Ohio Environmental Protection Agency (OEPA)

And

Ravenna Army Ammunition Plant (RVAAP)

2002 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

January 4, 2002

Re: **Ramsdell Quarry Landfill**
Ground Water Monitoring

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 (Ohio EPA) has reviewed the documents titled "Notification to the Director", dated June 15, 2001, and "Notification to the Director" dated August 24, 2001, concerning the detection and confirmation of statistically significant differences at the Ramsdell Quarry Landfill (RQL) between the upgradient monitoring well RQLMW-06 and downgradient well RQLMW-07. The notifications were received on June 18, 2001, and August 27, 2001, respectively. Ground water at the site is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10).

Upon review of the above mentioned documents, Ohio EPA concluded the following:

1. In the June 2001 "Notification to the director," RQL informs the Ohio EPA that statistically significant increases for total dissolved solids (TDS) and specific conductance were detected in downgradient well RQLMW-07 when compared to upgradient well RQLMW-06. This notification is in accordance with OAC 3745-27-10 (D)(8)(a). RQL also indicated that the affected well would be resampled for TDS and specific conductance on June 26, 2001, as per OAC 3745-27-10 (D)(8)(b).

2. As per OAC 3745-27-10 (D)(8)(c), RQL submitted the August 2001 "Notification to the Director," to inform Ohio EPA that well RQLMW-07 was resampled on June 26, 2001, as per OAC 3745-27-10 (D)(8)(b), and that the statistical difference between background and downgradient well RLMW-07 was confirmed for TDS. RQL further stated that it is proceeding in accordance with OAC3745-27-10 (E)(1) and is preparing a ground water quality assessment program plan (GWQAP) for the facility.

RQL has met the requirements of OAC 3745-27-10 (D)(8)(a) through (c) and OAC 3745-27-10 (E)(1). The GWQAP has been received by the Ohio EPA and is currently under review. No further action is required by RQL with respect to these documents at this time.

If you have any technical questions regarding this review, please do not hesitate to contact either Diane Kurlich at 330-963-1150 or myself at 330 963-1276.

Sincerely,

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

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 11, 2002

Re: Ramsdell Quarry Landfill
Ground Water Monitoring

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 40201-005

Dear Mr. Jent:

The Ohio Environmental Protection Agency has reviewed the below listed documents:

1) JUNE 2000 GROUND WATER DATA STATISTICAL REPORT; DATED AUGUST 21, 2000; RECEIVED AUGUST 28, 2000;

2) DECEMBER 2000 GROUND WATER MONITORING SAMPLE EVENT; DATED JANUARY 31, 2001; RECEIVED FEBRUARY 5, 2001;

3) APRIL 30, 2001, GROUND WATER MONITORING SAMPLING EVENT; DATED JUNE 12, 2001; RECEIVED JUNE 15, 2001;

4) OCTOBER 9, 2001, GROUND WATER MONITORING SAMPLE EVENT; DATED DECEMBER 3, 2001; RECEIVED DECEMBER 10, 2001

The above referenced documents were received as indicated above. Ground water at the site is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10).

The ground water monitoring network at the Ramsdell Quarry Landfill includes upgradient well RQLMW-006 and downgradient wells RQLMW–007 through RQLMW-009 located immediately downgradient of the limits of waste placement. Two additional wells (RQLMW-010 and RQLMW-011) were installed farther downgradient from the limits of waste placement as part of a hydrogeologic investigation at the site. These two wells are also downgradient of the quarry pond. Although downgradient wells RQLMW-007 through RQLMW-009 fulfill the requirements of OAC 3745-27-10 (B)(1)(b), RQLMW-10 and -011 also are sampled during each ground water monitoring event.

Constituents analyzed during each ground water sampling event include the indicator parameters (pH, specific conductance, total organic carbon (TOC) and chemical oxygen demand (COD)) as well as site specifics such as VOCs, explosives, and metals.

Following review of the above mentioned documents, Ohio EPA has determined the following:

1. Ramsdell Quarry Landfill has failed to install an upgradient/background monitoring well that represents the quality of the ground water that has not been affected by past or present operations at the sanitary landfill facility as required by OAC 3745-27-10 (B)(1)(a).

   In "Final Report on the Ground Water Investigation for Ramsdell Quarry Landfill," dated October 15, 1999, seasonal ground water flow reversals are documented. As stated in this report, these flow reversals cause ground water from the landfill to impact upgradient well RQLMW-006. Therefore, the ground water monitoring program does not comply with OAC Rule 3745-27-10 (B)(1)(a).

   Ramsdell Quarry Landfill should install an upgradient ground water monitoring well in a location that complies with OAC Rule 3745-27-10 (B)(1)(a) or meets the exception provided by OAC Rule 3745-27-10 (C)(4).

COMMENTS JUNE 2000 GROUND WATER STATISTICAL REPORT

The following comments concern the review of the document "June 2000 Ground Water Statistical Report," dated August 21, 2000, and received August 28, 2000.

1. Statistical analyses indicate that there are statistically significant differences between background and downgradient wells RQLMW-07 for specific conductance and RQLMW-007, –008, and -010 for pH. No other statistically significant differences were calculated.

2. In the future, a ground water flow arrow(s) should be added to the ground water contour maps to indicate the calculated ground water flow direction(s).

3. Nickel was detected at a concentration of 217 ug/L in RQLMW-006. This exceeds the nickel MCL which is 100 ug/L.

4. Low concentrations of several organics also were detected in samples collected during this sampling event. These included:

   - RQLMW-006: acetone (15 ug/L), benzene (0.42 ug/L), 2-butanone (55 ug/L), methylene chloride (0.12 ug/L), and toluene (0.17 ug/L);

   - RQLMW-010: chloromethane (0.12 ug/L), methylene chloride (0.12 ug/L), and toluene (0.16 ug/L);

- RQLMW-011: chloromethane (0.14 ug/L), methylene chloride (0.10 ug/L), and toluene (0.16 ug/L);

- RQLMW-007: benzene (0.14 ug/L), 2-butanone (2.7 ug/L), methylene chloride (0.13 ug/L), and toluene (0.14 ug/L);

- Trip Blank: bromodichloromethane (0.11 ug/L), chloroform (0.35 ug/L), chloromethane (0.12 ug/L), and methylene chloride (0.51 ug/L); and

- Field Blank: acetone (1.1 ug/L).

5. The QA/QC report that accompanies the laboratory data indicates that three method blanks were analyzed with the VOC samples. One of the method blanks contained methylene chloride (0.37 ug/L). The second method blank contained bromodichloromethane (0.11 ug/L), chloroform (0.42 ug/L), and methylene chloride (0.29 ug/L). The third method blank contained chloroform (0.22 ug/L) and methylene chloride (0.10 ug/L). Therefore, it appears that some of the low level VOC contamination detected in the Ramsdell ground water samples may be attributed to laboratory contamination.

COMMENTS: DECEMBER 2000 GROUND WATER MONITORING SAMPLE EVENT

The following comments concern the review of the document, "December, 2000 Ground Water Monitoring Sample Event," dated January 31, 2001, and received February 5, 2001.

1. On page 2 of the report narrative, it states that the ground water contour map for the "June 2000 sampling event is presented as Figure 1." Based on the date that the map was generated and the sampling event being reported, it is assumed that this is a typographical error. The owner/operator should submit a corrected page for insertion into this report.

2. Statistical analyses indicate that there are statistically significant differences between background and downgradient well RQLMW-007 for TDS and TOC. No other statistically significant differences were calculated.

3. In the future, an arrow(s) should be added to the ground water contour maps to indicate the calculated ground water flow direction(s).

4. From the information on the field sampling logs, it is unclear whether a sheen was observed on the water obtained from RQLMW-006, -007, and -011 (duplicate). This should be clarified.

5. Nickel was detected at a concentration of 217 ug/L in RQLMW-006. This exceeds the MCL for nickel which is 100 ug/L. Thallium was detected in the sample obtained from RQLMW-008 at a concentration of 2.9 ug/L which exceeds the MCL of 2.0 ug/L.

6. Low concentrations of acetone (1.3 ug/L to 3.1 ug/L) were detected in all of the samples obtained from the monitoring wells. Acetone (1.6 ug/L) and chloromethane (0.32 ug/L) were detected in the field blank. Acetone also was detected in both trip blanks at concentrations of 1.9 ug/L and 1.4 ug/L. Acetone was detected in both method blanks at concentrations of 1.2 ug/L and 1.4 ug/L. Thus, it appears that the acetone detected in the ground water samples may be from laboratory contamination.

COMMENTS: APRIL 30, 2001, GROUND WATER MONITORING SAMPLING EVENT

The following comments concern the review of the document, "April 30, 2001 Ground Water Monitoring Sampling Event," dated June 12, 2001, and received June 15, 2001.

1. On page 2 of the report narrative, it states that the ground water contour map for the "June 2000 sampling event is presented as Figure 1." Based on the date that the map was generated and the sampling event being reported, it is assumed that this is a typographical error. The owner/operator should submit a corrected page for insertion into this report.

2. Statistical analyses indicate that there are statistically significant differences between background and downgradient well RQLMW-007 for TDS and specific conductance. No other statistically significant differences were calculated.

3. In the future, an arrow(s) should be added to the ground water contour maps to indicate the calculated ground water flow direction(s).

4. Based on the April water level elevation data, the ground water flow direction has shifted to a more easterly direction.

5. The laboratory report narrative indicates that the temperature of the coolers upon receipt at the laboratory ranged from 4.6^0 C to 7.3^0 C. Because the samples were not maintained at the proper temperature, the results of all analyses that are temperature dependent (e.g., VOCs) are questionable. In the future, the owner/operator should ensure that the temperature of samples arriving at the laboratory does not exceed 4^0C.

6. The laboratory cooler receipt form documents the following problems with the samples upon arrival at the laboratory:

   a. The bottle labels and tags did not agree with the custody papers. A sample bottle labeled as being from RQLMW-007 for cyanide analysis was not received. However, the laboratory did receive two sample bottles labeled as being from RQLMW-006 for cyanide analysis. Based upon the time of sample collection, the laboratory assumed that one of the RQLMW-006 cyanide sample bottles was actually from RQLMW-007. It is unclear from the information submitted, how this discrepancy was rectified. This information should be submitted by the owner/operator. Because of this discrepancy, the cyanide data from both RQLMW-006 and -007 are suspect.

   b. Although two trip blanks were submitted, only one trip blank appears on the chain-of-custody.

   c. Some of the samples were not at the correct pH when received at the laboratory. The metals sample from RQLMW-007 required the addition of nitric acid and the cyanide sample from RQLMW-010 required the addition of sodium hydroxide to meet the recommended pH levels for the indicated analyses. Because the metals sample from RQLMW-007 and the cyanide sample from RQLMW-010 were not properly preserved in the field, the results for these analyses are considered minimum values.

   d. Ramsdell Quarry Landfill has indicated that there are a total of four chain-of-custody forms. However, only three forms have been submitted. It does appear that all of the samples contained in the coolers are included on the chain-of-custody forms received by the laboratory.

   The validity analytical data depends upon proper preservation (pH adjustment, temperature) of the samples and the accurate documentation of the sample identities. The chain-of-custody forms also must accurately document all samples submitted for analysis. In the future, the owner/operator must ensure that all samples are properly preserved, identified, and included on the chain-of-custody forms. In addition, all chain-of-custody forms must be accurately completed in their entirety. **In the future, problems such as those cited above may result in the data being rejected and could require the sampling event to be repeated.**

7. Nickel was detected at a concentration of 332 ug/L in RQLMW-006. This exceeds the MCL for nickel which is 100 ug/L. Thallium was detected in the sample obtained from RQLMW-008 at a concentration of 2.5 ug/L which exceeds the MCL of 2.0 ug/L.

8. Acetone (8.5 ug/L) and 2-butanone (92.0 ug/L) were detected in the sample obtained from RQLMW-006. There were no VOCs detected in any of the other ground water samples. Neither of these constituents were detected in the trip blank, the field blank, or the two method blanks analyzed by the laboratory as part of its QA/QC protocols.

9. The explosive compound 2,4-dinitrotoluene (2,4-DNT) was detected in the sample obtained from RQLMW-010 at a concentration of 0.36 ug/L. 2,4-DNT was not detected in the duplicate sample obtained from this well. Explosive compounds are site specific contaminants of concern.

10. A data validation report prepared by Purves Environmental is included in this document. The following three items contained in the data validation report require clarification by the owner/operator:

    a. On page 4 of the Data Validation Report, it states that the field sample numbers and the laboratory numbers correlated with the field chain of custody and analytical reports. As noted above, there are problems with the identity of the cyanide samples for RQLMW-006 and -007. Therefore, the statement in the Data Validation Report that there was a correlation between the field sample numbers and the field chain-of-custody should be clarified.

    b. On page 10 of the Data Validation Report, it states that all data are valid except for the turbidity data. It further states that the turbidity data are estimated due to extended holding times. Previously in the same report (page 5, Section 2), it states that all holding times were met. This discrepancy should be clarified.

    c. On page 4 of the Data Validation Report, it states that the temperature of the samples was greater than 4^0 C upon arrival at the laboratory "because the cooler was packed [and] received at the laboratory in less than two hours. This does not provide enough time for the cooler to drop to the 4^0C temperature." However, it is unclear where/how the samples were stored and cooled from the time of collection the previous day until delivery to the laboratory almost 24 hours later. It seems that if the samples were stored in the shipping coolers from the time of collection, as is typically done, then this premise is not valid. This should be clarified.

11. The statistically significant differences in TDS and specific conductance observed in the ground water samples obtained from RQLMW-007 were confirmed when the well was resampled as per OAC 3745-27-10 (D)(8)(b) on June 26, 2001. Therefore Ramsdell Quarry Landfill has entered assessment monitoring in accordance with OAC 3745-27-10(E).

COMMENTS: OCTOBER 9, 2001, GROUND WATER SAMPLE EVENT

The following comments concern the review of the document, "October 9, 2001, Ground Water Monitoring Sample Event," dated December 3, 2001, and received December 10, 2001.

1. On page 2 of the report narrative, it states that the ground water contour map for the "June 2000 sampling event is presented as Figure 1." Based on the date that the map was generated and the sampling event being reported, it is assumed that this is a typographical error. The owner/operator should submit a corrected page for insertion into this report.

2. Statistical analyses indicate that there are statistically significant differences between background and downgradient well RQLMW-007 for TDS and specific conductance. There is also a statistically significant difference between background and downgradient well RQLMW-008 for 2,4-DNT. No other statistically significant differences were calculated.

3. The laboratory case narrative indicates that the samples for 2,3,6-trinitrotoluene (2,3,6-TNT) obtained from RQLMW-008, -009, -011, and the field blank were re-extracted after the holding time had expired. The 2,4,6-TNT analysis was rerun because the laboratory control sample for the original batch was above QC limits. Because these samples were analyzed after the holding times had expired, the data obtained for 2,4,6-TNT for the affected wells are considered minimum values.

4. In the future, an arrow(s) should be added to the ground water contour maps to indicate the calculated ground water flow direction(s).

5. The laboratory cooler receipt form documents the following problems with the samples upon arrival at the laboratory:

   a. The trip blank is not recorded on the chain-of-custody form.

   b. Some of the samples were not at the correct pH. The metals and cyanide samples from RQLMW-007 and the cyanide sample from RQLMW-008 required further preservation at the laboratory to meet the required pH levels. Because these samples were not properly preserved in the field, the data resulting from their analyses are considered minimum values.

   c. One of the 40 ml vials for VOC analysis for RQLMW-009 was empty when it was received by the laboratory.

The validity of analytical data depends proper collection and preservation (pH adjustment, temperature) and accurate documentation of samples on the chain-of-custody. In the future, the owner/operator must ensure that all samples are properly collected, preserved, and documented on the chain-of-custody forms. Problems such as those cited above may result in the data being rejected and could require the sampling event to be repeated.

6. Nickel (131 ug/L) and antimony (6.9 ug/L) were detected above their MCLs in RQLMW-006. The MCL for nickel is 100 ug/L and the MCL for antimony is 6.0 ug/L. Antimony (2.6 ug/L) also was detected in the method blank. Arsenic was detected in the sample obtained from RQLMW-008 at a concentration of 55.8 ug/L which exceeds the MCL of 50 ug/L. Arsenic also was detected in the duplicate from this well at a concentration of 56.2 ug/L.

7. Low concentrations of acetone (0.68 ug/L to 0.95 ug/L) were detected in the samples obtained from RQLMW-007, -009 -and -011. No VOCs were detected in any of the other ground water samples. Acetone was not detected in the trip blank, the field blank, or the method blank analyzed by the laboratory as part of its QA/QC protocols.

8. The explosive compounds 2,4-DNT and 2,4,6-TNT were detected in the sample obtained from RQLMW-008 at concentrations of 0.41 ug/L and 0.62 ug/L, respectively. 2,4-DNT (0.21 ug/L) and 2,4,6-TNT (0.90 ug/L) also were detected in the sample obtained from RQLMW-011. The field blank also contained 1.1 ug/L of 2,4,6-TNT. Explosive compounds are site specific contaminants of concern.

9. A data validation report prepared by Purves Environmental is included in this document. On page 4 of this report, it states that the cooler temperature was slightly above the upper limit. However, according to the information included in the laboratory narrative, the temperatures of the coolers were well below the upper limit of 4^{0} C when they were received at the laboratory. The statement in the Date Validation Report concerning the temperature of the coolers being above limits should be clarified.

10. A ground water quality assessment plan as well as a report documenting the results of the sampling of well RQLMW-007 for Appendix II parameters has been submitted to the Ohio EPA for review. The facility also planned to sample the other downgradient wells at the site for the Appendix II parameters in December 2001. Because the facility has already entered the assessment phase of monitoring and is moving forward with plans to sample the remaining downgradient wells for Appendix II parameters, the owner/operator does not plan a confirmation sampling of wells RQLMW-007 and -008.

In summary, Ramsdell Quarry Landfill is not in compliance with OAC 3745-27-10(B)(1)(a) as it has failed to install an upgradient monitoring well that represents the quality of ground water that has not been affected by past or present operations at the sanitary landfill facility. Ramsdell Quarry Landfill should install an upgradient ground water monitoring well in a location that complies with OAC Rule 3745-27-10 (B)(1)(a) or meets the exception provided by OAC Rule 3745-27-10(C)(4).

In addition, the following comments require a written response by Ramsdell Quarry Landfill:

December 2000 Ground Water Report comments 1 and 4;
April 30, 2001, Ground Water Report comments 1, 6a, 10a, 10b, and 10c; and
October 9, 2001, Ground Water Report comments 1 and 9.

Please submit the written response to Ohio EPA addressing the above mentioned items within 30 days of your receipt of this letter.

If you have any technical questions regarding this review, please contact Diane Kurlich at 330-963-1150 or Jarnal Singh at 330-963-1276. 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]

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

TO 4/18/02	
L	CR.COR
L	ENV
	CONTRACTOR
	RETUEN FOR FILE

April 15, 2002

Re: Ramsdell Quarry Landfill
Ground Water Assessment
Monitoring Plan

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 (Ohio EPA), Northeast District Office (NEDO) has completed review of the Ground Water Assessment Plan for the Ramsdell Quarry Landfill (RQL) received by Ohio EPA NEDO on September 10, 2001. Ground water at RQL is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10). The Ground Water Assessment Plan was submitted in response to the statistically significant differences observed in total dissolved solids and specific conductance between upgradient well RQLMW-006 and downgradient well RQLMW-007 during the April 30, 2001, semiannual sampling event. The statistically significant difference in total dissolved solids was confirmed during a June 26, 2001, sampling event. However, the statistically significant difference in specific conductance was not confirmed during the June 26, 2001, sampling event.

Based on the review of the Ground Water Assessment Plan, Ohio EPA had determined the following violation:

1. Per OAC 3745-27-10 (B)(1)(a), the owner/operator has failed to install an upgradient/background monitoring well that represents the quality of the ground water that has not been affected by past or present operations at the sanitary landfill facility.

   In the document, "Final Report on the Ground Water Investigation of Ramsdell Quarry Landfill," (August 2000) (page 4-4) it stated, "Considering that the horizontal potentiometric gradient during the wet season is flat and exhibits short-term reversals, leaching from RQL [Ramsdell Quarry Landfill] and/or underlying historical wastes is the likely source of observed contaminants in well RQLMW-006."

   Ohio EPA agrees with this assessment of the hydrogeology in the vicinity of RQLMW-006. Therefore, the owner/operator should include provisions in the "Ground Water Assessment Plan" for the installation of an upgradient well that meets the requirements OAC Rule 3745-27-10 (B)(1)(a) or meets the exception provided by OAC Rule 3745-27-10 (C)(4).

Please note that the sub-section, "Upgradient/Background Monitoring Well-RQLMW-006," in Section 2 should be modified accordingly.

Ohio EPA also has the following comments that require your attention:

1. The title page of the document has the date, September 2001. The document was received by the Ohio EPA-NEDO on September 10, 2001. However, the heading on each page of the document is dated September 27, 2001. In order to avoid confusion, the date included in the heading of each page should be corrected.

2. In the "Introduction," page 1, it states that the rules under which this facility is regulated are "applicable for solid waste landfills closing on or before December 1990." This is incorrect and it is unclear where the December 1990 date originates. The solid waste regulations which became effective on March 1, 1990, are applicable to solid waste landfills that ceased accepting waste prior to March 1, 1990, but did not complete closure certification prior to that date. Because the facility stopped accepting waste prior to March 1, 1990, it was not required to move into the 1994 solid waste regulations. Because it did not complete closure activities, prior to March 1, 1990, the 1990 regulations rather than the 1987 regulations are in effect. The "Introduction" should be revised accordingly.

3. Appendix I is referenced on page 2. There is no Appendix I. It appears that this reference should be to Appendix A. Similar references occur in other sections of this document (e.g., Section 7). All references in the assessment plan to Appendix I should be changed to Appendix A.

4. Appendix A is the document "Initial Phase Report Ground Water Investigation: Ramsdell Quarry Landfill" (January 1999). This document should be replaced by the "Final Report on the Ground Water Investigation: Ramsdell Quarry Landfill" (August 2000). The final report includes the results of the complete investigation rather than only the data from first few months of the project.

5. The indicator parameter cited in Section 2, page 2, should be "total dissolved solids" (TDS) not "total suspended solids." This should be corrected.

6. On page 5, Section 6, it states that a copy of the "Final Report on the Ground Water Investigation of the Ramsdell Quarry Landfill" is attached to the assessment plan. As noted above, the Initial Phase Report is included as Appendix A. As stated above, the Final Report should be added to the assessment plan. In addition, the date of the Final Report is August 2000, not January 1999 as is stated on page 5 of the assessment plan. This should be corrected.

7. In Section 8, Appendix II is referenced. There is no Appendix II. It appears that this reference should be to Appendix B. Similar citations occur in other sections of the document (e.g., Section 9). All references in the assessment plan to Appendix II should be changed to Appendix B.

8. The requirements for a detailed summary of the statistical analyses that were applied to the detection monitoring data (OAC 3745-27-10(E)(3)(b)(iii)) has not been fulfilled by the information included in Section 9 and the table included as Appendix B. A written summary of the statistical test(s) used, the results, and the results of any confirmatory sampling should be documented in Section 9.

9. As per OAC 3745-27-10 (E) (3)(d), a revised sampling and analysis plan should be added to the Ground Water Assessment Plan. Including the old sampling and analysis plan as Appendix C does not satisfy this requirement. Appropriate sections of the "Facility Wide Sampling and Analysis Plan" (March 2001) may be referenced and included as part of the revised sampling and analysis plan. However, when completed, the assessment monitoring plan should provide field personnel with current procedures to be followed in the collection of ground water monitoring samples.

10. In Section 10, it states that no additional wells will be installed during the assessment monitoring program. This section should be revised to include provisions and procedures for the installation of a new upgradient/background well (see the Compliance Section above).

11. In Section 14, Appendix III is referenced. There is no Appendix III. It appears that this reference should be to Appendix C. This should be corrected. References to Appendix C should be added to each of the sections in which the owner/operator cites "in-place Ramsdell/RVAAP ground water monitoring plans and procedures." In addition, if the owner/operator plans to utilize procedures included in the "Facility Wide Sampling and Analysis Plan" (March 2001) specific references to the document should be included in the assessment plan (see comment 9 above).

12. In Section 28, it states that the only anticipated statistical evaluation to be performed during assessment monitoring will be to determine whether RQLMW-006 is an appropriate upgradient well. Statistical analyses also may be needed to determine if there are statistically significant differences between the background and downgradient concentrations of contaminants. This will be particularly important for parameters that are naturally occurring or for contaminants that might be migrating from the CERCLA areas surrounding the landfill. This section should be modified accordingly.

13. As per OAC 3745-27-10 (E)(3)(e)(iv), the assessment plan must include the criteria that will be utilized to determine if additional assessment activities are warranted. Section 31 does not adequately address this issue and should be revised.

14. The assessment plan should include provisions for requesting a reinstatement of the detection monitoring program if no leachate or leachate derived constituents have entered the ground water (OAC 3745-27-10 (E)(7)).

15. In accordance with OAC 3745-27-10 (E)(8), the assessment plan also should include provisions to continue making the determinations (i.e., rate, extent, and concentration of leachate or leachate derived constituents in the ground water) required by OAC 3745-27-10 (E)(4) on a quarterly basis until released from this obligation by the director or unless an alternate time interval is established by the director.

In summary of this document review, the owner/operator should install an upgradient/background monitoring well at the Ramsdell Quarry Landfill that fulfills the requirements of OAC 3745-27-10(B)(1)(a), or meets the exception of OAC rule 3745-27-10(C)(4). Provisions for the installation of this well should be added to the assessment plan. Also, the owner/operator should submit a revised Ground Water Assessment Plan that addresses comments 1 through 15 above, to Ohio EPA for review within 30 days of your receipt of this letter.

If you have any technical questions regarding this review, please contact Diane Kurlich at 330-963-1150 or Jarnal Singh at 330-963-1276. Please submit all correspondence to Jarnal Singh, Ohio EPA, Northeast District Office, Division of Solid and Infectious Waste Management, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely,

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

JS:cl

pc: Murat Tukel, DSIWM-NEDO
Dianne Kurlich, DDAGW-NEDO
Eileen Mohr, & Todd Fisher, DERR, NEDO
Steven Uecke, Portage County HD
Mark Patterson, IOC-RVAAP
File: [LAND/Ramsdell/GRO/67]

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 15, 2002

Re: Ramsdell Quarry Landfill
Ground Water Monitoring

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 (Ohio EPA), Northeast District Office (NEDO) has reviewed the documents listed below:

1. RESPONSE TO OCTOBER 31, 2000, NOTICE OF VIOLATION;

2. ADDENDUM TO JUNE 2000 GROUND WATER MONITORING STATISTICAL REPORT;

3. ADDENDUM TO THE FEBRUARY 2000 GROUND WATER SAMPLING EVENT;

All three documents were dated December 12, 2000, and were received by Ohio EPA on December 13, 2000. Ground water at the Ramsdell Quarry Landfill is being monitored under the 1990 municipal solid waste rules (OAC 3745-27-10).

No compliance issues were identified during Ohio EPA's review of these documents. The owner/operator has adequately addressed the three violations cited in the October 31, 2000, Notice of Violation letter. Ohio EPA does, however, have the following comment concerning review of the documents 'Addendum to the February 2000 Ground Water Sampling Event' and the 'Addendum to the June 2000 Ground Water Monitoring Statistical Report':

1. Ramsdell Quarry Landfill historically has had problems documented with the statistical programs that it used to analyze its ground water monitoring data. After consultation with the USACE (Army Corp of Engineers), Ohio EPA, and a professional statistician, a different statistical program was developed for use with the ground water monitoring data at this site. The recalculation results for the statistical analyses performed on the February and June ground water data are documented in these two addenda.

Ohio EPA has determined that the statistical program used in the recalculation of the statistics for the February and June ground water monitoring data meets the requirements of OAC 3745-27-10 (C)(5) and (6). No further action is required by the owner/operator with respect to these two documents at this time.

If you have any technical questions regarding this review, please contact Diane Kurlich at 330-963-1150 or Jarnal Singh at 330-963-1276. Please submit all correspondence to Jarnal Singh, Ohio EPA, Northeast District Office, Division of Solid and Infectious Waste Management, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely,

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

JS:cl

pc: 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]

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, 2002

Re: Ramsdell Quarry Landfill

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 (Ohio EPA), Northeast District Office (NEDO) has completed review of the Ramsdell Quarry Landfill (RQL) document dated April 8, 2002, titled "Response to Comments Letter." This document was submitted in response to the comments included in the Ohio EPA March 11, 2002 letter to the facility, and was received by Ohio EPA on April 15, 2002.

Upon review of this document, it has been determined that RQL has adequately addressed the comments in the Ohio EPA March 11, 2002 letter. No further action is required by RQL in respect to this issue at this time.

If you have any questions, please do not hesitate to contact me at 330-963-1276.

Sincerely,

Jarnal Singh

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

JS:cl

pc: Dianne Kurlich, DDAGW-NEDO
Eileen Mohr, DERR-NEDO
Steven Uecke, Portage County Health Department
Mark Patterson, IOC-RVAAP
File: [Tukel/LAND/Ramsdell/GRO/67]

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 11, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
ERIE BURNING GROUNDS

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Final, Phase I Remedial Investigation Report for the Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated December 2001 and received at Ohio EPA, NEDO, on December 26, 2001, was prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) under contract number DACA62-94-D-0029, delivery order number 0072.

The final document was reviewed compared to the draft-final document, dated May, 2001, and the comment response documents.

The document revisions are acceptable to Ohio EPA and the document is considered final by the Agency.

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
David Seely, U.S. EPA Region V
Brian Tucker, Ohio EPA, CO, DERR
Steve Selecman, SAIC
Conni McCambridge, Ohio EPA, NEDO, DDAGW
LTC Tom Tadsen, RVAAP
John Cicero, RVAAP
Bob Whelove, OSC
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

January 4, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
OPEN DEMOLITION AREA # 1

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Final, Phase I Remedial Investigation Report for Demolition Area 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated December 2001 and received at Ohio EPA, NEDO, on December 26, 2001, was prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) under contract number DACA62-94-D-0029, delivery order number 0076.

The final document was reviewed compared to the draft-final document, dated June 2001 and the comment response documents.

The document revisions are acceptable to Ohio EPA and the document is considered final by the Agency.

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

Sincerely,

for Eileen T. Mohr

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

ETM/kss

cc: John Cicero, RVAAP
Bob Whelove, OSC
Brian Tucker, Ohio EPA, CO, DERR
Bonnie Buthker, Ohio EPA, OFFO, SWDO
Conni McCambridge, Ohio EPA, NEDO, DDAGW
LTC Tom Tadsen, RVAAP
Steve Selecman, SAIC
David Seely, U.S. EPA Region V
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

June 18, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
OPEN DEMOLITION AREA # 1

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

Dear Mr. Patterson:

On May 15, 2002, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), received the two-volume document entitled: "OE/UXO Removal and Interim Removal Action Report for the Open Demolition Area # 1." This document was prepared for the U.S. Army Operations Support Command (OSC) by MKM Engineers, Inc.

I returned to the office on June 10, 2002, subsequent to a four-month medical leave. As such, I will not be able to meet the 30-day document review time. I apologize for this delay and this document will be prioritized and reviewed as soon as possible.

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, Ohio EPA, OFFO, SWDO
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Rick Callahan, MKM Engineers
Mike Samelak, MKM Engineers

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

June 25, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
OPEN DEMOLITION AREA # 1

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the two-volume document entitled: "OE/UXO Removal and Interim Removal Action Report for the Open Demolition Area # 1, Ravenna Army Ammunition Plant, Ravenna, Ohio, 44266." This document, dated April 2002 and received on May 15, 2002, was prepared for the U.S. Army Operations Support Command (OSC) by MKM Engineers, Inc.

Ohio EPA has the following comments on the submitted document:

General Comments:

1. In a recent meeting which included representatives from the U.S. Army Corps of Engineers (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. In future preliminary-draft and draft reports, please number the text lines. This will aid in drafting comments, as well as facilitating the comment resolution process.

3. Please substitute "area of concern" (AOC) for the term "site" when specifically referencing OD-1. This substitution needs to be made throughout the document.

4. In several areas within the text describing the TNT/RDX field analyses, there is the notation that there were "interferences which can produce false positives... including haze or cloudiness caused by organic humus and sediment content in the sample or cleanliness of the sample cuvette." At an appropriate place in the text of the report, please indicate what corrective actions were undertaken to mitigate the impact of these interferences on the field analyses. In addition, any corrective actions instituted should be utilized on future projects.

Specific Comments:

1. Please revise the text in section 1.1 (page 1-1) to read: "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."

2. Please update the second paragraph in section 1.1 (page 1-1) to reflect the May 13, 2002 DD 1354 which officially reassigned an additional 3,774 acres of RVAAP to the National Guard Bureau (NGB). The NGB will subsequently license the area to the Ohio Army National Guard (OHARNG) for use as a training site.

3. Please add text to the revised report (in the second full paragraph on page 1-2) to indicate that the Phase 1 Remedial Investigation (RI) report also recommended that a baseline Human Health Risk Assessment (HHRA) and a Screening Ecological Risk Assessment (SERA) be conducted.

4. In the last paragraph of section 1.2 (page 1-2), please add text to the revised report which provides the rationale for the four foot excavation depth (i.e., funding and OSC driven). In addition, please be advised that this depth may not be acceptable to the OHARNG, based upon the potential future use of this area. (This comment is also applicable to section 3.1 on page 3-1.)

5. In the last paragraph of section 1.2 (page 1-2), the last sentence in this section indicates that "...grid soils did not exceed the chemical criteria..." Is this referring to the site-related background that was developed during the Winklepeck Burning Grounds (WBG) RI? Please revise the text as necessary.

6. Please revise the text in section 1.3 (page 1-2) to read as follows: "The OSC Safety Group reviewed and approved the documents; and Ohio EPA reviewed and provided comments on the documents."

7. The fourth bullet on page 1-3 references grids 17, 18, 19, and 20, and indicates that all grids are delineated on figure 1-4. In the revised document, please label grids 17-20 on figure 1-4.

8. In section 1.3 (second last paragraph on page 1-3), please provide a description of the soil stockpile management (i.e., silt fencing, etc.).

9. In section 1.3 (second last paragraph on page 1-3), please revise the text to read as follows: "Each 100 yd^3 stockpile that was tested and determined to be non-detect for explosives, and which had metals concentrations consistent with background, were staged back on the OD-1 AOC, following sifting, for use as backfill."

10. On page 2-2, should the text read: "The extent of OES visible on the surface at the AOC was not investigated prior to the initiation of this IRA."?

11. Please add an additional figure to the revised report that delineates the location of the two small areas (outside the 400 x 600 foot area) containing surface OES which were identified and excavated. (Section 3.0)

12. Each grid was surveyed with a Schonstedt at the excavation termination depth of either two or four feet. Please provide additional text to section 3.1 (page 3-1) which describes the effective penetration depth of the Schonstedt GA-52CX commercial handheld magnetometer.

13. In section 3.2 (page 3-2), please reference the later section in the report (section 7.1) that details the amount (poundage) of OES removed from the OD -1 AOC.

14. On figure 3-1, please label grid 11a as a burn pit.

15. Please revise the text on page 4-1 (section 4.0) to read: "...consequently removing the potential for future migration of contaminants off of the AOC."

16. Please revise the text on page 4-1 (section 4.0) to read as follows: "If field analysis indicated non-detect results for both TNT and RDX, and Phase 1 metals concentrations were consistent with background, the soil was used for backfilling the AOC excavations."

17. In section 4.2 (page 4-2), please revise the text to indicate that only the soil samples collected for explosives analyses were composited. All other samples should have been discrete samples, as specified in the Facility-Wide Sampling and Analysis Plan (FSAP).

18. In section 5.0 (page 5-1), please substitute the term "grid" for "gird."

19. In section 5.5 (page 5-3), please re-arrange some of the text so that it is clear (up-front) in the second paragraph why portions of this grid were excavated to an eight foot depth.

20. In section 5.5 (page 5-4), please provide additional information in the text as to the disposition of the volatile organic compound (VOC) - contaminated soils. (This comment is also applicable to section 7.2 on page 7-1.)

21. In section 5.8 (page 5-5), there is an indication in the text that a burn area/pit was encountered and excavated in the southwestern portion of the grid. In the revised document, please delineate this burn area/pit on a figure.

22. In section 5.9 (page 5-5), there is an indication in the text that a burn area/pit was encountered and excavated in the grid. In the revised document, please delineate this burn area/pit on a figure.

23. In section 5.10 (page 5-6), there is an indication in the text that two burn areas/pits were encountered and excavated in the grid. In the revised document, please delineate these burn areas/pits on a figure.

24. In section 5.11 (page 5-6), there is an indication in the text that a burn area/pit was encountered and excavated in the grid. In the revised document, please delineate this burn area/pit on a figure. In addition, please change the section title to read "5.11" instead of "5.10."

25. In section 5.11 (page 5.6), please remove the sentence in the second paragraph that states: "The soil was used as backfill," as a previous sentence in this paragraph indicates that the soil was placed in the explosives and metals contaminated stockpile.

26. In section 5.12 (page 5-7), there is an indication in the text that a burn area/pit was encountered and excavated in the grid. In the revised document, please delineate this burn area/pit on a figure.

27. In section 5.12 (page 5-7), please revise the text to read: "The total volume of soil excavated from grid 12 was 400 yards^3."

28. In section 5.17 (page 5-9), there is an indication in the text that a burn area/pit was encountered and excavated in the grid. In the revised document, please delineate this burn area/pit on a figure.

29. In section 5.18 (page 5-9), there is an indication in the text that two burn areas/pits were encountered and excavated in the grid. In the revised document, please delineate these burn areas/pits on a figure.

30. In section 5.18 (page 5-9), please provide additional details in the revised text which discuss the disposition of the soils removed from the two burn areas.

31. In section 5.19 (page 5-9), there is an indication in the text that a burn area/pit was encountered and excavated in the grid. In the revised document, please delineate this burn area/pit on a figure.

32. In section 5.19 (page 5-9), please provide additional details in the revised text which discuss the disposition of the soils removed from the lateral trench filled with burn pit debris.

33. On table 5-1, please verify whether the column entitled "Region 9 PRG Data" represents the straight Region 9 value or 1/10 the PRG which is the initial screen used at RVAAP. In addition, please re-check the individual columns to ensure that the correct concentrations are either highlighted or in bold print (for example, benzene should also be in bold print).

34. In section 6.1 (page 6-2), the text indicates that antimony was not identified as a chemical of potential concern (COPC) during the Phase 1 RI. This is not entirely correct, as antimony was not identified as a subsurface COPC, but was identified as a surface COPC.

35. On Table 7-1:

    a. Were any semi-volatile organic compound (SVOC) analyses conducted on any of the burn pit soils?

    b. Please verify whether the column entitled "Region 9 PRG Data" represents the straight Region 9 value or 1/10 the PRG which is the initial screen used at RVAAP.

    c. Please re-check the individual columns to ensure that the correct concentrations are either highlighted or in bold print (for example, benzene should also be in bold print).

36. Please update section 8.0 (page 8-1) to indicate whether or not the final seeding, (using the approved RVAAP mixture) has taken place.

37. In section 9.1 (page 9-1), please clarify the text to indicate that the concentrations that are reported are from the confirmation samples taken at the termination depth of the excavation.

38. In Appendix A, please add information to the worksheets that identifies the on-site analyst(s).

39. In Appendix B:

    a. Please provide the chain of custody (COC) forms.

    b. With respect to VOC analyses, please provide additional information as to the analysis date, as some of the samples appear to have exceeded their holding times.

40. In Appendix C:

    a. Please provide signed copies of the weekly report in the revised report.

    b. With respect to the "blue soils" depicted in the photographs from grid 11, please discuss, in the text of the report, the reason for the blue coloring, the corresponding analytical results, and the disposition of the soil.

41. In Appendix E:

    a. There are several data validation reports which indicate (in the data summary section) that no qualifiers were changed and that all the data is valid. Yet several pages after this statement, there is an additional page that indicates that qualifiers were changed. Please review all the data validation reports and have the validator revise his reports as necessary.

    b. In several data validation reports, there are the notations that the serial dilutions which were performed are not valid and that flags were removed. Yet in the data summary section, there is text that indicates that no qualifiers were changed and that the data is valid. Please review all the data validation reports and have the validator revise his reports as necessary.

    c. With respect to the data validation reports which indicate that serial dilutions were performed, please provide additional information as to why they were

performed, whether or not a regular metals analysis was run, and the potential impact upon all the resulting data.

42. In Appendix G, please provide clarification as to the additional column inserted in the chart which is labeled as "RCRA Bck Prg." What is the significance of these additional notations and who added the column to the chart?

43. In Appendix H, please add the analyst's name(s) to the worksheets. In addition, for future projects, please ensure that the proper protocol for making changes is followed (i.e., one line strike-out and initialed).

44. The PRG list in Appendix I does not match the two tables which appear in volume 1 of this report. Please clarify which is correct and make any necessary adjustments to the table(s) and the text of the report.

45. In volume 2, please clarify why the contractor is having the laboratory report tentatively identify compounds (TICs).

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
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bill Ingold, OSC
Rick Callahan, MKM (Ravenna)
Mike Samelak, MKM (Ravenna)
Srini Neralla, MKM (Sacramento)

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

March 15, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY
GW MONITORING EVENT RESULTS (ODA)
SUPPLEMENTARY ANNUAL REPORT

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

Dear Mr. Cicero:

On February 25, 1999, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the following documents: the September 1998 Open Detonation Area Ground Water Monitoring Event Results, dated February 18, 1999; the December 1998 Open Detonation Area Ground Water Monitoring Event Results, dated February 18, 1999; the 1998 Supplementary Annual Report for Ground Water Monitoring Data, dated February 18, 1999. The above referenced documents were submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The ground water monitoring program at the site is in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-02.

The Ohio EPA has the following comments regarding the submittals.

COMMENTS:

COMMENTS SEPTEMBER 1998 SAMPLING EVENT:

1. The following statistically significant differences between upgradient well DET-1 and the cited downgradient wells were observed:

   Sodium in DET-2, -3, and -4;
   Barium in DET-3;
   Calcium in DET-2, -3, and -4;
   Specific conductance in DET-2, -3, and -4;
   pH in DET-2, -3, and -4; and
   TOC in DET-3 and -4.

2. There are discrepancies between the date of sample collection that appears on the field sampling sheets (September 17, 1998); the laboratory sample description information sheet (September 23, 1998); and the laboratory data sheets (September 23, 1998). There is also a discrepancy between the date received as

documented on the laboratory sample description information sheet (September 25, 1998) and on the laboratory data sheets (September 24, 1998). The chain-of-custody form also indicates that the samples were collected on September 23, 1998. Discrepancies such as these affect the validity of the data package and should be avoided.

3. If the samples were collected on September 17, 1998, as documented on the field sampling sheets, then the holding times for VOCs were exceeded because the samples were not analyzed until October 6, 1998. The VOC data, therefore, would be considered to be minimum concentrations.

4. If the samples were collected on September 17, 1998, the holding time of seven days between collection and extraction for explosives also was exceeded and the concentrations detected would be considered to be minimum values.

5. The laboratory control sample for nitrocellulose was outside of control limits.

COMMENTS DECEMBER 1998 SAMPLING EVENT

1. According to the laboratory data sheets for the explosives data, the samples were collected on December 18, 1998. The samples were not received by the laboratory until December 31, 1998, and were not analyzed until February 15, 1999. If these dates are accurate, the holding times between collection and extraction and analysis were exceeded. Therefore, all explosive results are minimum values.

2. Explosive compounds detected in upgradient well DET-1 included 1,3,5-trinitrobenzene (0.58 ug/L); 3-nitrotoluene (1.0 ug/L); 4-nitrotoluene (0.40 ug/L); and 1,2-dinitrobenzene (123 ug/L).

3. The explosive compounds 3-nitrotoluene (0.40 ug/L) and 1,2-dinitrobenzene (49 ug/L) were detected in DET-2. The explosive compounds 1,3,5-trinitrobenzene (0.49 ug/L); 3-nitrotoluene (1.5 ug/L); and 1,2-dinitrobenzene (94 ug/L) were detected in DET-3. Tetryl (0.43 ug/L); 1,3,5-trinitrobenzene (0.54 ug/L); nitrobenzene (0.43 ug/L); 3-nitrotoluene (0.46 ug/L); 4-nitrotoluene (0.53 ug/L) and 1,2-dinitrobenzene (38 ug/L) were detected in DET-4. In the duplicate sample obtained from well DET-2, 1,3,5-trinitrobenzene (0.57 ug/L); tetryl (0.41 ug/L); nitrobenzene (0.41 ug/L); 4-nitrotoluene (0.50 ug/L) and 1,2-dinitrobenzene (36 ug/L) were detected.

4. The following statistically significant differences between upgradient well DET-1 and the cited downgradient wells were observed:

Barium in DET-3;
Calcium in DET-2, -3, and -4;
pH in DET-2, -3, and -4;
Specific conductance in DET-2, -3, and -4;
TOC in DET-3 and -4; and
Sodium in DET-2 and -3.

CONCLUSIONS:

In the future, RVAAP should ensure that all documentation associated with the sampling event is accurately completed. Discrepancies such as the documentation of the sampling date during the September sampling event should not occur.

RVAAP should ensure that all sample holding times are met. Failure to extract or/and analyze samples within the specified holding times may result in the data being considered invalid.

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:cl

cc: Natalie Oryshkewych, DHWM, NEDO
Jeremy Carroll, DHWM, CO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Todd Fisher, 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 29, 2002

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

RE: RAVENNA ARSENAL AMMUNITION PLANT, OHD 210-020-735, PORTAGE COUNTY DECEMBER 29, 1999 RESPONSE LETTER

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced document. The document was submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. On September 23, 1999, the Ohio EPA observed the quarterly sampling of ground water monitoring wells at the Open Detonation Area #2 (ODA-2). An Ohio EPA comment letter, dated October 20, 1999, summarized the Ohio EPA's comments concerning the sampling event. The above cited document is RVAAP's response to the October 20, 1999, Ohio EPA comments. The ground water monitoring program at the site is in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-02.

The Ohio EPA has the following comment regarding the submittal.

COMMENT:

RVAAP has adequately addressed the October 20, 1999, Ohio EPA comments. No further action is required by RVAAP concerning these issues at this time.

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

May 29, 2002

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

RE: FEBRUARY 2000 SAMPLING EVENT, DATED JUNE 23, 2000; JUNE 2000 SAMPLING EVENT, DATED AUGUST 21, 2000; SEPTEMBER 2000 SAMPLING EVENT, DATED NOVEMBER 1, 2000; AUGUST 2000 SAMPLING EVENT, WELL DET-1B, DATED NOVEMBER 30, 2000; DECEMBER 2000 SAMPLING EVENT, DATED JANUARY 29, 2001; AND SUPPLEMENTARY ANNUAL REPORT FOR 2000, DATED FEBRUARY 16, 2001.

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced. The documents were submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The ground water monitoring events were conducted at the Open Detonation Area (ODA) during the year 2000. The ground water monitoring program at the site is in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-02.

The Ohio EPA has the following comments regarding the submittals.

COMMENTS:

COMMENTS FEBRUARY 2000 SAMPLING EVENT:

1. The text of this report indicates that the sampling was conducted on February 23, 2000. However, the information on the computer disk that accompanies the report, as well as the hard copies of the results of the statistical tests, indicate that the sampling event was conducted on March 28 and 29, 2000. The 2000 Supplementary Annual Reporting Form also indicates that the sampling event was conducted on March 28 and 29, 2000. RVAAP shall clarify this discrepancy in the dates the sampling was conducted.

2. The text of the report indicates that the following statistically significant differences were observed between the concentrations of constituents in the upgradient well DET-1 and the cited downgradient wells:

   calcium in DET-2, -3, and -4;
   chromium in DET-2, -3, and -4;
   sodium, in DET-2, -3, and -4;

   specific conductance in DET-2, -3, and -4;
   iron in DET-3; and
   potassium in DET-4.

The text in the 2000 Annual Report for what appears to be the same sampling event indicates that the statistically significant differences between the upgradient well DET-1 and the cited downgradient wells included the following:

iron in DET-2 and 3;
sodium in DET-2, -3, and -4;
specific conductance in DET-4;
HMX in DET-4; and
RDX in DET-4.

These discrepancies between the quarterly report and the annual report must be explained.

3. The laboratory data sheets for this sampling event were not submitted as part of this report. However, the 2000 Supplementary Annual Report did include copies of these forms. A review of the data sheets included in the annual report indicate the following.

   a. The explosive, RDX, was detected in the samples obtained from DET-2 (0.11 ug/L) and DET-4 (1.3 ug/L). The concentration detected in the sample from DET-2 was below the reporting limit of 0.50 and, therefore, was flagged as an estimated value.

   b. The explosive HMX was detected in the sample obtained from DET-4 (2.5 ug/L).

   c. Arsenic was detected in the samples obtained from DET-1 (7.6 ug/L), DET-2 (14.5 ug/L), and DET-3 (9.7 ug/L).

COMMENT SEPTEMBER 2000 SAMPLING EVENT:

An arrow showing the calculated direction of ground water flow has not been included on the ground water contour map. Such an arrow should be included on all future ground water contour maps submitted for review.

COMMENT AUGUST 2000 SAMPLING EVENT:

The detection of site specific contaminants of concern in the field blank indicates that cross contamination may have occurred in the sampling and/or analytical procedures. Alternatively, the source used for preparing the field blank may have been contaminated. In the future, provisions should be taken to ensure that the field blank is not contaminated with site specific contaminants of concern.

COMMENT DECEMBER 2000 SAMPLING EVENT:

The ground water contour map does not include an arrow showing the estimated direction of ground water flow. Such an arrow should be included in all future submittals.

CONCLUSIONS

Comments 1 and 2 under the February 2000 sampling event require responses from RVAAP to clarify discrepancies between the information provided in the quarterly report and the Supplementary Annual Reporting Form.

In the future, all ground water contour maps should include an arrow(s) showing the estimated direction of ground water flow.

The detection of site specific contaminants of concern in the field blank during the August 2000 sampling event indicates that cross contamination may have occurred in the sampling and/or analytical procedures. Alternatively, the source used for preparing the field blank may have been contaminated. In the future, provisions must be taken to ensure that the field blank is not contaminated with site specific contaminants of concern.

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

Sincerely,

Gregory Orr
Environmental Specialist
Division of Hazardous Waste Management

cc: Jeremy Carroll, DHWM, CO
Mark Patterson, RVAAP

ec: Natalie Oryshkewych, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Todd Fisher, DERR, 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

June 12, 2002

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

RE: MARCH 2001, ODA-2 GROUND WATER MONITORING REPORT; DATED MAY 10, 2001; RECEIVED MAY 31, 2001; JUNE 2001, ODA-2 GROUND WATER MONITORING REPORT; DATED AUGUST 8, 2001; RECEIVED AUGUST 10, 2002; SEPTEMBER 2001, ODA-2 GROUND WATER MONITORING REPORT; DATED NOVEMBER 21, 2001; RECEIVED NOVEMBER 23, 2001; DECEMBER 2001, ODA-2 GROUND WATER MONITORING REPORT; DATED JANUARY 18, 2002; RECEIVED JANUARY 22, 2002; SUPPLEMENTARY ANNUAL REPORT FOR 2001; ODA-2; DATED FEBRUARY 19, 2002; RECEIVED FEBRUARY 22, 2002; MARCH 2002, ODA-2 GROUND WATER MONITORING REPORT; DATED APRIL 25, 2002; RECEIVED APRIL 30, 2002

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced. The documents were submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The ground water monitoring events were conducted at the Open Detonation Area #2 (ODA-2) during 2001 and also March 2002. The ground water monitoring program at the site is in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-02.

The Ohio EPA has the following comments regarding the submittals.

COMMENTS:

GENERAL COMMENTS

1. On July 2, 2001, in response to confirmed statistical triggers at ODA-2, a Compliance Monitoring Plan was submitted to the Ohio EPA for review. Ohio EPA comments concerning the plan were sent to the facility in a letter dated October 12, 2001. This plan, with the required changes incorporated, has not been resubmitted to the Ohio EPA for review. The revised plan shall be submitted, immediately.

2. In future submittals, the ground water contour map should be revised to show the geographic relationship between Sand Creek and DET-4 and DET-3. As now drawn, it is impossible to determine on which side of the creek the wells are located.

3. In all future submittals, the ground water contour map should include an arrow(s) indicating the calculated direction(s) of ground water flow.

COMMENTS MARCH 2001 SAMPLING EVENT

1. The text of the report indicates that the following statistically significant differences were observed between the concentrations of constituents in the upgradient well DET-1B and the cited downgradient wells:

   arsenic in DET-2 (11.2 ug/L),
   specific conductance in DET-4 (1300 umhos/cm),
   HMX in DET-4 (0.55 ug/L), and
   zinc in DET-2 (22.7 ug/L).

2. The explosive compound RDX was detected in the sample obtained from DET-4 at a concentration of 0.19 ug/L. This concentration is below the reporting limit of 0.50 ug/L and is an estimated value.

3. The time of sample collection for DET-4 has been omitted from the chain-of-custody (COC) form. In the future, all pertinent information shall be included on the COC.

4. The text indicates that only the most recent four observations were used for the background statistical data set. Although this was correct for the December 2000 sampling event, the background data set has now grown to the most recent five observations. The text shall be corrected and a replacement page submitted for insertion into the report.

COMMENTS JUNE 2001 SAMPLING EVENT

1. The text of the report indicates that the following statistically significant differences were observed between the concentrations of constituents in the upgradient well DET-1B and the cited downgradient wells:

   arsenic in DET-2 (13.3 ug/L) and
   specific conductance in DET-4 (900 umhos/cm).

2. The contouring of the water level elevation data presented on the ground water contour map (Figure 1) has been done incorrectly. The contours are all labeled between 954 and 959 while the water level elevations at each well are between1029 and1048. A corrected version of this map was included in the 2001 Supplementary Annual Report Form. No further action is required of RVAAP with respect to this issue.

3. The time of sample collection for DET-4 has been omitted from the COC. This has resulted in the laboratory sample summary indicating that the samples from both DET-3 and DET-4 were collected at 10:30. In the future, all pertinent information should be included on the COC.

4. The text indicates that only the most recent four observations were used for the background statistical data set. Although this was correct for the December 2000 sampling event, the background data set now includes the most recent six observations. The text should be corrected and a replacement page submitted for insertion into the report.

5. The result for the HMX analysis of the sample obtained from DET-3 is flagged with an I. The footnote on the laboratory data sheet indicates that this means that there was a matrix interference. In the data validation report, it is indicated that this is not a problem because historically, HMX has never been detected. This statement should be clarified because HMX was detected as recently as the previous sampling event in well DET-2, has been consistently detected in DET-4, and was detected in DET-3 in 1999.

COMMENTS SEPTEMBER 2001 SAMPLING EVENT

1. The text of the report indicates that the following statistically significant differences were observed between the concentrations of constituents in the upgradient well DET-1B and the cited downgradient wells:

   arsenic in DET-2 (12.4 ug/L) and DET-3 (11.0) and
   specific conductance in DET-4 (720 umhos/cm).

2. The COC indicates that the samples were preserved with H_2SO_4. Based on the analyses being performed, the preservative should have been HNO_3. This should be explained by the facility. If the incorrect preservative was used, the facility shall document how this error may have affected the validity of the metals data.

3. The statistical calculation report for specific conductance indicates that the value for this parameter for DET-4 is 940 umhos/cm. On the laboratory data sheet, the specific conductance value is documented as 720 umhos/cm. This discrepancy should be explained. If an incorrect value was used in the statistical evaluation, the calculations shall be redone and the results submitted to Ohio EPA for review.

COMMENTS DECEMBER 2001 SAMPLING EVENT

1. The text indicates that only the most recent seven observations were used for the background statistical data set. Although this was correct for the September 2001 sampling event, the background data set now includes the most recent eight observations. The text shall be corrected and a replacement page submitted for insertion into the report.

2. The text of the report indicates that the following statistically significant differences were observed between the concentrations of constituents in the upgradient well DET-1B and the cited downgradient wells:

   arsenic in DET-2 (11.7 ug/L) and DET-3 (8.5 ug/L),
   specific conductance in DET-4 (1300 umhos/cm),
   HMX in DET-4 (1.5 ug/L), and
   RDX in DET-4 (1.5 ug/L).

COMMENTS SUPPLEMENTARY ANNUAL REPORTING FORM FOR 2000

1. The text indicates that only the most recent 4 background observations were used during the year for statistical analyses. This is incorrect. Statistical analyses of the data began

when a background pool of four values were available from replacement well DET-1B. Each quarter, the number of background values used in the statistical analyses has increased by one. The text shall be corrected and a replacement page submitted for insertion into this document.

COMMENTS MARCH 2002 SAMPLING EVENT

1. The following statistically significant differences between the upgradient well DET-1B and the cited downgradient wells were documented:

   arsenic in DET-2 (12.4 ug/L) and DET-3 (7.7 ug/L),
   zinc in DET-2 (23.1 ug/L),
   HMX in DET-4 (0.94 ug/L), and
   specific conductance in DET-2 (640 umhos/cm) and DET-4 (1200 umhos/cm).

2. The explosive compound RDX was detected in the sample obtained from DET-4 at a concentration of 0.36 ug/L. Because this concentration is below the reporting limits, it is considered an estimated value.

CONCLUSIONS

The revised Compliance Monitoring Plan for ODA-2 should be submitted immediately.

In the future, all ground water contour maps should include an arrow(s) showing the estimated direction(s) of ground water flow.

In the future, the COC should be filled out completely and accurately.

Comment 4 from the March 2001 sampling event; comments 4 and 5 from the June 2001 sampling event; comments 2 and 3 from the September 2001 sampling event; and comment 3 from the 2001 Supplementary Annual Report require responses from the facility.

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: Jeremy Carroll, DHWM, CO
Tammy McConnell, DHWM, CO
Mark Patterson, RVAAP

ec: Natalie Oryshkewych, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Todd Fisher, DERR, 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

June 24, 2002

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

RE: RAVENNA ARSENAL AMMUNITION PLANT, OHD 210-020-735, PORTAGE COUNTY MODIFIED APPENDIX IX SAMPLING DATE, ODA-2, DATED JULY 3, 2001

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced document. The document was submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. On July 2, 2001, RVAAP submitted a Compliance Monitoring Program Plan for the Open Detonation Area #2 (ODA-2). Included in the document was a discussion of the results of the modified Appendix IX sampling that was conducted at the site. However, the original laboratory data set was not submitted. The document currently under review is that data set. Ground water at the site is monitored in accordance with OAC 3745-54-90 through 3745-55-011.

The Ohio EPA has the following comments regarding the submittal.

COMMENTS:

1. It should be noted that Ohio EPA comments concerning the original Compliance Monitoring Program Plan were forwarded to the facility in October 2001. A revised Compliance Monitoring Program Plan, with the required revisions incorporated, has not been submitted to the Ohio EPA for review. The revised document shall be submitted immediately for review. RVAAP is out of compliance with OAC 3745-54-98 (G)(4) until an approvable plan is submitted.

2. RVAAP should be aware that it is responsible for implementing a compliance monitoring program in accordance with OAC 3745-54-99. This includes annual sampling for all of the constituents in the appendix to OAC 3745-54-98, also referred to as Appendix IX, unless an approved plan exists that modifies the number of constituents or frequency of this sampling. The sampling for a modified list of constituents from the appendix to OAC 3745-54-98 was last conducted on May 17, 2001. Thus, unless an approvable Compliance Monitoring Program Plan with a modified list of constituents and/or sampling frequency is submitted immediately, RVAAP shall make plans to conduct the annual sampling required by OAC 3745-54-99 (G).

3. This data package is incomplete. The following information is not included:

   a. the TAL metals data; and

b. the laboratory chronicles, case narratives, and QA/QC information for each of the tests conducted.

The validity of the data cannot be evaluated without the submittal of the above information. RVAAP shall submit this information for review.

4. Several results on the laboratory data sheets are flagged with an "*". The footnote associated with the "*" states, "In Description = Dry Wgt." Analytes with this flag include benzo(a)pyrene; indeno(1,2,3-cd)pyrene; dibenzo(a,h)anthracene; benzo(ghi)perylene; and 4-nitrotoluene. Because all of these samples are water samples, it is unclear what this footnote means. This shall be clarified by RVAAP.

CONCLUSIONS

The facility should submit a revised Compliance Monitoring Program Plan that addresses the October 2001 Ohio EPA comments.

The annual sampling required by OAC 3745-54-99 (G) was last completed in May 2001. Thus, this sampling is again due to be completed. An approved Compliance Monitoring Program Plan is needed to modify the list of constituents (appendix to OAC 3745-54-98) or the frequency of this sampling.

The information cited in Comment 3 above should be submitted for review.

The meaning the footnote cited in Comment 4 should be clarified.

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

July 2, 2002

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

The revised workplan was reviewed compared to the draft workplan, dated January 2002, and the comment resolution document.

Ohio EPA has the following comments on the revised workplan. However, as the comments detailed below will not impact upon field activities, field work may commence as planned on July 8, 2002.

1. Please refer to previous Ohio EPA comments regarding the SESOIL and AT123D groundwater models. Copies of several inter-office e-mails were transmitted to the Ravenna Army Ammunition Plant (RVAAP) and the U.S. Army Corps of Engineers (USACE) during previous meetings related to the on-site load lines. I have attached these e-mails to SpecPro's copy of this correspondence.

2. In Ohio EPA comment # 8 on the draft workplan, the Agency requested that additional receptors utilized in other RVAAP baseline risk assessments be evaluated (for example, residential, resident-farmer, industrial, etc.). The Army and contractor disagreed with this request, stating that "Although future land use has not been determined with 100% certainty, future land use will in all probability be consistent with the receptor scenario as set forth in the workplan." The response further indicates that "...should the future use change, the risk assessment *could* (emphasis added) be re-visited to include other receptors as appropriate at that time." Please be advised of

the following: if the future land use changes, the risk assessment would definitely be re-visited to include other receptors. As such, it is incumbent upon the Army to ensure that the appropriate data to support all necessary scenarios is collected.

In addition, it is my understanding that during the May 8, 2002 comment resolution meeting, it was decided that a position paper was to be developed by the contractor. This position paper was to detail the potential dropping and adding of certain receptors. This position paper would then be reviewed by Ohio EPA risk assessors. As of this date, this position paper has not been received by Ohio EPA, and, as such, the Agency's original comment # 8 still stands.

Again, given the nature of the two comments above, field work may commence as planned on July 8, 2002. I look forward to providing oversight and field assistance on this project.

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: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, DERR, CO
Conni McCambridge, Ohio EPA, DDAGW, NEDO
John Cicero, RVAAP
LTC Tadsen, RVAAP
Bob Whelove, OSC
David Seely, U.S. EPA Region V
Susan McCauslin, SpecPro (with attachments)

ec: Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, 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

September 13, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
ODA2 TECH MEMO

Ms. Susan McCauslin
SpecPro, Inc.
Ravenna Army Ammunition Plant
Building 1038
8451 State Route 5
Ravenna, OH 44266

Dear Ms. McCauslin:

The Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency and Remedial Response (DERR); and Ohio EPA, Office of Federal Facilities Oversight (OFFO), Southwest District Office (SWDO), have received and reviewed the document entitled: "Technical Memorandum for the Demolition Area 2 Phase II Remedial Investigation (RI) Baseline Human Health Assessment at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio." This document, dated July 29, 2002, and received at Ohio EPA, Northeast District Office (NEDO), on July 30, 2002, was prepared by SpecPro Inc. for the Operations Support Command (OSC) under contract number DAAA09-01-G-0009, Delivery Order number 0003.

Ohio EPA has the following comments on the technical memorandum:

General Comments:

1. Ohio EPA recommends revising this tech memo to be consistent with the facility-wide risk assessment work plan that is due out in draft form in mid September. Contact Dr. Dave Brancato of the U.S. Army Corps of Engineers (USACE) - Louisville District for an update on the status of this work product. In addition, the tech memo for Load Lines 1 and 12 should be referenced for consistency in this risk assessment. Please be advised to make note of the comments and resolution of comments when reviewing the final tech memo for Load Lines 1 and 12, since Ohio EPA had comments on the final document. (The revised Load Lines 1 and 12 technical memorandum was released in August 2002.)

2. Per the October 30, 2001 Ohio EPA, NEDO, meeting notes, the Agency requested that USACE send an email or memo regarding the reduction of receptors evaluated in this risk assessment. To date, Ohio EPA has not received this document, and the latest indication was that this rationale would be presented in the USACE's installation-wide risk assessment document (see # 1 detailed above). Considering that future land use is still not resolved, please provide the rationale for the reduction in receptors evaluated in this risk assessment. Table 2, "Parameters Used to Quantify Exposures for Each Medium and Receptor at Demolition Area 2, RVAAP," will be reviewed in detail after the team reaches resolution on what receptors will be evaluated in this risk assessment.

remedial investigation activities: 0 -1 foot below ground surface (bgs), and 1 - 3 feet bgs. If a land use control plan and deed restrictions are not in place to restrict future exposure to the 0 - 1 foot bgs interval, then the potential for subsurface exposure is possible at some point in the future and should be considered a complete exposure pathway. As such, receptors having exposure to subsurface soils should be included and evaluated in this assessment.

6. **Section 3.0, Exposure Assessment, Potential Exposure Media, Exposed Populations, and Exposure Pathways, page 2 (second paragraph):** Please include a discussion and write-up on the activities and exposure for the following: 1) National Guard and FBI training personnel, 2) National Guard and FBI trainees, 3) loggers, 4) trespassers. In addition, potential future users also include a resident child and adult farmer. Also, current receptors and exposure pathways for current exposure must be discussed and presented in this report. (For instance, persons who are employed and located at RVAAP may frequent OD-2 more often than the receptors presented in this evaluation.)

7. **Section 3.0, Table 1, Conceptual Exposure Model for Demolition Area 2 at RVAAP:** Please provide a key for indicating what is meant by the symbol utilized on this table.

8. **Section 3.0, Exposure Point Concentration, page 3:** Please specifiy if and how (*i.e.*, what statistical method) the distribution of the data set will be tested for normality. Ohio EPA recommends that this step be done first in order to determine what the distribution of the data set is, such that the appropriate equation to use for generating the 95% UCL can be selected. In addition, please specify that lognormal distribution and associated equations will be the default distribution in events where the distribution of the data set is neither normal nor lognormal.

9. **Section 3.0, Exposure Point Concentration, page 3:** Please explain why the Resource Conservation and Recovery Act (RCRA) unit will not be included in the Human Health Baseline Risk Assessment (HHBRA) exposure units. This exposure unit should be evaluated in this HHBRA, because the National Guard/FBI training activities are proposed to take place primarily within the RCRA area. Please revise text to include this exposure unit in this evaluation.

10. **Section 3.0, Exposure Parameters and Calculations for Estimating Intakes, page 3:** Analytical data should be evaluated to determine where contamination is present. If the RCRA area is contaminated more than the area outside of the RCRA area, and this is where the majority of exposure occurs, then exposure to this area should be included in the HHBRA.

11. **Section 3.0, Exposure Parameters and Calculations for Estimating Intakes, page 3:** Are the receptors presented in the tech memo current or future receptors? Please include a discussion regarding both current and future receptors. In addition, what is the current and future land use of this area? This information will help identify the appropriate current and future receptors to evaluate in this risk assessment. If future land use has not been decided and documented and controls are not in place to restrict exposure, then unrestricted reuse of this site should be evaluated using the appropriate future receptors, such as residential adult, child, and farmer.

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, 2002

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

RE: RAVENNA ARSENAL AMMUNITION PLANT, OHD 210-020-735, PORTAGE COUNTY, JUNE 18, 2002, GROUND WATER MONITORING WELL SAMPLING EVENT FOR ODA-2 REPORT

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced document. The document was submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The ground water monitoring event occurred at the Open Detonation Area #2 (ODA-2) on June 18, 2002. Ground water at the site is monitored in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-011.

The Ohio EPA has the following comments regarding the submittal.

COMMENTS:

1. On July 2, 2001, in response to confirmed statistical triggers at ODA-2, a Compliance Monitoring Plan was submitted to the Ohio EPA for review. Ohio EPA comments concerning the plan were sent to RVAAP in a letter dated October 12, 2001. Although over a year has passed since the Ohio EPA comments were sent to the facility, this plan, with the required changes incorporated, has not been resubmitted to the Ohio EPA for review. RVAAP is in violation of OAC rules 3745-98 (G)(4) and 3745-54-99 because it has not submitted an approvable Compliance Monitoring Plan and has not initiated compliance monitoring activities at this site.

   To abate this violation, RVAAP shall submit the plan immediately. RVAAP shall document compliance by submitting the plan to the Ohio EPA's Northeast District Office (NEDO) within thirty (30) days.

2. In future submittals, the ground water contour map should show the geographic relationship between Sand Creek and DET-4 and DET-3.

NO FLAG IS REQUIRED. The data is not affected by the blank contamination. Thus the use of the J flag in this report due to blank contamination is completely improper."

In the future, RVAAP should refrain from using the "J" flag in this unconventional manner. This is particularly important because statistical analyses might not be performed on data so flagged because it is usually assumed that a "J" flag indicates an estimated value.

The above violation and comments must be corrected, and documentation of all corrections must be sent to this office, to my attention within thirty (30) days after receipt of this letter.

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.

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: Jeremy Carroll, DHWM, CO
Tammy McConnell, DHWM, CO
Mark Patterson, RVAAP
ec: Natalie Oryshkewych, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Todd Fisher, DERR, NEDO

MEMORANDUM

TO: **Susan McCauslin, SpecPro**

FROM: **Eileen T. Mohr, Ohio EPA NEDO DERR**

DATE: **December 04, 2002**

RE: **ODA #2 Investigation-Derived Waste**

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: "Investigation-Derived Waste Characterization and Disposal Plan for the Phase II Remedial Investigation of Demolition Area #2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated November 2002 and received at Ohio EPA on December 02, 2002 was prepared by SpecPro for the US Army Operations Support Command (OSC) under contract number DAAA09-01-G-0009, delivery order number 0009.

The Ohio EPA concurs with both the waste classifications and disposal methods presented in the document.

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

cc: Mark Patterson, RVAAP

Ohio EPA
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

December 13, 2002

RE: RAVENNA ARSENAL AMMUNITION PLANT
OHD 210-020-735
PORTAGE COUNTY
RESPONSE TO 6/12/02 OHIO EPA LETTER

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

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced document on August 14, 2002. The document, dated June 12, 2002, was submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio.

The above cited document is RVAAP's response to the June 12, 2002, Ohio EPA letter containing comments concerning the March, June, September, and December 2001 sampling event reports as well as the 2001 Supplementary Annual Report and the March 2002 sampling event report. Ground water at the site is monitored in accordance with Ohio Administrative Code (OAC) 3745-54-90 through 3745-55-01. The Ohio EPA has the following comment regarding the submittal.

COMMENT:

RVAAP has adequately addressed all of the comments included in the June 12, 2002, Ohio EPA letter except for General Comment 1. RVAAP still has not submitted a revised Compliance Monitoring Plan for ODA-2. Until such a plan is submitted and compliance monitoring activities are initiated at the site, RVAAP is in violation of OAC rules 3745-98 (G)(4) and 3745-54-99. The revised Compliance Monitoring Plan (CMP) should be submitted within thirty (30) days upon receipt of this letter for review.

On November 20, 2002 RVAAP submitted a letter to abate this violation (also cited in Ohio EPA's letter dated November 5, 2002). The letter explained the reason for the delay in the submittal of the CMP was because RVAAP and Ohio EPA are in negotiations to place RVAAP into Findings and Orders, which could potentially shift the ODA-2 groundwater monitoring into the CERCLA program. On December 6, 2002, I spoke with Mr. Rick Callahan of MKM Engineers, Inc., and informed him that the Findings and Orders may not be issued for awhile, if issued at all. I also explained that RVAAP would not be excused from submitting the CMP until the Findings and Orders were issued. If RVAAP submits an approvable CMP within thirty (30) days upon receipt of this letter, this violation will be abated.

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

ec: Natalie Oryshkewych, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
Eileen Mohr, DERR, NEDO
Todd Fisher, DERR, NEDO

cc: Jeremy Carroll, DHWM, CO
Mark Patterson, RVAAP

OhioEPA | inter-office communication

To: Eileen Mohr, NEDO-DERR Date: 20 March 2002

From: Brian Tucker, CO

Subject: Comments regarding, April 2001 Final RI Report for WBG

The following comments are for the Phase II Remedial Investigation Report for the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio, Final, April 2001. Comments and the comment response table (dated March 2000) on the February 1999, Draft Final RI Report for WBG, were used to ensure that the appropriate revisions were included in the final document. Therefore, a cover-to-cover review was not performed. Please contact me with any questions.

1. Page ES-8, Baseline Human Health Risk Assessment (BHHRA), and throughout the human health risk assessment:
The RVAAP WBG Phase II Remedial Investigation, Final report, Executive summary, did not incorporate the agreed to changes regarding the identification of COCs with an excess cancer risk level greater than 1 E-6. See comment number 2 from Ohio EPA, in the Ravenna Army Ammunition Plant Winklepeck Burning Grounds Phase II Remedial Investigation, Response to Comments, Draft Final Report. March 2000 (Comment response, 2000). The text given in the executive summary is essentially unchanged and only identifies receptors with an excess cancer risk of greater than 1 E-4. The text implies a regulatory limit of 1 E-4 which is misleading and is to be changed. In addition, the executive summary also discusses and uses a hazard value of 3.0 or greater to identify "hot spots." This text is appropriate for the feasibility study, but is not appropriate for the RI report. Risk and hazards are to be identified and discussed without any implication to risk management. Therefore, the discussion regarding hazards in excess of 3 is not appropriate and should be removed from the document. In addition, the executive summary is to be revised as originally requested, with the new text being based on an excess life time cancer risk of 1 E-6 and a hazard value of greater than 1.

2. Section 4.1.4 Data Screening and section 6.2.1.1 SRC Screening Process:
Comment # 6 of the comment response 2000 document discusses the inappropriate use of a frequency of detection screen when combined with a screen based on background concentrations. These two screening methodologies have separate and independent uses and are not to be combined. This topic was discussed and clarified at the comment resolution meeting. These agreed-upon changes were not incorporated into the Final RI Report. Therefore, section 4.1.1 needs to be revised to reflect the multiple comments made by Ohio EPA regarding the use of the background screening method that does not incorporate a frequency of failure.

3. Section 6.2.3.1.4 Screening for Copper and Lead:
Comment # 9 listed in the comment response table discusses the screening and quantification of copper and lead. Corrections were made to the text regarding the use of the residential screening values only. However, response part 2a identified that "(f)uture reports will provide an analysis of lead using the adult lead model, but not in this report." This is not clear as the RI risk assessment is the location to identify all potential site-related risks and hazards. Given that site lead concentrations exceed the screening and background values, the evaluation of adverse effects as the result of lead exposure is appropriate and needed. If this evaluation is not to be given in the RI, then specific information is required in the report that identifies what report the evaluation will be contained within, and the date of the report. If this evaluation is not completed before the feasibility study (FS), then the FS will use 400 mg kg^{-1} or 26 mg kg^{-1} (background) of lead in soil as the remedial clean-up value.

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 13, 2002

Dr. Dave Brancato
United States Army Corps of Engineers
Louisville District
CELRL-ED-EE
600 Dr. Martin Luther King, Jr., Place
Louisville, KY 40202-2232

RE: COMMENTS ON THE OUTLINE OF CONSENSUS DOCUMENT FOR THE ECOLOGICAL PROTECTION LEVELS (EPL'S) AT WINKLEPECK BURNING GROUNDS (WBG) AND OTHER PLACES, RAVENNA ARMY AMMUNITION PLANT (RVAAP), PORTAGE AND TRUMBULL COUNTIES

Dear Dr. Brancato:

The following comments were generated by Ohio EPA team members and are for the Outline of Consensus Document for the Ecological Protection Levels at WBG and Other Places:

1. **Section 8.1, third bullet**:: Please note that if EPL concentrations (for certain contaminants) cannot be developed using the data collected during this ecological field truthing effort or if the uncertainty of the values is too great, then the HQ approach with a target of one will be considered when developing EPLs.

2. **Section 8.3, second bullet**:: Brain Tucker sent an email on May 6 2002, to address this issue. The email has been inserted below for reference:

> May 6, 2002 email from Brian Tucker: After reviewing some information on the evaluation of dose response data, it seems appropriate to continue with the approach given in the draft report on the Biological Field Truthing Effort at Winklepeck Burning Grounds (April 2001 draft) (i.e., linear regressions). Given the limited data we have, it is unlikely that evaluations other than linear are possible. Also, as identified in our comments on the draft report, the data sets should still be separated based on the type of contamination that is being evaluated. For example, it may be appropriate to combine the data from the vegetation and explosive concentration data of pads 66 and 67. Confidence levels should also be discussed and added to the revised text and graphs where appropriate. Discussions on other screening concentrations or EPLs should also be included as part of the revisions. I hope this clarification is helpful, Brian.

3. **Section 8.3, last bullet**: Define whether the weight-of-evidence (WOE) methods will be qualitative or quantitative. As discussed during the May 2, 2002 conference call, this should be a qualitative evaluation. As mentioned during previous discussions, the HQ approach and information generated from the HQ approach must be included in the WOE evaluation and discussion.

4. **Section 8.4.5 Determination of EPLs**: As mentioned during previous discussions, if the conclusions of this study are not definitive, then the HQ approach will be used in the development of EPLs for WBG.

5. **Section 8.4.5 Determination of EPLs**: Additional remedial values (screening values and remedial goals for similar contaminants developed for other explosive contamination sites) should also be evaluated as part of the EPL evaluation. Please add a bullet to address this comment to the outline.

6. **Section 8.4.6, last bullet**: Other things to consider when selecting the EPL: uncertainty with the conclusions and results of the field study; what receptor are these levels protective for (vegetation only, mammals, earthworms). The text states, "*EPLs will be selected based on size and confidence limits on the EPL.*" Please be more specific in terms of defining what is the target confidence level that is considered protective.

7. **Section 9.1 Geographic Scale**: From a technical standpoint, a discussion on geographical scale as related to different receptors (*i.e.*, what scale is important for earthworms is different than scale for mammals, such as deer and what scale is important for what receptor you are trying to protect, etc.) is warranted in the revised report. The difficulty in defining geographical scale should be included in the discussion. Discuss all aspects of this topic that have been discussed within the technical group, even if there is no one recommendation for the scale that should be managed. However, any positions taken or recommendations (*i.e.*, to state that the scale being this size or that size) made must be discussed along with the rationale for getting to that decision point and any supporting information used to substantiate your position. A discussion of the technical points of this topic should be presented for risk managers to evaluate for decisions from a risk management perspective.

8. **Section 9.x Development of Animal EPLs Based on Plot to Pad Scale**: This section must be removed. Development of EPLs based on the small mammal data cannot be performed due to the small sample size. A statement should appear in the report that states EPLs cannot be developed using the small mammal data due to the small sample size of the population caught during the field study.

9. **Section 9.3**: Remove "And Animal EPLs" from the title of this section.

10. **Section 9.3, third bullet**: Include a discussion of what criteria or characteristics an AOC must have in order for these EPLs and this process to be applicable. Include a discussion of other AOCs within RVAAP that could be candidates for this application of this methodology and EPLs.

11. **Section 9.4 Ecological Risk Assessment Decision Making**: Given that the field truthing study was completed to confirm or refute the screening level ecological risk assessment, and is in fact considered an ecological risk assessment by Ohio EPA , risk management should not be included in the report. This is based on the RI/FS process under CERCLA. Risk managers are required to balance various pieces of information with the findings of the ecological risk assessment (*e.g.*, results of the human health risk assessment, future reuse for the site, potential damage to the ecosystem if remedial actions were initiated) before they can determine an appropriate remedy for the site. Therefore, risk management discussions are to be left to the discussions for selecting a preferred remedial alternative and preparation of a proposed or preferred plan following the completion of the RI/FS. The field truthing report may provide a conclusion on the determination (definitive) of ecological harm developed with the team. Alternatively, if a conclusion is made in the revised report that Ohio EPA does not concur with, then the field truthing report will not be considered in the RI report or subsequent remedial decision making if warranted. Ohio EPA has already provided comments on the Ecological Risk Assessment Decision Making portion in the draft field truthing report. Please review the comments and make the appropriate revisions. This topic may also be discussed at the planned 5 - 7 June 2002 meeting.

12. **Section 9.4, second bullet**: The following is Ohio EPA's recommended hierarchy of screening sources for ecological receptors:

    Soil Screening Hierarchy:

    1) Preliminary Remediation Goals for Ecological Endpoints, Efroymson, R.A., G.W. Suter II, B.E. Sample, and D.S. Jones, August 1997, ES/ER/TM-162/R2, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831.

    2) Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision, Efoymson, R.A., M.E. Will, and G.W. Suter II, ES/ER/TM-126/R2, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831;

3) Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision, Efoymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten, ES/ER/TM-85/R3, Oak Ridge National Laboratory, Oak Ridge Tennessee.

4) Ecological Data Quality Levels (EDQL), U.S. EPA, Region 5, Final Technical Approach for Developing EDQLs for RCRA Appendix IX Constituents and Other Significant Contaminants of Ecological Concern, April 1998.

Cumulative Effects:

The potential for adverse effects associated with exposure to multiple contaminants (*i.e.*, all COPECs, as well as Chemicals of Interest [COIs] not selected as COPECs) should be evaluated. If evidence supports that the cumulative effects of COIs detected below benchmark values are potentially impacting important ecological receptors, then the COIs should be considered as COPECs for future evaluation.

Benchmarks Availability:

If screening benchmark values do not exist for any specific COI, then the chemical is to be retained as a COPEC.

13. **Section 9.5 Ecological Risk Management Decision Making**: Risk management discussions should take place in a memorandum or report separate from this Ecological Field Truthing Report. This report should report the finding of the study and ecological risk assessment and include a discussion of those findings as additional information for the risk managers to evaluate when making remedial decisions about WBG. As stated in the OSWER DIRECTIVE 9355.0-30, Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, http://es.epa.gov/oeca/osre/910422.html: "(t)he primary purpose of the baseline risk assessment is to provide risk managers with an understanding of the actual and potential risks to human health and the environment posed by the site and any uncertainties associated with the assessment. This information may be useful in determining whether a current or potential threat to human health or the environment exists that warrants remedial action." Ecological risks are not the only consideration risk managers must evaluate when making remedial decisions. In addition to the outcome of this study, the human health risk assessment results, future reuse by the Ohio National Guard and evaluation of the nine criteria are all factors that must be considered by the risk managers when making remedial decisions on WBG (See comment # 11 above).

If you have any questions regarding these comments, please do not hesitate to contact me at (330) 963-1148 or Laurie Eggert at (937) 285-6457.

Sincerely,

Todd R. Fisher
Project Coordinator
Division of Emergency and Remedial Response
Todd.Fisher@epa.state.oh.us

TRF/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Eileen Mohr, Ohio EPA, DERR, NEDO
Brian Tucker, Ohio EPA, DERR, CO
Elizabeth Ferguson, USACE, Louisville
Glen Beckham, USACE, Louisville
Paul Zorko, USACE, Louisville
Mark Patterson, RVAAP
Bob Whelove, OSC, Rock Island
Barney Cornaby, SAIC
Pat Ryan, SAIC
Jimmy Groton, SAIC
Larry Tannenbaum, AMEDD
Melanie Hawkins, AMEDD
LTC Tom Tadsen, OHANG
Chantelle Carroll
Laurel Boucher, Army Facilitator
John Jent, USACE, Louisville

ec: Mike Eberle, Ohio EPA, DERR, 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

June 12, 2002

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

Mr. Mark Patterson
Environmental Coordinator
Ravenna Army Ammunition Plant
8451 State Route 5, Bldg 1037
Ravenna, OH 44266

Dear Mr. Patterson:

Enclosed with this correspondence, please find a memo (dated March 20, 2002) from Brian Tucker, Ohio Environmental Protection Agency (Ohio EPA), Central Office (CO), Division of Emergency and Remedial Response (DERR). This memo details outstanding risk assessment comments on the Phase II Remedial Investigation (RI) report for the Winklepeck Burning Grounds (WBG). I apologize for the delay in forwarding this memo to your attention, however, I just returned from an extended medical leave.

As previously stated in my correspondence, dated November 5, 2001, it is requested that replacement pages be submitted for the portions of the text that need to be revised based upon these comments, rather than re-submitting the entire three-volume 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

enclosure

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

ec: Mike Eberle, Ohio EPA, NEDO, DERR (w/o enclosure)

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 27, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
FINAL WBG 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), Central Office (CO), has received and reviewed the document entitled: "Responses to Comments Regarding April 2001 Final Remedial Investigation Report for Winklepeck Burning Grounds." This document was received on July 18, 2002.

Ohio EPA has the following comments on the responses to comments (RTCs) document:

1. Page ES-8, Baseline Human Health Risk Assessment (BHHRA), and throughout the human health risk assessment:
The response to comment number one is not acceptable with respect to the lack of changes in the executive summary (ES). The response to comment number one states: "(t)he executive summary was revised in accordance with the responses to Ohio EPA-CO-DERR comment number 2 to the final RI report." The March 2000 response to comment # 2 stated agreement with Ohio EPA comment # 2. The response also specifically identified removal of the references to "significant" and "minor" COCs. The removal of methodology to identify significant and minor COCs was only a fraction of March 2002 Ohio EPA comment # 2 and the previous comments on the same topic. Ohio EPA has been clear on what was expected in the revision of the executive summary and throughout the final RI report regarding and the use of the 1E-6 excess lifetime cancer risk point of departure and non-cancer hazard value of 1. Throughout the executive summary, the use of the excess lifetime cancer risk value of 1E-4 and non-cancer hazard value of 3 has not been revised as requested. The use of these values also gives the impression of significance in the values for regulatory decision making which is not correct. The text of the executive summary will need to be revised in accordance with the past comments regarding the use of the 1E-6 point of departure and hazard value of 1. The remainder of the response is acceptable.

2. Section 4.1.4 Data Screening and Section 6.2.1.1 SRC Screening Process:
The response is acceptable, as it outlines the decisions that were made by the Ravenna team regarding a frequency of detection screen and the use of background screening values. The response also clarifies how the corrections to these methodologies were handled.

3. Section 6.2.3.1.4 Screening for Copper and Lead:
The response is acceptable.

Please revise the ES in accordance with # 1 detailed above. It is recommended that a draft revision be sent to Ohio EPA for review and comment. Subsequent to concurrence from Ohio EPA on the revision, replacement pages for the ES should be sent to all recipients, including the two information repositories.

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
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, CO, DERR
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
David Brancato, USACE Louisville
John Jent, USACE Louisville
Paul Zorko, USACE Louisville
Kevin Jago, SAIC

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, 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

December 12, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
DRAFT - FINAL 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), Central Office (CO) and Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), and Ohio EPA's Southwest District Office (SWDO), Office of Federal Facilities Oversight (OFFO), have received and reviewed the report entitled: "Draft-Final, Report on the Biological Field-Truthing Effort at Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated November 2002 and received November 06, 2002, was prepared for the U.S. Army Corps of Engineers (USACE) by Science Applications International Corporation (SAIC) under contract number F44650-99-D-007, delivery order CY06.

This correspondence represents a compilation of comments from all reviewers and will follow the format of the document. Each comment will be referenced by page and line number (if applicable).

General Comments:

A. The document is well written and reads nicely. This version is a significant improvement over the previous version and has incorporated many/most of the decisions made by the team. Thank you for your efforts.

B. General Comment on the Decision Making Process and Use of Reference Soil Data: It is questioned why the soil concentration data from the reference locations was evaluated without input from the entire Ravenna team. The selected methods used for the evaluations given in the report could have a significant impact on the completion and approval of the report. It would have been advisable to consult the Ravenna team before such decisions were made regarding the use of the reference location soil data.

Specific Comments:

1. Please ensure that any changes made to the text of the document are made to the applicable parts of the abstract. (Page iii)

2. Please ensure that any changes made to the text of the document are made to applicable portions of the executive summary (ES). (Pages xvii-xx) This is especially true with respect

to Ohio EPA Weight of Evidence (WOE) re-writes. Please ensure all sections of the final report are consistent with the comments/revisions made for the WOE documents. In addition, please ensure that this section is revised to be consistent with later comments in this correspondence regarding the comparison of soil concentrations determined for the reference locations with the facility-wide background.

3. Executive Summary, page xviii, lines 1 - 2: List "those few chemicals that exceeded the ESVs at the reference sites and in the Ravenna Army Ammunition Plant (RVAAP) background samples" in the text or in parentheses.

4. Executive Summary, Page xviii: Remove the citation to the Ohio Environment Protection Agency on line 26.

5. Executive Summary, Page xviii: The sentence on lines 27 through 29 should be revised to incorporate the information that the values for these metals will be used qualitatively, when appropriate, at other locations at the RVAAP. The statement, as written, implies a definitive use of the values that may not be correct.

6. Executive Summary, Page xviii: Lines 5 through 8 on page xviii discusses that the study at WBG was centered around identifying ecological effects, if any, to the scale of the pad. Throughout the field-truthing effort this concept has been promoted (and agreed to) that the pad is one important scale of interest, and the scale of interest for the vegetation and small mammal studies. Therefore, it is not clear why the majority of the results of the vegetation studies are given as combined results for pad pairs. The results of combining the study information from pad pairs and reference pairs would imply that these results can only identify adverse effects at the level of pad pairs. Therefore, specific adverse ecological effects cannot be determined for any individual pad, but only to the total area of the two pads combined (the two pads in the pad pair). This is evidenced by the sample numbers needed for the required statistics. Section 3 discusses that a total of 27 samples were needed from each WBG site, if the site had a significant difference/CV ratio of 1. However, these samples were split between the pads in the pad pair. For the small mammal study, pad pairs were selected as a means of capturing an area large enough to encompass the home range of the receptors. Pad pairs accomplishes this task. However, information would only be specific to the level of the pad pairs and not to the individual pads. Also, the report acknowledges that pad pairs and not individual pads were used in the statistical tests. Line 23 in Section 4.2.8 states this concept clearly with: "(b)ecause the statistical tests for ecological effects were to be performed for pad pairs rather than individual pads, the statistical comparisons were made using data from both pads 37 and 38." The report will need to be clarified to discuss the comment above. Are the measurements reported in the document using data from pad pairs able to identify potential impacts at the scale of the pad, or are effects only identifiable to pad pairs? If the later is true, then the definition of scale will have to be changed to indicate that the scale of the study is at the level of pad pairs, or two times the area given on page xviii. In addition, the results sections and discussions/conclusions will also need to be modified.

7. Replace the "less than" symbol with a comma after 2,4,6-TNT. (Page 1-3 line 21)

8. Section 1.3, Graduation to a Field-Based Approach, page 1-3, line 28: Revise the last sentence of the paragraph to state: "However, the HQ approach does have limitations."

9. Section 1.3, Graduation to a Field-Based Approach, page 1-3, line 29-34: The text states that hazard quotients (HQs) are not measures of risk, but does not define what they do measure. Please include a sentence defining what the HQs represent.

10. Section 1.3, Graduation to a Field-Based Approach, page 1-3, line 46: Replace "tens and hundreds of generations" with "many generations."

11. Section 3.0: This section is very well written and explains the statistical design process very well.

12. Please revise the text to indicate that only explosives samples were composited from three sub-samples. This is in accordance with the facility-wide documents. (Page 4-3, lines 2 - 4 and lines 6 - 7)

13. Section 4.2.6, Results for WBG Soil Sites: Section 4.2.6 (page 4-4) discusses the comparison of pad pair soil concentration data with the facility-wide background concentrations. The facility-wide background values were described as the 95% upper tolerance limit (UTL). Although this may be correct, it should be noted that the UTL was only used as a facility-wide criterion when the UTL was less than the maximum detected values. The sentence implies that the UTL was the criteria for selecting facility-wide background values. Please revise the text to inform the readers that the facility-wide background values were selected as the lower of either the 95% UTL or maximum detected value.

14. Please revise the text to read... "base maps in the Phase I through II RIs...." A third remedial investigation (RI) phase has not been completed. (Page 4-5 line 18)

15. The heading for this section indicates that the soil concentrations inside the grid vs. outside the grid for pads 37 and 38 were compared. Please clarify whether or not this was conducted for the other pad pairs. (Page 4-6 line 19)

16. Section 4.3.5, Comparison of Reference Soil Data to Background and Ecological Screening Values, page 4-9: Are the average concentrations mentioned in item # 2 the mean values or 95% UTLs? Please clarify this in the text.

17. Section 4.3.5, Comparison of Reference Soil Data to Background and Ecological Screening Values, (1) Facility-wide Background Comparison: The comparison of the soil concentrations determined for the reference locations to the facility-wide background values is appropriate and useful to identify whether the WBG reference areas have been impacted by potential contaminants of concern. However, as was thoroughly discussed and agreed to during the development of the facility-wide background concentrations, values based solely on a UTL calculation alone are not acceptable. The criteria for developing background concentrations was, and is, the lower of the maximum detected value or 95% UTL, coupled with an outlier test. The use of the outlier test has been shown to identify impacted soil at RVAAP. By using a "background" data set that includes known contamination (the data set used for the determination of facility-wide background values, plus those excluded based on being impacted) in an evaluation of reference areas (similar in attributes but without contamination) is not consistent with the intended use of the facility-wide background values. Therefore, any comparison of the soil concentration data from the WBG reference areas to background

values should only be done using the values that have been agreed to and approved. Thus, the use of the entire facility-wide background data set (all background values including those that were considered impacted, *i.e.*, contaminated) is not acceptable and text discussing its use should be removed from the report.

18. Section 4.3.5, Comparison of Reference Soil Data to Background and Ecological Screening Values, (1) Facility-wide Background Comparison: Section 4.3.5 indicates that several metals exceed the facility-wide background values (those approved for use at RVAAP). This may raise some concern for the use of the reference areas as controls in the WBG field truthing studies. Given that some metals did exceed their background concentrations, the report looked at a comparison of the populations between the reference areas and background. This exercise should be continued with the soil concentrations at the burning pad pairs. If reference soil concentrations of chemicals of concern are found to be "not different" than the burning pads, then additional discussions are required to determine the use of the various reference locations as controls in the WBG field truthing studies. These comparisons could be completed only with the compounds that exceed the facility-wide background criteria to help expedite the process.

19. Section 4.3.5 Comparison of Reference Soil Data to Background and Ecological Screening Values, (1) Facility-Wide Background Comparison: Some discussion should be included in the report that is specific to the COCs identified at the pad pairs based on the HQ values and the soil concentrations of those constituents at the reference locations. It would be helpful to specifically identify any of the COCs based on HQ values that have high (greater than background) concentrations at the reference areas. One such compound, cadmium, does not appear on tables 4-19 through 4-31. Given that cadmium was a COC at pads 58/59 and the resulting HQ value cited as one reason for conducting the field truthing, it would be helpful to know the concentrations of this metal at the reference locations. Please include cadmium in the tables cited above.

20. Please provide additional text in the revised report which indicates how the term "significantly" is being utilized. (Page 4-12 line 6)

21. Section 4.3.8, Reference Site Summary: Lines 10 and 11 state in part that: "(r)eference sites were not meant to be pristine." This statement should be revised to better reflect the definition of a reference site. The reference sites in the WBG field-truthing studies were to be equal to the burning pads without contamination. If the author is using the term "pristine" to indicate no chemical contamination, then the statement is incorrect. The reference sites were intended to be without contamination. Obviously, it would be difficult to find a location where the chemical concentrations are always below the approved facility-wide background concentrations. Therefore, some consideration will be given to reference locations with values that slightly exceed the background values. However, the identified statement should be revised to indicate that the intent of the reference areas were to be "pristine" with respect to chemical contamination.

22. Please revise figure 4-2. Only the soil samples obtained for explosives analyses were to be composited (in accordance with the facility-wide documents). (Page 4-20)

23. In the revised report, please clarify in the keys to tables 4-3, 4-4, and 4-5, 4-16 and 4-17 that, in setting the background criteria, the explosives and organics compounds were assumed to be from human activities and, therefore, the background concentration was set to zero. (Pages 4-40, 4-42, 4-44, 4-63, 4-65)

24. In the revised report, please clarify what is meant by the data that is derived from "AEC's Tables." (Table keys on pages 4-47, 4-49, 4-51, 4-53, 4-55, 4-57)

25. Please revise the key for tables 4-25, 4-29, and 4-30 in the heading "test type," as there is no "NA" sub-entry. (Pages 4-74, 4-78, 4-79)

26. In Table 2, please provide (in the revised report) a reason for the lack of nitroguanidine and nitrocellulose data. (Attachment 1)

27. Section 5.0, Re-Screen of Hazard Quotients, page 5-1: This section was well written and the course of events clearly discussed.

28. Section 5, RE-SCREEN OF HAZARD QUOTIENTS, page 5-1: Please change "the most" found on line 15 to "a" as additional site-management options were not fully explored.

29. Section 5, RE-SCREEN OF HAZARD QUOTIENTS, page 5-1: It would be helpful to add a citation to the document that discusses the U.S. EPA "new risk policy" on aluminum. The end of the sentence on line 34 would be a good location for the citation.

30. The extent of extrapolation of this field study to other areas of concern at the RVAAP is still to be determined. (Pages 5-1 - 5-2 lines 45 - 1)

31. Section 5, RE-SCREEN OF HAZARD QUOTIENTS, page 5-2: Please add some additional information to the sentence that begins on line 3 that indicates that the HQ values being discussed are the newly developed values and not the original numbers. For example, the sentence could read: "(a)lso, there is argument that the new HQ values..."

32. Section 6.0 and throughout the document: The draft final report cites "SAIC 2001" often in the document. Some of the information cited may be needed to reproduce the results presented in the report. It is assumed that the final version will be complete and will not cite another document for data, or the data will be easily accessible. Is the "SAIC 2001" document available to the general public or does one need to register with the Statistical Analysis Software (SAS) company to view the document? Information that is available on the internet should have the URL given for ease of access. A copy of the SAS Online document could not be obtained. Thus, the cited document has not been reviewed by Ohio EPA and, if the final report is approved, it should be clarified that the information in the online document would not also have approval. Please clarify that all appropriate information will be provided in the final version of the WBG field-truthing report, or that the information is readily available to anyone that may have interest in the document.

33. Please remove Sections 6.6, 6.7, and 6.8. In the revised report, please insert (verbatim) the most recent weight of evidence, discussions and uncertainties, and conclusions and summaries re-writes from Ohio EPA. (Pages 6-9 - 6-15)

34. Section 6.7, Discussion and Uncertainties, page 6-13, line 20: Please define r-selected primary invaders in this text.

35. Please remove from the revised text, the phrase that indicates that small rodents are plentiful at WBG. Clearly, the difficulty in trapping small rodents throughout the study does not lend credence to this statement. (Page 7-1 line 23)

36. Section 7.5.2, Species Composition: The text beginning on line 32 on page 7-8 through the end of the section appears to be more of a discussion of uncertainty or possible explanations of the results, rather than a presentation of the results. This text should be moved to the uncertainty section.

37. Section 7.5.3, Reproductive Status of Males and Females from Field Observations: Section 7.5.3 presents percentages of pregnant and lactating mice. The results are presented on the basis of percent of total captured adult or sub-adult animals. It is assumed, though not stated in the text, that sub-adult specimens are reproductively mature. Please add this information to the text, if correct.

38. Please confirm in the revised text whether or not the trapping, capture and removal of several small animals from one reference area two years ago would, in fact, have an impact upon this study. (Page 7-8 lines 39-40)

39. In the revised text, please add additional information which cites survival and reproduction rates of earthworms with respect to various concentrations of explosives and propellants. (Page 7-9 lines 20-22)

40. Please remove Sections 7.6, 7.7, and 7.8. In the revised report, please insert (verbatim) the most recent weight of evidence, discussions and uncertainties, and conclusions and summaries re-writes from Ohio EPA. (Pages 7-10 - 7-15)

41. In item number 12 in the selection decision comments, please also indicate that sperm counts, morphology and motility is also a destructive sampling technique. (Page 7-25)

42. Please revise the text to read: "... of WBG sites may be used to derive..." (Page 8-1 line 15)

43. Please revise the text to indicate that only samples were composited from three sub-samples solely for the determination of Plant Protection Levels (PPLs). In all other cases, only the explosives samples are obtained from three sub-samples (i.e., composited). (Page 8-4 lines 5-7)

44. Please remove Sections 8.4, 8.5, and 8.6. In the revised report, please insert (verbatim) the most recent weight of evidence, discussions and uncertainties, and conclusions and summaries re-writes from Ohio EPA. (Pages 8-4 - 8-6)

45. Please make any necessary changes to this section based upon Ohio EPA re-writes of the weight of evidence, discussion and uncertainties, summary and conclusions for the small mammals, plants, and plant protection levels. (Pages 9-1 - 9-8)

46. Section 9.2, EXTRAPOLATION: Section 9.2 and 9.5 identify conditions that should be met to ensure the appropriate extrapolation of data from WBG to other areas of RVAAP. Might this list be expanded to include the criterion of fire? The field-truthing report clearly emphasized in several locations that adverse effects identified at WBG may be the result of fire impacting the soil and not chemical contamination. If thermal treatment (*e.g.*, fire) of soils is considered an important piece of data regarding the adverse affects identified at WBG, than it should be included as a criterion for the extrapolation of data from WBG to other similar areas at RVAAP. Please include some brief discussions regarding the extrapolation of information for WBG to other similar areas with respect to the potential effects of fire on the soil.

47. The text indicates that the candidate locations for extrapolation are numerous, given the similar environments and use history. Please revise this text to be less global in intent. First, based upon use histories, there are very few areas of concern where open burning occurred. Second, any decisions as to how applicable this methodology is, will be made by the management team. (Page 9-2 lines 14-15)

48. Section 9.2, EXTRAPOLATION: The sentence that begins on line 12 of page 9-2 discusses similarities between locations where measurements were taken (*i.e.*, WBG) to areas that might be applicable for extrapolation of information. One of the similarities is identified as "projected land use." Projected land use should not be listed as a criterion for potential extrapolation. Projected land use does have a place in decisions to investigated ecological risk and in decision making for potential and known areas of contamination. Typically, and in contrast to human health evaluations, ecological risk assessments are only conducted for present conditions and are not conducted for potential future receptors. Therefore, it is not clear how the potential future use of an area should be considered in the decision on whether to extrapolate relevant data from the WBG field-truthing study. Please remove or clarify the use of future land use in the decision on the extrapolation of the WBG information.

49. Please be advised that, although it may be the Army's intent to extrapolate the findings to other areas of concern, the intent may not match up with what might realistically occur. These are decisions that will be made by the management team. (Page 9-2 line 18)

50. Section 9.4, DISCUSSION AND UNCERTAINTIES: See the red line/strike-out PPL document release on 14 November for suggested text changes to Section 9.4 and other sections.

51. The text indicates that the candidate locations for extrapolation are numerous. Please revise this text to be less global in intent. Any decisions as to how applicable this methodology is will be made by the management team. (Page 9-6 lines 25-27)

52. As a point of information, given the fact that plant protection levels have only been derived for four constituents, it is unlikely that this metric will be a main driver in determining whether or not cleanup is warranted. (Pages 9-6 - 9-7)

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, SWDO, OFFO
Laurie Eggert, Ohio EPA, SWDO, OFFO
Brian Tucker, Ohio EPA, CO, DERR
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE Louisville
Paul Zorko, USACE Louisville
David Brancato, USACE Louisville
Elizabeth Ferguson, USACE Louisville
Bob Whelove, OSC
Barney Cornaby, 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

July 18, 2002

RE: Ravenna Army Ammunition Plant
Portage/Trumbull Counties
Load Line 12 Draft RI Report

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

Dear Mr. Patterson:

The Oho Environmental Protection Agency (Ohio EPA) has received and reviewed the two-volume document entitled: "Draft, Phase II Remedial Investigation Report for the Load Line s21 at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated July, 2001 and received at Ohio EPA on August 1, 2001, was prepared for the US Army Corps of Engineers (USACE) - Louisville District by Science Applications International Corporation (SAIC) under contract number DACA62-00-D-0001, delivery order number 0003.

This 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). This correspondence represents a compilation of comments from these two 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 a page number reference. Comments form Ohio EPA's risk assessment personnel were previously sent to your attention on November 5, 2001.

The Agency has the following comments on the draft report:

General Comments:

1. In a recent meeting which included representatives from the USACE, the Ravenna Army Ammunition Plant (RVAAP) and the 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. Chain of Custodies have been omitted from the report (except for the one included in Appendix L, Geotechnical Analytical Results). The Ohio EPA requests that all Chain of Custodies be provided for this report and all future submittals.

3. Please provide further explanation as to why headspace readings were not collected with the OVA.

Specific Comments on Volume 1 (Main Text):

4. Table of Contents, pages iii -vii: All Appendices should be included in the Table of Contents

5. Executive Summary, page xxii, Eastern Aggregate, lines 20-21: The text states that "Tetrachloroethene (TCE) and dichloroethene (DCE) were detected at low estimated concentrations in surface soil of this aggregate." TCE is the abbreviation for Trichloroethene not Tetrachlorethene which is PCE. Please change TCE to PCE. Tetrachloroethene was never detected in surface soil in the Eastern Aggregate. Also, the DCE value reported in Table 4-15, page 4-76 for sample LL12ss-177-0612-SO was not estimated (No "J" value).
Please make the appropriate changes to the text.

6. Executive Summary, page xxii, Sediment, line 35: Change "most" to "mostly."

7. Section 1.0 Introduction, Page 1-3, Figure 1-2: Numbers corresponding to AOCs listed in the legend have been omitted from the map. Please add numbers to the symbols "circles" on the map.

8. Section 1.2.2 Demography and Land Use, page 1-6, line 36: The text states that "these (future) uses include two live-fire rifle ranges." According to information provided to the Ohio EPA in June 2002 by LTC Tadsen, OHARNG currently has no plans for live-fire ranges. Please check with the OHARNG, and make the appropriate changes to the text.

9. Section 2.3.1.2 Bedrock Stratigraphy: The text states that "The Sharon Member of the Pennsylvanian Pottsville Formation unconformably overlies the eroded Cuyahoga Formation throughout the eastern half of RVAAP." Please change "Cuyahoga Formation" to "Mississippian Cuyahoga Group."

10. Figure 2-2. Geologic Map of Unconsolidated Deposits on RVAAP: Outwash deposits are represented by a double green diagonal line pattern, however, the Lavery Till and Hiram Till deposits are not represented by any type of fill pattern. Only a solid black line representing the contact between the two tills is present on the map. Each geologic unit should be represented by a fill pattern, and the fill pattern should be included in the legend.

11. Section 2.3.2.1 Soil: The text states that "a generalized geologic cross section for the AOC from north to south is provided in Figure 2-2." This cross section is presented in Figure 2-3. The figure number in this statement should be corrected. Additionally, a map illustrating the location of the cross section should be included in Figure 2-3.

12. Section 2.4.1.2 Bedrock Hydrology, page 2-8, lines 28 and 29: The text states that "Past studies of the Sharon Conglomerate indicate that the highest yields come from the true quartz-pebble conglomerate facies and from jointed and fractures zones." These pebbles are predominantly made of "quartzite", not "quartz" as the text suggests:

http://www.dnr.state.oh.us/geosurvey/geo_fact/geo_f19.htm
http://www3.uakron.edu/geology/facpages/ids/aifres.html

13. Section 2.4.2 Load Line 12 Hydrologic/Hydrogeologic Setting: Figure 2-4 illustrated the potentiometric map for the November 9, 2000 data collected during the Phase II RI. Only one data set of groundwater levels has been collected for LL12. Additional measurement of ground water elevations may be needed to determine the following:

    a. Any seasonal or yearly variations in the ground water flow directions near the site.

    b. Whether the locations of the existing monitoring wells are suitable to evaluate the conclusions of the submission, for example, the evaluation of the relative locations of "upgradient" and "downgradient" monitoring wells with respect to source area(s).

    c. The direction of potential migration of contaminants with a specific reference to the sources and source areas within LL12.

    Although the flow directions, based on only one set of water level data, may give a general idea of the groundwater flow direction in the area of LL12, there could be variations in flow that have not been detected due to the limited number of sets of water level data. The observed ground water flow directions based on only one set of data should be, at best, considered a "rough" estimate of the ground water flow directions in LL12 and viewed with caution.

14. Inconsistencies in Figure 2-4: There are several inconsistencies in the potentiometric map presented in Figure 2-4. Potentiometric surface lines located in the southern portion of Load Line 12 do not correspond to the groundwater surface elevations measured in monitoring wells. For example, monitoring wells, L12mw-183 and L12mw-184 have the same water table elevation of 970.67 feet above mean sea level (amsl). However, in Figure 2-4, L12mw-183 is bounded by the 967 and 968 foot contours, and L12mw-184 is bounded by the 968 and 969 foot contours. Figure 2-4 should be corrected and ground water flow directions at the site should be re-evaluated based on the corrected version of the potentiometric map.

15. Section 2.7 Preliminary Site Conceptual Model, Utilities, page 2-16: The text states that the sanitary sewer system may function as a preferential migration pathway for shallow groundwater transport. Water lines and hydrants are also present at LL-12. The fill material (often gravel) in which these water lines may be installed in, often act as preferential migration pathways, and therefore may also facilitate shallow groundwater transport.

16. Section 3.4.1 Rationale: The text states that "...the piezometer was abandoned..." The draft report did not discuss how piezometers were abandoned. The revised report should discuss the abandonment procedures for the piezometers.

17. Section 3.4.1 Rationale, page 3-27, lines 4-6: The text states that "Table 3-4 provides the rationale for placing wells in the selected locations and designates the piezometers converted to wells." Table 3-4 does not designate the which piezometers were

converted to monitoring wells. Please make the appropriate changes to the text.

18. Section 3.4.2 Table 3-5: The "total depth" of monitoring wells LL12mw-107 and LL12mw-128 indicated in Table 3-5 does not correspond to the total depths illustrated on the corresponding well diagrams in Appendix D. These discrepancies should be corrected.

19. Section 3.4.5 In Situ Permeability Testing: The draft report referenced Appendix F for the slug tests conducted at the site. This appendix did not include the raw data and any illustration of the raw data to demonstrate the changes in water table through time during the test. Appendix F did not present any calculations of hydraulic conductivity. The revised submission should contain the data and calculations based upon which hydraulic conductivity values in Table 2-1 were estimated.

20. Section 4.1.1 Site Chemical Background: Table 4-1 presents the "RVAAP facility-wide background criteria..." Within this table, the results of filtered and unfiltered samples for the unconsolidated zone appear to be exactly the same for all the constituents listed. The results in Table 4-1 should be checked for error and appropriate corrections should be made.

    Additionally, background concentrations of chemical constituents in the bedrock zone have been presented in Table 4-1. However, no bedrock monitoring well has been installed for Load Line 12 to make a comparison with the facility-wide background criteria for bedrock zone. The background concentrations for wells completed in the bedrock aquifer should be removed from the revised report.

21. Table 4-6: In Table 4-6, it is unclear how the "average result" of several analytes (Cadmium, Chromium, Cobalt, and Copper) can be greater than the "maximum detect." Please provide a clarification in the response to comment matrix.

22. Section 4.6.2 TAL Metals and Cyanide: Table 4-27 "presents concentrations of the 12 inorganics that were considered SRCs in ground water." It is unclear as to whether these values represent filtered or unfiltered samples results. Table 4-27 should include a note to clarify this issue.

23. Section 4.9.1.2 TNT Comparison: Figure 4-22 is a plot of soil concentrations of TNT based on field screening data and laboratory data. This plot indicated a high correlation ® value of 0.8921) between the field screening data and laboratory data. Apparently, this value of R is hinged on one data point in the upper right hand corner of Figure 4-22. This data point could be an outlier. Overall, the correlation between the field screening data and laboratory data is poor. This issue should be addressed.

24. Section 4.9.2 Field Metals Analysis by XRF, page 4-151, lines 39-43: The text states that "the center and the vertices of an equilateral triangle with 0.9 meter (3-foot) sides were cleared of vegetation and surface debris at each sampling location. A Spectrace 9000 XRF instrument was used in the field to record metals concentrations at the center and the vertices of the triangle. Thus, four in situ XRF measurements were made at each surface soil sampling location." Please provide an explanation for why the in situ XRF readings were based on the triangulation sampling scheme that is utilized for explosives.

25. Section 4.9.2.4 Assessment of XRF Use, page 4-163: The Ohio EPA maintains that the use of both in situ an ex situ XRF analyses yields inconsistent results when compared to the laboratory analysis. Therefore, the use of such technology will have limited applicability and neither accurate or reliable enough to guide field investigations or soil removal activities at the Ravenna Army Ammunition Plant (RVAAP).

26. Section 5.3.5 Natural Attenuation of Contaminants in LL12 AOCs: The text discusses that "based on site characterization (Chapter 4) ...," LL12 may be "a candidate for natural attenuation remediation approach" and that "off-AOC migration of contaminants from LL12 will be limited due to natural attenuation..."

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

b. Favorable Hydrogeochemical Conditions: The site characterization in Chapter 4 did not adequately address whether the known hydrogeochemical conditions of the site are favorable for natural attenuation of the contaminants present at the AOC. If natural attenuation is to be cited as a factor in reducing concentrations of contaminants in groundwater and in limiting and reducing the migration of contaminants offsite, please include the following information in the revised report:

   i) A discussion addressing the suitability of site-specific hydrogeochemical conditions for natural attenuation processes beneath the site area.

   ii) Appropriate documentation and discussion of the evidence and processes supporting natural attenuation beneath the site area.

   These discussions and documentation should include the procedures used to demonstrate the natural attenuation of explosives and organic compounds.

c. Biotransformation: Section 5.2.4 indicated that TNT and DNT may undergo biotransformation, based on information from culture studies in the laboratory. The hydrogeochemical conditions under which these biotransformations take place and whether such conditions exist in groundwater beneath the site are not addressed. Beside these two groups of explosive compounds (TNT and DNT), there was also RDX in groundwater. Whether this compound undergoes any transformation is not addressed.

Please substantiate the above-referenced statements with respect to natural attenuation with appropriate discussions, documentation, and data.

27. Section 5.5 Fate And Transport Modeling: The "constituents identified as CMCOPCs (contaminant migration constituent of potential concern)" were evaluated using a SESOIL model for vertical migration, and a AT123D model for lateral migration to the receptor locations (p. 5-9).

a. SESOIL Model:

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

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

iii) Section 5.4.2 concerning the "Limitations and Assumptions of Soil Screening Analysis" (p. 5-8) 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 explained. The input values summarized in Table 5-2 (p. 5-16) did not include the value used for degradation/decay. Table 5-2 should include the values of all input parameters.

b. AT123D Model:

i) Aquifer thickness: Table 5-2 lists aquifer thicknesses ranging from 5.2 m to "4.4E-05 m." The latter thickness value should be checked for error. The installation did not discuss the use of these aquifer thicknesses as modeling parameters.

ii) Organic fraction data: The installation did not provide organic fraction data documentation, such as sample depth and location, in the draft report.

iii) Model Input Values: The installation 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 that were used?

iv) Hydraulic gradient: The installation 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 installation indicated a hydraulic conductivity ranging from 1.3E-02 to 4.4E-05 cm/day, based on site-specific slug tests. It is unclear which hydraulic conductivity value was used as model input and the location of the well where 1.3E-02 cm/day K value was estimated.

vi) Heterogeneity: The installation should consider the presence of heterogeneity beneath the site area and how heterogeneity could effect 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 AOC needs to be evaluated and its effect on ground water flow and contaminant migration needs to be addressed in the revised report.

vii) Sensitivity Analysis: The effects of input value uncertainty on the model predictions are not evaluated and addressed in the report. The installation should discuss how the chosen input values are appropriate for the site and should conduct a sensitivity analysis 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 of the parameters at the site area.

viii) Calculations: The draft report did not present the retardation factors calculations used for the analytical model. These calculations should be documented in the revised report.

ix) Model Validation: The submitted report did not provide information to validate the model's 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 the 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 (continuous/instantaneous) used in the model should be indicated in the revised report.

xi) Concentration of Contaminants: Do the values of contaminant concentration used in the model represent the maximum contaminant concentration for the AOC? Are the monitoring wells, for which the contaminant concentration is used in the model, located in the downgradient direction from the source area(s)?

Because of the issues listed above, the predictions of the analytical models cannot be evaluated. The installation should address each of the abovementioned issues.

28. Section 8.1.5 Groundwater: In the first bullet, the text states that "widespread migration of explosives from soil to groundwater has not occurred." The definition of "widespread" is unclear. A clarification of the definition of "widespread" should be added this section, and any other pertinent sections, and the text should be modified accordingly.

29. Appendix D, Piezometer and Monitoring Well Installation Logs : Please provide elevation data for the corresponding depth interval on each of the monitoring well installation diagrams.

30. Appendix H, Data Quality Assessment Report:

a. Quality Assurance/Quality Control (QA/QC): Laboratory analytical results and chain of custody records were not submitted. This issue should be addressed.

b. Table 5 indicated that Nitrocellulose had an achieved detection limit of 0.36 µg/L. Table I-24 (Appendix I) indicated groundwater analytical results for

Nitrocelloulose as being non-detect or non-detect/estimated at 500 µg/L. This discrepancy should be discussed.

31. Additional Bedrock Monitoring Wells: Explosives, propellants, zinc, cobalt, aluminum, arsenic, minor semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), and PCBs/pesticides were detected above the facility-wide background standards in the unconsolidated aquifer during the 2000 ground water sampling event. No impermeable layer is documented between the top of the Sharon Sandstone and the overlying unconsolidated sediments at the LL12 area. Based on considerations of a sandy lithology, the range of hydraulic conductivities, and the presence of possible fractures in bedrock formation, the unconsolidated sands and Sharon Sandstone seem hydraulically connected. This may warrant the installation and sampling of additional bedrock monitoring wells in order to determine the full vertical and horizontal extent of groundwater contamination at this AOC.

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

Sincerely,

Todd R. Fisher
Project Coordinator
Division of Emergency and Remedial Response

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,
USEPA Region V

ec: Mike Eberle, NEDO DERR
Eileen Mohr, 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 21, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
SAND CREEK DUMP REMOVAL
FINAL WORKPLAN

Mr. Brian Stockwell
Project Manager
MKM Engineers, Inc.
Ravenna Army Ammunition Plant
Building 1038
8451 State Route 5
Ravenna, OH 44266

Dear Mr. Stockwell:

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 Work Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC 34);"

2. "Final Sampling and Analysis Plan Addendum for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC 34);" and

3. "Final Site-Specific Safety and Health Plan Addendum for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC 34)."

These documents, dated April 2001 and received by Ohio EPA on November 15, 2002, were prepared by MKM Engineers, Inc. for the U.S. Operations Support Command (OSC).

The above-referenced documents were reviewed with respect to the draft documents dated March 2001, and the comment response documents dated May 1, 2001. Ohio EPA has the following comments on the revised documents:

General Comments:

1. Ohio EPA requests a copy of the signed Action Memorandum for our files.

2. The Agency is aware of the funding problems that led to the delay of this project. However, in future projects, please change the date on the submissions, so that they more accurately reflect the date they are submitted to and received by Ohio EPA. (In this case the three documents should be dated November 2002 instead of April 2001.)

3. The Agency is additionally aware of funding issues that led the proposed action to be described as a Remedial Design/Removal Action. However, the stakeholders have verbally agreed that this should more accurately be described as an interim removal action (IRA) and, as such, the actions proposed in the workplans may not result in the final area of concern (AOC) remedy.

Specific Comments: (Workplan designated as WP; field sampling plan designated as FSP; quality assurance project plan designated as QAPP; and, health and safety plan designated as HASP.) All of Ohio EPA comments were addressed as requested. The specific comments detailed in this section are primarily the result of changes requested by other stakeholder reviewers. Although these comments will not result in a delay of the project, please address the applicable comments by: a) ensuring that, in future projects, the unrevised text is not carried forward; and b) attach a copy of this correspondence to all final Sand Creek documents, especially the copies submitted to the information repositories.

4. The term "mixed waste" has a specific regulatory definition. Please do not use this term unless it is applicable. (WP page 2-2; FSP page 3-1; HASP page 2-4)

5. Section 2.1. of the WP (page 2-2) - This section indicates that fill dirt/soil will not be removed as part of this project, yet the text also indicates that excavators may be used for larger items of debris which would necessarily result in some soil removal. If soils are removed during excavation, it should be disposed of in accordance with all applicable State and Federal rules, laws, and regulations. (Also applicable to FSP page 3-2; HASP page 2-4)

6. In Section 2.1.4 (page 2-4), there has been a change from removal of debris, such that the land is returned to the original contour, to surface debris removal. In addition, the text indicates that a Schonstedt will be utilized to detect sub-surface anomalies and, based upon this survey, the materials causing the anomalies *may* be removed. First... how does the change from "original contours" to "surface debris" removal impact upon the volume of material removed and the adequacy of the cleanup? Second, given that much of the debris is non-ferrous in nature, these materials will not be detected by the Schonstedt. Third, the text indicates that the ferrous anomalies *may* be removed, indicating that debris might be left in place. Each of these underscore Ohio EPA general comment # 1 that this action may not result in a final remedy for the AOC. (Also applicable to FSP Section 3.1.4 page 3-3; HASP Section 2.1.1 page 2-6)

7. Please be advised that in order to use the Region 9 Preliminary Remediation Goals (PRGs) for screening purposes at the Ravenna Army Ammunition Plant (RVAAP), the following applies: for the cancer endpoint, the Region 9 number may be utilized, however, for the non-cancer endpoint, 1/10 of the Region 9 value is utilized. (WP Section 2.1.5 page 2-4; WP Section 7.0 page 7-1; FSP Section 3.1.5 page 3-3; HASP Section 2.1.8 page 2-6)

8. In future documents, please remove the reference to the USEPA Investigation Derived Waste (IDW) document. (WP Section 6.0, page 6-1)

9. In future submissions, please update MKM's project organization chart. (FSP page 2-3; HASP page 3-2)

10. In future submissions, please reference the revised facility-wide documents dated March 2001. (QAPP page iv)

11. Please be advised that decontamination liquids cannot be stored pending the final remediation of the AOC. Please refer to Ohio EPA correspondence to OSC dated November 03, 1997 regarding this issue.

Again, although these comments will not result in a delay of the project, nor require an additional revision, please address the applicable comments by: a) ensuring that in future projects, that the unrevised text is not carried forward; and b) attach a copy of this correspondence to all final Sand Creek documents, especially the copies submitted to the information repositories.

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, DERR, CO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Mark Patterson, RVAAP
John Cicero, RVAPP
LTC Tadsen, RVAAP
Bill Ingold, OSC
John Jent, USACE Louisville

ec: Todd Fisher, Ohio EPA, DERR, NEDO
Mike Eberle, Ohio EPA, DERR, 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

January 23, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
NACA TEST AREA

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

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), has received and reviewed the document entitled: "Final, Phase I Remedial Investigation Report for the NACA Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio." This document, dated December 2001 and received at Ohio EPA, NEDO, on December 26, 2001, was prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE) under contract number DACA62-94-D-0029, delivery order number 0077.

The final document was reviewed compared to the draft-final document, dated June, 2001, and the comment response documents.

The document revisions are acceptable to Ohio EPA and the document is considered final by the Agency.

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
LTC Tom Tadsen, RVAAP
David Seely, U.S. EPA, Region V
Conni McCambridge, Ohio EPA, NEDO, DDAGW
Kevin Jago, SAIC
John Cicero, RVAAP
Bob Whelove, OSC
Steve Selecman, 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

September 12, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
LOAD LINE 11 IRA DRAFT 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) has received and reviewed the three-volume document entitled: "Interim Removal Action Report for Load Line # 11, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266." This document, dated April 2002 and received at Ohio EPA on May 20, 2002, was prepared for the U.S. Army Operations Support Command (OSC), Rock Island, Illinois, by MKM Engineers, Inc. under contract number DAAA09-98-G-0001 and Delivery Order Number 0026. The following comments were generated from Ohio EPA's review of this document:

General Comments

Comment # 1: It is Ohio EPA's understanding that all information, findings, and recommendations pertaining to the IRA will also be provided, to some degree, in the future LL-11 RI report. All IRA data shall be folded into the November - December 2000 RI data for inclusion in the LL-11 Human Health and Ecological Risk Assessment.

Specific Comments

Comment # 2: List of Acronyms, pages iii and iv. Please include the following acronyms: 1) ACM (Asbestos Containing Material); 2) AP (Artillery Primer); 3) PCHD (Portage County Health Department) and 4) OHARNG (Ohio Army National Guard).

Comment # 3: Figure 1-1 Ravenna Army Ammunition Plant Location Map. Please provide a direction indicator on this figure.

Comment # 4: Figure 1-2 Load Line 11 Interim Remedial Action Facility Location Map. Load Line 11 has been omitted from the Legend of Sites. Please add Load Line 11.

Comment # 5: Section 1.2 Load Line 11 Background, page 1-4, 3rd bullet, lines 15-16. The text states that "floors are covered with a non-conductive material." What is the nature of this material.

Comment # 6: Section 1.2 Load Line 11 Background, page 1-5, 5th bullet, lines 11 and 12. The text states that "the floor of AP-3 is covered with a conductive lead liner. In the comment above, floors were covered in a non-conductive material." Were these floors conductive or non-conductive? Please clarify.

Comment # 7: Section 1.3 Summary of IRA Activities, page 1-5, lines 34 and 35. The text states that "the water was applied to the site ground surface for infiltration." It should be mentioned in this section that water was released in a manner that minimized erosion.

Comment # 8: Section 3.2 Sewer/Sump Water Removal, page 3-1, line 35. Please indicate in the text that a spreader bar was used to control the rate of discharge.

Comment # 9: Figure 3-0 Load Line 11 Interim Remedial Action Site Map. Please add the exact sump locations to the figure and include them in the legend.

Comment # 10: Table 3-1 Ravenna Army Ammunition Plant Sump and Sewer Water Results Load Line 11 RI. Why does this table include soil background criteria and Region 9 PRG residential soil values along with the sump and sewer water results? Water results cannot be compared with soil background and soil PRG values. Please make the appropriate changes to the table.

Comment # 11: Figure 3-3 Load Line 11 Interim Remedial Action Hot Spot Sampling Location and Limits of Excavation. This figure shows "approximate test trench excavation locations" just N-NW of the "hot spot." There is no mention of these test trenches in the text of the document. What is the nature of the test trenches? Please provide an explanation for these trenches in the text.

Comment # 12: All Figures. Please change the word "Remedial" to the word "Removal" in the titles.

Comment # 13: Section 4.0 Soil Assessment, pages 4-1 through 4-23. Please specify the depths at which each of the samples were taken.

Comment # 14: 7.0 References, page 7-1. Please include June 7, 2001 Ohio EPA correspondence in References section.

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

TF/kss

cc: Eileen Mohr, Ohio EPA, DERR, NEDO
Bonnie Buthker, Ohio EPA, OFFO, SWDO
Rob Whelove, OSC
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Rick Callahan, MKM, RVAAP
Stan Levenger, MKM, RVAAP
John Jent, USACE, Louisville
David Seely, U.S. EPA Region V

ec: Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, NEDO (archive purposes)

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

December 23, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
PARIS-WINDHAM DUMP REMOVAL
FINAL WORKPLANS

Mr. Brian Stockwell
Project Manager
MKM Engineers, Inc.
Ravenna Army Ammunition Plant
Building 1038
8451 State Route 5
Ravenna, OH 44266

Dear Mr. Stockwell:

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 Work Plan for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC 51);"

2. "Final Sampling and Analysis Plan Addendum for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC 51);" and

3. "Final Site-Specific Safety and Health Plan Addendum for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC 51)."

These documents, dated April 2001 and received by Ohio EPA on November 15, 2002, were prepared by MKM Engineers, Inc. for the U.S. Operations Support Command (OSC).

The above-referenced documents were reviewed with respect to the draft documents, dated March 2001, and the comment response documents, dated May 1, 2001. Ohio EPA has the following comments on the revised documents:

General Comments:

1. Ohio EPA requests a copy of the signed Action Memorandum for our files.

2. The Agency is aware of the funding problems that led to the delay of this project. However, in future projects, please change the date on the submissions so that they more accurately reflect the date they are submitted to and received by Ohio EPA. (In this case, the three documents should be dated November 2002 instead of April 2001.)

3. The Agency is additionally aware of funding issues that led the proposed action to be described as a Remedial Design/Removal Action. However, the stakeholders have verbally agreed that this should more accurately be described as an interim removal action (IRA) and, as such, the actions proposed in the workplans may not result in the final area of concern (AOC) remedy.

Specific Comments: (Workplan designated as WP; field sampling plan designated as FSP; quality assurance project plan designated as QAPP; and health and safety plan designated as HASP.) All of Ohio EPA comments were addressed as requested. The specific comments detailed in this section are primarily the result of changes requested by other stakeholder reviewers. Although these comments will not result in a delay of the project, please address the applicable comments by: a) ensuring that in future projects, that the unrevised text is not carried forward, and b) attach a copy of this correspondence to all final Paris-Windham Dump documents, especially the copies submitted to the information repositories.

4. Section 2.1. of the WP (page 2-2) - This section indicates that fill dirt/soil will not be removed as part of this project, yet the text also indicates that excavators may be used for larger items of debris, which would necessarily result in some soil removal. If soils are removed during excavation, it should be disposed of in accordance with all applicable State and Federal rules, laws, and regulations. (Also applicable to FSP page 3-2; HASP page 2-4.)

5. In Section 2.1.4 (page 2-4), there has been a change from removal of debris such that the land is returned to the original contour, to surface debris removal. In addition, the text indicates that a Schonstedt will be utilized to detect sub-surface anomalies and, based upon this survey, the materials causing the anomalies *may* be removed. First... how does the change from "original contours" to "surface debris" removal impact upon the volume of material removed and the adequacy of the cleanup? Second, given that much of the debris is non-ferrous in nature, these materials will not be detected by the Schonstedt. Third, the text indicates that the ferrous anomalies *may* be removed, indicating that debris might be left in place. Each of these underscore Ohio EPA general comment # 1 that this action may not result in a final remedy for the AOC. (Also applicable to FSP Section 3.1.4, page 3-3; HASP Section 2.1.6 page 2-5.)

6. Please be advised that in order to use the Region 9 Preliminary Remediation Goals (PRGs) for screening purposes at the Ravenna Army Ammunition Plant (RVAAP), the following applies: for the cancer endpoint, the Region 9 number may be utilized, however, for the non-cancer endpoint, 1/10 of the Region 9 value is utilized. (WP Section 2.1.5, page 2-4; WP Section 7.0 page 7-1; FSP Section 3.1.5, page 3-3; HASP Section 2.1.7, page 2-6)

7. In future documents, please remove the reference to the USEPA Investigation Derived Waste (IDW) document. (WP Section 6.0, page 6-1)

8. In future submissions, please update MKM's project organization chart. (FSP page 2-3; HASP page 3-2)

9. In future submissions, please reference the revised facility-wide documents, dated March 2001. (QAPP page iv)

10. Please be advised that decontamination liquids cannot be stored pending the final remediation of the AOC. Please refer to Ohio EPA correspondence to OSC, dated November 03, 1997, regarding this issue.

Again, although these comments will not result in a delay of the project, nor require an additional revision, please address the applicable comments by: a) ensuring that, in future projects, the unrevised text is not carried forward; and b) attach a copy of this correspondence to all final Paris-Windham documents, especially the copies submitted to the information repositories.

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

Sincerely,

-FOK-

Todd R. Fisher
Project Coordinator
Division of Emergency and Remedial Response

TRF/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, DERR, CO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Mark Patterson, RVAAP
John Cicero, RVAPP
LTC Tadsen, RVAAP
Bill Ingold, OSC
John Jent, USACE Louisville

ec: Eileen Mohr, Ohio EPA, DERR, NEDO
Mike Eberle, Ohio EPA, DERR, NEDO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

TO 3/4/02	
CR-COR	
ENV	
CONTRACTOR	
RETURN FOR FILE	

FEB 25 2002

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 August 22, 2001, representatives of both 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. In response to violations identified during the inspection, U.S. EPA issued a Notice of Violation (NOV) on October 30, 2001.

On December 6, 2001, the U.S. EPA received your response to the NOV. This letter is to inform you that the U.S. EPA has reviewed your response and determined that additional enforcement action need not be taken at this time.

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.

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

Woodhouse P.
Vermost R.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
DE-9J

MAY 17 2002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

Re: Compliance Evaluation inspection
EPA I.D. No.: OH5 210 020 736

Dear Mr. Patterson:

On March 26, 2002, a representative of the United States Environmental Protection Agency (U.S. EPA) inspected Ravenna Army Plant located in Ravenna, Ohio. The purpose of the inspection was to evaluate your facility's compliance with certain requirements of the Resource Conservation and Recovery Act (RCRA), specifically storage and disposal of hazardous waste set forth at Ohio Administrative Code (OAC) 3745-52 and 40 Code of Federal Regulations (CFR) Parts 260 through 270 and 279.

As of this writing, based upon information available to U.S. EPA, our review of the inspection has not resulted in the detection of violations of any of the specific RCRA requirements under evaluation. This determination does not limit the applicability of the requirements evaluated, other RCRA regulations, or regulations under other environmental statutes. U.S. EPA will continue to evaluate your facility in the future.

If you have any questions or concerns regarding this matter, please contact George Opek of my staff at (312) 886-1423.

Sincerely,

Paul Little, Chief
Compliance Section 2
Enforcement and Compliance Assurance Branch

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

12/17/02

REPLY TO THE ATTENTION OF

DE-9J

CERTIFIED MAIL - 7001 0320 0006 0177 2442
RETURN RECEIPT REQUESTED

Mark Patterson
Environmental Program Manager
Department of the Army
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

Re: **RCRA Compliance Inspection**
Ravenna Army Ammunition Plant
EPA ID No.: OH5 210 020 736

Dear Mr. Patterson:

On December 12, 2002, the Department of the Army's [DoA] Ravenna Army Ammunition Plant [RVAAP] was inspected by United States Environmental Protection Agency (U.S. EPA) representative Duncan Campbell. Mr. Gregory Orr of the Ohio Environmental Protection Agency [Ohio EPA] observed this inspection. The inspection evaluated compliance with requirements of the Resource Conservation and Recovery Act (RCRA) for generators.

Based on the information provided by you, review of the records and the physical observations of the U.S. EPA inspector on December 12, 2002, we have determined that your installation manages hazardous waste on an episodic basis. Hazardous waste may be generated as a result of continuing decontamination and demolition work at RVAAP.

At the time of the inspection, your installation had not generated hazardous waste since February of 2002 at which time it generated less than 100 kilograms of hazardous waste in the calendar month. Thus, during the month of February of 2002, you operated as a Conditionally Exempt Small Quantity Generator (CESQG). However, in the future should you generate hazardous waste in excess of 100 kilograms in any one calendar month, you will then be subject to requirements found in Ohio Administrative Code 3745-54 regulating generators.

U.S. EPA detected no violations of those RCRA requirements for which you were inspected. Your installation will continue to be evaluated by U.S. EPA and Ohio EPA for compliance with RCRA requirements on a periodic basis.

If you have any questions regarding this letter, please contact Duncan Campbell of my staff at (312) 886-4555.

Sincerely,

for Paul Little, Chief
Compliance Section 2

Enclosure

cc: Greg Orr, Ohio EPA-NEDO

U.S. ENVIRONMENTAL PROTECTION AGENCY

Region 5

RCRA INSPECTION REPORT

GENERAL FACILITY INFORMATION

U.S. EPA ID #:	OH5 210 020 736				
Facility Name:	Ravenna Army Ammunition Plant (RVAAP)			Phone #:	(330) 358-7311
Facility Location:	8451 State Route 5			County:	Portage
City:	Ravenna	State: OH	Zip Code:	44266-9297	
Legal Owner:	Department of the Army	Address:	City: Washington D.C.	State:	Zip Code:
Region/District	Ohio EPA - NEDO	Inspection Date: 12/12/02	Start Time: 9:30 am	End Time: 11:30 am	
Weather:	Cloudy/low 30's				

NOTIFICATION INFORMATION (EPA Form 8700-12)/TYPE OF FACILITY

Notified: 08/18/1980	Part A: 11/18/1980 Interim status for storage and treatment of off-spec munitions and cleanup from munitions production	Regulated As: TSD - Inactive but not yet RCRA closed	Generation of hazardous waste: Episodic Large Quantity Generator

TYPE OF INSPECTION : RCRA CEI- EPA led inspection. Ohio EPA's Northeast District Office was present during inspection.

INSPECTION PARTICIPANTS

U.S. EPA Inspector	Duncan Campbell	(312) 886-4555
Ohio EPA Inspector	Greg Orr	(330) 963-1189

FACILITY CONTACTS

Ravenna	Mark Patterson	Environmental Program Manager	(330) 358-7311
TolTest	James D. McGee	Contract Site Manager	(330) 358- 3005

Additional Information

NAC Codes- 928110 Military Reserve Armories & Bases **SIC - 9711 National Security**	
Other Environmental activities-	RVAAP is not on the CERCLA National Priority List
Persistent Bioaccumulative Toxics (PBTs) or Chemicals of Concern (COC)-	Lead and PCBs generated from the decontamination and demolition of buildings

Facility Description - Ravenna Army Ammunition Plant [RVAAP] came into existence in August of 1940, with the purchase of 25,000 acres in Portage and Trumbull Counties in Ohio by the United States Government. In, 1980, the Department of the Army [DoA] submitted both a notification of its intent to generate hazardous waste and a Part A permit application for interim status. In 1992, RVAAP submitted a part B permit application to Ohio EPA for its treatment units located at Winklepeck Open Burn Grounds. In 1994, RVAAP withdrew its permit application and began closing both the storage and open burn trays. Closure of Winklepeck was completed and approved by Ohio EPA in 1998. In addition, three less-than-90 day storage areas were also closed according to Ohio EPA requirements.

In 1999, the U.S. Army Industrial Operating Command (IOC), a major subordinate command of U.S. Army Material Command transferred 16,064 acres of RVAAP to the National Guard Bureau. IOC remains responsible for Installation Restoration Program (IRP) of 5,355 acres that became contaminated from ordnance production from 1941 to 1972.

A total of 51 areas of contamination [AOCs] at RVAAP. The AOCs include open burning, open detonation, load lines, wastewater treatment facilities, landfills, and land disposal sites. Cleanup of these areas is slated to be completed by 2014. Contaminants include, residual TNT, RDX (research department explosives), HMX (high melt explosives) and metals (antimony, arsenic, chromium and lead along with cyanide). Most contamination resulted from RVAAP's practice of burning scrap ordnance, bulk explosives, and related materials as a way to dispose of the waste it generated from production facilities.

RVAAP's primary mission was both as a depot storage [Portage Ordnance Depot] and an ordnance manufacturing facility [Ravenna Ordnance Plant]. In 1943, these two facilities were combined and have gone through several name changes before they became known as RVAAP. Load Lines 1-12 manufactured different types of ordnance [load, assemble, and pack]. Production included medium and major caliber artillery, bombs, mines, fuses, primers, and boosters. Contamination resulted from the melt-pour and drilling operations. Explosive dust and vapors attached to the surfaces in the production areas. Maintenance crews routinely steam cleaned these surfaces. Rinse waters seeped through cracks in the walls and floors and escaped into ground. Rinse waters, known as "pink water," also leaked from conveyance systems before they were treated wastewater treatment facilities. Earthen tanks were used to settle out treated wastewaters contaminating both the surrounding ground and groundwater with pink water.

All ordnance production was curtailed in 1972. In 1992, the mission for RVAAP was changed from inactive-maintained to modified caretaker status. Today, RVAAP is primarily used as a training ground for the Ohio National Guard and the "static" storage of bulk explosives and propellants in 623 storage igloos. Over the years, RVAAP has also been the storage site for DoD's strategic and critical materials. The DoD's Defense Logistics Agency (DLA) manages these stockpiles in Buildings 835, 842, 843, and 844. Inside space is devoted primarily

to the storage of talc.

RVAAP engages in the generation of hazardous waste when funding is available for decontamination and demolition of structures. At the height of its productivity there were more than 1,000 permanent structures located at RVAAP. Today, more than half of the area is without electricity.

Summary of RCRA inspection findings:

DoA at RVAA had:

1) generated one container (150 lbs) of hazardous waste during the calendar year 2002

2) updated its contingency plan in January 2002;

3) completed conversion of Bldg. 1047 to "Central" < 90 day storage area to replace the former practice of storing hazardous waste in multiple locations at the site;

4) not begun Thermal Decomposition of Load Lines 6 and 9 and the Wet Storage.

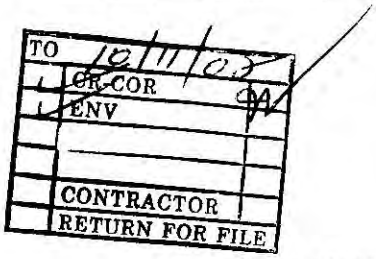
Area of concern:

None.

Report submitted by _____ Date 2/26/02

Reviewed by _____ Date _____

OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
(330) 425-9171
FAX (330) 487-0769



George V. Voinovich
Governor

October 10, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
OHARNG EA AND DOPAA

CPT Tom Daugherty
(AGOH-FM-EN)
2825 West Dublin-Granville Road
Columbus, OH 43235

Dear CPT Daugherty:

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: "Preliminary Draft, Environmental Assessment of Enhanced Training and Operations at the Ravenna Training and Logistics Site, Portage and Trumbull Counties, Ohio (September, 2001), and "Draft, Description of Proposed Actions and Alternatives for the Environmental Assessment of Enhanced Training and Operations at the Ravenna Training and Logistics Site, Portage and Trumbull Counties, Ohio (June 2000)." Both the Environmental Assessment (EA) and the Description of Proposed Actions and Alternatives (DOPAA) documents were prepared for the Ohio Army National Guard (OHARNG) and received by Ohio EPA, NEDO, DERR on August 29, 2002.

Please note that the comments in this correspondence solely reflect the review of the documents by the DERR project coordinator with respect to the current and projected Installation Restoration Program (IRP) activities at the Ravenna Army Ammunition Plant (RVAAP). It is unclear as to whether or not these documents were submitted to Ohio EPA, Division of Surface Water (DSW), which may necessarily have more specific comments including, but not limited to: existing surface water quality; proposed construction of hardened stream crossings; storm water pollution prevention; and the ecological resources that are currently identified as existing at the installation.

Ohio EPA, NEDO, DERR has the following comments on the submitted documents. Please note that specific page numbers are referenced for the EA and not the DOPAA. Given that most of the DOPAA appears in the EA, any changes made to the EA should be made to the corresponding section of the DOPAA.

General Comments:

1. For several years, Ohio EPA has been encouraging the Operations Support Command (OSC) and the OHARNG to formalize the future use of the installation. Although it is clear that the land will be utilized as a training and logistics site, it is less clear as to the

utilization of each specific area. As such, we have now reached an impasse with respect to the ability to determine cleanup levels and depths of cleanup on the remaining 1,481 acres. For example, OSC has indicated that chemical contamination would be cleaned up to an industrial standard, which is clearly not protective of several OHARNG land use scenarios. In addition, the OSC has indicated that unexploded ordnance (UXO) would be removed only down to four feet below ground surface, yet the OHARNG land use scenarios would require a cleanup depth of 9.5 feet to accommodate an M-1 main battle tank in turret defilade. Further, Department of Defense (DOD) directive 6055.9-STD requires a ten foot assessment depth for unrestricted use (commercial, residential, utility, sub-surface, recreational and construction activity).

In order to meet the common goals of cleanup and reuse of the RVAAP, the OSC and OHARNG must come to agreement with respect to future land use of the remaining 1,481 acres of OSC land at the RVAAP. The sooner that future land use issues can be resolved, the more efficiently investigations and remedial activities can be undertaken, and the OHARNG can utilize those portions of RVAAP for training activities.

2. Please reference Ohio EPA correspondence, dated March 5, 2001, which details the Agency's involvement in the environmental investigation and restoration efforts at the installation, as well as detailing over-arching issues at the RVAAP. In addition, correspondence dated February 4, 2002 on the draft Integrated Natural Resources Management Plan (INRMP) contains comments applicable to the recently-received documents.

3. Please ensure that a copy of the EA and DOPAA are sent to the appropriate Ohio EPA, DSW, personnel for review and comment. Personnel from DSW may necessarily have more specific comments including, but not limited to: existing surface water quality; proposed construction of hardened stream crossings; storm water pollution prevention; and ecological resources that are currently identified as existing at the installation. This comment is applicable to several portions of the submitted documents. In addition, the appropriate State and local agencies that deal with cultural and historical resources should also receive a copy of the documents for review and comment.

4. One comment in the previously-referenced March 2001 and February 2002 correspondence indicated the need for on-site preservation of wetlands and other sensitive areas, especially the Hemlock Gorge. The Hemlock Gorge area is one of the rarest community types at the RVAAP and within Ohio as a whole. What plans are being made for the preservation of sensitive areas such as (but not limited to) the Hemlock Gorge? Section 2.2 of the report would be an appropriate place to insert this information, as it discusses, in a broad sense, the long range planning, or Section 4.8.4 (special interest area) would be another appropriate location for this information.

Specific Comments:

5. Please make any necessary changes to the text of the Executive Summary (ES) based upon changes made to the body of the report.

6. The text on page 2 (Section 1.1.2) should indicate that TolTest Inc. is the current operating contractor. (This comment is also applicable to Section 1.1.3.3 on page 3.)

7. The text on page 2 (Section 1.1.2) should be revised to indicate that the Memorandum of Agreement (MOA) transferring 16,164 acres was signed in December 1998 and the DD1354, which transferred an additional 3,774 acres, became official on May 13, 2002 (MOA signed in January and March, 2002).

8. In Section 1.1.3.2 (page 3), please specify the current number of OHARNG personnel employed at the Ravenna Training and Logistics Site (RTLS).

9. The text in Section 2.1.2.3 (page 21) needs to be revised to indicate that (currently) any demolitions that are conducted at Open Demolition # 2 are only done subsequent to receiving an emergency permit from Ohio EPA, Division of Hazardous Waste Management (DHWM).

10. In Sections 2.2.1.1 (page 30) through Section 2.2.8.2 (page 54), for each proposed action or project, either the siting criteria or the proposed location portion of the chart should clearly indicate whether or not the proposed location coincides with a known area of concern (AOC).

11. In Sections 2.2.1.1 (page 30) through Section 2.2.8.2 (page 54), please provide additional information regarding the materials utilized for constructing the proposed hardened stream crossings, hardened tank trails, and hardened pads.

12. Please revise the text on page 66 (Section 4.3.3) to read as follows: "Only Load Line 4 and 24 of the inert storage warehouses...."

13. Update (in the revised EA) the date for the installation's current Spill Prevention Control and Countermeasures (SPCC) plan, which is January 2002. (Also applicable to Section 4.13.6 on pages 131-132).

14. In Section 4.4.4 (page 78), please add in the flashing furnace.

15. In Section 4.4.6 (proximate sensitive receptors) on page 78, please add text to the revised report which details how it was determined that there was only a single potential sensitive receptor within a one-mile radius of the RTLS. For example, was a search conducted on the internet? (Comment also applies to Section 4.5.4 on page 83 and Section 4.10.9 on page 118).

16. Please update Section 4.6 (geology, topography and soils) to be consistent with the most recent facility wide workplan (SAIC, March 2001). In addition, please ensure that the text is revised to indicate that the Lavery Till is found in the western portion of the installation and the Hiram Till and associated outwash is present in the eastern two-thirds of the facility.

17. In Section 4.7.2.1 (groundwater) on pages 94 - 95:

    a. Include a definition of "groundwater" in the revised text. Specifically, in the second paragraph, there is the notation that the average depth to groundwater is approximately 50 below ground surface (BGS). However, in the CERCLA/IRP investigations being conducted at the installation, groundwater is encountered in the unconsolidated aquifer at a depth much shallower than 50 feet.

    b. Remove the statement in the text that indicates that the unconsolidated unit "...is mostly undeveloped or unused as a water source." There are a significant number of residential wells in the vicinity of the RTLS which utilize the unconsolidated unit as their drinking water supply, obtaining both adequate quantity and quality.

    c. Please revise the text to indicate that the well logs are kept on file by the Ohio Department of Natural Resources (ODNR), Division of Water.

18. Remove the statement from the text on page 95 (Section 4.7.3.1) which indicates that "areas with statistically significant levels of contamination are denoted as AOCs...," as this is incorrect.

19. Statistical tests other than the ANOVA are utilized during IRP investigations at the RVAAP. Please cross-reference the most recent AOC-specific documents and the facility-wide sampling plan to update this section of the report.

20. Provide the specific source for the list of potential sources of pollution at the RTLS and update. For example, the PCB storage area and the pesticide storage area are listed; however, the pesticide building had a generator closure in September 2000 (in accordance with OAC Rule 3745-66-11 and 14) and the PCB storage building received a no further action (NFA) in September 1999. This comment also partially applies to the text in Section 5.13.4 on page 194 and to Section 5.13.6 on page 197.

21. Update Table 4-8 (page 103) which details the State of Ohio Special Status Species at RTLS. Updated lists can be found in the most recent IRP reports. For example, it is noted that the river otter is not listed in the current table 4-8.

22. What impact will the proposed Tactical Vehicle Maneuver Area (TVMA) have on special interest area # 1. (Section 4.8.4, page 104)

23. Expand the last paragraph of Section 4.9.4 on page 111 to detail the proposed activities and time tables for conducting additional archaeological investigations at the RTLS.

24. With respect to consumption patterns (Section 4.11.4 on page 120), wouldn't it provide more accurate information to ask the local population (rather than RTLS staff) if there are local groups or identifiable populations that rely principally on fish or wildlife for subsistence?

25. Please clarify the text in Section 4.12.1 (page 120) to clearly indicate whether or not the well located at UTES in training area (TA) C is utilized for drinking water purposes.

26. In addition to the clean hard fill (CHF) area located along the western side of George Road, please add text to the revised report that the three change houses at Load Line 1, which were excavated into bedrock, may also be used as CHF sites. In addition, the text should clearly indicate that the local health departments are the agencies designated to deal with CHF issues. (Section 4.12.3 on page 121).

27. In Section 4.13.2 (regulatory framework) on page 124, please revise the text to indicate that if unstable munitions are detonated at Open Demolition Area (ODA) # 2, it is only done subsequent to receiving an emergency permit from Ohio EPA.

28. Although technically correct that RVAAP is not on the National Priorities List (NPL), please be advised (and revise the text accordingly), to indicate that the installation scored high enough utilizing the Hazard Ranking System (HRS) to be listed. (Also applicable to Section 4.13.2 on page 124 and Section 4.13.5 on page 126.)

29. In Section 4.13.3 on page 124, please clarify what is meant by "hypo solution."

30. Please update the bulleted portion of Section 4.13.3 on page 125, as the listing and current status of the treatment and storage facilities is incorrect.

31. Please remove the statement from the text on page 126 (Section 4.13.5) which indicates that "The third site, Open Demolition Area # 2 will begin RCRA closure pending approval of the revised closure plan." ODA # 2 is not undergoing closure. (This comment is also applicable to Section 5.13.6 on page 197, which discusses the locations of the potential proposed actions with currently identified AOCs.)

32. Additional text should be added to Section 4.13.5 (page 127), which clarifies what is meant by a "response complete" or "RC" under the IRP. This term does not necessarily mean that any action or remediation has taken place at a particular AOC,

it may merely mean that the site or AOC falls under a different regulatory program and is, therefore, ineligible for IRP funding.

33. The second full paragraph on page 127 (Section 4.13.5) which lists activities or projects conducted under the IRP needs to be updated, as the list is incomplete.

34. In Table 4-16 (pages 127-129), please be advised that Ohio EPA does not concur that the listed potential constituents of concern (PCOCs) at each AOC is all-inclusive.

35. In Table 4-16 (pages 127-129), please clarify that the priority status is based upon the Relative Risk Site Evaluation (RRSE) process.

36. In Section 4.13.7.1 (page 131), please remove the statement from the text which indicates that the RVAAP mass-produced explosives, as this is not correct.

37. In Section 4.13.7.4 (PCBs) on page 132, please include additional text in the revised report that indicates that paint utilized during construction at the RVAAP contained PCBs. (Also applicable to Section 5.13.3 on page 194 and Section 5.13.6 on page 195.)

38. Please revise the last sentence in Section 4.13.7.5 (radioisotopes) on page 133 to read: "The site is anticipated to be remediated to an industrial standard for radioisotopic contamination; however, the analytical confirmation data is still pending.

39. Section 4.13.10 (page 133 - 134) references the removal of several underground storage tanks (USTs) and the excavation and disposal of contaminated soils. Please provide the closure reports to Ohio EPA.

40. In Section 5.1.5 (page 138), please ensure that the terms "will" and "shall" are defined in the revised report. Are both of these terms being utilized (as in statutes or contracts) where the word is generally imperative or mandatory?

41. In Section 5.2.2 (page140, item # 3), please revise the text to ensure that only fresh water will be utilized for dust control/suppression techniques.

42. In Section 5.2.2 (page 141, item # 5), please specify what is meant by "...processes that supercede regulatory procedures."

43. Please add a key at the end of table 5 -1 (pages 143 - 146), that describes the various standard mitigation measures.

44. In Section 5.3.2 (page 147), please provide additional details as to what constitutes "no on-Post land use impacts."

55. In Appendix 1, there is a figure which details the competing build alternative for the aviation project. Please provide a figure in the revised EA which details the preferred alternative.

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
LTC Tom Tadsen, RVAAP
Mark Patterson, RVAAP
John Cicero, RVAAP
Tim Morgan, RVAAP

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, Ohio EPA, NEDO, DERR

45. The text on page 152 (Section 5.5.2) indicates that there is the potential for an Environmental Noise Management Plan (ENMP) to be prepared for the RTLS. Please update this section to indicate whether or not an ENMP will be prepared and the proposed schedule for preparation and review/comment.

46. The text on page 171 (Section 5.8.3.3) indicates that "...field surveyed jurisdictional wetland delineations must be performed to accurately estimate potential wetland impacts." Please provide, in the revised EA, the proposed schedule for review and comment.

47. The text on page 175 (Section 5.9.2) indicates that Phase 1 archaeological investigations have identified 11 sites proposed for National Registry of Historic Places (NHRP); six of which lie within the proposed project areas. When will a final eligibility determination be made on these six sites? Evaluation of these (and other sites) is critical when determining the suitability of alternatives.

48. The text on page 179 (Section 5.9.3) for actions 3, 4, 5 and 8B indicates that archaeological surveys needed to be conducted prior to implementation. The text for Action 8B indicates that ten bridges need to be evaluated for NHRP eligibility. Please provide schedules for the archaeological and NHRP eligibility determinations.

49. In Section 5.9.6 (mitigation measures), please provide a schedule for the performance of Phase I or Phase II cultural resources investigations.

50. Please add to the text the appropriate Ohio EPA RCRA citations to the list of requirements for the construction of new hazardous waste storage areas or buildings. (Section 5.13.6, page 196) This comment is also applicable to Table 5-13 on page 205.

51. Section 5.13.6 on page 197 discusses the proposed action locations if they would happen to coincide with current AOCs. Please refer to the first comment in this correspondence, which stresses the need for clear communication between the OHARNG and the OSC regarding future land use issues.

52. On page 197 (Section 5.13.6), the term "clean" is utilized and must be defined. Currently, as written, the term clean will be interpreted to represent the regulatory (specifically RCRA) context. This comment is also applicable to Table 5-13 on page 205.

53. On page 197 (Section 5.13.6), the term "usable" is utilized and must be defined. This comment is also applicable to Table 5-13 on page 205.

54. In Appendix 1, please provide an additional figure which overlays the currently identified AOCs on to the proposed actions and alternatives.

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

June 26, 2001

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

Re: Potential Orders with the Army for Ravenna Army Ammunition Plant

Dear Mr. Patterson:

On May 1, Ohio EPA participated in a conference call with representatives from Ravenna Army Ammunition Plant and the Army, Industrial Operations Command, concerning their proposed Order, which was faxed to Ohio EPA on March 28, 2001. During this phone call, the Army clarified that they are willing to put the entire installation under Orders with the state, if that would allow them to receive permit exemptions or waivers of requirements at 3 sites currently regulated under the solid waste and hazardous waste programs. These three sites would then be investigated and remediated under the CERCLA program, meeting all substantive requirements. The Army feels that it makes sense to proceed with such a approach, since Ravenna Army Ammunition Plant is a closing facility, and they wish to have all clean ups completed within the next 7 to 10 years.

While Ohio EPA recognizes that these sites are currently regulated under other state programs, there is an advantage to the investigation and cleanup at Ravenna Army Ammunition Plant if a CERCLA approach were taken at these contaminated areas. For example, each of the currently regulated units are within larger potential areas of contamination that are being investigated under CERCLA. By taking a more site wide approach, a better ground water and surface water monitoring network could be designed with available funding, instead of focusing and sampling only around regulated units. In addition, other issues such as the incorporation of Natural Resource Damage restoration during the clean up could also be included in the Orders.

However, Ohio EPA also recognizes that the negotiation of Orders with the Army may potentially take a significant amount of staff resources before it is completed. The Army has stated that they are willing to enter into an Order if we will waive permitting and administrative requirements at these sites currently regulated under other programs. However before we start committing resources to this effort, we would like to determine how willing the Army is to address Ohio concerns and issues as part of this agreement.

Below is a list of items that Ohio EPA feels should be included in these Orders:

Items Specific to Entire Installation:

1. Activities necessary under the investigation and cleanup of the entire installation would be covered under the orders (both removal and remedial actions.)

2. Institution of an installation-wide groundwater monitoring program. The number and locations of monitoring wells, in addition to the constituents of concern to be analyzed for as well as the frequency of sampling etc. can be resolved during negotiations, but we need to ensure that Open Detonation Area 2, the deactivation furnace, and the Ramsdell Quarry Landfill are adequately monitored to address any hazardous waste or solid waste concerns.

3. Institution of an installation-wide surface water monitoring program.

4. Incorporation (where applicable) of site restoration during remediation activities to satisfy potential Natural Resource Damage Claims at the installation.

4. Clear definition of roles and responsibilities of all parties involved under the Orders.

5. The Army agrees to obtain state approval before any investigation or remediation is initiated.

6. Enforceable schedules for investigation and remediation activities necessary at the installation (similar to language that we have under other Orders with Federal facilities.)

7. Though a waiver 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.

Items specific to three sites regulated under hazardous waste or solid waste rules:

1. Open Detonation Area (ODA) #2: A small portion of this site is currently being regulated under hazardous waste laws. This site would be falling under RCRA closure rules, but the Army would like to continue to use this site to treat unexploded ordnance found during the CERCLA investigations. If Ohio EPA would agree to a permit waiver or waiver from closure requirements under hazardous waste rules, the following items would need to be included in the Order:

a. Regularly scheduled groundwater monitoring for site specific constituents should continue at this Area of Concern for as long as it is actively being used for detonation purposes. Groundwater monitoring during this period should incorporate the Part B permit requirements (OAC 3745-54-90 through 3745-55-01). However, modifications to these requirements may be agreed upon during the negotiation of and finalization of the Orders (see installation ground water monitoring plan discussed in the General items

b. Open Detonation Area #2 should be subject to similar requirements that any Treatment, Storage, and Disposal facility would be subject to comply with while it was still being used for open detonation and/or open burning. Therefore, the Army should be required to submit to Ohio EPA a plan (for review and approval) that provides the following: facility and unit description (what the Army plans to do with the ODA until final closure) as outline in OAC rules 3745-50-44 and 3745-54-13; an outline of procedures to prevent hazards from occurring as outlined in OAC rule 3745-50-44 and 3745-54-44; an outline of procedures to prevent hazards from occurring as outlined in OAC rule 3745-50-44 and 3745-54-44; a contingency plan as outlined in OAC rule 3745-54-51 and 3745-56-27; and, a personnel training plan as outline in OAC rule 3745-50-44 and 3745-54-16.

c. Agreement that once Open Detonation Area #2 is no longer needed, that the entire site (both the RCRA portion and CERCLA portion) will be remediated as necessary.

2. Deactivation Furnace:

a. A closure plan has been submitted for the deactivation furnace. The Army agrees to resolve any outstanding issues concerning the closure of this unit. Post-closure activities would also be addressed under these Orders.

b. Regularly scheduled groundwater monitoring for site specific constituents should continue at this Area of Concern until it is incorporated into an installation-wide groundwater monitoring program under the CERCLA program.

3. Ramsdell Quarry Landfill (RQL):

a. Regularly scheduled groundwater monitoring for site specific constituents should continue at this Area of Concern until it is incorporated into an installation-wide groundwater monitoring program under the CERCLA program. Until an installation-wide groundwater monitoring program is instituted or until the 30 year post closure monitoring period is over, the groundwater monitoring program at this Area of Concern should incorporate the requirements of OAC 3745-27-10. However, modifications to

these requirements may be agreed upon during the negotiation of and finalization of the Orders.

b. The facility should complete their 30 years of post-closure care activities per OAC 3745-27-14.

c. If RVAAP is exempted from the groundwater monitoring requirements of 3745-27-10, an exemption from the groundwater monitoring requirements mentioned in 3745-27-14 would also need to be granted.

After you have a chance to review this list, Ohio EPA would like to set up a conference call with the Army to discuss how to proceed with these negotiations. If you have any questions or would like to discuss this matter further, please contact Eileen Mohr at (330) 963-1221.

Sincerely,

Graham E. Mitchell, Chief
Office of Federal Facilities Oversight

cc: Mark Navarre, Legal/CO
Cindy Hafner, DERR/CO
Tom Winston, SWDO
Bill Skowronski, NEDO
Rod Beals, DERR/NEDO
Eileen Mohr, DERR/NEDO
Todd Fisher, DERR/NEDO
Diane Kurlich, DDAGW/NEDO
Greg Orr, DHWM/NEDO
Dennis Bush, DAPC/NEDO
Dennis Lee, DSW/NEDO
Mike Hopkins, DAPC/CO
Kurt Princic, DSIWM/DHWM, NEDO
Jarnal Singh, DSIWM/NEDO
Murat Tukel, DSIWM/NEDO
Frank Markunus, Akron Regional Air Quality Management
Bonnie Buthker, 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

December 19, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
SITEWIDE HHRA

Dr. David Brancato
Department of the Army
U.S. Army Corps of Engineers
P.O. Box 59
Louisville, KY 40201-0059

Dear Dr. Brancato:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO) and Central Office (CO), Division of Emergency and Remedial Response (DERR), and Ohio EPA, Southwest District Office (SWDO), Office of Federal Facilities Oversight (OFFO), have received and reviewed the document entitled: **"RVAAP's Facility Wide Human Health Risk Workplan."** This workplan, dated September 26, 2002 and received by Ohio EPA on September 30, 2002, was prepared by the U.S. Army Corps of Engineers (USACE) for the Ravenna Army Ammunition Plant (RVAAP).

This correspondence represents a compilation of comments from all Ohio EPA reviewers, and follows the same general format as the document itself.

1. Revise the title of this workplan from "RVAAP's Facility Wide Human Health Risk Workplan" to "RVAAP's Facility Wide Human Health Risk Assessment Workplan."

2. On page 1, please reference the Preliminary Review (PR)/Visual Site Inspection (VSI) as the first step in the Resource Conservation and Recovery Act (RCRA) Corrective Action process.

3. Section 1.0, Introduction: Section 1.0 should be revised for clarity. The introduction should be more general, with fewer specifics on regulations and the hierarchy of management and the installation action plan (IAP) process than are currently given in the document. The present text goes into great detail regarding several fundamental processes and decision-making for the Ravenna Army Ammunition Plant (RVAAP); this discussion should be more general (less details), clear, and written with respect to conducting human health risk assessments. The introduction appears to serve as an installation management plan for addressing contamination, rather than a guidance on how human health risk assessments will be conducted.

4. Section 1.0, Introduction, page 1, last paragraph: In the second to last sentence on this page, replace "established health criteria" with "has exceeded acceptable criteria established in CERCLA and the NCP." Make this change throughout the document for consistency and specificity regarding how and where "acceptable criteria" is defined. Also, add to the end of this sentence, "and is used to determine if remedial action is necessary." In the last sentence, please spell out the acronym, CSM. All acronyms should be spelled out when first mentioned in the report. The last sentence of this paragraph (on page 2, under CERCLA Section 120...) should be moved and inserted after the sentence that ends "....or BRA is used to determine quantitatively if the sites or any of its units have exceeded established health criteria....." and before the sentence that states, "As indicated in the RFI guidance (EPA, 1989), a site-specific risk assessment...."

5. Please modify the spelling of "fuse" to "fuze" throughout the document.

6. In the section that details the past military activities in the Preliminary Assessment (PA), please also include Areas of Concern (AOCs), such as the Pistol Range and the 40 mm Range. In addition, please revise the last bullet to read: "Various dump areas that occur along roads and creeks." (Page 2)

7. Section 1.0, Determination of the Scope of the Assessment, page 2, second paragraph: Revise the first sentence for clarity to read: "The scope of the human health risk assessment(s) within RVAAP is to characterize the risk to humans exposed to Contaminants of Potential Concern (COPCs) at the Areas of Concern (AOC) or Exposure Unit (EUs)." Revise the end of the second sentence to state: "The human health risk assessment(s) will focus on individuals impacted by substances in the environment, under both current and future land use exposure scenarios." Remove the third sentence, or revise and expand the discussion of this concept in detail for more clarity. Several potential risk management and area management considerations are discussed. Specifically, terms such as exposure unit must be defined and clarified, and examples given. An exposure unit may be defined as the extent of contamination for which exposure to a receptor is possible and considered a complete exposure pathway. The use of preliminary remediation goals (PRGs) in Interim Actions (IAs) as Remedial Goal Options (RGOs), as well as discussion of the completion of IAs (paragraph after bullets on page 2), must be defined and discussed in detail. The term "hot spot" must be defined. Hot spots have been defined as localized areas of contamination. Care should be used when using the term "hot spots." The term should be used and discussed in terms of methods or decisions required when a hot spot is identified. A clear definition and example of the use of the EU should be given in Section 1.0.

8. Section 1.0, Determination of the Scope of the Assessment, page 2 , last paragraph, and page 3, second paragraph: Risk management and the use of information from other sites to determine if they are comparable should be discussed in an independent, separate section of the human health risk assessment (HHRA) Work Plan.

9. On page 2, please revise the text in the second last paragraph that discusses the endpoint of the interim removal actions (IRAs) conducted at RVAAP. Up to this point in time, the IRAs which have been conducted (Building T-5301 and the Pesticide Storage Building) have had, as the endpoint, background conditions.

10. Please add additional text to the bottom of page 2 which would detail how site-specific RGOs will be utilized.

11. The text on the bottom of page 2 indicates that the analytical data will be screened against the Region 9 PRGs. Please provide additional detail in the text that indicates that the carcinogenic endpoints are screened against the Region 9 PRGs, while the non-carcinogenic endpoints are screened against 0.1 X the Region 9 PRGs. (This comment is also applicable to page 20, Section 2.1.5.2.)

12. Section 1.0, Determination of the Scope of the Assessment, page 3: The first partial sentence on the top of the page should be revised to state what action will take place if AOCs are not comparable, or if the concentrations are greater than the AOC being used for comparison. The text should clearly state when screening level risk assessments are conducted and when the process moves into the next step, such as the baseline risk assessment. Remove the last sentence from the top paragraph (i.e., "Therefore, cost estimates should account for .....").

13. Section 1.0, Determination of the Scope of the Assessment, page 3, last paragraph: The use and implementation of PRGs in the screening stages, risk assessment screening, and RGO development should be discussed as separate sub-sections in the report where appropriate. For instance, how the Region 9 PRGs will be used for screening and at what stage of the investigation this will take place, should be discussed clearly and in detail in this workplan. Topics such as any adjustments for multiple chemical exposure, and additivity, should also be addressed in this discussion.

14. Revise title of Section 1.1 to read: "Description and Background of the Ravenna Army Ammunition Plant Facility."

15. Please revise the text on page 3 as follows (in the facility-wide description): ".... the City of Ravenna..."

16. Update the text on page 4 to reflect the latest Memorandum of Agreement (MOA) between the Army, National Guard Bureau (NGB), and the Ohio Army National Guard (OHARNG) regarding the transfer of land.

17. On page 5, please revise the date that the Silas Mason company operated the ammonium nitrate line to read "1949."

18. On page 6, please revise the name of the company referenced in the October 1982 date to read "Physics International Company."

19. On page 6, please confirm that Load Line 2 should be included in the list of Load Lines where all the transite has been removed.

20. Please revise the text on page 6 (entry May 1999) to accurately reflect the acreage transferred to the OHARNG.

21. On page 6, please add another entry which details the latest MOA between the Army and the OHARNG.

22. On the top of page 7, please confirm that, at Load Lines 1 through 4, TNT and Composition B were loaded into tanks.

23. On page 7 (first paragraph), the text details the potential constituents of concern (PCOCs) at the fuze and booster lines (Load Lines 5 through 11). Please check and confirm whether or not PETN was ever stored, managed, or loaded into any munitions items at the fuze and booster lines.

24. Section 1.1, page 7: The last sentence of the first paragraph beginning on page 7 states, in part: "...all residual dust and spills were washed into the storm drainage system." Please revise the sentence to clarify to which load lines this statement applies.

25. In the second last paragraph on page 7, please confirm the explosive known as RCX. Ohio EPA is unfamiliar with this explosive acronym. In addition, please add HMX as a potential contaminant.

26. Section 1.1, page 7: A table that summarizes the COPCs discussed in the last three paragraphs on this page would be a helpful addition to the report.

27. Section 1.2, Environmental Settings: Maps such as the zone of influence for groundwater wells, surface water drainage areas, storm sewer drains, etc., would be a helpful addition to this report and would also help visually determine areas of

potential exposure. As an alternative, indicate in the revised text that such maps/graphics would be supplied in the AOC-specific documents.

28. In Section 1.2.2.2 (page 9), the text indicates that the Sharon Conglomerate is a "porous, coarse-grained, grey-white sandstone that often exhibits thin layers of milky white quartz pebbles." The Sharon Conglomerate is a second cycle sedimentary rock, and the pebbles are comprised of quartzite. Please revise the text accordingly.

29. In Section 1.2.3.1 (page 10), please add additional text to the revised workplan which indicates that the unconsolidated unit is used as a source of drinking water for a good percentage of residents in the vicinity of the RVAAP. (This comment is also applicable to page 11.)

30. In Section 1.2.3.3 (page 11), the text indicates that all but two of the production wells have been abandoned at the facility, and these two, located in the central portion of the facility, provide sanitary water to the remaining site personnel. Please provide additional discussion in the text regarding the production well located at the former site of Building T-5301. (This comment is also applicable to page 14).

31. Based upon field observations from10/29 - 31/02, the statement that "All water bodies support an abundance of aquatic vegetation and ponds have fish" needs to be revised. (Page 12)

32. The text on the bottom of page 12 indicates that, due to access limitations, fishing is no longer permitted at the RVAAP. Please confirm this observation, as it is Ohio EPA's understanding that OHARNG personnel are allowed to participate in catch and release fishing at the installation. In addition, the text on this page directly contradicts the text on page 14 (second full paragraph).

33. Section 1.2.3.5, Surface Water Utilization, page 13: The last sentence on the top of the page should also include potential use of surface water by OHARNG troops for training, and also other site workers, who may also use these water bodies.

34. Please provide additional background information/sources in the revised text on page 13, which details whether or not Hinkley Creek and the South Fork of Eagle Creek are utilized for recreational and agricultural purposes.

35. In Section 1.2.4 (page 13), please provide additional information in the revised text as to why the City of Ravenna was excluded as the nearest significant upwind urban area.

36. Please revise the text on page 13 (Section 1.2.5) that indicates that the Michael J. Kirwan reservoir serves as a possible water source. It has been confirmed with Ohio EPA's Division of Drinking and Ground Waters' (DDAGW) personnel that the reservoir is not used as a public water supply source.

37. Section 1.2.5, Site Use, page 13: Define "restricted access industrial" as stated in the first sentence of this section. This sentence should clarify and specifically state that, currently, there are no or limited formal future land use controls in place that are enforceable and documented. The second paragraph should state that the surrounding land use is primarily residential in a rural setting. The sentence should also clarify that this is the current land use, and potential future land uses should also be discussed in this section (basically, clarify the text so reader knows what current land use is and what potential future land use may be).

38. In Section 1.2.5, please revise "Hinley" to read "Hinkley." (Page 13)

39. Please revise the text on page 14 in two places (second paragraph) to read "Sharon" Conglomerate.

40. Section 1.2.5, Site Use, page 14: Second full paragraph: Revise first sentence to include use of surface waters by recreational users, OHARNG troops, and site employees.

41. Section 1.2.5, Site Use, page 14: The bulleted items should include the following potential future uses: use as a full-time OHARNG training area, residential, and any other appropriate potential future uses that may be applicable.

42. On page 14 (Section 1.2.6), the text states: "..wetland areas at RVAAP include seasonal wetlands, wet fields, and forested wetlands." The text also indicates that many of the wetland areas are associated with anthropogenic settling ponds and drainage areas. In the revised text, please reference the OHARNG constructed mitigation wetland in the western part of the installation.

43. Please update the flora and fauna lists based upon Table 2-3 of the Load Line 1 Report, as the list in this workplan is not all inclusive.

44. In the description of investigations at the RVAAP (pages 16-17), please add to the revised text the first Relative Risk Site Evaluation (RRSE) report. In addition, please revise the entry under "1998" which indicates that USACE conducted the RRSE, as this work was conducted by the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), not USACE.

45. In the text on the bottom of page 17, please provide additional information in the revised text as to the differentiation between "heavy metals" and "metals." (This comment is also applicable to the top of page 18.0)

46. Please revise the text on the bottom of page 17 to read: "Contaminants in Load Lines 5 through 11 include, but are not limited to, metals and explosives."

47. In Table 18:

    A. The potential sources of contamination list is not all inclusive. For example, landfills and other dump sites are not considered;
    B. Where surface water is identified as a potential migration pathway, sediment should also be noted;

    C. How were the various receptor groups chosen, given that there has not been an agreed upon land use between the Operations Support Command (OSC) and the OHARNG?

48. Section 2.0, Comprehensive Data Package for the HHRA, page 18: Section 2.0 needs additional clarification, as it is not clear what is being discussed in this section. It is assumed that the data quality objective (DQO) process is being discussed, however, a better introduction to the process and how it is to be applied at RVAAP is needed. Also, if an ecological assessment is required for any AOC, then often the same data are used for both purposes. Section 2.0 should indicate that the decision for the need of an ecological assessment is required before a comprehensive sampling plan is developed, to ensure that the data collected are of appropriate quality, are in appropriate media, and have detection and method limits low enough to be of use for both assessments. Please add additional clarifying text.

49. Section 2.0, Comprehensive Data Package for the HHRA, page 18: The objective given under Section 2.0 should include the complete, to the extent practicable, extent of contamination, in addition to the nature of contamination.

50. Section 2.1, DQO Process to Determine Data Required for HHRA in the Investigation of AOCs/EUS at RVAAP, page 18: Table 1, Preliminary Conceptual Site Model (CSM), should include a column entitled, exposure medium/media, for clarification purposes. Also, another likely receptor group, and one that was clearly requested by the public, was that of the recreator and/or hunter/trapper. A trespasser and potential FBI trainees should also be included in the receptor list. Please make the appropriate changes to Table 1 and ensure consistency with receptors evaluated in other AOCs and documents, such as Open Demolition Area (OD) # 2, and Load Lines 1 and 12.

51. Please clarify the text on page 19 (Section 2.1.2) that indicates that the grid sampling also serves as a guide to conducting the biased sampling. Up to this point in time, the grid sampling has been used in areas outside of known or suspected contamination, and has not been used in the biased sampling process.

52. Section 2.1, DQO Process to Determine Data Required for HHRA in the Investigation of AOCs/EUS at RVAAP, page 19: The paragraph titled: "Exposure Scenario," should be revised and corrected for grammatical errors.

53. On the top of page 20, please replace the word "deflate" with "defilade."

54. As a point of information (no text change required on age 20), currently the only acceptable field testing is the Jenkins method for explosives contamination determination. X-Ray Fluorescence (XRF) has not been demonstrated to be an adequate or accurate enough method to determine the extent of contamination or to direct removal actions.

55. On the top of page 22, please add additional text to the revised workplan which indicates that it is a team decision as to whether or not the calculated sample size is cost prohibitive.

56. Section 2.1.4, Define the Boundaries of the Study [AOC/EU]: Section 2.1.4 briefly discusses an approach to identify "hot spots" at an AOC/EU. Additional information will be required on an AOC/EU basis that gives full details on how hot spots are to be identified. The information in Section 2.1.4 is currently not sufficient to describe how hot spots will be identified. Please add additional information in the revised text that gives specific details on how hot spots will be identified at AOC/EUs. See comment # 7 above.

57. Section 2.1.4, Define the Boundaries of the Study [AOC/EU]: Section 2.1.4 introduces a new term "Area of Interest." It is not clear if this term is meant to be area of concern or exposure area. Please clarify. Also, it should be stated in Section 2.1.4 that the exposure units are to be defined in conjunction with the complete determination of nature and extent of contamination. This includes the identification of contamination, if present, at depths greater than 9' 6". For residential scenarios, depths to 13 feet are evaluated. Depths greater than this may need to be considered for OHARNG troop activities.

58. Section 2.1.5.1, Specify Action Level for the Study: This section should be expanded to discuss in detail how the EPA Region 9 PRGs will be used and implemented in the various stages of the investigation and remedial decision making process (i.e., adjustments?, additivity?, acceptable levels?, point of compliance for evaluation of COPCs in remedial action documents such as FS, EE/CAs, etc.?).

59. In Section 2.1.9.1, please remove toluene from the list of common laboratory artifacts. In addition, please revise the text in this section to read as follows: "Chemicals that are detected infrequently, except explosives and propellants...."

60. Section 2.1.9, Data Tabulation, page 23, second to last bullet: Revise the text to indicate "Background concentrations if appropriate" and clarify that background is by default, the lesser of the maximum detected value or the statistically calculated value.

61. Section 2.1.9.2, Concentration-Toxicity Screen, page 23-24: Please remove the reference to drinking water maximum contaminant levels (MCLs), as MCLs are not to be used as screening values.

62. Section 2.1.9.2, Concentration-Toxicity Screen, page 24: In the last two paragraphs, a sentence should be included to state that the default is to use the maximum detected value, if the statistically calculated value exceeds this concentration.

63. Section 2.1.9.2, Concentration-Toxicity Screen, page 24: The concentration-toxicity screen should not be used for other than what has been described and approved in the past. Only maximum concentrations are to be used during the screening step. Averages, including the 95% upper confidence limits, are not acceptable. Compounds whose maximum concentration values exceed the screening criteria are to be carried forward into the risk assessment. In addition, the upper tolerance limit is not to be utilized. Please revise the Section 2.1.9.2 to incorporate these comments.

64. Section 2.1.9.3, Background Screen, page 24: It may be appropriate to complete the background screen prior to completing the concentration-toxicity screen.

65. Section 3.1 Conceptual Site Model, page 25: Please remove the last bullet "Area Use Factor," as this is not part of a conceptual site model.

66. Please revise the heading in Section 3.1.1 to read: "Potential contaminant release mechanisms and transport pathways include, but are not limited to, the following."

67. Section 3.1.2, Potential receptors include the following: Section 3.1.2 identifies some possible receptors and exposure pathways. It is not clear what the "possible" notation is attempting to convey. In Section 3.1.2, will the FBI trainer/trainee be included as potential receptors? Please clarify Section 3.1.2. In addition, please add ingestion of soil to all relevant potential receptors in the list and those receptors that are not currently in the list, but are applicable to this site (i.e., FBI Trainees, full-time OHARNG Guard troops, etc.).

68. In Table 2, Exposure Pathways for Receptors at AOC/EU, RVAAP:

    A. This table is not complete and, as such, could not be reviewed. Please provide a complete table for review in the revised document.

B. Please add a key to the table which explains what each number under the potential receptor means; and

C. In the revised workplan, please indicate which pathways are considered to be complete.

69. Table 2, Exposure Pathways for Receptors at AOC/EU, RVAAP: The footnote (a) on Table 2 appears to be from an earlier version of either the Load Line 1 or 12 Technical Memorandum. Please review the DRAFT Responses for Ohio EPA Comments to the "Final Technical Memorandum, Human Health and Ecological Risk Assessment Aproach for the Load Line 1 and Load Line 12 Phase II Remedial Investigations, Ravenna Army Ammunition Plant, Ravenna, Ohio." These comments, dated June 22, 2001, and the results from follow-up discussions, have essentially finalized this table and the approach (e.g., the exposure assumptions) for the selected receptors at RVAAP.

70. In Section 3.1.3 (pages 27 - 28), please spell "plume" consistently throughout this section.

71. Section 3.2.3, Ingestion of Chemicals in Beef and Milk, page 29 (if no dairy cows, then eliminate milk from the equation): The use of a blanket contaminant concentration factor is not appropriate. The concentration of chemical contaminants in venison should be consistent with the methods used in the ecological risk assessment workplan. This comment was also made on the Load Line 1 and 12 Technical Memorandum. Include the calculation that will be used to estimate contaminant level in venison (page 30).

72. Section 3.2.3 Ingestion of Chemicals in Beef/Pork and Milk (if no dairy cows, then eliminate milk from the equation): It would be appropriate to not assume that ingestion of beef/pork or dairy products would be a likely future use at the site. If residential properties are developed on a former AOC, it would be likely that those properties would not be hobby farms. Given the amount of uncertainty associated with the estimation of exposure of human receptors to home grown food-stuffs and the low probability that farms would be developed on the properties, it would be acceptable not to evaluate potential exposure via these exposure pathways. However, exposure to potential contamination via ingestion of venison should be evaluated. Include the calculation that will be used to estimate contaminant level in venison.

73. Table 3, Parameters Used to Quantify Exposures for Each Medium and Receptor at AOC/EU, RVAAP: Exposure time for the National Guard Trainee is set at eight hours day-1. Please clarify that the trainee is only on site for eight hours per day. Could trainees be at the site for 24 hours? If so, the exposure time needs to be adjusted

accordingly. In addition, if the trainees are on site for only eight hours day-1, then please justify why the soil ingestion rate (surface and subsurface) is apportioned over 24 hours and not event driven, such as might be likely for the National Guard exposure. The equation given for ingestion of soil essentially apportions the ingestion of 24 hours. Therefore, the resulting soil ingestion is only 33 mg d-1. The increase in soil ingestion (i.e., 100 mg d-1) was initially selected based on information that supported a higher soil exposure and ingestion rate for the National Guard trainees. It is recommended that the soil ingestion for the National Guard trainees be event driven and, therefore, the time variable be removed from the exposure calculation. This comment is also appropriate for other media exposure via ingestion (*e.g.*, sediment).

74. Table 3, Parameters Used to Quantify Exposures for Each Medium and Receptor at AOC/EU, RVAAP: It has been identified that future use of the RVAAP property might include intermittent training and more recently, full time occupation and training. Therefore, it is recommended that the National Guard trainee scenario be evaluated to consider longer exposure durations and frequency. Generally, unrestricted use of a property is predicated on the demonstration that exposures based on a residential scenario are protective. However, in the case of a full-time National Guard trainee, the residential scenario may not be protective, due to the higher media exposure as the result of training activities. Therefore, it is recommend that either a full-time National Guard trainee scenario be developed, or a comparison be made to expected exposures from the current residential scenario. If the residential exposure scenario is determined to be protective for a full-time National Guard trainee receptor, then the residential scenario may continue to be used as a determination of protection for unrestricted use. A full discussion of the comparison should be provided in the revised Facility-wide Human Health Risk Assessment Work Plan.

75. Table 3, Parameters Used to Quantify Exposures for Each Medium and Receptor at AOC/EU, RVAAP: Footnote "r" in Table 3 should be updated. A public review draft is available: Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, Interim), EPA/540/R/99/005 and should be cited if the information given in the table is consistent.

76. Table 3, Parameters Used to Quantify Exposures for Each Medium and Receptor at AOC/EU, RVAAP: The comment below was taken from comments on the previously-submitted Load Line 1 and 12 Technical Memorandum. As no changes were made to the table, the comment is still germane.

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 volatile organic compounds [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 of 0.25 m^3hr^{-1}. Therefore, the method and cited volatilization factor is inappropriate 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 source 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 the 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 constant 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.

77. Section 4.2.1, Target Organ Toxicity: the second sentence of the last paragraph on page 46 states: "(I)f more than one organ is affected at the threshold, the more severely affected is chosen." When multiple organs are identified at the threshold concentration, then all identified organs should be listed as target organs. For example, if the liver and kidneys were identified to be adversely affected by a compound at the NOAEL or LOAEL in the critical study, then the compound would be

cumulatively considered with both the hepatoxins and nephrotoxins in the risk assessment. Please revise Section 4.2.1 to reflect the above information.

78. Please revise the text in Section 4.2.1.1 to read: "....corresponding oral values, provided there is no evidence..."

79. Section 4.2.1.2, Gastrointestinal Absorption Factor (GAF): Section 4.2.1.2 discusses the extrapolation of oral toxicity criteria to absorbed dose equivalents for use in the evaluation of exposures via the dermal route of exposure. This section should be revised to be consistent with Chapter 4, Toxicity Assessment of the review draft of RAGS, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) EPA/540/R/99/005. One example of an item to be revised includes the default GAF of 0.9.

80. Section 4.3.1, Lead: Section 4.3.1 should also cite the U.S. EPA Memorandum, Revised Interim Soil Lead Guidance for CERCLA and RCRA Corrective Action Facilities, July 1994. This guidance describes a flexible approach for evaluating sites contaminated with lead. The approach offers both qualitative and quantitative methods for the evaluation of lead exposure.

81. Section 6.0, page 50: The introduction to this section should discuss how the risk assessment(s) and the information gathered during the risk assessment(s) fits into and functions in the remedial investigation/feasibility study (RI/FS) process.

82. Section 6.0, Derived Risk-Based Cleanup Objectives: Section 6.0 should provide the equations and input values to those equations used to derive the PEF value given on page 51. Also, the Soil Screening Guidance: Technical Background Document 1996 should be used to develop the PEF values for both the residential receptors and the National Guard trainees, as the PEF values are not expected to be the same for both receptors. In addition, site-specific information is required to determine the appropriate PEF values. Some of these inputs include the source area (in acres), percent vegetation cover, mean annual wind speed, etc. Please include all information required to calculate a PEF value for each AOC/EU.

83. Section 6.0, page 50: This section should discuss in detail how risk-based cleanup objectives will be calculated when multiple chemicals and multiple exposure pathways are present. This should also include a discussion on how these will be developed, in order to ensure that the cumulative target risk goals and hazard index are not exceeded when multiple chemicals and multiple pathways are present.

84. Section 7.0, Uncertainty Analysis, page 52: Condense the last paragraph of the section to just state that Monte Carlo analysis is an option or tool that can be considered and used in uncertainty analysis.

85. Please include any or all applicable appendices.

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
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, CO, DERR
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE
Bob Whelove, OSC

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, 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

December 11, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
SITEWIDE SURFACE WATER

Mr. John Jent
Department of the Army
US Army Corps of Engineers
P.O. Box 59
Louisville, KY 40201-0059

Dear Mr. Jent:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), and Central Office (CO), Division Surface Water (DSW), Ecological Assessment Section (EAS), have received and reviewed the document entitled: "Draft, RVAAP's Facility Wide Surface Water Assessment Workplan." This workplan, dated November 19, 2002 and received by Ohio EPA on November 21, 2002, was prepared by the U.S. Army Corps of Engineers (USACE) for the Ravenna Army Ammunition Plant (RVAAP).

This correspondence represents a compilation of comments from all Ohio EPA reviewers, and follows the same general format as the document itself.

General Comment on Meeting Minutes: Please note that the sitewide surface water scoping meetings were held on October 29 - 32, 2002.

Workplan Comments:

1. On page 4, 1st paragraph, 2nd sentence, please change "hazardous waste investigations" to "remedial investigations." The term "hazardous waste" has exclusive meaning, and should not be used loosely in the text. (Section 1.0)

2. Please revise the sentence on page 4 to read: "...waters entering and leaving the RVAAP facility, specifically targeting...." (Section 1.0)

3. Please revise the text on page 4 as follows (in the facility-wide description, Section 1.1): ".... the City of Ravenna..."

4. Please modify the spelling of "fuse" to "fuze" throughout the document.

5. Update the text on page 5 (Section 1.1) to reflect the latest Memorandum of Agreement (MOA) between the Army, National Guard Bureau (NGB) and the Ohio Army National Guard (OHARNG) regarding the transfer of land. In addition, please specify the exact acreage transferred.

6. In the section that details the past military activities in the Preliminary Assessment (PA), please also include Areas of Concern (AOCs), such as the Pistol Range and the 40 mm Range. In addition, please revise the last bullet to read: "Various dump areas that occur along roads and creeks." (Section 1.1, page 5)

7. On page 5 (Section 1.2), please add additional text to the revised workplan which indicates that the unconsolidated unit is used as a source of drinking water for a good percentage of residents in the vicinity of the RVAAP.

8. The text on page 6 (Section 1.2.1.1) indicates that due to access limitations, fishing is no longer permitted at the RVAAP. Please confirm this observation, as it is Ohio EPA's understanding that OHARNG personnel are allowed to participate in catch and release fishing at the installation.

9. Please provide additional background information/sources in the revised text on pages 6 - 7 (Section 1.2.1.1) which details whether or not Hinkley Creek and the South Fork of Eagle Creek are utilized for recreational and agricultural purposes.

10. On page 7, under Section 2 (Determination of the Scope of the Assessment), add the following document - *September 30, 1989 Addendum to Biological Criteria for the Protection of Aquatic Life: Volume II: Users Manual for Biological Field Assessment of Ohio Surface Waters, October 30, 1987 (Updated January 1, 1988).* Please see Attachment One for a more complete list of documents and publications which should be referenced in the workplan.

11. On page 7 (Section 2.1: bullet one), please note that the QHEI evaluates more than just physical stream **bed** habitat. Delete the word "bed." Macro-invertebrate should read macroinvertebrate. Under bullet three, aquatic chemical seems redundant with surface water. The sentence should end with "aquatic biological results."

12. On page 7, Section 3, delete the word "quantified" from the second sentence. The last sentence on page 7 should be replaced with the following: A score between 45 and 60 suggests some habitat limitations and falls into a range between Modified Warmwater Habitat and Warmwater Habitat. The appropriate aquatic life use designation assigned will depend on the habitat characteristics which are most limiting to aquatic life.

13. On page 8, Section 3.1, this section and Section 3 cover the same information. Ohio EPA recommends deleting Section 3 and replacing it with Section 3.1.

14. On page 8, Section 3.1.1, add the following: A lake/pond QHEI evaluation form in development at Ohio EPA (Roger Thoma, NEDO, DSW, personal communication) will be used to assess physical habitat features at all pond sampling locations.

15. Ohio EPA recommends that Section 3.2 (page 8) be deleted and replaced with Section 3.2.1 (with some changes noted below).

16. On page 9, Section 3.2.1, 2nd paragraph, 2nd sentence, delete the word "most" before RVAAP.

17. On page 9, Section 3.2.1, 3rd paragraph, 1st sentence, add the text "in streams" after uses. Change Table 7-17 to Table 7-15 (this number changes with the rule revisions this month).

18. Page 9, Section 3.2.1, last paragraph. In the second to last sentence, change WWH to "applicable."

19. On page 9, Section 3.2.1, add a paragraph as follows: Attainment/non-attainment of aquatic life uses for ponds has not been developed by Ohio EPA. However, fish communities will be sampled using boat electrofishing techniques similar to rivers. Within each pond, a 500 meter distance (if possible) along the shoreline will be sampled. Comparable to river sampling sites, an effort will be made to collect all available stunned fish. Fish will be counted, weighted, identified to species, and evaluated for external anomalies. Fish results will be used to calculate IBI and MIwb scores at each pond sampling location, along with the specific metrics that comprise the IBI. The metrics used for calculation of the IBI will include those which are used for boat electrofishing sites. Results from potentially contaminated pond locations will be compared to physically similar, on-site reference ponds.

20. Ohio EPA suggests deleting Section 3.3. It is redundant with Section 3.3.1

21. Please insert the following language for Section 3.3.1 in place of the existing verbiage: The macroinvertebrate community at the RVAAP sampling locations will be sampled qualitatively, and where flow conditions permit, quantitatively. The quantitative sample consists of a composite sample of five modified Hester-Dendy multiple plate samplers. The samplers are placed in flowing water and allowed to colonize for six weeks. The samplers are then collected and all the macroinvertebrates colonizing the Hester-Dendy samplers are identified to the lowest practical level and counted. When the quantitative samples are collected, a qualitative sample will also be collected. At sites where insufficient flow prevents collecting a quantitative sample, a qualitative sample will be collected. The qualitative sample consists of an inventory of all the observed macroinvertebrate taxa collected from all the available habitat types at a sampling location. The RVAAP pond sampling locations will be sampled qualitatively and quantitatively using Hester-Dendy samplers. Activity traps will also be used to sample the macroinvertebrate and amphibian community of the ponds. The activity (funnel) traps are similar to minnow traps only made of window screening. The trap consists of an aluminum screen cylinder with fiberglass screen funnels facing the inside of the trap from each open end. Macroinvertebrates, amphibians, and fish enter the trap through the funnel ends and are unable to escape. Ten traps will be used for one 24 hour sampling period in each pond. The traps will be spaced uniformly around the perimeter of the pond at a depth sufficient to almost submerge the trap. After 24 hours, the traps are emptied and the contents preserved for later identification and counting. The contents of each trap are processed separately.

22. On page 10, Section 3.4.1, add the following to the 1st sentence after the word to "biocriteria (for streams only)." For your reference, attachment 2 is a pdf file of the narrative ranges of biological quality, that could be added as an appendix to the workplan.

23. On page 10, Section 3.4.1, revise the sentence to read: "and thus may require some remedial action." Also for the last sentence, add the following after range - "or all of the measured indices are in the fair range."

24. Please keep in mind that although throughout the workplan reference is made to the WWH use, some of the streams at RVAAP may be a different aquatic life use (modified warmwater, coldwater, limited resource water, exceptional warmwater).

25. Please insert the following language for Section 3.4.4 (page 11): The results of the IBI and MIwb fish data, as well as the qualitative, quantitative and activity trap data for macroinvertebrates from the study sites, will be compared to corresponding data from the facility reference ponds.

26. The following are a number of comments on Table 1 (page 12):

    a. Please add grain size to the list of parameters for sediment samples;

    b. Cyanide will be measured as total. This is fine for sediment, however, for surface water, free cyanide is the preferred analyte. The Ohio Water Quality Standards have criteria only for free cyanide. To complicate matters, until very recently, U.S. EPA did not have a free cyanide lab method developed. So, labs (including Ohio EPA's) were only able to test for total cyanide;

    c. Herbicides are listed for testing, however, they are not listed in the Facility-Wide Sampling and Analysis Plan for Environmental Investigations at RVAAP (March 2001). Which herbicides will be tested, and why?;

    d. Add ammonia-N and total phosphorus under water for all samples;

    e. Unless there is a significant concern about PCBs and pesticides on-site, we recommend testing these parameters only once in the water samples (not twice as indicated); and

    f. What is the reason for testing for sulfide, both in sediment and water? Sulfide should be deleted unless there is a site-specific reason for testing.

27. On page 12, Section 4, last paragraph, change the anticipated time frame of sampling to June - August, 2003.

28. In Table 2, the following are some corrections to site location names and information:

    Site S-1: Delete "trib" from Sand Creek in site location.

    Site S-10: Add "downstream RR" in site location.

    Site SFE-1: This stream is not South Fork Eagle Creek, but an unnamed tributary to the SF Eagle Creek.

    Site SFE-2: This stream is not South Fork Eagle Creek, but an unnamed tributary to the SF Eagle Creek.

    Site SFE-3: Delete under site location "from Kelly's Pond(LL-2)."

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

Sincerely,

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

ETM/kss

attachments

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, CO, DERR
Dave Altfater, Ohio EPA, CO, DSW
Mike Gray, Ohio EPA, CO, DSW
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
John Jent, USACE
Bob Whelove, OSC

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, 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

12/30/02

December 23, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
SITEWIDE SURFACE WATER

Dr. David Brancato
Department of the Army
U.S. Army Corps of Engineers
P.O. Box 59
Louisville, KY 40201-0059

Dear Dr. Brancato:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR), and Central Office (CO), Division of Surface Water (DSW), Ecological Assessment Section (EAS), have received and reviewed the document entitled: "Draft, RVAAP's Facility Wide Surface Water Assessment Workplan." This workplan, dated December 19, 2002 and received via e-mail by Ohio EPA on the same date, was prepared by the U.S. Army Corps of Engineers (USACE) for the Ravenna Army Ammunition Plant (RVAAP).

This correspondence represents a compilation of comments from all Ohio EPA reviewers, and follows the same general format as the document itself.

1. On new page 5, please add in the meaning of the acronym "BRACO," and add this new entry to the workplan's acronym list.

2. Under "Objectives" (new page 9): add MIwb with the IBI in parentheses.

3. As Section 3.2 (Fish Lotic and Lentic) was not deleted as previously requested by the Agency, please revise as follows:

   a. 2nd paragraph, last sentence: Replace last sentence with the following - "The overall IBI score is compared to biocriteria values listed in the Ohio water quality standards, in addition to narrative ranges developed by Ohio EPA for the appropriate ecoregion."

   b. The list of IBI metrics in the workplan is for wading sites, not headwater sites. Change the following metrics: number of sunfish species to number of headwater species, number of sucker species to number of minnow species, number of intolerant species to number of sensitive species, percent top carnivores to percent pioneering species, and proportion of individuals as simple lithophilic spawners to number of simple lithophilic species.

   c. Last paragraph, replace 3rd sentence with the following: "Relative numbers and relative weights are adjusted to represent a 0.3 km sampling reach for headwater and wading sites and 1.0 km for boat sampling sites."

d. Last paragraph, replace last sentence with the following: "The MIwb is based on a scoring range of 0 to12, with 0-5 being "very poor" and greater than 9.5 being "exceptional" quality."

4. On new page 13 (Section 3.4.1), change the text to read as follows: "...'fair category,' which may...."

5. On new page 13 (Section 3.4.1), please revise the text to read as follows: "Impacts due to upgradient, off-installation activities that may...."

6. On Table 2: As your response to Ohio EPA comments indicates, S-1 should be S-2.

Subsequent to revising the document in accordance with this correspondence, please send hard copy versions of the final workplan to the appropriate Ohio EPA personnel.

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
Dave Altfater, Ohio EPA, DSW, EAS, CO
Mike Gray, Ohio EPA, DSW, EAS, CO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, DERR, CO
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Elizabeth Ferguson, USACE Louisville
Paul Zorko, USACE Louisville
John Jent, USACE Louisville

ec: Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, NEDO

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 25, 2002

Re: Ravenna Army Ammunition Plant
Portage/Trumbull Counties
Future Land Use

The Adjutant General's Department
Attn: Col. Gregory Wayt
Col. William Zieber
Col. Matthew Kambic
2825 West Dublin-Granville Road
Columbus, Ohio 43235-2789

Mr. K.R. Youngman
US Army Operational Support Command
Attn: AMSOS-IS
One Rock Island Arsenal
Rock Island, Illinois 61299-6000

Dear Sirs:

On September 19, 2002, representatives of the Ohio Environmental Protection Agency (Ohio EPA) met with Mr. Henry Crain of the Operations Support Command (OSC) to discuss several issues related to the Ravenna Army Ammunition Plant (RVAAP). One of the discussion items, which involves both the OSC as well as the Ohio Army National Guard (OHARNG), is the issue of future land use.

For several years, the Ohio EPA has been encouraging the OSC and the OHARNG to formalize the future use of the installation. Although it is clear that the land will be utilized as a training and logistics site, it is less clear as to the utilization of each specific area. As such, we have now reached an impasse with respect to the ability to determine clean-up levels and depths of clean-up on the remaining 1,481 acres. For example, OSC has indicated that chemical contamination would be cleaned-up to an industrial standard which is clearly not protective of several OHARNG land use scenarios. In addition, the OSC has indicated that unexploded ordnance (UXO) would be removed only down to four feet below ground surface, yet the OHARNG land use scenarios would require a clean-up depth of 9.5 feet to accommodate an M-1 main battle tank in turret defilade. Further, Department of Defense (DOD) directive 6055.9-STD requires a 10 foot assessment depth for unrestricted use (commercial, residential, utility, sub-surface, recreational and construction activity).

In the recent Memorandum of Agreement (MOA) that was signed in March, 2002 between the OSC and the OHARNG, an additional 3,774 acres was transferred to the National Guard Bureau (NBG). Within this MOA, the term "clean closure" was utilized. It is disconcerting to note that there is no agreement between the OHARNG and the OSC as to the meaning of this term. As a point of information, this term has regulatory meaning under Ohio Administrative Code (OAC) 3745-55-11 which details closure performance standards and, in a general sense, means that a site is cleaned up to free release standards and is suitable for any future use.

Currently, the Feasibility Study (FS) stage has been reached at several Areas of Concern (AOCs) on the installation. In the first two stages of this process: remedial action objectives are developed; general response actions for each medium of interest are formulated; the volumes or areas of media to which the response action(s) would be applied are determined; applicable technologies for clean-up are identified and evaluated; and, the selected representative technologies are assembled into alternatives representing a range of treatment and containment options. The third phase of the FS consists of analyzing the alternatives with respect to the nine evaluation criteria developed to address the Comprehensive Environmental Response and Compensation Act (CERCLA) objectives. Chief among these are the threshold criteria which must be met as they relate to statutory findings that must be made in the Record of Decision (ROD). These two criteria are: overall protection of human health and the environment and compliance with Applicable or Relevant and Appropriate Requirements (ARARs). Clearly, based upon the components of the FS and the nine evaluation criteria, without having knowledge of the future land use, no further progress on AOC evaluation and clean-up can occur.

In order to meet the common goals of cleanup and reuse of the RVAAP, the OSC and OHARNG must come to agreement with respect to future land use of the remaining 1,481 acres of OSC land at the RVAAP. Until that occurs, Ohio EPA will have to continue to require an evaluation of all potential future land use including the child and resident farmer scenarios. In addition, the environmental team cannot begin to look at any potentially applicable institutional land use controls because we do not have any assurance (given that land use cannot be agreed-upon) that the appropriate parties would enforce the controls.

In closing, the Ohio EPA proposes that a meeting be held with the appropriate personnel from the OSC and OHARNG. The sooner that future land use issues can be resolved, the more efficiently investigations and remedial activities can be undertaken, and the OHARNG can utilize those portions of RVAAP for training activities.

If you would like to discuss Ohio EPA's position concerning this matter, or if you have any questions regarding this correspondence, please do not hesitate to contact me at 937-285-6018.

Sincerely,

Graham E. Mitchell, Chief
Office of Federal Facilities Oversight

GEM/br

cc: Chris Jones, Director, Ohio EPA
Bonnie Buthker, Ohio EPA, SWDO, OFFO
Eileen Mohr, Ohio EPA, NEDO, DERR
John Cicero, RVAAP
Mark Patterson, RVAAP
LTC Tom Tadsen, OHARNG, RVAAP
Henry Crain, OSC AMSOS-ISR
Bob Whelove, OSC, AMSOS-ISR
Rosemary Vermost, OSC AMSOS-ISM
Paul Woodhouse, OSC AMSOS-ISM

ec: Rod Beals, Ohio EPA, NEDO, DERR
Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, Ohio EPA, NEDO, DERR

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Tuesday, January 22, 2002 2:51 PM
To: Christopher Kenah; Michael Slattery; john.p.jent@lrl02.usace.army.mil
Cc: Charlotte Hammar; Conni McCambridge; Diane Kurlich; Nancy Rice; Scott Williams; pattersonm@osc.army.mil
Subject: Arsenic Occurrences in Groundwater

M. Michael and Christopher:

I am one of the project coordinators for the Ravenna Army Ammunition Plant (RVAAP) located in Portage and Trumbull Counties. In a letter to the editor of a local newspaper on 01/20/02, a citizen in the area is trying to link the arsenic concentrations found in the Vaughn Elementary School with the RVAAP. The school is approximately two miles from the RVAAP. The US Army Corps of Engineers (USACE) will be compiling all the data we have regarding arsenic concentrations on the installation itself..... in response to the information that is being presented in the newspaper.

A couple of questions:

1) May I was given an abstract of the paper that you (others) authored entitled: "Occurrence and Release of Ground Water Arsenic in Public Water Supply Wells in Ohio." Is there a detailed paper and charts tabulating data (etc) that goes along with this abstract? If so, it it possible for me to get a copy of this?

As part of the remedial activities that we conduct at the RVAAP, we have a Restoration Advisory Board (RAB) consisting mainly of local citizens and elected officials. Have either of you done talks on arsenic occurrences in Ohio's groundwater? Is this something you might be willing to consider doing?

Diane and Conni - how about you folks? Want to talk about As occurrences in NE Ohio groundwater? What is the data from our ambient monitoring network showing?

Mark and CJ - I passed along the letter to the editor to the chief of our drinking water division. As a FYI, the local health department is planning on sampling approximately 50 private wells in the vicinity of the school this week. Also, the last test of the school's water supply well had the concentration of arsenic coming back at below the current MCL (but above the proposed MCL).

Thanks for all your help folks!!

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: Christopher Kenah [Christopher.Kenah@epa.state.oh.us]
Sent: Wednesday, January 23, 2002 2:54 PM
To: Eileen Mohr
Cc: Charlotte Hammar; Conni McCambridge; Diane Kurlich; Kathy Pinto; Kirk Leifheit; Michael Eggert; Michael Slattery; Nancy Rice; Scott Williams; Todd Kelleher; Tom Allen; pattersonm@osc.army.mil
Subject: Re: Arsenic Occurrences in Groundwater


As summ-short.wpc

Eileen Mohr
The abstract entitled: "Occurrence and Release of Ground Water Arsenic in Public Water Supply Wells in Ohio" was presented at the 2000 Mid-West GW conference by Mike Slattery. Since then Mike has completed more statewide analysis. The attached draft document, summarizes this work in some detail in order to start developing conclusions that provide "simple" rules for applying this information io identification of wells that may have high arsenic concentrations. The multi-variant controls of arsenic distribution/availability and oxidation-reduction controlling arsenic mobilization make the identification of simple rules difficult. This document is not complete, but is still useful for identifying the geochemical controls that appear to be controlling arsenic (mostly naturally occurring?) mobilization., like the association of iron and arsenic, and the inverse relationship of arsenic and nitrate. Questions can be addressed to Mike or me, but Mike Slattery is the most knowledgeable about these relationships.

Mike Slattery can certainly help out with a presentation about arsenic in Ohio wells. I believe that doing a tag team with some one in the district would allow the state wide information to be presented (Mike Slattery) and then narrow the focus to the local setting (District Staff, Diane Kurlich?).

Scaling this document to a color printer will help clarify with the graphical presentation of the data. I printed a copy of the report and will send it to you via interoffice mail.

I hope this helps,
Chris Kenah

>>> Eileen Mohr 01/22/02 02:51PM >>>
Hi Michael and Christopher:

I am one of the project coordinators for the Ravenna Army Ammunition Plant (RVAAP) located in Portage and Trumbull Counties. In a letter to the editor of a local newspaper on 01/20/02, a citizen in the area is trying to link the arsenic concentrations found in the Vaughn Elementary School with the RVAAP. The school is approximately two miles from the RVAAP. The US Army Corps of Engineers (USACE) will be compling all the data we have regarding arsenic concentrations on the installation itself..... in response to the information that is being presented in the newspaper.

A couple of questions:

Today I was given an abstract of the paper that you (others) authored entitled: "Occurrence and Release of Ground Water Arsenic in Public Water Supply Wells in Ohio." Is there a detailed paper and charts tabulating data (etc) that goes along with this abstract? If so, it it possible for me to get a copy of this?

As part of the remedial activities that we conduct at the RVAAP, we have

a Restoration Advisory Board (RAB) consisting mainly of local citizens and elected officials. Have either of you done talks on arsenic occurrences in Ohio's groundwater? Is this something you might be willing to consider doing?

Diane and Conni - how about you folks? Want to talk about As occurrences in NE Ohio groundwater? What is the data from our ambient monitoring network showing?

Mark and JJ - I passed along the letter to the editor to the chief of our drinking water division. As a FYI, the local health department is planning on sampling approximately 50 private wells in the vicinity of the school this week. Also, the last test of the school's water supply well had the concentration of arsenic coming back at below the current MCL (but above the proposed MCL).

Thanks for all your help folks!!

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

April 3, 2002

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; PORTAGE COUNTY: FIRST QUARTER 1999 GROUND WATER MONITORING DATA, DATED JUNE 3, 1999, RECEIVED JUNE 28, 1999; SECOND QUARTER 1999 GROUND WATER MONITORING DATA, DATED SEPTEMBER 1, 1999, RECEIVED SEPTEMBER 7. 1999; THIRD QUARTER 1999 GROUND WATER MONITORING DATA, DATED DECEMBER 1, 1999, RECEIVED DECEMBER 16. 1999; FOURTH QUARTER 1999 GROUND WATER MONITORING DATA, DATED FEBRUARY 1, 2000, RECEIVED FEBRUARY 9, 2000; AND 1999 SUPPLEMENTARY ANNUAL REPORTING FORM FOR GROUND WATER INFORMATION, DATED FEBRUARY 2, 2000, RECEIVED FEBRUARY 14, 2000

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received the above referenced. The documents were submitted by the Ravenna Army Ammunition Plant (RVAAP), located at 8451 State Route 5, Ravenna, Ohio. The ground water monitoring program at the site is in accordance with Ohio Administrative Code (OAC) rules 3745-54-90 through 3745-55-02.

The Ohio EPA has the following comments regarding the submittals.

COMMENTS:

COMMENTS FIRST QUARTER 1999:

1. The following statistically significant differences between the background well DET-1 and the cited downgradient wells were documented:

   pH (DET-2, -3, and -4);
   specific conductance (DET-2, -3, and -4);
   barium (DET-3);
   calcium (DET-2, -3, and -4); and
   sodium (DET-2, -3, and -4).

2. Explosive compounds were detected in upgradient well DET-1 (RDX, 0.057 ug/L) and downgradient well DET-4 (HMX, 1.1 ug/L; RDX, 0.41 ug/L). RVAAP indicates that there is not a statistically significant difference between the background well and the downgradient well because RDX is detected in the background well. Although there may not be a statistically significant difference between DET-1 and DET-4 with respect to RDX, this fact has no bearing on whether there is a statistically significant difference in the HMX concentrations. This should be taken into consideration during the evaluation of statistical differences in all future sampling events.

3. In the narrative, page 4, the concentrations of RDX and HMX detected in wells DET-1 and DET-4 are reported in mg/L. In looking at the laboratory data sheets, the concentrations are actually in ug/L. A revised page 4 should be submitted for insertion into this report. In the future, RVAAP should ensure that correct units are used throughout the data reports.

4. The Laboratory Case Narrative indicates that the sample for metals analysis obtained from DET-3 required additional acid preservation upon receipt at the laboratory. Because this sample was not properly preserved in the field, the metals data for DET-3 are considered to be minimum values. In the future, care must be taken to properly preserve samples in the field. Failure to properly field preserve samples may result in invalid data and may require the resampling of the affected wells for the affected constituents.

COMMENTS SECOND QUARTER DATA

1. The following statistically significant differences between the background well DET-1 and the cited downgradient wells were documented:

   specific conductance (DET-2, -3, and -4);
   arsenic (DET-4);
   calcium (DET-2, -3, and -4); and
   sodium (DET-2 and -3).

2. Explosives were detected in DET-4 (RDX, 0.23 ug/L) and DET-2 (nitrobenzene, 0.049 ug/L). These concentrations are estimated values because they are below the reporting limits of 0.50 ug/L and 0.20 ug/L, respectively. Nitrobenzene also was reported as an estimated value (0.095 ug/L) in the method blank. It should be noted that although the concentrations are estimated values, it is assumed that the compounds detected actually are present in the respective ground water samples.

COMMENTS THIRD QUARTER DATA

1. The following statistically significant differences between the background well DET-1 and the cited downgradient wells were documented:

   specific conductance (DET-2, -3, and -4);
   calcium (DET-2 and -3);
   sodium (DET-2 and -3).

2. Explosive compounds were detected below the reporting limits in the following cited wells. The concentrations reported are estimated values.

   DET-1 (HMX, 0.13 ug/L);
   DET-2 (1,3-DNB, 0.036 ug/L; HMX, 0.12 ug/L);
   DET-2, duplicate sample (1,3-DNB, 0.04 ug/L; HMX, 0.18 ug/L);
   DET-3 (1,3-DNB, 0.036 ug/L; HMX 0.15 ug/L);
   Field blank (1,3-DNB, 0.038 ug/L; HMX 0.21 ug/L).

   The contamination in the field blank indicates cross contamination may be occurring or that the decontamination water supply is contaminated. RVAAP should ensure that the decontamination water supply is not contaminated and that procedures are implemented to prevent any cross contamination of samples.

   It should be noted that although the concentrations are estimated values, it is assumed that the compounds detected actually are present in the respective ground water samples.

4. The ground water contour map does not include an arrow(s) showing the estimated ground water flow direction(s). In the future, such an arrow(s) should be included on these maps.

COMMENTS FOURTH QUARTER DATA

1. The following statistically significant differences between the background well DET-1 and the cited downgradient wells were documented:

   specific conductance (DET-2, -3, and -4);
   calcium (DET-2 and -4);
   sodium (DET-2 and -3); and
   iron (DET-3).

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

Patterson, Mark

From: Whelove, Robert W
Sent: Monday, April 08, 2002 6:04 PM
To: 'Citron, Stan Civ AMCCC01'
Cc: Crain, Henry; Patterson, Mark
Subject: RE: Ohio EPA letter on Draft RVAAP Orders

I have a problem with timing on this ---the state is going to want this now and i can't really give it to them till the next IAP or two. I really would like to delay the gw agreement until i am more sure of what i've got a t RVAAP in order to minimize the number of wells i sink and what i have to monitor for. In fact this may be pie in the sky. but if i cleaned up the sources and then sunk a minimum of wells, i think i will be using army resources very wisely----Stan i am not good at language--i am an engineer not a lawyer.

309-7826
3292
Tara Mack

-----Original Message-----
From: Citron, Stan Civ AMCCC01 [mailto:CITRONS@hqamc-exchg.army.mil]
Sent: Monday, April 08, 2002 4:29 PM
To: 'Whelove, Robert W'
Subject: RE: Ohio EPA letter on Draft RVAAP Orders

Bob -

I thought I addressed it in the last para. If you think it needs more emphasis. please provide some suggested language.

Stan

Army

-----Original Message-----
From: Whelove, Robert W [mailto:WheloveR@osc.army.mil]
Sent: Monday, April 08, 2002 3:59 PM
To: 'Citron, Stan Civ AMCCC01'; Simmons, Jewel Civ AMCIS01; Whelove, Robert W; Mack, Tara C; Patterson, Mark
Cc: Crain, Henry
Subject: RE: Ohio EPA letter on Draft RVAAP Orders

what about that surface water and monitorinng concerns will be worked out in partnering sessions in the future.?

-----Original Message-----
From: Citron, Stan Civ AMCCC01 [mailto:CITRONS@hqamc-exchg.army.mil]
Sent: Monday, April 08, 2002 1:25 PM
To: Simmons, Jewel Civ AMCIS01; 'whelover@osc.army.mil'; 'mackt@osc.army.mil'; 'Mark Patterson'
Subject: FW: Ohio EPA letter on Draft RVAAP Orders

Jewel/Bob/Tara/Mark -

1. During our conf call, we discussed the following potential concerns in the attached letter from the the State's responding to our proposed F&O:

   a. All sites under the F&O (General Comment 1).
   b. State approval before any investigation/remediation (General Comment 5).
   c. Enforceable schedules (General Comment 6).
   d. One dispute resolution mechanism (Additional Comment 1)
   e. Individual AOC permits (Additional Comment 3).

2. We discussed the following potential compromise to address the State's concerns. The F&O would be revised include all RCRA and CERCLA sites provided that -

(a) The final step in the F&O dispute resolution process would require a joint decision by the Ohio EPA Director and DA (Mr. Fatz). If the Ohio EPA Director and DA could not reach a joint decision, the parties would take appropriate administrative/legal action to resolve the dispute.

RATIONAL - This establishes a single dispute resolution process. More importantly, it would reduce the Army's concerns about state approval of investigation/remediation and enforceable schedules on all the RVAAP sites since the Ohio EPA and Army leadership would ultimately make a joint decision on these matters.

(b) The RVAAP work schedules would be developed through the existing IAP process. However, if RVAAP and the State weren't able to agree to a work schedule/extension for CERCLA sites, the Army would have an automatic 1 year extension on these sites. If the Army still required an extension after the one year extension, the Army would request an extension in accordance with the F&O procedures .

RATIONAL - The OSC/RVAAP indicated that we don't have adequate resources to request formal extensions on all the CERCLA sites. However, we could agree to enforceable schedules provided there is a one year automatic extension. This would give the Army a buffer to resolve most site cleanups but provide the State a role in approving extensions if we can complete the work within the one year period. Any disputes regarding extensions would be subject to the dispute resolution process.

3. This proposed compromise addresses the major issues raised in the State's letter but includes safeguards to protect the Army's interests. If OSC/RVAAP support this approach, we should seek DA approval to contact the Ohio EPA with this proposal. If the Ohio EPA supports this concept, we can resume negotiations to finalize the F&O (e.g., address the State's requirement for site specific AOC's, **the site wide gw and surface water inspection programs,** the 30 year post-closure requirement for the Ramsdell Quarry Landfill, etc.). If this proposal is not acceptable to the Army or Ohio EPA, we should terminate the current F&O negotiations but RVAAP should proceed with negotiating an F&O to get an exemption for the OB/OD RCRA permit requirement.

Stan

-----Original Message-----
From: Citron, Stan Civ AMCCC01
Sent: Friday, March 22, 2002 11:11 AM
To: Simmons, Jewel Civ AMCIS01
Cc: German, John Civ AMCCC01
Subject: FW: RVAAP - Approval to Initiate Formal F&O Negotiations

Jewel -

If we put all of the RVAAP sites under the F&O, this would that all these sites are subject to F&O milestone requirements (Section VI.D.). The F&O states that the Ohio EPA will consider availability of funding in reviewing requests to adjust milestones (Section VI.C.), consult with RVAAP prior to disapproving a milestone extension, and provide a written statement of reasons for disapproving the extension (Section VI.F.). If there's a dispute on a milestone extension, the final decision will be signed by the Director of the Ohio EPA and subject to administrative or judicial appeal according to applicable law (Section IX.D).

By signing the F&O, we'd get more favorable treatment of the RVAAP RCRA sites but allow the Ohio EPA to establish milestones at a non-NPL site. If we aren't able to agree to a F&O, I suppose that we would continue to address the RCRA sites under RCRA closure and continue to address the other sites under CERCLA. Suggest we talk with the

OSC/RVAAP folks to get a better sense of the pro's and con's of having a comprehensive F&O. However, ultimately this is an Army policy question as to whether or not we should put the entire RVAAP program under the F&O.

Stan

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

From: Simmons, Jewel Civ AMCIS01

Sent: Friday, March 22, 2002 9:33 AM

To: Crain, Henry; Murphy, Richard; Citron, Stan Civ AMCCC01

Cc: 'tiemeierk@osc.army.mil'; 'whelover@ioc.army.mil'; 'Onewokae, Cyril O'

Subject: FW: Ohio EPA issues with the RVAAP Orders

Gentlemen,

Rick would like to know why we are unable to workthrough the state's concerns that will allow us to incorporate the four Haz-Waste sites into Ravenna IR program under the proposed AO. Bonnie (Ohio Regulator) has indicated to Rick that she is willing to work with the Army on lead agency and dispute resolution issues, using such provisions as reservation of rights for all parties, and addressing their concern on enforceable schedules through force majeure provisions.

The state wants to know if the Army can accept these conditions. I think Rick would like for us to find a way to work this out. Any and all thoughts welcome. I will be meeting with Rick today at 3:30 pm EST.

Jewel

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

From: Newsome, Richard E Mr ASA-I&E

Sent: Wednesday, March 13, 2002 12:17 PM

To: Simmons, Jewel Civ AMCIS01

Cc: Wilson, Karen S ACSIM

Subject: FW: Ohio EPA issues with the RVAAP Orders

Jewel,

I spoke with Bonnie today to better understand her concerns in the e-mail below. The State is willing for the four state regulated units to be rolled into the Army's CERCLA cleanup if the Army is willing to enter into an order that would: (1) incorporate the rest of the Ravenna IRP into the agreement, currently there are 53 Areas of Concern in the Ravenna IRP, and (2)provide some guarantee that the groundwater monitoring, and potential cleanup, at these four units will continue under the IRP.

She indicated the state is willing to work with the Army on lead agency and dispute resolution issues, e.g., reservation of rights for all parties, and address our concerns on enforceable schedules, e.g. via a force majeure provision.

The state wants to know if the Army can accept these conditions. If not, we can go back to the separate program for the four units, (address under state law/regulatory provisions), and the rest of the IRP.

Please review and give me a call.

Rick

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

From: Bonnie Buthker [mailto:Bonnie.Buthker@epa.state.oh.us]

Sent: Tuesday, March 12, 2002 3:57 PM

To: Newsome, Richard E Mr ASA-I&E

Subject: Ohio EPA issues with the RVAAP Orders

Hi Rick:

Sorry I couldn't reach you today to discuss the RVAAP Orders issues. I'll outline it briefly in this email, and maybe we could discuss this later today or tomorrow.

In Spring of last year, the Army OSC command approached us with a draft set of Orders for the Ravenna Army Ammunition Plant. Army's proposal to enter into Orders with the state if that would allow them to receive permit exemptions or waivers of requirements at 4 units currently regulated under the solid waste and hazardous waste programs. These four units would then be investigated and remediated under the CERCLA program, meeting all substantive requirements. The Army felt that it made sense to proceed with such a approach, since Ravenna Army Ammunition Plant is a closing facility, and they wished to have all clean ups completed within the next 7 to 10 years. While we understood why the Army felt their approach was justified, we had concerns about entering into negotiations to develop an Order. (In the past when we had attempted to negotiate Orders with the Army for this site, significant resources were expended on both sides without ever reaching an acceptable agreement.)

Therefore, to try to determine if their was a chance of working out an acceptable agreement (before dedicating resources to this effort), on June 26, 2001, Ohio EPA sent a letter outlining what items would need to be included into the Orders before we would be willing to proceed further with negotations. After the letter was sent, we had two additional conference calls with the Army OSC representatives to clarify our concerns. At the conclusion of each call, Ohio EPA was assured by the Army that we were close to resolving these issues.

In February 2002, we received the revised draft of the Orders from the Army. Since we had been very clear about what items we wanted to be addressed in the Orders (though both conference calls and our letter), we were confident that the Orders would only need minor revisions before an acceptable agreement could be reached. However, when we reviewed the Orders, we found that the Orders did not include many of the items we felt were necessary. In addition, we were told by the installation point of contact, Mark Patterson, that this was the Army's final position, and that any negotations would only be to include minor wording changes.

That's why I gave you a call to discuss this. If the Army is not willing to incorporate our issues, then further negotiations are a waste of resouces (both the Army and Ohio EPA's). However, if this isn't the Army's final position, then there is still a chance we can develop an agreement acceptable both to the Army and the state.

Since we're drafting a letter back to the Army on their Orders, it would be good to know what your position is on the Orders. If you could let me know when we can discuss this, I would really appreciate it.

Take care,

Bonnie

-----Original Message-----
From: Mack, Tara C [mailto:Mack.T@osc.army.mil]
Sent: Monday, March 25, 2002 3:02 PM
To: 'scitron@hqamc.army.mil'
Subject: FW: Ohio EPA letter on Draft RVAAP Orders

Stan,

Attached is the letter from Ohio EPA regarding the revised draft orders for RVAAP. It is my understanding, per our phone conversation, that Rick

Newsome will be handling negotiations with the Ohio EPA. This office would like to continue to be notified as this progresses. As you may know, Mr. Whelove has some concerns regarding the OEPA's position. I have also attached an e-mail that our office received from Mr. Whelove regarding his concerns about the OEPA's position. This office would like to make sure that those concerns are addressed at some point in the process. Thank you for your assistance.

Tara C. Mack
AMSOS-GC

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, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
OHARNG INRMP

CPT Tom Daugherty
(AGOH-FM-EN)
2825 West Dublin-Granville Rd.
Columbus, OH 43235

Dear CPT Daugherty:

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, Integrated Natural Resources Management Plan and Environmental Assessment for the Ravenna Training and Logistics Site and the Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio." This document prepared by AMEC Earth and Environmental, and dated August 2001, was received by Ohio EPA, NEDO, DERR, on January 17, 2002.

Please note that the comments in this correspondence solely reflect the review of the document by the DERR project coordinator with respect to the current and projected Installation Restoration Program (IRP) activities at the Ravenna Army Ammunition Plant (RVAAP) installation. It is unclear as to whether or not this document was submitted to Ohio EPA, Division of Surface Water (DSW), which may necessarily have more specific comments including, but not limited to: existing surface water quality; proposed construction of hardened stream crossings; storm water pollution prevention; and, the ecological resources (flora and fauna) that are currently identified as existing at the installation.

Comments in this correspondence will follow the same general format as the document itself.

General Comments:

1. The Integrated Natural Resources Management Plan (INRMP) was prepared in order to "support and accommodate accomplishment of military missions while providing for natural resources stewardship and management." The INRMP thus encompasses the missions of both the Ohio Army National Guard (OHARNG) and the Army's Operation Support Command (OSC). The stated mission of the OHARNG at the RVAAP/Ravenna Training and Logistics Site (RTLS) is "..structured to command, operate, manage, and administer services of the facility, as well as assign the use of resources to ensure training and logistical support to National Guard units from within the state of Ohio, National Guard units from other states, other Reserve Components, certain elements of Active Components, Federal Government organizations, state and local agencies and civic groups. As such, it is my understanding that the OHARNG utilizes a five-year plan to plan for future training needs and activities. The stated mission of the OSC is to provide for the "...indefinite safe and secure storage of energetic materiel (munitions), and environmental remediation of contaminated areas."

One of the challenges that is continually faced in any process is ensuring that all parties integral to the decision-making are in direct communication. Integral to this communication is ensuring that the stakeholders are communicating both short and long range plans to one another, and that the stakeholders are in agreement with respect to these plans. Throughout the work conducted at the RVAAP as part of the IRP investigation and remediation activities, it has become clear that the OHARNG and the OSC have very different expectations and assumptions as to the future use of the areas that currently are contaminated with process-related wastes (ex. explosives, heavy metals, etc.), unexploded ordnance (UXO) and ordnance explosive wastes (OEW). In addition, it is apparent that there is no firm plan on the part of the OHARNG as to the scope of the intended training to be conducted at the RVAAP/RTLS, for example, whether or not a tactical airstrip will be constructed at the installation has not been resolved.

It is recommended that coordination meetings within the OHARNG and between the OHARNG and the OSC be conducted, so that the reasonable future use of the property is determined and agreed-upon. In addition to being beneficial to both the OHARNG and the OSC, it will greatly assist the IRP environmental team in making sound decisions regarding cleanup levels, depth of UXO removal, etc..

(This comment is applicable to numerous portions of the text.)

2. Please reference Ohio EPA correspondence, dated March 5, 2001, which details the Agency's involvement in the environmental investigation and restoration efforts at the installation, as well as detailing over-arching issues existing at the RVAAP.

3. Please ensure that a copy of the INRMP is submitted to the appropriate Ohio EPA, DSW, personnel for review and comment. Personnel from DSW may necessarily have more specific comments including, but not limited to: existing surface water quality; proposed construction of hardened stream crossings; storm water pollution prevention; and the ecological resources (flora and fauna) that are currently identified as existing at the installation. (This comment is applicable to numerous portions of the text.)

Specific Comments:

1. The text on page 2-2 should specify what areas are included in the 1,418 acres that will constitute the RVAAP by the end of fiscal year (FY) 01.

2. Please revise the text in section 2.5 (page 2-2) that states: "...installation and was done during none ammunition production periods...." so that the intent of the sentence is clarified. In addition, in the same paragraph, change the word "room" to "roam."

3. If available, please provide the chemical composition of the deer repellant "Zip." (Page 2-3)

4. On page 2-3, please add text to the report which indicates that fires have also been started by the careless use of torches in various load line areas (even though they have been prohibited in designated areas).

5. In addition to the types of Areas of Concern (AOCs) identified at the RVAAP, please include items such as landfills, uncontrolled dump sites, RCRA units, etc. (Page 2-4)

6. The text in section 2.6 (page 2-4) indicates that "Studies to date indicate that most of the contamination is isolated to specific locations around process buildings and treatment sites within the top one or two feet of soil..." The studies that are being referenced should be cited and, in addition, please note that several of the IRP studies have indicated site-related soil contamination at depths greater than two feet. Please adjust the text accordingly.

7. The text on page 2-4 (section 2.6) states the following: "Of the several high priority AOCs sampled to date, surface water contamination has only been found at the Erie Burning Grounds (AOC 2) and in the associated drainage ditches." This statement is incorrect and should be modified or removed from the text. The contractor is referred to the list of IRP documents specified in Ohio EPA correspondence (dated March 5, 2001) and also to one of the two established public information repositories (Ravenna and Newton Falls public libraries) or to the environmental files of the RVAAP Environmental Program Manager, for the most recent IRP site information.

   This comment is also applicable to text found on pages 11-31, 11-45, and 13-10.

8. The text on page 2-5 indicates that the documented surface water contamination (RDX) is considered "minor." Please define on what basis or compared to what standard the contamination has been determined to be "minor."

9. Remove the following statement from the text of the INRMP: "No groundwater contamination has been found in any of the groundwater monitoring wells installed as part of the installation restoration program." Site-related contamination has been detected in several monitoring wells installed as part of the IRP program, RCRA groundwater monitoring programs and solid waste monitoring programs. (Page 2-5)

10. Remove the following statement from the text located on page 2-5: "All monitoring to date indicates that the aquifers under the RTLS/RVAAP are not contaminated." Site-related contamination has been detected in several monitoring wells installed as part of the IRP program, RCRA groundwater monitoring programs and solid waste monitoring programs.

11. On page 2-5, please revise the text to indicate that most, but not all, AOCs are delineated with fencing or Siebert stakes. There are several AOCs that are not marked with either fencing or Siebert stakes, for example, Paris-Windham Dump, the Sand Creek Dump, etc..

12. Please confirm that the tactical airstrip has been removed from the five year plan for the RTLS/RVAAP. (Page 3-5) This comment is also applicable to Table 12-3.

13. In section 3.3.2 on pages 3-6 to 3-7, please include the construction and use of tank trails as one of the training activities that have the potential to cause soil or vegetation disturbance.

14. If the above-referenced airstrip still has the potential to be constructed, is an Environmental Impact Statement (EIS) required? (Page 4-2)

15. In section 4.4.4, the roles of both Ohio EPA and the United States Environmental Protection Agency (USEPA) should be specified. (Page 4-4)

16. Please revise the text in section 5.2 on page 5-1 to indicate that the Lavery Till is found in the western portion of the installation and the Hiram Till and associated outwash is present in the eastern two-thirds of the facility. This comment is also applicable to section 5.3.1 on page 5-2.

17. On page 5-2, please provide the source for the "chemical makeup of typical unimproved grounds."

18. On Table 5-2, please provide citations for all the references utilized in constructing this table.

19. Please revise the text on page 5-9 to read as follows: "Few of the farm fields ever had drainage systems and those that did were abandoned....." (Comment also applicable to section 13.5.6.1 on page 13-9)

20. Please revise the text in section 5.4 to state: "Oil and gas development must also be done in accordance with all state and federal environmental regulations." The role of the Ohio Department of Natural Resources (ODNR), Division of Oil and Gas, should be cited. (This comment is also applicable to section 13.5.7 on page 13-9)

21. On Table 5-3 located on page 5-11:

    a. Please revise the name of the Cobbs Pond complex to read: "Upper and Lower Cobbs Pond."

    b. Please contact MKM Engineering at the RVAAP to inquire about recent analytical testing conducted at Cobbs Pond.

    c. Please revise the name of "Criggy's Pond" to "Griggy's Pond." (This comment also applies to page 5-37)

22. In section 5.5.5, located on page 5-14, please revise the text with respect 50 foot static water level (SWL). In particular, please provide the citation for this SWL depth and specify that this is with respect to the bedrock unit(s), not the unconsolidated material.

23. Please revise the text in section 5.5.5 that indicates that the unconsolidated unit is "...mostly undeveloped or unusable as a water source." This statement is not correct, as many residents in the vicinity of the RVAAP rely upon and utilize the unconsolidated material as their sole water source. In addition, upon what criteria is the term "unusable" based?

24. On page 5-15, please remove the sentence from the text which states as follows: "To date, there have been no contaminates of concern identified in any surface water samples." This statement is incorrect.

25. One of the comments in the previously-referenced March 5, 2001 correspondence from Ohio EPA indicates that there needs to be on-site preservation of wetlands and other sensitive areas, especially the Hemlock Gorge. The Hemlock Gorge area is one of the rarest community types at the RVAAP and within Ohio as a whole. What plans are being made for the preservation of sensitive areas such as (but not limited to) the Hemlock Gorge? (Page 5-21)

26. On pages 5-34 and 5-35, in three places, please change the name of the AOC referenced to Erie Burning Grounds.

27. Section 7.3.4 on page 7-4 discusses a proposed surface water monitoring program. Is a groundwater quality monitoring program also planned?

28. In goals 2, 3, and 4 detailed on page 11-2, one of the objectives listed for each goal should indicate that there will be coordination between the RTLS/RVAAP and the appropriate regulatory agencies.

29. In goal # 6 described on page 11-3, please add as one of the objectives: coordination and communication with the IRP environmental program manager. Data from the investigation and remediation activities under the IRP program is constantly updated, and would provide useful information to the collection and management goal of the RTLS/RVAAP.

30. Section 11.4.4.8 on pages 11-17 and 11-18, present the guidelines that are to be utilized during timber harvesting operations. Please be aware that if there are fuel spills during the operations - depending upon the location (i.e., if the spill enters into waters of the state) or quantity, the contractor may be required to contact Ohio EPA.

31. In section 11.5 on pages 11-18 and 11-19, the text should state that the rate of all herbicide application will be conducted in accordance with the prescribed guidance.

32. The sentence on page 11-26 (fire protection) that states: "There are occasional demolition operations associated with the environmental restoration program at the installation" should either be expanded, or removed from this portion of the text.

33. Please provide the criteria utilized for making the determination as to whether or not timber harvesting would be conducted in riparian areas. (Page 11-28)

34. Please obtain and reference a copy of Ohio EPA's recent document which discusses headwater stream assessment methods. (Page 11-29)

35. In section 11.14.3.1, please add to the listed potential mission conflicts, that white tailed deer management has also impacted upon the IRP field activities at the RVAAP.

36. At an appropriate point in the text of the INRMP, there should be a listing of the ponds that are fished and whether they are solely catch and release.

37. Please provide information in the revised text (pages 11-43 and 11-43), as to whether or not the hunters that are allowed into the RTLS/RVAAP undergo a security check.

38. In section 13.4.4, please provide additional information as to what constitutes "intensive monitoring." (Page 13-3)

39. In section 14.0, please reference the appropriate IRP documents. Several of these documents were referenced in Ohio EPA, March 5, 2001, correspondence. In addition, please revise the spelling of "Moore" to "Mohr."

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: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Graham Mitchell, Ohio EPA, OFFO, SWDO
Bob Davic, Ohio EPA, DSW, NEDO
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Tim Morgan, RVAAP

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

Patterson, Mark

From: Eileen Mohr [eileen.mohr@epa.state.oh.us]
Sent: Wednesday, January 09, 2002 1:30 PM
To: Derek.Romitti@aec.apgea.army.mil; Bonnie Buthker; Brian Tucker; Laurie Eggert; Todd Fisher; SpaarT@ioc.army.mil; Glen.Beckham@lrl02.usace.army.mil; John.P.Jent@lrl02.usace.army.mil; Francis.Zigmund@nwk02.usace.army.mil; tom.tadsen@oh.ngb.army.mil; PattersonM@osc.army.mil; WheloveR@osc.army.mil
Subject: RE: Draft IAP 2002

Hi Mark:

I have reviewed the contaminant assessment portion of the IAP and have just a few comments (nice job!):

1. In the FY 2001 projects section... as a FYI, the Ohio EPA has already completed the review of the preliminary draft report for Load line 1.

2. In the FY2001 section, there is the notation that the Load line 11 RI and IRA reports are scheduled to be received by June 2002. Both reports were to be received in October 2001... what is the delay?

3. In the FY2002 section, both the CElock Quarry and Anchor Test Area SOWs that I reviewed were for RIs, not IRAs. As such the language describing work to be conducted at these 2 AOCs would need to be adjusted accordingly.

4. I already sent you suggested revisions on the rest of the IAP via snail mail. The comments in here and in the other document reflect both Todd's and my review.

Thanks for all your work on this Mark!

Eileen

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

>>> "Patterson, Mark" <PattersonM@osc.army.mil> 11/08/02 05:30PM >>>
All,

Attached is update to FY 2001 and FY 2002 Contaminant Assessment part of the IAP. Please review it and email me any comments you may have.
I'll need to get any comments back by 1/16 on this and the draft IAP I sent
on 12/20. Thanks for your help.

Mark Patterson
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

Phone: (330) 358-7311
FAX: (330) 358-7314
Email: pattersonm@osc.army.mil

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

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 15, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
PAINT SAMPLING PLAN
THERMAL DESTRUCTION PROPOSAL

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

Dear Mr. Cicero:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR) and Southwest District Office (SWDO), Office of Federal Facilities Oversight (OFFO), have received and reviewed your correspondence, dated October 04, 2002, and the attached sampling plan entitled: "PCB Sampling Plan for Applied Dry Paints at the Ravenna Army Ammunition Plant." The correspondence and sampling plan were received on October 07, 2002.

The Agency has the following comments on the sampling plan:

1. Please notify Ohio EPA of the proposed sampling date at least fourteen (14) days prior to the sampling event. Ohio EPA will be collecting split samples of the various paint colors with the contractor.

2. Please advise the Agency as to which extraction method (and the rationale for selection) will be utilized for PCBs, as the text currently indicates that one of two methodologies may be employed. The extraction method utilized should be consistent, not only for all the contractor's samples, but also for the split samples.

3. In the revised sampling plan, please add text to the revision which indicates that the site-wide Health and Safety Plan (HASP) and any applicable sections of the site-wide Field Sampling and Analysis Plan (FSAP) and Quality Assurance Project Plan (QAPP) will be adhered to during the sampling event. The latest version of these documents is March 2001.

4. Please ensure that dedicated sampling equipment is utilized or that sampling equipment is properly decontaminated between waste streams. The site-wide decontamination procedure can be found in Section 4.4.2.8 of the March 2001 FSAP.

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

December 3, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
THERMAL DECOMPOSITION 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. "Work Plan for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266;"

B. "Explosive Safety Submission for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266;" and

C. "Safety and Health Plan for the Thermal Decomposition and 5X Certification of Load Lines 6 & 9 and Wet Storage Igloos 1, 1A, 2, and 2A, Ravenna Army Ammunition Plant, Ravenna, Ohio 44266."

The documents, dated October 2002 and received at NEDO on November 18, 2002, were prepared by MKM Engineers, Inc. for the U.S. Army Operations Support Command (OSC) under contract number DAAA-09-02-C-0029.

The Agency has the following comments on the documents (WP = Workplan; ESS = Explosives Safety Submission; and HASP = Health and Safety Plan) related to environmental issues. If comments are applicable to one or more documents, the comment will be made only once and the applicable section/page of the other document(s) will be referenced.

General Comments:

1. The initiation of the workplan (and supporting documents) is dependant upon the issuance of a burn permit from the Akron Regional Air Quality Management District (ARAQMD). In addition, the proposed thermal destruction (TD) hinges on the acceptability of the environmental position paper which, as of this date, has not been received.

2. During the presentation made by MKM, OSC, and Neal Environmental Services (NES) to various regulatory agencies on September 04, 2002, Mr. Chip Porter of the Portage County Health Department (PCHD) had several questions regarding the proposed activities relative to wind speed, wind direction, etc. Please ensure that Mr. Porter's concerns are addressed.

3. Were the above-referenced workplans placed in the two information repositories for the Ravenna Army Ammunition Plant (RVAAP), such that the general public had/has the opportunity to provide comments on the proposed plans? (Also applicable to WP Section 2.4.3.1 on pages 14 - 15.)

4. Please comment on the potential for dioxin production as a result of the incomplete combustion of PCBs.

5. Please submit a copy of the letter from the Department of Defense Explosives Safety Board (DDESB) approving the ESS.

Workplan (WP):

1. Please revise the meaning of the acronym "IOCP" found on page v.

2. The workplan indicates that the TD is planned for Wet Storage (WS) igloos 1, 1A, 2, and 2A. The WS area of concern also contains two other igloos identified as 3 and 3A. Please explain why these two igloos are not included in the proposed work. (WP Section 1.1.2, page 1; WP Section 1.4.3, page 4; WP Section 2.2.1, page 6; WP Section 2.2.2, page 6; WP Section 2.10.1.2, page 19; ESS Section 1.3.1, page 2; ESS Section 7.1, page 6; ESS Section 7.3.1, page 11; HASP Section 3.2.3, page 10)

3. In Section 1.1.2 (page 1), if there is contamination beneath the WS igloos, it will be necessary to determine the nature and extent of the contamination in a subsequent phase of work.

4. In Section 1.1.2 (page 1), please add Ohio EPA to the list of agencies to be contacted in the event that visible bulk explosives are encountered under concrete floor slabs at either the load lines or WS area. (Also applicable to WP Section 2.2.2, page 9; WP Section 2.10.6, page 24; ESS Section1.2, page 1; ESS Section 7.2, page 7; ESS Section 7.3, page 11; ESS Section 7.7, page 14)

5. As a point of information, the fact that the removal of building/igloo footers will not be conducted under this scope of work (SOW) indicates the need for future investigative and remedial work. (WP Section 1.1.2, page 1; ESS Section 1.2, page 1)

6. In Section 1.1.4 (page 2), if there are any changes made to the WP that impact upon environmental issues, Ohio EPA also needs to be notified.

7. In future submissions, please ensure that Ravenna is referred to as being a city, not a town. (WP Section 1.2, page 2; HASP Section 3.1.1, page 9)

8. Update Section 1.3 (page 2) to reflect the latest transfer of land between the Army and the National Guard Bureau (NGB). (Also applicable to ESS Section 2.0, page 3; HASP Section 3.1.2, page 9)

9. Section 2.1.2 (page 5) indicates that RVAAP is not a known Chemical Warfare Materiel (CWM) site. Please revise the text to indicate that RVAAP is on the Non-Stockpile Chemical Materiel Project (NSCMP) list, due to the suspected Mustard Agent Burial Site. (Also applicable to ESS Section 12.3, page 19)

10. Please define what is meant by "slab removal restrictions." (WP Section 2.1.2, page 6)

11. Please provide additional explanation as to the rationale behind potentially using TD on non-explosive buildings (NEB). The main point of TD was based on the fact that it would be utilized on buildings that could not safely be demolished using more conventional techniques. The Agency requests further discussion on this issue. (Also applicable to WP Table 1; ESS Section 7.1, page 6; ESS Section 7.7, page 14; HASP Section 5.2.1.1, page 25)

12. Table 1 indicates that the majority of buildings at Load Line 6 may have handled mercury fulminate. It is Ohio EPA's understanding that Load Line 6 could have been retro-fitted to handle mercury fulminate, i.e., there was a design contingency to handle this compound, but that, based upon process information and history, the main primary explosive at this Load Line was lead azide. Please confirm and adjust the table accordingly. In addition, is there any existing de-classified information regarding the testing conducted at this Load Line, such that a more accurate list of explosives compounds used at this AOC could be generated?

13. Please provide additional information in Section 2.2.2 (page 9) regarding the amount of water that will be utilized to flood any cracks in the concrete floors at the WS igloos and Load Lines, prior to the slabs being demolished/removed. If there is any residual contamination in the buildings, it may be mobilized and enter the groundwater. This potential issue would be handled under any subsequent Remedial Investigation (RI) by the installation of monitoring wells. (Also applicable to HASP Section 5.10.1 page 32)

14. Please add Ohio EPA's spill number (1-800-282-9378) to the list of emergency response numbers in Section 2.4.3.1 on page 15. Additionally, in WP Sections 5.3.7 (page 39) and 5.4.1 (page 40), the spill number must be called if there is a discharge into the Waters of the State. (Also applicable to HASP Section 12.11.2, page 69)

15. Section 2.4.3.3 on page 16 indicates that "No other permits have been identified to be required for the execution of work under this scope of work." This has yet to be

determined, as the environmental position paper has not yet been received and reviewed by this Agency.

16. Section 2.6 (page 16) should also indicate that the paint at the Load Lines has been demonstrated to contain PCBs and other metals in addition to lead.

17. If the floor sweepings potentially contain paint chips, they must be containerized and characterized and disposed of in accordance with all applicable State and Federal rules, laws, and regulations. (WP Section 2.7 page 16)

18. With respect to Table 3 (Waste Stream and Disposition) on page 17:

    a. Please provide a description of the "biopad." Decontamination water should be containerized, characterized and disposed of in accordance with all applicable State and Federal rules, laws, and regulations.

    b. Sump water may potentially be applied to the ground surface, only if the water is determined to be in accordance with the details and conditions of Ohio EPA's e-mail, dated October 18, 2002. (Also applicable to WP Section 2.10.5, page 24; ESS Section 7.6, page 13)

    c. With respect to the transport of the resulting concrete to the on-site Clean Hard Fill (CHF) areas, please contact Ohio EPA's Division of Solid Waste Management (DSIWM) and the PCHD, to ensure that this option is acceptable. (This comment is also applicable to WP Section 2.10.4, page 23; WP Section 2.10.5, page 24; WP Section 2.10.6, page 24; ESS Section 7.5, page 13; ESS Section 7.7, page 14: HASP Section 5.8.1, page 30)

    d. Please refer to Ohio EPA's e-mail, dated October 18, 2002, regarding the sampling suite for the sump water and revise accordingly.

    e. Please add to the analytical suite the following constituents for the paint chips: full TCLP and PCBs.

    f. Further discussion is requested regarding the sampling frequency for the resulting ash. The sampling frequency, as specified, may not result in a representative sample. (This comment is also applicable to WP Section 2.10.3 on page 22; ESS Section 7.4, page 12; HASP Section 5.7.1, page 29)

    g. Please ensure that the proposed analytical testing is acceptable to the disposal facility(ies) utilized.

19. Please discuss in Section 2.10 (page 18) whether or not any noise monitoring at the perimeter of the installation will be conducted. (Also applicable to WP Section 5.6, page 41)

20. Please provide additional information regarding the desensitization of the WS igloos. When will the "desensitization" take place? Please explain why fuel will be utilized instead of the "kill solution" that the US Army Corps of Engineers (USACE) typically utilizes. (WP Section 2.10.1.2, page 19; ESS Section 7.3, page 10; HASP Section 5.5.1, page 28)

21. Section 2.10.1.3 (page 20) indicates that the interior of the Load Lines and the WS igloos will be sprayed with fuel oil on the day of the proposed burn. Please provide an explanation for this departure from the presentation given to the regulatory agencies on September 04, 2002. Are there any floor drains in the vicinity where the fuel is proposed to be sprayed? If so, what precautions will be taken? With respect to potential health and safety issues (for example explosive atmospheres), have they been determined to be moot based upon the fact that the roofing will have been removed?

22. On page 23 (Section 2.10.4), please provide additional information as to the "designated location" for debris removal. (Also applicable to ESS Section 7.5, page 12)

23. The text on page 23 (Section 2.10.4) indicates that "soil from the earthen-cover (igloos) will be staged for re-use during site restoration activities." This will only be done subsequent to the determination that the soil is not contaminated with any human-made constituents, and that the metals concentrations are consistent with the facility-wide background. (Also applicable to ESS Section 7.3, page 10; ESS Section 7.5, page 13; HASP Section 5.8.1, page 31)

24. Please revise the text on page 23 (Section 2.10.5) to indicate that there is only one (1) sump at Load Line 6. (Also applicable to HASP Section 5.9.1, page 31)

25. On page 24 (Section 2.10.5), please provide additional information as to how the lead liners (in the sumps) will be decontaminated.

26. Please comment on the potential for the lead in the lining of the sumps to migrate through cracks in the sumps during the TD. (WP Section 2.10.5, page 24)

27. Please comment on the potential for the release of asbestos fibers from the lead lined sumps during the TD. (WP Section 2.10.5, page 24)

28. Please confirm with the accepting disposal facility that the lead lining from the sumps can be disposed of along with other asbestos containing material (ACM). (WP Section 2.10.5, page 24)

29. In Section 2.10.7 (page 25), please provide additional information as to how the soil will be "desensitized." In addition, what is the cut-off concentration for lead in the soil before analyses for azides will be conducted? (Also applicable to ESS Section 7.8, pages 14 - 15; HASP Section 5.11.1, page 33)

30. Section 2.13 (pages 28 - 30) describes explosives demolition operations (if needed). If it is determined that unexploded ordnance (UXO) needs to be demolished, please contact Ohio EPA, Division of Hazardous Waste Management (DHWM), for the appropriate permits.

31. In Section 2.13 (page 29), please define who the "appropriate parties" are in the event of an impending demolition shot.

32. In Section 2.18 (page 31), please add Ohio EPA to the distribution list for the site specific removal report (SSRR).

33. In Section 5.3.6 (page 39), please provide specific examples of what constitutes "discarded material."

34. In Sections 5.5.1, 5.5.2, 5.5.3 and 5.5.4 (page 40), please specify how particulate, hydrocarbon, carbon monoxide, oxides of nitrogen and sulfur emissions, and odors will be controlled.

35. Provide a project schedule as referenced on page 43.

36. In Appendix A, please re-label figure 4 to read, "Load Line 9 Site Map."

37. In Appendix B, please provide Attachment F (drawing # 1500.101).

Explosives Safety Submission (ESS):

Please reference/respond to ESS comments that are detailed in the workplan section above.

38. In Section 3.3 (page 4), please consult with Ohio EPA regarding potential sampling locations at the WS igloos.

39. In Section 4.1 (page 4), please confirm that no UXO items have been found at Load Lines 2 - 4. (Also applicable to Section 6.0 page 5)

40. If the items detailed in Section 7.2 # 1 on page 7, i.e., mercury switches, PCB ballasts, etc., are not removed prior to the TD, they must be included in all loading calculations for air emissions.

41. In Appendix A, please insert a map of the WS igloos.

Health and Safety Plan (HASP):

Although Ohio EPA does not have regulatory jurisdiction over HASPs, the following comments are offered for your consideration. In addition, please reference/respond to HASP comments that are detailed in the workplan section above.

42. On table 2 (page 12), please reference the fact that PCBs are also found in the various Load Line paints.

43. Please revise the text on page 17 to indicate that this project will likely be initiated in the cold weather months. (Also Section 13.18, page 78)

44. Please complete the last sentence found in Section 4.6.4.6 (page 20).

45. On page 29 (Section 5.6.1), please clarify the meaning of the acronym "PEB." (Also applicable to Table 5 on page 50)

46. In Section 5.6.2 (page 29), please add another bullet to the text indicating that there may be inhalation hazards.

47. Please revise the text in Section 6.8 (page 37) to indicate that RVAAP requires that a First Responder be a member of the team. (Also applicable to Section 8.5.1, page 47)

48. The text in Section 7.10 on page 45 indicates that no safety showers will be required, as personnel will not be potentially drenched with materials that pose a threat to the skin. Please clarify this statement in light of the proposal to spray fuel oil into the WS igloos and Load Lines on the day of TD.

49. Please be advised that it is likely that any responding ambulance would only be able to provide basic life support (BLS) and not advanced life support (ALS). There is the possibility that if ALS is required, that an intercept would need to be arranged. (HASP Section 8.5.1, page 48; HASP Section 8.5.2, page 48; HASP Section 21.8.4, page 67; HASP Section 12.9.1, page 68)

50. Please be advised that Robinson Memorial Hospital is a provisional Level III trauma center. If a higher level of support is needed, the injured party would need to be taken to a different trauma center in the nearby vicinity. (HASP Section 8.5.2, page 48)

51. Please clarify the first sentence in Section 11.1.2 on page 55.

52. In Table 6 (page 59), please clarify whether or not all emergency calls are to be routed through Post # 1.

53. What criteria will be utilized to determine if a fire is "large" or "small" and when firefighters will be called in to extinguish the blaze. (HASP Section 12.5, page 60)

54. If a contaminated worker needs to be taken to the hospital, notify the BLS, so that the squad and hospital can take the appropriate precautions. (HASP Section 12.8.3, page 66)

55. Throughout Appendix A, please modify the forms to read "Load Lines."

56. In Appendix B, please provide an explanation for why the task hazard assessment forms are not signed.

57. Please confirm that the Standard Operating Procedures (SOPs), especially # 32 and # 39, were reviewed by OSC Safety.

Please contact Ohio EPA to discuss the issues and concerns raised in this correspondence, prior to the initiation of the TD. If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,

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

ETM/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Bob Princic, Ohio EPA, NEDO, DAPC
Greg Orr, Ohio EPA, NEDO, DHWM
Jarnal Singh, Ohio EPA, NEDO, DSIWM
LTC Tom Tadsen, RVAAP
John Cicero, RVAAP
Chip Porter, PCHD
Steve Uecke, PCHD
Lynn Malcolm, ARAQMD
Sean Vadas, ARAQMD
Kendall Moore, U.S. EPA, Region V
Rick Callahan, MKM

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, Ohio EPA, NEDO, DERR

MEMO

(DRAFT)

TO: **Bill Ingold, Army Operations Support Command (OSC)**
Khodi Irani, MKM Engineers, Inc.

FROM: **Ernie Neal, Neal Environmental Services, LLC (NES)**

RE: **Ravenna Army Ammunition Plant (RVAAP)– Environmental Enforcement Issues**

DATE: **January 11, 2002**

Purpose – Evaluate the Environmental Enforcement Actions and Policies of Ohio EPA and U.S. EPA

Over the past two years, the RVAAP has received environmental enforcement actions (e.g. Notice of Violation) from both the Ohio EPA and U.S. EPA Region V regarding hazardous waste activities. The environmental infractions generally involved basic administrative and record keeping issues, which, on a practical basis, are expected to be realized by many entities during annual regulatory inspections.

However, in consideration of the concern on behalf of the Army regarding enforcement matters, NES is proposing that a review of environmental enforcement policies, inspections and follow-up actions by the combined agencies will assist the OSC/RVAAP in determining the on-going compliance status and severity of environmental violations reported at the facility.

Goal – Develop a Report for OSC/RVAAP presenting the policies and hazardous waste environmental enforcement actions of the two agencies and their perception of RVAAP compliance. Also, the report will indicate the frequency, type and level of enforcement actions initiate by both agencies and if agencies' actions are generally observed to be fair and reasonable.

Task – 1 **-Est. Time - .75 days**

Outline preparation, telephone contact and establishment of agency visits and record research.

Task – 2 -Est. Time – 1 day

Meet with OEPA Division of Hazardous Waste Management staff to review hazardous waste management policies, procedures and 2001 records on statewide environmental violations.

Task – 3 -Est. Time – 1 day

Meet with OEPA-Northeast District Office staff to review hazardous waste management policies, procedures and 2001 records regarding OEPA-NEDO hazardous waste enforcement actions. (Note – the RVAAP is located in the northeast district of OEPA).

Task – 4 -Est. Time – 1 day

Meet with U.S. EPA Region V (Chicago) representatives of the Waste, Pesticides and Toxics Division, Enforcement and Compliance Branch to review hazardous waste management policies, procedures and 2001 records on Ohio and one additional region V state regarding environmental violations.

Task – 5 - Estimated Time 2.5 days

Develop a consultant report for OSC/RVAAP reflecting OEPA/U.S. EPA policies, procedures of hazardous waste environmental enforcement actions as well as the frequency, level and fairness of these actions.

Estimated Project Costs

Consulting Services 6.25 days
or 50 hours @ $98.00 = $4,900.00

Expenses – Air Travel to Chicago – Est. @ $150.00 w/14 days notice
Airport Parking and mileage costs - $ 30.00
Travel to OEPA-NEDO mileage costs - $140.00
Meals - $ 30.00

Est. Expenses $ 350.00

Total Estimated Costs $5,250.00

Cc: Mark Patterson, RVAAP

DRAFT RAVENNA PROCESS IMPROVEMENT

1 On 24 January 2002, Mark Patterson, Eileen Mohr, Bonnie Buthker, and John Jent held a conference call to discuss means of streamlining, both time and money, the ongoing environmental activities at the RVAAP, OH. The following items were agreed upon.

2 Document Preparation and Reviews

A In preparing reports, etc., refer to the Facility-Wide plans as much as possible; ex- Site History, AOCs, Environmental Setting, etc.

B Utilize standard report outlines. By in large, most Corps SOWs have attempted to utilize those detailed in the USEPA Guidance Documents.

C Upon receipt of the review comments from a Draft Report, the AE/Contractor will prepare detailed responses prior to the comment resolution meeting. In cases where review comments conflict with each other, if the AE cannot resolve conflicting comments, he/she should bring these to the attention of the contracting agency (Corps or OSC)and prepare the response according to the decision of the contracting agency.

D Subsequently, the Draft Report along with detailed responses to comments (hard copy and CD) will be provided to the public for its review.

E At the review comment resolution meeting, additional, hopefully, minor comments will be generated and these will be addressed in the Final Report, along with any comments generated by the public from its review of the Draft Report and the initial detailed responses to comments

F Where it is cost effective, replacement pages will be provided instead of completely new volumes. Replacement pages and new covers, along with a cross-reference sheet that delineates which pages have been replaced will be provided. Special emphasis will be made to not copy appendices containing boring logs, laboratory data, etc. except where such changes are necessary.

G The CD of the Final Report will include a detailed table of responses to comments, but otherwise will be a finished document clear of all Draft Report material that was changed.

H In preparing reports attempts will be made to increase ease of reading, as with the use of bullets, subparagraph numbers, line numbers on both Draft and Final Reports, etc.

I Check on the possibility of securing Government rates for Fed-Ex shipments, instead of private rates.

J Utilize regular mail, e-mail, etc instead of Fed-Ex where rapid shipment is not required.

3 Work Plans

A Generally, the AE/Contractor will attempt to conduct an informal, but organized field visit with the main participants to enable preparation of a fairly detailed, agreed upon Draft Work Plan.

B The Work Plans will refer as much as prudently possible to already described methods, tests, etc. detailed in the Facility-Wide plans.

C AE/Contractor will prepare only one Sampling and Analysis Work Plan which shall contain all necessary information, i.e., not a separate work plan and sampling plan.

D With the informal field visit prior to preparation of the Draft Work Plan, hopefully, changes to the Final Work Plan will be minimized. Again, where prudent, replacement pages shall be used.

4 The Louisville Corps is preparing a Facility-Wide Guide for performing human health and ecological risk assessments. Once these guides are finalized, they shall be used for all risk assessments, and as project specific work plans utilize the Facility-Wide plans, the assumptions documents for risk assessments will utilize and refer to the Facility-Wide Risk Assessment Guidelines as much as possible.

5 Waste Management

A Instead of utilizing 55-gallon drums for collection of solid IDW, utilize a single roll-off box for all solid IDW within a large area of investigation/remediation.

1 Take a representative composite sample of the contents of the roll-off box, conduct a TCLP test on that sample and dispose of according to the results of that test.

2 Keep any obviously contaminated materials, as indicated by color, odor, etc separate from the roll-off box, test and dispose of accordingly.

B Check on the possibility of utilizing the City of Ravenna facilities for disposing of liquid IDW, especially development water, etc that is thought to contain little or no contamination.

6 Prepare a generic Feasibility Study with presumptive remedies according to media, contaminant, and size.

7 Laboratory Analyses

A Where it can be documented that there was no use of a given chemical of concern, as secondary explosives at some of the fuze and booster load lines, the number of such analyses will be drastically reduced, or in some cases eliminated.

B The necessity for analyzing for nitrocellulose is to be checked. If no health or ecological risk are demonstrated, analyses for nitrocellulose may be eliminated. J. Jent is to check.

C QA/QC

1 There has been some discussion of the Louisville Chemistry Guideline requiring additional measures that increase the cost of laboratory analyses. J. Jent is to check.

2 As a general policy, detection limits are to be as low as possible with common, commercially available analysis techniques.

3 Attempt to reduce or scale back any QA/QC requirements that can prudently be made. J. Jent is to check.

8 AOC Boundaries

Many of the AOC boundaries were rather generally defined. Where appropriate and on a case-by-case basis, the boundaries of a given AOC may be changed in consultation with the OH EPA.

9 Field Methods

A The use of cost effective field analysis methods, including mobile labs, is to be encouraged where it is prudent.

B The recent exhaustive attempt to utilize XRF for analysis of metals will be relooked at by Dr. Samir Mansy.

C Another search will be made to determine if any other field methods are appropriate for use at the RVAAP. Paul Zorko is to check.

Ohio EPA

Division of Drinking and Ground Waters

John Jent

TO: ~~Mark Patterson~~

FROM: Nancy Rice

RE: Vagh Elem / Ravenna Arsenal

DATE: 3-22-02

PAGES TO FOLLOW: 8

as requested - call w/ questions 330 963-1195

→ the fact sheet is new - we will bring copies to the RAB mtg & use as needed.

Vaughn Elementary School, Trumbull County

Summary of Total Arsenic Results

	12/1/98	12/3/01	12/13/01	12/14/01	12/17/01	1/9/02	2/11/02
Main Well (entry pt)	15.4 ug/l	53.9 ug/l	109 ug/l	119 ug/l	110 ug/l	36.2 ug/l*	17.4 ug/l 48 ug/l*
Main Well (raw)	----------	----------	---------	---------	---------	38.6 ug/l*	
Back-up Well (raw)	----------	----------	---------	---------	---------	<2 ug/l*	<5 ug/l <2 ug/l*

Notes -

* samples collected by Ohio EPA
- entry point is the first tap after pressure tank and treatment, if any exists
- The school serves a population of approximately 275 students and teachers.
- Ohio EPA average use for elementary schools is 15 gallons per day per person, total daily use is 4125 gallons
- There is no water treatment at the school.
- Vaughn Elementary was closed for winter break from December 20th through January 1st, therefore no water was used during that time.

prepared by Nancy Rice, Division of Drinking and Ground Waters, Ohio EPA - 3/22/02

Summary of Private Well Sampling for Arsenic Around Vaughn Elementary School, Trumbull County

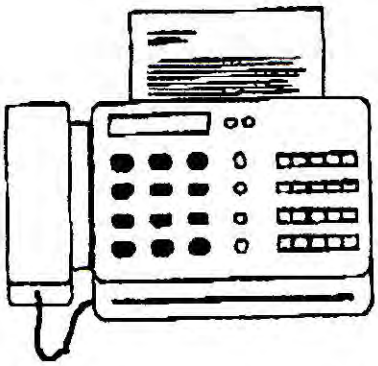
Please note that this information was gathered from faxes and phone conversations with representatives of the Trumbull County Health Department. For complete information, please contact them direct at 330-675-2489. Ohio EPA, DDAGW does not regulate wells that serve private homes.

A total of 57 private wells were initially tested for arsenic, in January, 2002, based on requests from the homeowners. The samples were analyzed by Tri-State Laboratories, which is not an Ohio EPA certified lab for testing public water systems. The sample results ranged from non-detectable to the highest result of 40 ug/l. The majority of the elevated arsenic levels appear to be on Braceville-Robinson Road.

The Ohio Department of Health returned on March 6, 2002, to resample 21 of the original private wells. This data is not yet available.

There are discussions regarding extending a water line from Newton Falls up to the area of the school. This is being addressed by the Health Department and the County Sanitary Engineer.

prepared by Nancy Rice, Division of Drinking and Ground Waters, Ohio EPA - 3/22/02



Fax

Transmission
LaBrae Local Schools

Date: January 27, 1999

To: **Michelle Tarka/Ohio EPA**

Fax #: 330 963-4760

j. L

Primary well – no well log exists

From: **John Leeper**
1015 N. Leavitt Rd.
Leavittsburg, OH 44430

Our Phone: (330) 898-1592
Our Fax: (330) 898-7808

Number of pages including this cover page:

Per your request
LaBrae Middle School Well Log

Information supplied by local plumber pertinent to water well at LaBrae Middle School, 544Braceville Robinson Rd., Newton Falls, OH 44444.

There is an 8" well casing. The pumping system consists of 126' of 2" galvanized steel pipe with a 5 HP - 230 volt 1 phase pump.

Please advise if additional information is needed. Phone 1 330 898-1592.
Thank you.

Please call if you experience any transmission problems.

per phone call with John – well and casing = 126' each

MT

03/22/2002 16:22 NO.071 P05

- Back-up Well - Currently not used

LABRAE LOCAL P.3

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

No. 191749

County ______ Township Braceville Section of Township ______

Owner Board of Education Braceville School Address RD #2 Newton Falls O

Location of property Braceville Robinson Rd just north of #82

CONSTRUCTION DETAILS

Casing diameter 10 Length of casing 110

Type of screen None Length of screen None

Type of pump ______

Capacity of pump ______

Depth of pump setting ______

Date of completion ______

BAILING OR PUMPING TEST

Pumping rate 55 G.P.M. Duration of test 24 hrs.

Drawdown 100 ft. Date Feb 7 - 58

Developed capacity 3300

Static level—depth to water 26 ft ft.

Pump installed by ______

WELL LOG

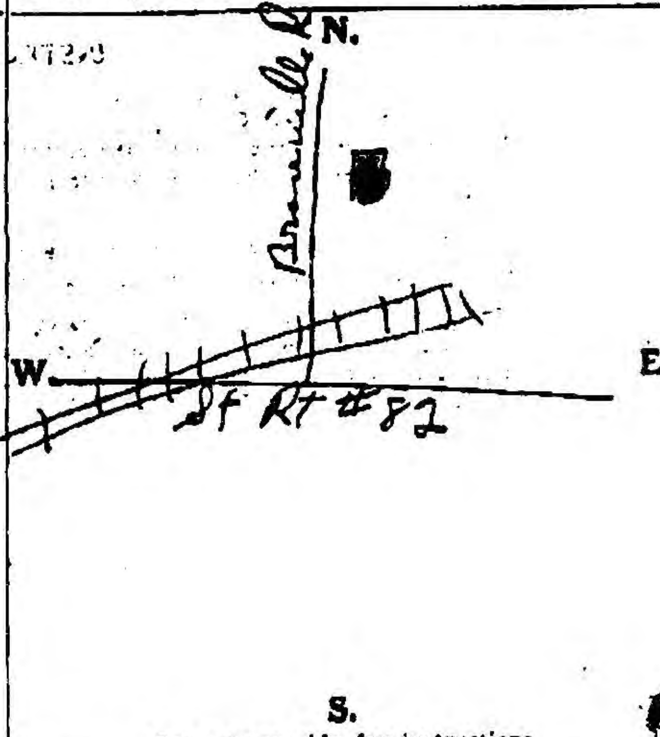
Formations Sandstone, shale, limestone, gravel and clay	From	To
Yellow Clay	0 Feet	18 Ft.
Blue Clay	18	80
Sand & gravel	80	106
Blue shale Rock	106	130
Blue shale & Sand R	130	138
Sand Rock or pebble	138	146
White sand Rock	146	153

Water at 118 Total 146 to 153

RECEIVED
FEB 11 1958

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm ______

Address RD #2 Newton Falls O

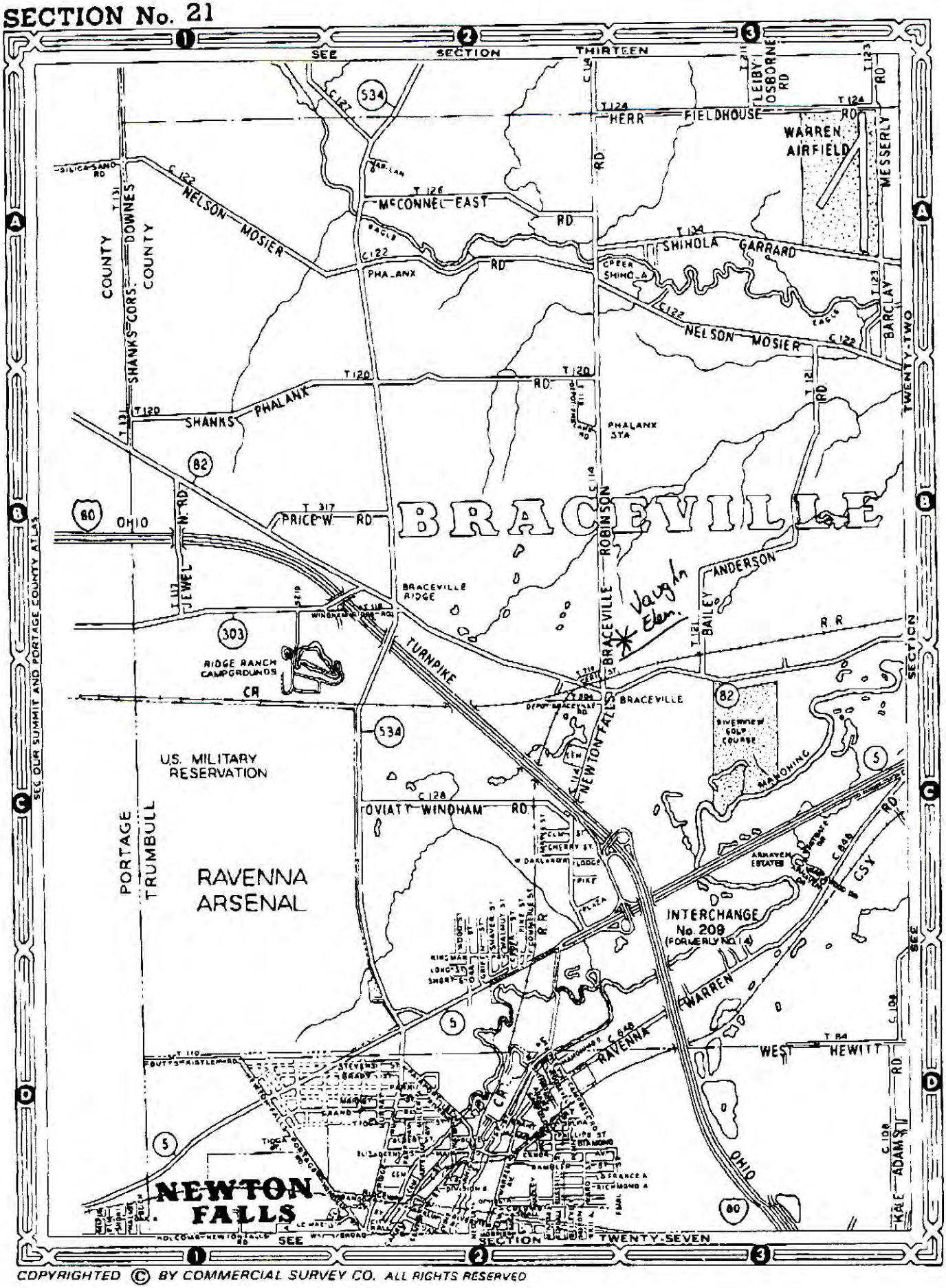
Date Feb 7 - 58

Signed W. J. Wareham

well 2

Rcd 1-22-99

SECTION No. 21



OhioEPA
State of Ohio
Environmental Protection Agency
Fact Sheet

Arsenic Facts for Public Water System Customers

March 2002

What is arsenic?

Arsenic is a common, naturally occurring element in the earth's crust.

The most common use for arsenic in the United States is for wood preservation, but it also is used in paints, dyes, soaps, metals and semi-conductors.

What are the health effects of arsenic?

Consumption of food and water are the major sources of human arsenic exposure.

Exposure to inorganic arsenic carries some health risks, and the amount of risk is related to the duration and level of exposure. At very high levels, such as 300 - 30,000 parts per billion, arsenic can cause acute, or immediate health effects such as vomiting, bloody diarrhea, abnormal heart rhythm, and a "pins and needles" sensation in the hands or feet. Such high levels have not been reported in Ohio's public water supply compliance samples. Exposure to arsenic at lower levels for long periods of time can add to a person's risk of developing lung, bladder, skin, kidney, nasal passage, liver and prostate cancer. Other long term, non-cancer effects include skin changes, cardiovascular, pulmonary, immunological, neurological and endocrine (diabetes) effects. The drinking water standard is set to lower the risk from chronic, or long term, health effects since exposure can be as long as a lifetime if arsenic is in your home water supply.

Why is arsenic in drinking water?

Arsenic can be found in water as a result of natural or human activities. Higher levels of arsenic tend to be found more in ground water sources than in surface water sources. The main source of arsenic found in ground water is the natural weathering and erosion of rocks and minerals. Evidence from Ohio's ground water ambient monitoring network suggests that most arsenic found in Ohio's ground waters is of a natural origin.

How do I know if I have arsenic in my water?

If you obtain your drinking water from a community water system such as a city, village, or mobile home park, you should receive a Consumer Confidence Report in the mail every year which explains what contaminants have been found in your water. If arsenic has been detected in your water, it will be disclosed in the report. If you would like to know if arsenic has been detected at a non-transient, non-community system such as a school or other place of business, you can call the water supplier or Ohio EPA for its latest drinking water test results. If your drinking water comes from a private well, contact your local health department for information on arsenic levels in your area or about having your water tested.

What is the limit for arsenic in drinking water?

The current limit for public water systems, called a maximum contaminant level or MCL, is 0.05 milligrams per liter (mg/L), which is the same as 0.05 parts per million (ppm). Laboratories also may report levels in micrograms per liter (µg/L), which is the same as parts per billion (ppb). The MCL in micrograms per liter is 50 µg/L.

Fifty micrograms per liter has been the U.S. Environmental Protection Agency (U.S. EPA) standard for arsenic since 1975 when it adopted the Public Health Service standard originally established in 1942. In 1996, Congress directed U.S. EPA to revise the arsenic standard. A new, lower MCL of 0.01 mg/L (10 µg/L) was finalized in October 2001. Community and non-transient non-community public drinking water systems in Ohio must meet this new standard by January 2006.

Why is the standard being lowered?

In evaluating the current MCL, U.S. EPA requested an expert panel at the National Academy of Sciences to review worldwide studies of the health effects of arsenic to determine the health risks at various levels of exposure. The panel concluded that the risk level at 50 µg/L was higher than previously thought and that the standard should be lowered. U.S. EPA believes that the final MCL of 10 µg/L maximizes health risk reduction at a cost justified by the benefits. The new MCL is expected to prevent approximately 19 to 31 cases and five to eight deaths from bladder cancer per year in the United States. An additional 19-25 lung cancer cases and 16 to 22 lung cancer deaths are expected to be avoided every year. The estimated yearly cost of lowering the MCL is between $1 and $327 per household, depending on the size of

Fact Sheet

Arsenic Facts for Public Water System Customers

the water system affected. Small public water systems serving fewer than 500 people will have the highest costs per household or individual.

Why doesn't the new standard take effect right now?

Public water systems will need time to plan, finance, design and construct new treatment systems. The time involved in each step of the process-obtaining loans, receiving plan approval, making land purchases, performing treatment pilot studies, resolving zoning issues, and laying new water lines can take months to years. For this reason the U.S. EPA granted all systems a capital improvement extension, giving them until January 2006 to make needed changes. In addition, U.S. EPA has determined that exposure to arsenic levels between the new and old standard between January 2001 and January 2006 does not pose an unreasonable risk to health.

What if my water has arsenic above the new standard of 10 µg/L?

While most water systems in Ohio meet the current standard of 50 µg/L for arsenic, approximately 160 systems have found arsenic at or above 10 µg/L at least once since 1999. Ohio EPA will be working with public water systems identified as having arsenic levels above the new standard in an effort to bring them into compliance before the January 2006 deadline. Some systems will have to add treatment, while others may seek a new source of water, such as a new well or even tie into a regional water system that meets the new standard. In the meantime, at levels below 50 µg/L it is safe to use the water for bathing and cooking where the water will not be consumed, such as in boiling vegetables. Although the U.S. EPA has said that there is no unreasonable risk to health at this time, for water that is to be consumed or used in preparing baby formula, soups, etc., the consumer may make a personal choice to substitute bottled water for tap water.

Some treatment devices that remove arsenic at the tap are available. Proper maintenance of any home treatment device is critical to effectively remove arsenic, as well as to avoid bacterial contamination. Consumers can contact the National Sanitation Foundation at 1-800-673-8010 or *www.nsf.org* to find out which treatment devices are certified for arsenic removal. Pretreatment of your water may be required.

For more information:

- U.S.EPA's arsenic Web site: *http:// www.epa. gov/ safewater/arsenic.html*
- The Safe Drinking Water Hotline: 1-800-426-4791
- Ohio EPA Division of Drinking and Ground Waters (DDAGW): 614-644-2752
- Ohio EPA DDAGW Web site: *http://www.epa.state. oh.us/ddagw*
- Ohio Department of Health (Private Wells): 614-466-1390

Water incident shows need for awareness

DEAR EDITOR:

The high levels of arsenic detected in the drinking water once used by children at Braceville's Vaughn Elementary School should, like Sept. 11, be a wake-up call. According to the National Academy of Sciences, arsenic levels above three parts per billion are associates with health risks, especially for lung and bladder cancer. And the Ohio EPA claims there's nothing to worry about in Braceville!

It is high time to take our collective head out of the sand and take an honest look at the water in our ground all around the Ravenna Arsenal, which is heavily polluted with heavy metals and other contaminates. Vaughn Elementary School is less than two miles, as the water flows, from the expansive Arsenal, home to just about every lethal pollutant imaginable. Arsenic has been a long-term resident of the Arsenal. Soil and water samples, 59 of them, taken from the Arsenal in late 1998 by the government revealed distributing levels of arsenic in several regions, including the northeast section close to Braceville.

In 1999, management of this and many other contaminated areas of the Arsenal was transferred, not to the EPA, but to the Ohio National Guard. In their Final Management Plan, published last October, the Guard basically dismisses any threat posed by this high concentration of contaminates to children since "there are seldom children present at the (Arsenal) as visitors, and no children reside at the installation." The same publication (which, on its title page spells our county as "Trumble") claims that no "exceptionally minority-based or exceptionally low income" families live near the Arsenal and that no "child care centers, schools, parks or other concentrations of children exist on or within the immediate vicinity of the installation."

Such distortions and outright fabrication do not exactly inspire confidence that the Arsenal's arsenic threat will disappear anytime soon. Will the real guardians of our children please speak up, before it is too late?

The REV. WARNER LANGE
Newton Falls

WARREN Tribune Chronicle 1/20/2002

From: Bates, Dennis
Sent: Monday, March 25, 2002 8:16 AM
To: Whelove, Robert W; Crain, Henry; Patterson, Mark
Cc: Jackson, Thomas; Murphy, Rick; Mack, Tara C
Subject: RE: Ohio EPA letter on Draft RVAAP Orders

Bob,

I understand your frustration, but I don't think we can afford to cut off negotiations. I'm not saying we should give in, but as you may see from AMC/DA involvement, we are getting their help too. Frankly, I don't know what other options we have but negotiation.

Dennis

-----Original Message-----
From: Whelove, Robert W
Sent: Friday, March 22, 2002 12:47 PM
To: Crain, Henry; Patterson, Mark
Cc: Bates, Dennis
Subject: FW: Ohio EPA letter on Draft RVAAP Orders

OEPA has gone too far in their demands. We have never agreed both verbally or in writing to enforceble schedules on our CERCLA clean up and I am recommending that we cease negotiations because of this demand of their's. We have shared with them for about the last four years the Installation Action Plan meetings where we have allowed anyone from the state who wanted to attend. They have had their management and Federal Facilities personnel at the last two for sure. We agreed to their demands for a surface water investigation which we are starting in the third quarter of this year and in the next two years we have agreed with them to work out a groundwater monitoring plan.

This transfer of groundwater under the RCRA sites can and should be worked out under something other than this order as it stands now. We think we could naturally attenuate many of these sites under CERCLA and that would still protect the state and the citizens in the area.

We have many wells at our sites now and we either come up with low levels above MCL's in the middle of the facility or we are clean. We have installed some wells in the perimeter and they have come up clean.

We recommend we cease negotiations under this order and seek some other mechanism to come up with an agreement. It is not in the Arm

y's best interest to proceed.

-----Original Message-----
From: Onewokae, Cyril O
Sent: Friday, March 22, 2002 9:50 AM
To: Whelove, Robert W
Cc: Onewokae, Cyril O
Subject: FW: Ohio EPA letter on Draft RVAAP Orders

-----Original Message-----
From: Whelove, Robert W
Sent: Friday, March 22, 2002 9:46 AM
To: Onewokae, Cyril O
Subject: FW: Ohio EPA letter on Draft RVAAP Orders

forwarded for your down loading--bob w.

-----Original Message-----
From: Bonnie Buthker [mailto:Bonnie.Buthker@epa.state.oh.us]
Sent: Thursday, March 21, 2002 1:19 PM
To: PattersonM@osc.army.mil
Cc: Diane Kurlich; Eileen Mohr; Graham Mitchell; Greg Orr; Jarnal Singh;
Kurt Princic; Mark Navarre; Rod Beals; Todd Fisher; "Robert Whelove"<WheloveR@osc.army.mil
Subject: Ohio EPA letter on Draft RVAAP Orders

Mark:

Please see attached. Hard copy with attachments will be sent to y ou.

If you have any questions, please give me a call.

Take care,

Bonnie

Patterson, Mark

From: Whelove, Robert W
Sent: Tuesday, April 02, 2002 1:28 PM
To: Patterson, Mark
Cc: Crain, Henry
Subject: FW: Ohio EPA issues with the RVAAP Orders

We are to work out the issues without an ORDER. Yours Bob Whelove Jr.
-----Original Message-----
From: Simmons, Jewel Civ AMCIS01 [mailto:SIMMONSJ@hqamc-exchg.army.mil]
Sent: Tuesday, April 02, 2002 12:12 PM
To: 'WheloveR@osc.army.mil'
Subject: FW: Ohio EPA issues with the RVAAP Orders

-----Original Message-----
From: Simmons, Jewel Civ AMCIS01
Sent: Tuesday, April 02, 2002 12:52 PM
To: 'whelover@osc.army.mil'
Cc: Crain, Henry
Subject: FW: Ohio EPA issues with the RVAAP Orders

Bob,

FYI, on RVAAP. Guidance from DA. Bottom-line "Work it out if at all possible." Don't waste the State of OH's time and money.

> Jewel Simmons
> AMC DERP Manager
> Comm: 703-617-3890
> DSN: 767-3890
> Fax: -7252
>

-----Original Message-----
From: Simmons, Jewel Civ AMCIS01
Sent: Friday, March 22, 2002 9:33 AM
To: Crain, Henry; Murphy, Richard; Citron, Stan Civ AMCCC01
Cc: 'tiemeierk@osc.army.mil'; 'whelover@ioc.army.mil'; 'Onewokae, Cyril O'
Subject: FW: Ohio EPA issues with the RVAAP Orders

Gentlemen,

Rick would like to know why we are unable to workthrough the state's concerns that will allow us to incorporate the four Haz-Waste sites into Ravenna IR program under the proposed AO. Bonnie (Ohio Regulator) has indicated to Rick that she is willing to work with the Army on lead agency and dispute resolution issues, using such provisions as reservation of rights for all parties, and addressing their concern on enforceable schedules through force majeure provisions.

The state wants to know if the Army can accept these conditions. I think Rick would like for us to find a way to work this out. Any and all thoughts welcome. I will be meeting with Rick today at 3:30 pm EST.

Jewel

-----Original Message-----
From: Newsome, Richard E Mr ASA-I&E
Sent: Friday, March 22, 2002 8:40 AM
To: Simmons, Jewel Civ AMCIS01
Subject: FW: Ohio EPA issues with the RVAAP Orders

Once again,

Rick

-----Original Message-----
From: Newsome, Richard E Mr ASA-I&E
Sent: Wednesday, March 13, 2002 12:17 PM
To: Simmons, Jewel Civ AMCIS01
Cc: Wilson, Karen S ACSIM
Subject: FW: Ohio EPA issues with the RVAAP Orders

Jewel,

I spoke with Bonnie today to better understand her concerns in the e-mail below. The State is willing for the four state regulated units to be rolled into the Army's CERCLA cleanup if the Army is willing to enter into an order that would: (1) incorporate the rest of the Ravenna IRP into the agreement, currently there are 53 Areas of Concern in the Ravenna IRP, and (2)provide some guarantee that the groundwater monitoring, and potential cleanup, at these four units will continue under the IRP.

She indicated the state is willing to work with the Army on lead agency and dispute resolution issues, e.g., reservation of rights for all parties, and address our concerns on enforceable schedules, e.g, via a force majeure provision.

The state wants to know if the Army can accept these conditions. If not, we can go back to the separate program for the four units, (address under state law/regulatory provisions), and the rest of the IRP.

Please review and give me a call.

Rick

-----Original Message-----
From: Bonnie Buthker [mailto:Bonnie.Buthker@epa.state.oh.us]
Sent: Tuesday, March 12, 2002 3:57 PM
To: Newsome, Richard E Mr ASA-I&E
Subject: Ohio EPA issues with the RVAAP Orders

Hi Rick:

Sorry I couldn't reach you today to discuss the RVAAP Orders issues. I'll outline it briefly in this email, and maybe we could discuss this later today or tomorrow.

In Spring of last year, the Army OSC command approached us with a draft set of Orders for the Ravenna Army Ammunition Plant.Army's proposal to enter into Orders with the state if that would allow them to receive permit exemptions or waivers of requirements at 4 units currently regulated under the solid waste and hazardous waste programs. These four units would then be investigated and remediated under the CERCLA program, meeting all substantive requirements. The Army felt that it made sense to proceed with such a approach, since Ravenna Army Ammunition Plant is a closing facility, and they wished to have all clean ups completed within the next 7 to 10 years. While we understood why the Army felt their approach was justified, we had concerns about entering into negotiations to develop an Order. (In the past

when we had attempted to negotiate Orders with the Army for this site, significant resources were expended on both sides without ever reaching an acceptable agreement.)

Therefore, to try to determine if their was a chance of working out an acceptable agreement (before dedicating resources to this effort), on June 26, 2001, Ohio EPA sent a letter outlining what items would need to be included into the Orders before we would be willing to proceed further with negotations. After the letter was sent, we had two additional conference calls with the Army OSC representatives to clarify our concerns. At the conclusion of each call, Ohio EPA was assured by the Army that we were close to resolving these issues.

In February 2002, we received the revised draft of the Orders from the Army. Since we had been very clear about what items we wanted to be addressed in the Orders (though both conference calls and our letter), we were confident that the Orders would only need minor revisions before an acceptable agreement could be reached. However, when we reviewed the Orders, we found that the Orders did not include many of the items we felt were necessary. In addition, we were told by the installation point of contact, Mark Patterson, that this was the Army's final position, and that any negotations would only be to include minor wording changes.

That's why I gave you a call to discuss this. If the Army is not willing to incorporate our issues, then further negotiations are a waste of resouces (both the Army and Ohio EPA's). However, if this isn't the Army's final position, then there is still a chance we can develop an agreement acceptable both to the Army and the state.

Since we're drafting a letter back to the Army on their Orders, it would be good to know what your position is on the Orders. If you could let me know when we can discuss this, I would really appreciate it.

Take care,

Bonnie

F:\USERS\JRAYERS\3016\MACOM 3016 memo 13Feb021

S: 24 May 02

SFIM-AEC-PCC (200-1a)

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Resource Conservation and Recovery Act (RCRA) 3016 Report

1. Reference letter, EPA, October 18, 2001, regarding above subject (encl 1) (instructions are also provided with this letter).

2. This memorandum requests that the MACOMs review information intended as part of the Army's response to the US Environmental Protection Agency (EPA). The Army is responding to the EPA's request for an inventory of all Federal facilities that treat, store or dispose of hazardous waste. Section 3016 of RCRA requires this inventory. For your convenience, the US Army Environmental Center (USAEC) has used data in existing Army environmental databases, the Environmental Quality Report (EQR) and the Defense Site Environmental Restoration Tracking System (DSERTS), to identify which installations must report, and to prepare draft facility questionnaires for those installations potentially meeting reporting requirements. The MACOMS are requested to review data provided in the enclosures and comment back to the USAEC POC by 24 May 02.

3. First, please validate that the installations in lists "A" and "B" (encl 2) must be reported in the RCRA 3016 inventory. The EPA defines the reporting criteria as "any Federally owned or operated facility at which hazardous waste is stored, treated, or disposed, or has been disposed" (see top of questionnaire). Installations in list "A" have reported a hazardous waste treatment, storage, and disposal facility (TSDF) in the EQR and clearly meet RCRA 3016 reporting criteria. Installations in list "B" were reported in the 1996 RCRA 3016 inventory but have not been reported as a TSDF in the EQR, so we are not certain they meet reporting criteria. We question whether these installations in list "B" were correctly reported in 1996, but have no information on installation TSDF activity prior to the first EQR data submissions in 1997. Therefore, we ask that you tell us which, if any, of the installations in list "B" must be reported in the 2002 RCRA 3016 report. List "B" may also include facilities that are no longer owned by the Army. We ask that you notify the USAEC POC of any installations that meet reporting criteria but are no longer owned by the Army. The EPA has requested that a "Formerly Owned" facility questionnaire be completed for these installations.

4. For installations that you confirm must be reported in RCRA 3016, we ask that you review and update the completed installation questionnaires (encl 3). The data for the questionnaire is contained in a Microsoft Access database made to approximate the format of the original EPA questionnaire. The USAEC POC will e-mail two electronic versions of this database to your MACOM POC. The first will be a "read only" database

of the Army's 1996 questionnaires provided for your reference. The second database will be submitted to the EPA and should be updated to reflect the current status of your installations. Please coordinate with your installations to review and correct the information within this database. You may update the questionnaires electronically or by marking up a hard copy. In either case, it should be returned to the USAEC POC.

5. In accordance with the enclosed **EPA instructions, subsequent to MACOMs and installations completing their review and updates, installations should submit completed copies of the questionnaires to their authorized state RCRA regulator.**

6. There are several enclosures with this memorandum. Please note that you are only receiving the installation data for those that fall under your MACOM.

7. The HQDA POC is Ms. Jennifer Leonard, DSN 223-0547 or (703) 693-0547, e-mail: *Jennifer.Leonard@hqda.army.mil.* The USAEC POC is Mr. Jim Ayers, Booz-Allen & Hamilton, Inc., DSN 584-7070 or (410) 436-7070; e-mail: *James.Ayers@aec.apgea.army.mil*; facsimile (410) 436 -1675.

FOR THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT:

3 Encls
as

RICHARD A. HOEFERT
Colonel, GS
Director, Environmental Programs

DISTRIBUTION:
ENVIRONMENTAL OFFICE
(ATBO-GE/MS. DEBORAH POTTER), US ARMY TRAINING & DOCTRINE COMMAND, BLDG 5, 3D FLOOR, SUITE A, 5A NORTH GATE RD, FT MONROE, VA 23651-1048
(AMCIS-A/MR. KRISHNA GANTA), US ARMY MATERIEL COMMAND, 5001 EISENHOWER AVE, ALEXANDRIA, VA 22333-0001
(AFEN-ENE/MR. RUDY STINE), US ARMY FORCES COMMAND, 1777 HARDEE AVE, SW, BLDG 200, FT MCPHERSON, GA 30330-1062
(CONT)

SFIM-AEC-PCC
SUBJECT: Resource Conservation and Recovery Act (RCRA) 3016 Report

DISTRIBUTION: (CONT)
(MAEN-EV/MR. EUGENE ROOD), US MILITARY ACADEMY, OFFICIAL MAIL & DISTRIBUTION CENTER, 646 SWIFT RD, WEST POINT, NY 10996-1905
(APEN-E/MR. MICHAEL HARADA), US ARMY, PACIFIC, FT SHAFTER, HI 96858-5100
(MCFA-E/MR. GILBERT GONZALEZ), US ARMY MEDICAL COMMAND, 2050 WORTH RD, FT SAM HOUSTON, TX 78234-6000
(NGB-ARE/COL RICHARD MURPHY), NATIONAL GUARD BUREAU, ARMY NATIONAL GUARD READINESS CENTER, 111 SOUTH GEORGE MASON DR, ARLINGTON, VA 22204-1382
(AFRC-ENV/MR. GEORGE GRICIUS), US ARMY RESERVE COMMAND, 1401 DESHLER ST, SW, FT MCPHERSON, GA 30330-2000
(CSTE-ILE-ENV/MR. MIKE VOGT), US ARMY TEST & EVALUATION COMMAND, PARK CENTER IV, 4501 FORD AVE, ALEXANDRIA, VA 22302-1458
(MTPAL-FE/MR. MR. TOM DOUTHIT), MILITARY TRAFFIC MANAGEMENT COMMAND, HOFFMAN BLDG II, 200 STOVALL ST, ALEXANDRIA, VA 22332-5000
(ANSP-IS-EV/MR. DAVID KEYS), US ARMY MILITARY DISTRICT OF WASHINGTON, 103 THIRD AVE, BLDG 42, FT LESLEY J. MCNAIR, DC 20319-5058
(SOEN/MR. CRAIG NAKAJO), US ARMY, SOUTH, PO BOX 34000, FT BUCHANAN, PR 00934-3400
(SMDC-ENV/MR. BARRINEAU), ENVIRONMENTAL OFFICE,US ARMY SPACE AND MISSILE DEFENSE COMMAND, PO BOX 1500, HUNTSVILLE, AL 35807-3801

Mark Patterson
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

Phone: 330-358-7311
FAX: 330-358-7314
Email: pattersonm@osc.army.mil

Fax

To:	Frank Jones	**From:**	Mark Patterson
Fax:	319-753-7212	**Pages:**	
Phone:		**Date:**	7/17/02
Re:	US EPA letter	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

- **Comments:**

Frank,

Estimate for shipping scales follows.

Thanks

Mark Patterson

OVERNITE TRANSPORTATION COMPANY
PO BOX 1216 / RICHMOND, VA 23209-1516 / (800) 227-8046

Date: July 14, 2002

Sending to: Mark Patterson

Location:

Fax number: 330 358 7314

The rate estimate provided on this fax is based on the information provided to Overnite and is not a binding rate. This estimate is not intended for invoicing purposes and Overnite Transportation accepts no responsibility if it is used as such.

Actual charges will be based on information as it appears on the bill of lading. Rates shown are government tender rates and are only applicable for freight moving on Government Bills of Lading (GBLs). Commercial bills of lading may also be used if the government contract specifies. These must be reimbursed by the government and have the proper endorsements on the commercial bill of lading at the time the freight is tendered to Overnite. Sales terms for the freight must be FOB origin prepaid and charge back (see below). Tender and rates reflect those in effect at the time of inquiry and may be subject to change.

Origin: 52638

Destination: 44266

Weight: 400

Tender: 7129

Estimated rate: $67.50

Quote number: 2315845

Comments:

Thank you for using Overnite,

Brenda Nichols

TERMS OF SALE: FOB origin, freight prepaid and charged back.
Title passed to buyer at origin.
Buyer owns goods in transit.
Buyer files claims (if any).
Seller pays freight charges to carrier, then collect from buyer by adding amount to invoice.

FILE MEMORANDUM

TO: **Ravenna Army Ammunition Plant (RVAAP) Files: Pistol Range, Anchor Test Area, C-Block Quarry and Suspected Mustard Agent Burial Site**

FROM: **Todd Fisher and Eileen Mohr, NEDO DERR**

DATE: **February 26, 2002**

RE: **Revised Remedial Investigation (RI) and Interim Removal Action (IRA) Scopes of Work (SOWs)**

The revised SOWs for the above-referenced areas of concern (AOCs) were received on 02/21/02 and reviewed relative to: the draft SOWs received on 11/14/01; Ohio EPA comments on the draft SOWs dated 11/19/01; and, the conference call between Ohio EPA, RVAAP and MKM personnel on 02/21/02.

General Comment:

1. On all of the SOWs, there is the potential that the proposed action(s) may not completely resolve existing contamination issues. If this is determined to be the case, the Ohio EPA reserves the right to require additional investigations, removals, risk assessments, etc.

Pistol Range IRA:

Ohio EPA concurs that of the two presented options, that the excavation option is the preferred and most effective option As such, this is the option discussed in the comments below: (The "Soil Screening" option should be removed from the SOW).

2. Please respond to Ohio EPA comments # 5, 51, 52, 53, 55 and 57 detailed in the 11/19/01 memorandum referenced-above.

3. Based upon the previous analytical results, the Agency's position is that the top foot of soil from the entire embankment should be removed (i.e., not just the bottom portion of the embankment deemed to represent the impact zone).

4. Based upon the previous analytical results which indicate that the material would fail TCLP for lead, the soil excavated from the bottom portion of the embankment (i.e. the main impact zone) should be containerized immediately subsequent to excavation. If the soil is placed/stockpiled on the ground, as proposed, it would be considered a waste pile and subject to RCRA closure.

5. As the soil (contaminated but non-hazardous) from the upper portion of the embankment is also proposed for disposal at a licensed facility, please containerize these materials

subsequent to excavation rather than creating a stockpile.

6. Please scope in a (to be determined - TBD) number of confirmation samples of the soil that will remain in the embankment. This is to ensure that there isn't any residual contamination from previous activities left in place. At a minimum, the samples should be analyzed for Target Analyte List (TAL) metals.

7. Please describe how it will be ensured that there isn't any contamination left in the embankment at a depth of greater than 1 foot. Excavations greater then 1 foot may be necessary in some instances.

8. Please describe the methodology by which it will be determined that there is no contamination in the intervening creek, the shooting "fan", and areas outside and beyond the embankment due to poor shooting. Any potential contamination needs to be remediated.

9. In the Action Memorandum, please ensure that there is a section which indicates that if the Ohio Army National Guard (OHARNG) does not utilize this range within 5 years that additional characterization, risk assessment, and additional remedial action may be required by the State and that it will be conducted by the Army.

10. Please add sections to the SOW that discuss investigation-derived waste (IDW) handling and the reports which will be generated and reviewed by all stakeholders.

11. What is the position of the OHARNG regarding the potential for conducting an IRA vs. a RI which was initially proposed? Please ensure OHARNG input into the process.

12. What is the ultimate remedial goal of this IRA, i.e. analytes below site-determined background? This needs to be discussed and agreed-upon by the stakeholders.

Anchor Test Area IRA:

13. Please respond to Ohio EPA comments # 5 and 49 detailed in the 11/19/01 memorandum referenced-above.

14. Provide clarification in the SOW as to the number of shallow soil samples. At one point the text indicates 16 samples, at another, 20 samples.

15. Please clarify whether or not there will be 3 separate sets of soil samples for propellant analyses taken from within the sand pit. (There is a contradiction on two different pages of the SOW.)

16. Revise task number 3 to indicate that the 130 cubic yards was estimated based upon USACHPPM data (not IRA data).

17. If there is a chance that the excavated soil will be hazardous, please ensure that it is immediately containerized subsequent to excavation, i.e. do not stockpile it as proposed. (Refer to the applicable comment above on the pistol range.)

18. If contamination is determined in the 0-1' interval at sampling locations where subsurface samples are not proposed; then contingency samples will need to be utilized to determine the extent of contamination and necessary excavation. Ensure that the contingency samples that are proposed for this effort are sufficient such that additional mobilization/characterization efforts will not be required.

19. What is the ultimate remedial goal of this IRA, i.e. analytes below site-determined background? This needs to be discussed and agreed-upon by the stakeholders.

C Block Quarry IRA:

20. Please respond to Ohio EPA comments # 5, 51, 52, 53, 55 and 57 detailed in the 11/19/01 memorandum referenced-above.

21. Has USACE determined what was contained in the aluminum bottles observed on the bottom of the quarry? (Comment #39 in the 11/19/01 Ohio EPA memorandum.) The contents, or suspected contents, of these containers may impact upon the proposed analytical constituent list.

22. What is the ultimate remedial goal of this IRA, i.e. analytes below site-determined background? This needs to be discussed and agreed-upon by the stakeholders.

23. In Task #3, please revise the text to indicate that the soil is contaminated, but not hazardous, based upon USACHPPM and USACE data.

24. Based upon the presence of corroded drums in several areas of the quarry, increase the confirmation sampling for VOCs to include each area which contains remnants of drums. Also, add a minimal number of asbestos samples to the confirmation samples where transite is currently present.

Suspected Mustard Agent Burial Site RI:

25. Provide additional information as to when the 549th EOD unit of Ft. Meade was recently contacted regarding the July 1970 request for their presence on site.

26. Ensure, in writing, that any plans regarding investigations at potential CWM sites do not need to be reviewed and approved by the USACE Huntsville Center of Expertise.

27. Revise the SOW to indicate, that if monitoring wells are installed, that the analytical results would solely indicate whether or not there has been an impact upon the local groundwater. This task alone would not indicate the nature and extent of any potential

soil contamination.

28. How will the perimeter of the suspected burial area be determined? Will this be based upon the geophysical surveys, the remnants of the fence, etc.? It is incumbent upon the Army and the contractor to ensure that they are not conducting intrusive activities in the suspected burial area.

29. As discussed during the 02/21/02 conference call, please ensure that the groundwater sample obtained for the RVAAP full-suite of analyses is collected from a down-gradient monitoring well.

30. The scope proposes to analyze ground water samples for the following Mustard agent decomposition products: Thiodiglycol; Chloroform; 1-4, dithiane; and 1-4, oxathiane. Is thioxane the same as 1-4, oxathiane? If not, should thioxane be included as one of the decomposition analytes? Will any ground water samples be submitted for bis(chloroethyl)polysulfide analysis?

31. For both safety and decontamination purposes, will MINICAMS, OP-FTIR, or any other monitoring devices/technologies be used to detect CWM during this investigation?

cc: Bonnie Buthker, OFFO SWDO
Conni McCambridge, NEDO DDAGW
Mark Patterson, RVAAP
Brian Stockwell, MKM
LTC Tom Tadsen, RVAAP OHARNG

ec: Mike Eberle, NEDO DERR

files: Pistol Range
Anchor Test Area
C Block Quarry
Mustard Agent

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 4, 2002

RE: REVISED RAVENNA ARMY AMMUNITION PLANT (RVAAP) REMEDIAL INVESTIGATION (RI) AND INTERIM REMOVAL ACTION (IRA) SCOPES OF WORK (SOWS) FOR PISTOL RANGE, ANCHOR TEST AREA, C-BLOCK QUARRY, AND SUSPECTED MUSTARD AGENT BURIAL SITE

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 (DERR), has received and reviewed the above-mentioned Scopes of Work (SOW). Theses revised SOWs were received on 02/21/02 and reviewed relative to: the draft SOWs received on 11/14/01; Ohio EPA comments on the draft SOWs dated 11/19/01; and, the conference call between Ohio EPA, RVAAP and MKM personnel on 02/21/02. The following comments were generated by Todd R. Fisher and Eileen T. Mohr, RVAAP Project Coordinators.

General Comment:

1. On all of the SOWs, there is the potential that the proposed action(s) may not completely resolve existing contamination issues. If this is determined to be the case, Ohio EPA reserves the right to require additional investigations, removals, risk assessments, etc.

Pistol Range IRA:

Ohio EPA concurs that of the two presented options, that the excavation option is the preferred and most effective option As such, this is the option discussed in the comments below: (The "Soil Screening" option should be removed from the SOW.)

2. Please respond to Ohio EPA comments # 5, 51, 52, 53, 55 and 57 detailed in the 11/19/01 memorandum referenced above.

3. Based upon the previous analytical results, the Agency's position is that the top foot of soil from the entire embankment should be removed (i.e., not just the bottom portion of the embankment deemed to represent the impact zone).

4. Based upon the previous analytical results which indicate that the material would fail TCLP for lead, the soil excavated from the bottom portion of the embankment (i.e., the main impact zone) should be containerized immediately subsequent to excavation. If the soil is placed/stockpiled on the ground, as proposed, it would be considered a waste pile and subject to RCRA closure.

5. As the soil (contaminated but non-hazardous) from the upper portion of the embankment is also proposed for disposal at a licensed facility, please containerize these materials subsequent to excavation rather than creating a stockpile.

6. Please scope in a (to be determined - TBD) number of confirmation samples of the soil that will remain in the embankment. This is to ensure that there isn't any residual contamination from previous activities left in place. At a minimum, the samples should be analyzed for Target Analyte List (TAL) metals.

7. Please describe how it will be ensured that there isn't any contamination left in the embankment at a depth of greater than one foot. Excavations greater then one foot may be necessary in some instances.

8. Please describe the methodology by which it will be determined that there is no contamination in the intervening creek, the shooting "fan," and areas outside and beyond the embankment, due to poor shooting. Any potential contamination needs to be remediated.

9. In the Action Memorandum, please ensure that there is a section which indicates that if the Ohio Army National Guard (OHARNG) does not utilize this range within five years, that additional characterization, risk assessment, and additional remedial action may be required by the State, and that it will be conducted by the Army.

10. Please add sections to the SOW that discuss investigation-derived waste (IDW) handling and the reports which will be generated and reviewed by all stakeholders.

11. What is the position of the OHARNG regarding the potential for conducting an IRA vs. a RI, which was initially proposed? Please ensure OHARNG input into the process.

12. What is the ultimate remedial goal of this IRA, i.e., analytes below site-determined background? This needs to be discussed and agreed upon by the stakeholders.

Anchor Test Area IRA:

13. Please respond to Ohio EPA comments # 5 and 49 detailed in the 11/19/01 memorandum referenced above.

14. Provide clarification in the SOW as to the number of shallow soil samples. At one point, the text indicates 16 samples, at another, 20 samples.

15. Please clarify whether or not there will be three separate sets of soil samples for propellant analyses taken from within the sand pit. (There is a contradiction on two different pages of the SOW.)

16. Revise task number 3 to indicate that the 130 cubic yards was estimated based upon USACHPPM data (not IRA data).

17. If there is a chance that the excavated soil will be hazardous, please ensure that it is immediately containerized subsequent to excavation, i.e., do not stockpile it as proposed. (Refer to the applicable comment above on the pistol range.)

18. If contamination is determined in the 0-1' interval at sampling locations where subsurface samples are not proposed, then contingency samples will need to be utilized, to determine the extent of contamination and necessary excavation. Ensure that the contingency samples that are proposed for this effort are sufficient, such that additional mobilization/characterization efforts will not be required.

19. What is the ultimate remedial goal of this IRA, i.e., analytes below site-determined background? This needs to be discussed and agreed-upon by the stakeholders.

C Block Quarry IRA:

20. Please respond to Ohio EPA comments # 5, 51, 52, 53, 55 and 57 detailed in the 11/19/01 memorandum referenced above.

21. Has USACE determined what was contained in the aluminum bottles observed on the bottom of the quarry? (Comment # 39 in the 11/19/01 Ohio EPA memorandum.) The contents, or suspected contents, of these containers may impact upon the proposed analytical constituent list.

22. What is the ultimate remedial goal of this IRA, i.e., analytes below site-determined background? This needs to be discussed and agreed-upon by the stakeholders.

23. In Task # 3, please revise the text to indicate that the soil is contaminated, but not hazardous, based upon USACHPPM and USACE data.

24. Based upon the presence of corroded drums in several areas of the quarry, increase the confirmation sampling for VOCs to include each area which contains remnants of drums. Also, add a minimal number of asbestos samples to the confirmation samples where transite is currently present.

Suspected Mustard Agent Burial Site RI:

25. Provide additional information as to when the 549th EOD unit of Ft. Meade was recently contacted regarding the July 1970 request for their presence on site.

26. Ensure, in writing, that any plans regarding investigations at potential CWM sites do not need to be reviewed and approved by the USACE Huntsville Center of Expertise.

27. Revise the SOW to indicate that, if monitoring wells are installed, the analytical results would solely indicate whether or not there has been an impact upon the local groundwater. This task alone would not indicate the nature and extent of any potential soil contamination.

28. How will the perimeter of the suspected burial area be determined? Will this be based upon the geophysical surveys, the remnants of the fence, etc.? It is incumbent upon the Army and the contractor to ensure that they are not conducting intrusive activities in the suspected burial area.

29. As discussed during the 02/21/02 conference call, please ensure that the groundwater sample obtained for the RVAAP full-suite of analyses is collected from a down-gradient monitoring well.

30. The scope proposes to analyze ground water samples for the following Mustard agent decomposition products: Thiodiglycol; Chloroform; 1-4, dithiane; and 1-4, oxathiane. Is thioxane the same as 1-4, oxathiane? If not, should thioxane be included as one of the decomposition analytes? Will any ground water samples be submitted for bis(chloroethyl)polysulfide analysis?

31. For both safety and decontamination purposes, will MINICAMS, OP-FTIR, or any other monitoring devices/technologies be used to detect CWM during this investigation?

If you have any questions regarding 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

TRF/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Conni McCambridge, Ohio EPA, NEDO, DDAGW
Brian Stockwell, MKM
LTC Tom Tadsen, RVAAP, OHARNG
Files: Pistol Range, Anchor Test Area, C Block Quarry, Mustard Agent

ec: Mike Eberle, Ohio EPA, NEDO, DERR

RAVENNA ARMY AMMUNITION PLANT
SCOPE OF WORK
MUSTARD AGENT BURIAL SITE (AOC 28) RI

SITE DESCRIPTION

This site is a 15-by-18-by18-foot area where mustard agent was reportedly buried prior to 1950 according to former employees. In 1969, the 68th EOD unit excavated a suspected mustard agent burial site nearby and found one 50-gallon drum and seven small rusty cans. No contamination was found during the excavation. An unidentified and undocumented source reported that the site had not been correctly identified and was adjacent to the area excavated. In 1970, RVAAP requested the 549th EOD of Fort Meade, who was responsible for the 68th EOD activities, to investigate another area in the same general location. In July 1970, the 549th stated they would comply with the request. The 549th was contacted concerning this operation and stated they were not familiar with the subject and that records dating back to 1971 were no longer available. There have been no attempts to excavate this new site, and it was fenced off. The fence has since fallen.

In 1998 Science Applications International Corporation (SAIC) performed a geophysical investigation at the second proposed mustard agent burial site location. The purpose of this investigation was to both delineate the boundaries of the suspected burial site and identify anomalies that potentially represent buried containers. As reported in the SAIC Geophysical Survey Results, Suspected Mustard Agent Burial Site (RVAAP-28), dated 9 March 1998, several areas with metallic responses were identified. Although there were no definitive findings that clearly delineate a former burial site, it cannot be ruled out that one anomaly could represent a buried container.

USACHPPM DATA

- Two (2) surface soil samples were collected from the site. Subsurface soil, surface water, sediment and groundwater were not evaluated as part of this investigation.
- Surface soil samples were analyzed for metals and thiodiglycol (mustard agent decomposition by product).
- Report identifies the site surface soil to be a potential media for contaminant migration due to lack of any physical barriers around the site.
- Surface soil samples indicated a maximum concentration of arsenic at 5.38 mg/kg.
- There is a *Potential* Receptor Pathway for soil since access to the site is not restricted.
- Relative Risk Site Evaluation for this AOC was scored LOW.

RI OBJECTIVES

Initiate groundwater-monitoring operations to characterize the nature and extent of mustard agent contamination at the suspected burial site. Information obtained from this portion of the RI will be used to help direct subsequent investigations and removal operations, if necessary.

RAVENNA ARMY AMMUNITION PLANT
SCOPE OF WORK
MUSTARD AGENT BURIAL SITE (AOC 28) RI

MUSTARD AGENENT BURIAL SITE SCOPE OF WORK

- Research historical site information to provide the most accurate account of site activities.
- Prepare work plans for site investigation operations. Specific activities to be covered within the work plans will include:

  - Implementation of the Department of the Army Interim Guidance for Biological Warfare Material (BWM) and Non-Stockpile Chemical Warfare Material (CWM) Response Activities dated September 5, 1997.
  - Installation of four (4) ground water monitoring wells outside the perimeter of the suspected burial site to evaluate potential migration of contaminants (see site map). **(As long as the probability of encountering Chemical Weapons Material (i.e., mustard agent) is categorized as *Improbable* or *Remote as per US Army Safety Procedures contained in AR-385-10*).**
    - ✓ Each monitoring well will be installed to monitor the first aquifer at maximum planned depth of thirty (30) feet below ground surface (bgs) or less. Bedrock may be encountered prior to saturated conditions, therefore, borings may be completed using air rotary technology as per the Facility-Wide Sampling and Analysis Plan. Air rotary operations will require additional funds for monitor well installations. These costs are not included in this price quote.
    - ✓ One groundwater sample will be collected from each well (4 total) and submitted to the laboratory for the analysis:
      - Mustard agent decomposition by products:

        - Thiodiglycol
        - Chloroform
        - 1-4, dithiane
        - 1-4, oxathiane

      Additionally, 10% of the groundwater samples will also be analyzed for TAL Metals (filtered), Explosives, Propellants, Cyanide, VOCs, SVOCs, and Pest/PCB.
  - UXO personnel will be present during all intrusive site operations.
  - Following data validation, a Mustard Agent Site report will be submitted to the OSC and OEPA for review. The report will summarize and present all pertinent results, observations, analytical results, data validation, conclusions and recommendations.

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

March 21, 2002

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

Re: February 7, 2002 Revised Draft Orders; Ravenna Army Ammunition Plant

Dear Mr. Cicero:

This letter follows Ohio EPA's review of your February 7, 2002 letter and revised draft administrative consent order for the Ravenna Army Ammunition Plant (RVAAP). Last summer, Ohio EPA and the Army participated in several conference calls concerning the Army's proposal to enter into orders with Ohio EPA to exempt three units currently regulated under the solid waste and hazardous waste programs. Under the Army's proposal, these units would be investigated and remediated under Ohio EPA's remedial response program, following the CERCLA approach outlined in the NCP, 40 CFR Part 300, and meeting all substantive requirements of Chapter 3734 of the Ohio Revised Code (ORC) and applicable rules. The Army felt that it made sense to proceed with such an approach, since the RVAAP is closing, and the Army wished to have all clean ups completed within the next 7 to 10 years.

While it is understood that these units are regulated under ORC chapter 3734, Ohio EPA acknowledges the potential advantages of the remediation of these units as part of a site-wide investigation and cleanup at the RVAAP using a CERCLA approach. These regulated units are within larger areas of contamination that are being or will be investigated under CERCLA. By taking a site-wide approach, a better ground water and surface water monitoring network could be designed with available funding, instead of focusing and sampling only around regulated units. However, since these units are regulated under state solid and hazardous waste facility laws, Ohio EPA has an effective regulatory mechanism to ensure that the necessary monitoring of these units continues to occur. Therefore, Ohio EPA is not willing to consider exemptions of solid or hazardous waste facility requirements for these units unless, at a minimum, the Army commits to: 1) ensuring that ground water and surface water will be regularly monitored at these units, and will continue for the entire RVAAP after the Army has completed all of its monitoring obligations for these units under ORC chapter 3734; and 2) continuing to acknowledge Ohio EPA's regulatory authority to ensure that the investigation and remediation of the RVAAP is performed in accordance with all applicable requirements. See Ohio EPA's June 26, 2001 letter (copy attached).

We also recognized that the negotiation of Orders with the Army would probably require a significant amount of staff resources to complete. Ohio EPA is not willing to commit resources to this effort unless the Army is willing to address our concerns and issues. During the May 1, 2001 conference call, and in Ohio EPA's June 26, 2001 letter, Ohio EPA clearly stated this position. In addition, this position was clearly stated during conference calls on July 11, 2001 and August 8, 2001 between Ohio EPA and the Army, where Ohio EPA was asked to clarify our June 26, 2001 letter. At the conclusion of each call, Ohio EPA was assured by the Army that we were close to resolving these issues. If we had not felt that the Army had committed to address our concerns in its revised draft Orders, we would have concluded our discussions in 2001 with a negative recommendation regarding the requested exemption order.

Ohio EPA has completed its review of the February 7, 2002 revised draft Orders. While we appreciate the Army's effort in redrafting the document, Ohio EPA is dismayed that most of the items that we requested in our June 26, 2001 letter are not addressed in the revised draft Orders. Below is a list of those items:

Items Applicable to Entire Installation:

1. Activities at all CERCLA, RCRA, and Solid Waste Areas of Concern necessary for the investigation and cleanup of the entire installation would be covered under the orders.

2. Institution of an installation-wide groundwater monitoring program. The number and locations of monitoring wells, in addition to the constituents of concern to be analyzed for as well as the frequency of sampling, etc., could be resolved during negotiations, but we need to ensure that Open Detonation Area 2, the Deactivation Furnace Area, and the Ramsdell Quarry Landfill are properly monitored to achieve the objectives of the hazardous waste and solid waste facility requirements. The facility-wide ground water monitoring program should include the components of OAC 3745-54-90 through 3745-55-011 and OAC 3745-27-10. Basically, Ohio EPA expects a regularly scheduled ground water monitoring program, consisting of a defined set of monitoring wells, with a defined list of analytes, a method of evaluating the data to determine if contamination is migrating, provisions to determine rate and extent, and if necessary corrective actions. Provisions for modifying this monitoring program should also be included in the Orders. See *Director's Final Findings and Orders between the Ohio EPA, the Department of Energy, and Flour Daniel, Inc for the Fernald Environmental Mangement Project* (September 7, 2000) (copy attached).

3. Institution of an installation-wide surface water monitoring program (with provisions for modification as needed).

4. Clear definition of roles and responsibilities of all parties under the Orders.

5. The Army agrees to obtain state approval before any investigation or remediation (under the current CERCLA Areas of Concern (AOC) or these 3 units) is initiated.

6. Enforceable schedules for all investigation and remediation activities necessary at the installation, including both the current CERCLA AOCs and these 3 regulated units. (this is similar to language that we have under other Orders with Federal facilities.)

Items specific to units regulated under hazardous waste or solid waste rules:

1. Open Detonation Area (ODA) #2: A portion of this unit is regulated under hazardous waste laws. This unit is subject to RCRA closure rules, but the Army would like to continue to use this unit to treat unexploded ordnance found during the CERCLA investigations. If Ohio EPA is to consider an exemption of the hazardous waste facility closure requirements, the following items would need to be included in the Order:

a. Regularly scheduled ground water monitoring for site-specific constituents should continue at this AOC for as long as it is actively being used for detonation purposes. This monitoring should, at a minimum, incorporate the components of OAC 3745-54-90 through 3745-55-11. However, modifications to these requirements may be discussed during the negotiation of the requested Orders.

b. Open Detonation Area #2 is subject to the same requirements that apply to any Treatment, Storage, or Disposal facility while it is still being used for open detonation and/or open burning of hazardous waste. Therefore, the Army should be required to submit to Ohio EPA a plan (for review and approval) that provides the following: facility and unit description (what the Army plans to do with the ODA until final closure), as outlined in OAC rules 3745-50-44 and 3745-54-13; procedures to prevent hazards from occurring, as outlined in OAC rules 3745-50-44 and 3745-54-44; a contingency plan, as outlined in OAC rules 3745-54-51 and 3745-56-27; and a personnel training plan, as outlined in OAC rules 3745-50-44 and 3745-54-16.

c. Agreement that once Open Detonation Area #2 is no longer needed, that the entire unit (both the RCRA portion and CERCLA portion) will be remediated as necessary.

2. Deactivation Furnace:

a. A closure plan has been submitted for the deactivation furnace. The Army must agree to resolve any outstanding issues concerning the closure of this unit. Post-closure activities would also be addressed under requested Orders.

b. Regularly scheduled groundwater monitoring for site-specific constituents should continue at this AOC until it is incorporated into an installation-wide groundwater monitoring plan under the CERCLA program.

3. Ramsdell Quarry Landfill:

a. Regularly scheduled ground water monitoring for site-specific constituents should continue at this AOC until it is incorporated into an installation-wide ground water monitoring plan under the CERCLA program. Until an installation-wide ground water monitoring plan is instituted or until the conclusion of the 30-year post-closure monitoring period, the ground water monitoring program at this AOC should comply with the requirements of OAC 3745-27-10. However, modifications of these requirements may be discussed during the negotiation of the requested Orders.

b. The facility should complete the requisite 30 years of post-closure care in accordance with OAC 3745-27-14.

c. If Ohio EPA is to consider an exemption from the ground water monitoring requirements of OAC 3745-27-10, an exemption from the ground water monitoring requirements in 3745-27-14 should also be considered.

In addition to these major items, Ohio EPA has additional concerns with language. These ~~major~~ concerns with the revised draft Orders are listed below:

1. The draft Orders propose one dispute resolution mechanism for these units, and a second dispute resolution mechanism for the remaining sites under the IRP program. Ohio EPA feels one dispute resolution mechanism should be developed for the RVAAP site, due to the potential for confusion with two separate dispute resolution mechanisms.

2. Though the revised draft Orders mention the intent of the Army to protect indigenous natural resources at the installation, the document does not discuss the incorporation (where applicable) of site restoration during remediation activities to address potential Natural Resource Damage claims at the installation. This issue needs to be resolved. At a minimum, the requested Order must include a Reservation of Rights provision regarding the State's potential NRD claims.

3. Though an exemption from permit requirements for hazardous waste treatment may be appropriate, individual AOC permits for discharges to air or surface water (if necessary for the remediation) would still be required. The revised draft Orders not only request an exemption from the hazardous waste and solid waste requirements for these units, but also suggest that Ohio EPA recognize that all response actions pursuant to CERCLA are exempt from the requirement to obtain permits. This position

is contrary to our discussions on this issue during our conference calls.

Please clarify whether the February 7, 2002 revised draft Orders contain the Army's final position concerning these issues. If this is the case, this stance is unacceptable, and contrary to previous discussions between the Army and Ohio EPA. As such, Ohio EPA would see no benefit in continuing negotiations with the Army regarding your request.

If you wish to discuss this matter further, please contact Eileen Mohr at (330) 963-1221.

Sincerely,

Graham E. Mitchell, Chief
Office of Federal Facilities Oversight

attachments (2)

cc: Mark Patterson, RVAAP
Bob Whelove, Army OSC
Mark Navarre, Legal/CO
Cindy Hafner, DERR/CO
Tom Winston, SWDO
Bill Skowronski, NEDO
Rod Beals, DERR/NEDO
Eileen Mohr, DERR/NEDO
Todd Fisher, DERR/NEDO
Diane Kurlich, DDAGW/NEDO
Greg Orr, DHWM/NEDO
Dennis Bush, DAPC/NEDO
Dennis Lee, DSW/NEDO
Mike Hopkins, DAPC/CO
Kurt Princic, DSIWM/DHWM, NEDO
Jarnal Singh, DSIWM/NEDO
Frank Markunus, Akron Regional Air Quality Management
Bonnie Buthker, 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

August 12, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
NITROCELLULOSE

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 information provided by representatives of the US Army Corps of Engineers (USACE) and the Ravenna Army Ammunition Plant (RVAAP) regarding the issue of testing for nitrocellulose at the RVAAP.

The RVAAP had requested concurrence from the Agency that nitrocellulose be eliminated from future environmental testing conducted at the installation. Ohio EPA does not concur with the elimination of testing for nitrocellulose, based upon the following reasons:

1. The elimination of nitrocellulose from the analytical suite at RVAAP would result in the State being inconsistent with what is being required at other federal facilities within the State of Ohio.

2. Nitrocellulose is an identified constituent of concern (COC) at the RVAAP that is directly attributable to Army activities. Analytical selection is based upon what may or may not be present at an area of concern (AOC). COCs cannot be eliminated solely based upon whether or not there is a currently defined toxicological effect. (For example, will it be requested in the future that some of the constituents on the target analyte list - TAL - that are currently known not to be toxic, be removed from the analytical testing suite?)

3. The Remedial Investigation/Feasibility Study (RI/FS) process requires that the nature and extent of contamination is determined at the particular site under investigation. By eliminating a known installation-specific COC during the investigation phase, there is no possible way that one of the main objectives of a RI/FS can be achieved, and neither risk evaluations nor adequate remedial decisions can be made for a particular AOC.

4. Currently, propellants are not being analyzed for in each sample which is obtained during the environmental investigations. For the most part, the analyses are only being done on a 10% basis, and selectively located in the area in which they would most likely be found (if present). As such, the cost factor in conducting the analyses for nitrocellulose should not be prohibitive.

5. The Agency does not disagree, based upon the information supplied by the USACE, that nitrocellulose has low toxicity to most receptors that have been exposed to this compound. However, compounds with low toxicity may still have deleterious effects on receptors. This is most often associated with ecological receptors. For example, a site in the Northeast District Office (NEDO) released large amounts of calcium carbonate into a river. Although calcium carbonate is not very toxic, the release over the years essentially turned the river bottom to

concrete, which subsequently had a severe adverse impact on the aquatic community. As such, toxicity alone is not enough to eliminate a compound, as non-chemical impacts (physical stresses) may also impact upon ecological receptors. Another example, iron is usually not a risk driver for most of our sites, but sometimes the precipitation of iron from either leachate or groundwater seeps can cover stream bottoms and create problems for benthic organisms. Is that something which could occur at RVAAP (with respect to nitrocellulose), at much lower concentrations than what would be considered a safety hazard? Is there any data to support what those concentrations might be?

6. Another concern regarding the elimination of nitrocellulose, would be if (for some reason) the toxicity of this compound was re-evaluated, and a toxicity value was determined. If the distribution of this contaminant is not determined during the initial RI process, and it is clearly a COC, then the nature and extent of this compound would need to be re-assessed. This, in the long view, would be more costly to the Army.

Ohio EPA has demonstrated in the past the willingness to work with the Army with respect to analyzing the obtained environmental samples for the constituents that make sense, *i.e.*, sampling based upon process knowledge, historical information, visual observance, etc. The Agency will continue to work with the Army in this manner, however, Ohio EPA cannot support the wholesale elimination of nitrocellulose from the analytical testing suite at the RVAAP.

I trust that this correspondence clarifies Ohio EPA's position regarding this issue.

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

Sincerely,

Michael J. Eberle
- FOR -

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

ETM/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, CO, DERR
John Cicero, RVAAP
LTC Tom Tadsen, RVAAP
Bob Whelove, OSC
David Brancato, USACE Louisville
John Jent, USACE Louisville
Paul Zorko, USACE Louisville
Kevin Jago, SAIC
Rick Callahan, MKM
Susan McCauslin, Spec-Pro Inc

ec: Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, 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

9/17/02

September 12, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
NITROCELLULOSE

Dr. David Brancato
Department of the Army
U.S. Army Corps of Engineers
Louisville District
P.O. Box 59
Louisville, KY 40201-0059

Dear Dr. Brancato:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed your correspondence, dated September 3, 2002, and your email and revised correspondence, dated September 4, 2002.

This response letter reflects the position of Ohio EPA's Northeast District Office (NEDO), Division of Emergency and Remedial Response (DERR); Central Office (CO), DERR; and Southwest District Office (SWDO), Office of Federal Facilities Oversight (OFFO). In crafting this response, it was Ohio EPA's assumption that the issuance of the September 4, 2002 email and revised correspondence supercedes the official correspondence, dated September 3, 2002 (sent via regular mail) and received at NEDO on September 6, 2002.

Please cross-reference Ohio EPA's correspondence dated August 12, 2002. Specifically, the last paragraph states: "Ohio EPA has demonstrated in the past the willingness to work with the Army with respect to analyzing the obtained environmental samples for the constituents that make sense, *i.e.*, sampling based upon process knowledge, historical information, visual observance, etc. The Agency will continue to work with the Army in this manner, however, Ohio EPA cannot support the wholesale elimination of nitrocellulose from the analytical testing suite at the RVAAP." Based upon the Army's commitment in the second to the last paragraph of the September 03, 2002 correspondence, which states: "Again, the Army wants to assure the Agency where nitrocellulose was stored, used in booster manufacture or demolition (OB/OD, or burn areas), testing for the same will occur, only for the purpose of determining characteristic failure," it does not appear that the Army and Ohio EPA are very far apart on this issue. However, Ohio EPA would also add to the above-referenced Army statement that nitrocellulose would also be tested for in areas in which demilitarization activities occurred. In addition, the Agency does not concur that the potential listing of Areas of Concern (AOCs) on page 2 of the September 3, 2002 correspondence is complete (*i.e.*, only Load Line 7, Winklepeck Burning Grounds and Open Burning/Open Demolition areas are referenced). Ohio EPA requests input on each generated AOC-specific scope of work (SOW) as to whether or not nitrocellulose should be included on the analyte list. This request is consistent with all of the work previously and currently conducted at the installation.

Comments Specifically Related to USACE Responses to the August 12, 2002 Ohio EPA Correspondence:

Comment # 1:

The question of "inconsistency with respect to what is required at other Federal facilities within the State of Ohio" references the fact that Ohio EPA requires that the Federal facilities (if appropriate) ensure that nitrocellulose is part of the analytical testing suite as nature and extent of contamination is determined in the Remedial Investigation (RI) process. For example, clearly, if the Federal facility is a Department of Energy site, nitrocellulose would not be a routine part of the constituent list. One of the issues that is routinely brought to the attention of Ohio EPA personnel by the rest of the RVAAP project team, is the need to be consistent. Other Federal facility sites expect the same of Agency personnel. In turn, Ohio EPA expects the same of the USACE.

Although the average concentrations of nitrocellulose at Load Line 1 may be "orders of magnitude below characteristic reactivity," it would be premature to make this statement with respect to AOCs that have not been investigated (for example Building 1200), as well as at AOCs from which we are awaiting data and reports (for example Cobbs Ponds which received discharges from Load Lines 3 and 12).

Comment # 2:

The USACE response indicates that "...nitrocellulose was a constituent of potential concern (COPC) only by the fact that it was stored in buildings at Load Line 1." Please provide additional information to Ohio EPA with respect to the storage location(s) of propellant at Load Line 1. In addition, nitrocellulose is also a COPC at Load Line 1 because this AOC was also used for demil/rehab operations following the Vietnam War; and, triple-based propellant pellets were observed on the ground surface near the buildings used for demil operations.

Comment # 3:

Please refer to comment # 2 detailed above with respect to Load Line # 1 references in the USACE response. Also refer to previous Ohio EPA statements in this correspondence which indicates that the listing of AOCs for which nitrocellulose analytical testing should occur is not complete.

Please provide additional information to Ohio EPA which substantiates the assertion that all disposal of nitrocellulose occurred at the burning pads. If this is the case, then why are we observing triple-based propellant pellets on the ground surface at Load Line 1, in Ohio EPA split sampling data from Cobbs Pond, in contractor data from Load Line 12, etc.

Again, the purpose of the RI/FS (Feasibility Study) process is to determine the nature and extent of the contamination at an AOC. During this process, sufficient information must be gathered "....to support an informed risk management decision regarding which remedy appears to be most appropriate for a given site. The appropriate level of analysis to meet this objective can only be reached through constant strategic thinking and (emphasis added) *careful planning concerning the essential data needed to reach a remedy selection decision.*" As such, it is imperative that the appropriate installation or AOC-specific COPCs are evaluated. (EPA/540/G-89/004)

Comment # 4:

Please refer to previous Ohio EPA statements in this correspondence which indicates that the listing of AOCs for which nitrocellulose analytical testing should occur, is not complete.

Comment # 5:

The Agency agrees that nitrocellulose has relatively low toxicity. The information on the toxicity of nitrocellulose provided in previous correspondence can be discussed qualitatively in the risk assessment. However, the degree of the compound's toxicity is not the major issue identified in comment # 5. Defining the nature and extent of nitrocellulose and all pertinent COPCs at every AOC is the issue at hand.

In addition, comment # 5 was intended to identify possible adverse effects as the result of physical disruption of habitat by way of contamination of water with insoluble, bulky, or persistent materials. This potential adverse impact to habitat is possible regardless of the toxicity of these contaminants. The response focused again on the low toxicity of nitrocellulose and only briefly discussed possible migration to surface waters based on concentrations of nitrocellulose. This point, however, emphasizes the fact that information (*i.e.*, nitrocellulose concentration data) is needed from AOCs where releases of nitrocellulose are suspected. Without this information, the Army could not have made the above statement regarding possible discharges to surface waters.

One other important point to consider is that contamination, or pollution in surface waters, as defined by 6111.01 of the Ohio Revised Code, does not include an exemption for compounds with low toxicity. Therefore, any waste would need to be evaluated that has been discharged, either directly or indirectly, to Waters of the State. Therefore, at AOC's where this compound is a suspected COPC, nature and extent must be defined.

Comment # 6:

The revised USACE response to Ohio EPA's comment indicates that "USACE does not anticipate any changes in the current information prior to completion of the RI/FS and Record of Decision (ROD) process for AOCs at RVAAP." Given the current Installation Action Pian (IAP) schedule for RVAAP, it is unclear as to how this statement can be made. As such, the original Ohio EPA comment still stands.

In conclusion, Ohio EPA reiterates the following:

1. Ohio EPA has demonstrated in the past the willingness to work with the Army with respect to analyzing the obtained environmental samples for the constituents that make sense, *i.e.*, sampling based upon process knowledge, historical information, visual observance, etc. The Agency will continue to work with the Army in this manner, however, Ohio EPA will not support the wholesale elimination of nitrocellulose from the analytical testing suite at the RVAAP.

2. The Agency does not concur that the potential listing of AOCs on page 2, as well as the general categories listed throughout the September 3, 2002 correspondence, is complete.

3. Ohio EPA requests input on each generated AOC-specific SOW as to whether or not nitrocellulose is included on the analyte list. This request is consistent with all of the work previously and currently conducted at the installation.

I trust that this correspondence clarifies the Agency's position on this issue. If you have any questions, please do not hesitate to contact me at 330-963-1221.

Sincerely,

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

ETM/kss

cc: Bonnie Buthker, Ohio EPA, OFFO, SWDO
Laurie Eggert, Ohio EPA, OFFO, SWDO
Brian Tucker, Ohio EPA, DERR, CO
Mark Patterson, RVAAP
John Cicero, RVAAP
LTC Tadsen, RVAAP
Bob Whelove, OSC
Elizabeth Ferguson, USACE Louisville
John Jent USACE Louisville
Paul Zorko, USACE Louisville
Kevin Jago, SAIC
Rick Callahan, MKM
Susan McCauslin, SpecPro Inc

ec: Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, 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

February 7, 2002

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, 2002 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

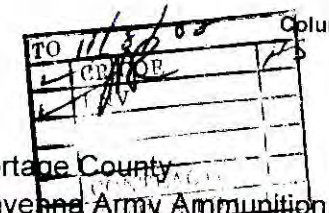
LAO:ca

pc: TolTest, Inc, Mr. Jim McGee
Portage County Health Department
Dave Evans, DDAGW, CO

OhioEPA
State of Ohio Environmental Protection Agency

STREET ADDRESS:
Lazarus Government Center
122 South Front Street
Columbus, OH 43215

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



Re: Portage County
Ravenna Army Ammunition Plt/Office
Nontransient Noncommunity Water System
PWS ID: 6784812
Issue Date: 11/06/02
Effective Date: 12/20/02

RAVENNA ARMY AMMUNITION PLANT US ARMY
8451 ST RT 5
RAVENNA OH 44266

CERTIFIED MAIL

Proposed action of the Director:

This letter is notification (1) that the Director of the Ohio Environmental Protection Agency (Ohio EPA) is proposing to classify your public water system as a Class A public water system and (2) that you must place the responsibility for the operation of your public water system with a properly certified operator.

Ohio Administrative Code (OAC) Rule 3745-7-03 requires all public water systems, except transient non-community public water systems, with no serious public health or environmental hazards serving 250 or fewer persons be classified. **CLASS A IS THE LEAST RESTRICTED CLASSIFICATION ALLOWED.** To be classified as a Class A public water system, the system must meet all of the following requirements contained in OAC Rule 3745-7-03(C):

1. be a community or non-transient non-community public water system which serves a population of no more than 250, or a transient non-community public water system which serves a population greater than 250;
2. use only purchased water or ground water source(s);
3. does not provide precipitative (lime) softening; and
4. have no serious public health or environmental hazard associated with the operation of the public water system.

The effective date of your Class A classification is shown above and on the enclosed certificate. The classification worksheet is available for your review at either your Ohio EPA District Office or at the Ohio EPA's Division of Drinking and Ground Waters Central Office in Columbus.

NO ACTION IS REQUIRED ON YOUR PART FOR THE CLASS A PUBLIC WATER SYSTEM CLASSIFICATION TO BECOME EFFECTIVE ON THE DATE SHOWN ABOVE AND ON THE ENCLOSED CERTIFICATE.

Appeal rights:

This is a proposed action of the Director. If you think this Class A classification is incorrect, you may appeal this proposed action. Your request for an adjudication hearing must be received by the Ohio EPA within thirty (30) days of issuance of this proposed action. At the adjudication hearing, you may appear in person or be represented by an attorney, and you may present evidence at such hearing and examine witnesses. A request for an adjudication hearing must be in writing and sent to: Hearing Clerk, Ohio EPA, 122 South Front Street, P.O. Box 1049, Columbus, Ohio 43216-1049. At that hearing you may address points you believe to be in error in the classification of your system.

Steps required for compliance:

Once the proposed classification of your public water system becomes effective, you are required to place the operation of the public water system in the responsible charge of an operator holding at least a Limited Class A certification in order to comply with the certified operator requirements of OAC Rule 3745-7-02. Your system has the following options to come into compliance with that rule:

1. Complete and return the enclosed Limited Class A Certification Application within forty-five (45) calendar days following the date of this letter, or by February 12, 2003, whichever is earlier. This option is available to you or your designees meeting certain minimum requirements as described in the attached fact sheet. This option is not available after February 12, 2003. The application must be signed by both the owner or their authorized representative and the operator. A separate application is required for each operator seeking a Limited Class A certification; or

2. Obtain the services of an adequately certified operator to be in the responsible charge of the water system. The operator may hold one of the following certifications: Class A, I, II, III, or IV Water Supply Operator or a Class I or II Water Distribution Operator. The operator may be either a full-time employee meeting the requirements of OAC Rule 3745-7-02(C), or a contract operator meeting the requirements of OAC Rule 3745-7-02(E); or

3. Provide training so that your present personnel may successfully obtain adequate certification. Please note that a satisfactory arrangement for "part-time" technical supervision may be required during this interim period.

Please inform the Ohio EPA in writing of your compliance with the new classification. Information should be sent to the Ohio EPA, Division of Drinking and Ground Waters, 122 South Front St., P.O. Box 1049, Columbus, Ohio 43216-1049 within forty-five (45) calendar days following the date of this letter as to your system's current compliance with the certified operator regulations. Your response should list the (1) name, (2) address, (3) certificate number and (4) designated responsibility for each operator employed by your public water system.

If a review of your compliance status shows you are **not** in compliance, you will be advised of a compliance schedule for your public water system.

Any questions you may have regarding public water system classification may be directed to our Operations Unit. For any questions about operator certification, contact our Certification Unit. Both are at the Ohio EPA, Division of Drinking and Ground Waters, 122 South Front St., P.O. Box 1049, Columbus, Ohio 43216-1049, (614) 644-2752.

Sincerely,

Michael G. Baker, Chief
Division of Drinking and Ground Waters

cc: Engineering and Operations Section
Journal Room
Northeast District Office
File

Enclosures: Certificate of Classification
Limited Class A Certification Application
Fact Sheet

Did You Know...

- Less than one gallon of gasoline can pollute one million gallons of ground water.
- One person uses 29,200 gallons of water a year.
- Only 3 percent of the water on earth is drinkable.
- Ground water contamination is both difficult and costly to clean up.

The following chemicals are potential sources of ground water contamination:

Cleaning products, Automotive products, Fuel oil, Furniture strippers, Lawn & garden products (fertilizers & pesticides), & Oil-based paints.

What YOU can do to HELP

PROTECT

Your Water Supply

1. Have your septic system inspected and pumped at least every three years. Do not use septic tank additives or pour left-over chemicals down a sink or toilet.

2. Apply fertilizers and pesticides at (or below) the recommended rates. Overapplication of these products can contaminate your water supply. If possible, do not use these chemicals near your well.

3. Recycle or properly dispose of unneeded chemicals. Do not pour wastes down storm drains.

4. If you spill a chemical outside, absorb it with old rags or paper towels. Do not wash chemicals into the ground.

Place Address Label Here

For More Information...

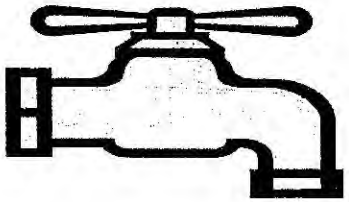
Ohio EPA

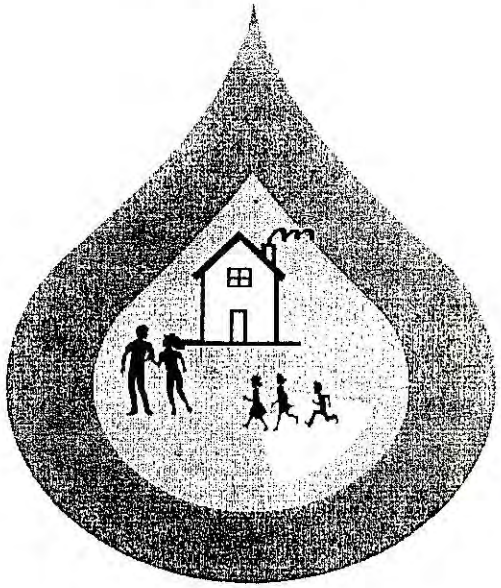
Northeast District Office
2110 E. Aurora Road
Twinsburg, OH 44087
(330) 425-9171 or (800) 686-6330

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

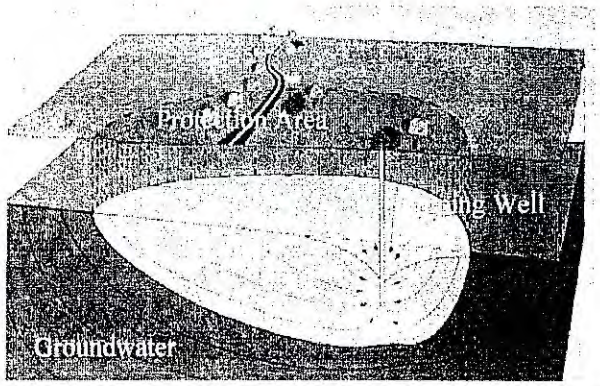
Ohio's Source Water Assessment & Protection Program

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:

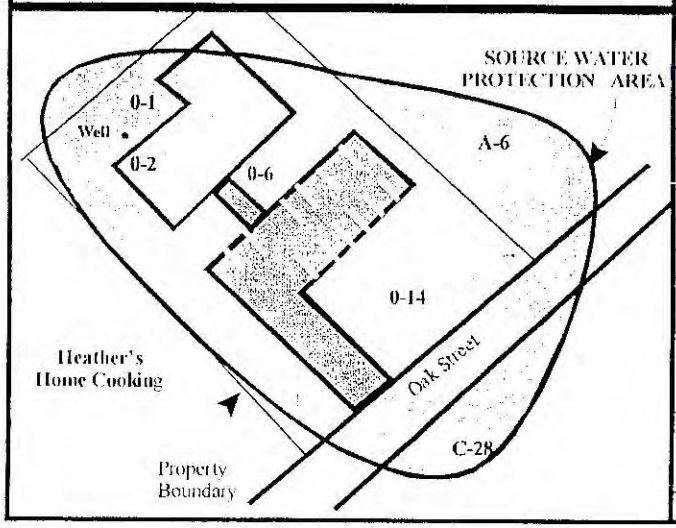
1) Delineate the Protection Area.

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 old
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 376 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 been determined, Ohio EPA will send you a map showing the boundaries of the protection area, the locations of potential contaminant sources that were identified through state and federal databases (landfills, hazardous waste sites, etc.), and forms and instructions on completing the Potential Significant Contaminant Source Inventory. Ohio EPA will ask you to verify the locations of the identified facilities and locate any additional potential contaminant sources. An Ohio EPA staff person will then visit your site to answer your questions and assist you in completing the inventory.

3) Complete a Susceptibility Analysis.

Ohio EPA will determine the likelihood that your drinking water could become contaminated. This susceptibility analysis will be based on the geologic sensitivity of your ground water resource, the potential contaminant sources within the protection area, well integrity, and information on water quality. The analysis will conclude with recommendations on the types of protective strategies that may be most useful and effective in protecting your ground water resources from contamination.

4) Develop & Implement Protection Strategies.

Protective strategies for non-community water systems will consist primarily of education and the implementation of best management practices (for potential contaminant sources located on the water system's property). For example, the public water system should make sure that any chemicals used on site are properly stored, handled, and disposed of, and septic systems are properly maintained. The water system also should develop an emergency preparedness plan to ensure that the owner and any employees know how to minimize or avoid contamination in the event of an emergency. Ohio EPA will assist you in developing protective strategies for your water supply and will provide you with information on what you can do to make sure your drinking water is protected.

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

12/16/02

December 13, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
OH5-210-020-736
PORTAGE COUNTY
CEI NOTICE OF COMPLIANCE

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

Dear Mr. Cicero:

On December 12, 2002, Duncan Campbell, representing the U.S. Environmental Protection Agency's (U.S. EPA), Waste Pesticides and Toxics Division, Enforcement, Compliance and Assurance Branch (WPTDECAB), and I, representing the Ohio Environmental Protection Agency's (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 RVAAP'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). Jim McGee, of TolTest, Inc., and Mark Patterson of RVAAP, 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.

A copy of our checklist is enclosed for your information. At the time of the inspection, was evaluated for compliance with applicable Hazardous Waste Regulations. No violations of Ohio's hazardous waste laws were found during this inspection.

No Checklist enclosed N.R.

Failure to list specific deficiencies in this communication does not relieve RVAAP 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

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

H:/ERP/BROWN/COST-TO-COMPLETE FY02 QA PROGRAM

SFIM-AEC-ERP (200) 22 Jan 02

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Cost-to-Complete (CTC) Quality-Assurance Sampling Program

1. References:

a. CFO Act of 1990, Public Law 101-576.

b. US Army Audit Agency, Audit Report: AA 01-332, 29 Jun 01, subject: Financial Reporting of Liabilities: Data Collection and Compilation.

c. Memorandum, Assistant Chief of Staff for Installation Management, DAIM-ED-R, 3 Dec 99, subject: Draft Report on the Audit of the Installations Restoration Program.

d. Management Guidance for the Defense Environmental Restoration Program (DERP), September 2001.

2. The 1990 Chief Financial Officers (CFO) Act (ref 1a) requires Department of Defense agencies to report environmental liabilities. The DERP CTC estimates form the basis of the environmental liabilities reported in the Army's annual financial statements. Incomplete, inaccurate, and unsupported liability data hinders the Army's efforts to obtain a favorable opinion on its financial statements as well as limits the usefulness of the data to managers of the environmental programs.

3. Reference 1b found that environmental liabilities for restoration projects totaling about $1.2 billion were not adequately supported because field operating activities hadn't made adequate progress in documenting cost estimates. The report recommended several actions for improving supporting documentation including the implementation of a Quality-Assurance Sampling program specified in reference 1c.

4. Beginning in February 2002, the US Army Environmental Center will be conducting cost-to-complete reviews at selected Installation Restoration Program and Base Realignment and Closure sites. The installations with selected sites will be notified through the MACOM. The CTC program manager will handle this coordination. Site selection criteria and procedures for validating CTC documentation are included in enclosure 1.

SFIM-AEC-ERP
SUBJECT: Cost-to-Complete (CTC) Quality-Assurance Sampling Program

5. Reference 1d require the Army to ensure the reliability and completeness of the data used to calculate CTC estimates. The CTC reviews as provided in the enclosure will ensure CTC estimates are complete, up-to-date and fully and formally documented in a manner that will withstand an audit.

6. The USAEC POC is Mr. Hopeton D. Brown, at (410) 436-1531 (DSN 584); FAX (410) 436-1548; and e-mail hopeton.brown@aec.apgea.army.mil.

FOR THE COMMANDER:

Encl

DOMINIQUE K. EDWARDS
Acting Chief
Environmental Restoration Division

DISTRIBUTION:
ENVIRONMENTAL OFFICE
(ATBO-GE/MR. MCCLAIN/MR. HOLSINGER/MR. BLUMEWEAVER), (ATBO-R/ MR. LEDERLE/MS. MILLS), US ARMY TRAINING AND DOCTRINE COMMAND, 3A BENARD ROAD, BLDG 105A (INSIDE MOAT), FT MONROE, VA 23651-5000
(AMCIS-A/MR. GANTA/MR. SIMMONS/MS. ANDEREGG), (AMCIS-B/MR. DAVIDSON) US ARMY MATERIEL COMMAND, 5001 EISENHOWER AVE, ALEXANDRIA, VA 22333-0001
(AFPI-ENE/MR. GRICIUS), (AFPI-BC/MR. BONILLA), US ARMY FORCES COMMAND, 1777 HARDEE AVE, SW, BUILDING 200, FT MCPHERSON, GA 30330-1062
(APEN-V/MR. KUBECKA), US ARMY, PACIFIC, BUILDING T-104, FORT SHAFTER, HI 96858-5100
(CEMP-R/MS. RIVERS), (CEMP-RI/MR. GREGG/MR. BALLIF/MR. ROSS), (CEMP-M/MR. LUCAS), (CELD-ZE/MR. ROBINSON), (CEMP-B/MR. LEE), US ARMY CORPS OF ENGINEERS, 441 G STREET, NW., WASHINGTON, DC 20314-1000
(MCFA-E/MR. CARDENAS/MR. GONZALEZ), US ARMY MEDICAL COMMAND, 2050 WORTH RD, FORT SAM HOUSTON, TX 78234-6000
(ANSP-IS-EV/MR. KEYS), US ARMY MILITARY DISTRICT OF WASHINGTON, 103 THIRD AVE, BUILDING 42, FT LESLEY J. MCNAIR, WASH DC 20319-5058
(ANEN-RO/MR. FRENCH), US ARMY MILITARY DISTRICT OF WASHINGTON, 103 THIRD AVENUE, FORT LESLEY J. MCNAIR, MD 21719-5058
(MTPAL-FE/MR. DOUTHIT), (MTRM-M/MS. GRAVES), MILITARY TRAFFIC MANAGEMENT COMMAND, HOFFMAN BLDG II, 200 STOVALL STREET, ALEXANDRIA, VA 22332-5000
(CONT)

SFIM-AEC-ERP
SUBJECT: Cost-to-Complete (CTC) Quality-Assurance Sampling Program

DISTRIBUTION: (CONT)
(AFRC-ENV-RC/MR. GRICIUS/MS. WATSON), US ARMY RESERVE COMMAND, 1401 DESHLER STREET, SW, FT MCPHERSON, GA 30330-2000
(CSTE-ILE-ENV/MR. VOGT), US ARMY TEST AND EVALUATION COMMAND, PARK CENTER IV, 4501 FORD AVENUE, ALEXANDRIA, VA 22302-1458

(NGB-ARE/MS. FATZ), NATIONAL GUARD BUREAU, ARMY NATIONAL GUARD READINESS CENTER, 111 SOUTH GEORGE MASON DRIVE, ARLINGTON, VA 22204-1382
(NGB-ARE-I/MR. HILYARD), NATIONAL GUARD BUREAU, BLDG E4430, 1ST FLOOR, ABERDEEN PROVING GROUND, MD 21010-5420

(SMDC-EN/MR. DAVIS), US ARMY SPACE AND MISSILE DEFENSE COMMAND, PO BOX 1500, HUNTSVILLE, AL 35807-3801

(MAEN-EV/MR. ROOD/MR. SHANDLING/MR. BUSKO), US MILITARY ACADEMY, OFFICIAL MAIL AND DISTRIBUTION CENTER, 646 SWIFT ROAD, WEST POINT, NY 10996-1905

CF (W/ENCL):
HQDA
(SAIE-ESOH/MR. NEWSOME), 110 ARMY PENTAGON, WASH DC 20310-0110
(DAIM-BO/MS. FLYNT/MR. DOHERTY), (DAIM-ED/COL HOEFERT), (DAIM-ED-R/ MS. WILSON), ACSIM, 600 ARMY PENTAGON, WASH DC 20310-0600

ENVIRONMENTAL OFFICE
(AMSEL-LE/DR. OTT), (AMSEL-PE-BR/MR. KENCIK), US ARMY COMMUNICATIONS- ELECTRONICS COMMAND, FT MONMOUTH, NJ 07703-5024
(CSTE-DTC-IM-E/MS. KOSKO), US ARMY DEVELOPMENTAL TEST COMMAND, 314 LONGS CORNER ROAD, ABERDEEN PROVING GROUND, MD 21005-5055
(AMSIO-MAI/MR. MURPHY), (AMSOS-MAI-ER/DR. CRAIN), US ARMY OPERATIONS SUPPORT COMMAND, BLDG. 390, 4TH FLOOR, NW RODMAN AVE., ROCK ISLAND, IL 61299-6000
(SOSMA-ISE-R/ MR. MATTHEWS), US ARMY OPERATIONS SUPPORT COMMAND FACILITIES SUPPORT, 1 ROCK ISLAND ARSENAL, ROCK ISLAND, IL 61299-5500
(AMSSB-OET/MR. MARTIN), (AMSSB-ISR/MR. CERAR), US ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND, 5183 BLACKHAWK RD., ABERDEEN PROVING GROUND, MD 21010-5424
(AMSTA-RM-XEM/MR. TIGHE) US ARMY TANK-AUTOMOTIVE AND ARMAMENTS COMMAND, 6501 E. ELEVEN MILE RD., BLDG. 205, WARREN, MI 48397-5000
(CONT)

SFIM-AEC-ERP
SUBJECT: Cost-to-Complete (CTC) Quality-Assurance Sampling Program

CF (W/ENCL): (CONT)
ENVIRONMENTAL OFFICE

(AMSAM-RA-EMP-IR/MS. RAWSON/MR.HASTINGS), US ARMY AVIATION AND MISSILE COMMAND, REDSTONE ARSENAL, AL 35898-5300
(CECRL-CD/MR. MCKAY), US ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, 72 LYME RD, HANOVER, NH 03755-1290
(AMSRL-OP-IN-RE/MR. CRAIG) US ARMY RESEARCH LABORATORY, 2800 POWDER MILL RD., ADELPHI, MD 20783-1145

INFORMATION PAPER

SFIM-AEC-ERP
22 Jan 02

SUBJECT: Criteria for Site Selection and Documentation of CTC Reviews

1. Purpose: Describe procedures for selecting sites and validating CTC documentation.

2. Discussion:

a. On 28 Feb 00, the US Army Audit Agency (AAA) recommended the Assistant Chief of Staff for Installation Management (ACSIM) require installations to prepare and maintain documentation that supports the quantities and proposed actions in the cost-to-complete (CTC) estimate. In response, the ACSIM stated, the "USAEC will institute field audits to verify supporting documentation to the requirements identified for cost-to-complete."

b. Beginning in Feb 02, the U.S. Army Environmental Center (USAEC) will be conducting cost-to-complete reviews at selected Installation Restoration Program (IRP) and Base Realignment and Closure (BRAC) sites. The following protocol will be used to determine sites selected for review:

(1) Sites with deficiencies identified during the AAA audit of the Army FY 2000 financial statements.

(2) Sites with remedial action costs greater than $5 M scheduled for execution in FY 2003 or FY 2004.

(3) Sites where cleanup versus study phase estimates are disproportionate (e.g., large study cost with small cleanup costs, design costs with no associated cleanup costs, design costs greater that 40% of the associated cleanup costs).

(4) Sites where there is a material change in the financial liability. A material change is defined as evidence that a change of more than 10 percent of the prior year ending balance (up or down) will occur.

c. The CTC Program Manager will notify the MACOM and USAEC Restoration Oversight Manager which installation and sites have been selected for review.

d. The CTC Program Manager is responsible for collecting this information and coordinating the review with the MACOM and the installation.

3. CTC Reviews:

a. The CTC reviews will begin on or after 15 Mar 02. Every effort shall be made to perform the reviews by telephone. In the event telephone interviews cannot be accomplished, the CTC Team will visit the installation upon MACOM approval. The reviews shall ensure preparation of CTC estimates in accordance with the DERP guidance and DoD-FMR 7000.14. It shall also ensure documentation of environmental restoration cost information is in accordance with Statement of Federal Financial Accounting Standard (SFFAS) No. 5 and SFFAS No. 6.

b. The FY 2001 CTC Detail Sheet will be used as the basis for conducting the review. Reviews will address the following issues:

(1) Determine whether the CTC estimates reflect the environmental restoration strategy and sequence as presented in the Installation Action Plan or BRAC Cleanup Plan.

(2) Determine whether the CTC estimates for sites without a feasibility study are developed using the RACER software.

(3) Determine whether the CTC estimates document environmental cost information in accordance with SFFAS No. 5 and SFFAS No. 6. SFFAS No. 5 provides the definition of a liability and establishes accounting standards for the federal government. SFFAS No. 6 provides information and accounting standards on cleanup cost liabilities.

(4) Determine whether the CTC estimates are supported by adequate documentation. Army guidance requires quantities and proposed actions reported on the CTC Detail sheet for any DERP site is supported by documentation. If no documentation exists in the form of a report (i.e., site is still in the investigation phase), the installation environmental coordinator must prepare and maintain a Memorandum for Record (MFR) documenting assumptions used for the estimate.

(5) Determine whether personnel engaged in the development of CTC estimates or preparation of environmental restoration liability reports have attended or scheduled the Cost Estimating training required by the DERP guidance.

(6) Determine whether there is evidence of documented management review of CTC estimates.

(7) The results of each CTC review will be documented on the CTC Review Chart (attached). Deficiencies identified will be forwarded to the installation through the MACOM.

Hopeton D. Brown/(410) 436-1531
Approved By: _____

RAVENNA AAP RACER - IAP COST COMPARISONS

DSERTS	SITE TITLE	TYPE STUDY LEFT TO DO	RI/FS COSTS ($1,000) RACER	IAP	ACTUAL	RACER/IAP	PROP IAP	RACER %RA	RD COSTS ($1,000) RACER	IAP	RACER/IAP	PROP IAP	RA COSTS ($1,000) RACER	IAP	ACTUAL	RACER/IAP	PROP IAP	LTM COSTS ($1,000) RACER	IAP	RACER/IAP	PROP IAP
RVAAP-																					
02	Erie Burning Grds	PH II RI/DD	231.4	390.0		59%		0.0%	0.0	25.0			272.1	25.0				214.7	115.0	186.7%	
03	Demo Area #1							6.0%	119.0	100.0	119%		1,981.4	600.0		330%					
04	Demo Area #2	PH II RI/DD	419.6	650.0	RI- 698	65%		9.0%	80.3	30.0	268%		891.8	300.0		297%		3,108.1	1,070.0	290.5%	
05	Winklepeck BG	UXO EECA	965.7					9.0%	346.4	150.0	231%		3,848.7	1,500.0		257%		827.8	1,000.0	82.8%	
06	C Block Quarry	IRA DD						4.4%	20.2	15.0	135%		454.8	110.0		413%		293.7	210.0	139.9%	
08	Load Line 1	FS	231.9	300.0		77%		8.0%	173.4	150.0	116%		2,167.2	2,000.0		108%		463.0	370.0	125.1%	
09	Load Line 2	FS	204.7	300.0		68%		6.3%	27.1	150.0	18%		429.1	2,000.0		21%		441.0	320.0	137.8%	
10	Load Line 3	FS	183.3	300.0		61%		6.6%	21.8	50.0	44%		328.2	2,000.0		16%		441.1	320.0	137.8%	
11	Load Line 4	FS	197.1	300.0		66%		4.8%	12.2	50.0	24%		252.9	1,556.0		16%		263.4	320.0	82.3%	
12	Load Line 12	FS	210.7	400.0		53%		6.6%	16.8	50.0	34%		253.9	1,250.0		20%		463.0	395.0	117.2%	
13	Bldg 1200	IRA DD	106.6					5.9%	16.6	15.0	111%		280.0	85.0		329%		195.9	210.0	93.3%	
16	Fuze-Booster Qry	RI/FS	630.2	800.0		79%		6.6%	43.7	5.0	874%		661.9	50.0		1324%		233.0	400.0	58.3%	
19	Land Fill N. Winkle	PH II RI/FS	226.7	200.0		113%		5.8%	38.2	20.0	191%		654.2	200.0		327%		196.4	110.0	178.5%	
28	Mustard Burial Site	IRA DD	25.6	5.0									40.7								
29	UpperLower Cobbs	PH II RI/FS	277.7	450.0	RI- 456													224.0	120.0	186.7%	
32	40/60mm Firing Ra	PH II RI/DD	294.0	300.0		98%		6.8%	30.5				450.2								
33	Load Line 6	RI/FS	345.1	700.0		49%		5.9%	16.0	60.0			270.8	600.0				233.5	180.0	129.7%	
34	Sand Cr.Disposal	IRA DD						5.1%	36.1	20.0			702.9	200.0	487	351%					
36	Pistol Range	IRA DD						3.9%	16.9	5.0			435.1	20.0		2176%					
38	NACA Test Area	PH II RI/FS	232.3	500.0		46%		5.9%	18.8	5.0	376%		318.8	25.0		1275%		408.7	165.0	247.7%	
39	Load Line 5	PH II RI/FS	345.1	700.0		49%		5.9%	16.0	60.0	27%		270.8	600.0		45%		233.0	180.0	129.4%	
40	Load Line 7	PH II RI/FS	345.1	700.0		49%		5.9%	16.0	60.0	27%		270.8	600.0		45%		233.0	180.0	129.4%	
41	Load Line 8	PH II RI/FS	345.1	700.0		49%		5.9%	16.0	60.0	27%		270.8	600.0		45%		233.0	180.0	129.4%	
42	Load Line 9	PH II RI/FS	345.1	730.0		47%		5.9%	16.0	60.0	27%		270.8	570.0		48%		233.0	180.0	129.4%	
43	Load Line 10	PH II RI/FS	345.1	700.0		49%		5.9%	16.0	60.0	27%		270.8	600.0		45%		233.0	180.0	129.4%	
44	Load Line 11	FS	328.4	900.0		36%		8.0%	35.6	60.0	59%		270.8	600.0		45%		263.5	180.0	146.4%	
45	Wet Storage Area	RI/FS	96.0	100.0		96%															
46	Bldgs F-15,F-16	RI/FS	147.7	150.0		98%		6.4%	10.7	10.0	107%		166.6	75.0		222%					
48	Anchor Test Area	IRA DD		20.0				6.4%	2.1				32.3	80.0		40%					
49	Central Burn Pits	RI/FS	363.0	600.0	RI- 588	61%		6.5%	34.1	30.0	114%		521.8	300.0		174%		136.6	140.0	97.6%	
50	Atlas Scrap Yard	RI/FS	316.6	1,000.0						60.0				600.0					250.0		
51	Dump Paris-Windh	IRA DD								10.0				50.0	198						
			SUM	SUM		MEAN			SUM	SUM	MEAN		SUM	SUM		MEAN		SUM	SUM	MEAN	
			7,759.8	11,895.0		65%	0.0		1,196.5	1,370.0	141%	0	17,040.2	17,196.0		332%	0.0	9,572.4	6,775.0	140.2%	0.0

IRA = INTERIM REMOVAL
DD = DECISION DOCUMENT

	RI/FS COSTS ($1,000) RACER	IAP	RACER/IAP		RD COSTS ($1,000) RACER	IAP	RACER/IAP		RA COSTS ($1,000) RACER	IAP	RACER/IAP	PROP IAP	LTM COSTS ($1,000) RACER	IAP	RACER/IAP	PROP IAP

WORK ALREADY DONE DATE	COST CONTR $K	COST CORPS $K	TYPE STUDY	# SOIL SAMPS	# SW/SED SAMPS	# TRENS	GW MONITORING WELLS #	GW MONITORING WELLS DEPTH	GW MONITORING WELLS # RDGS	BRA'S REPTS	TOTAL RI	FS = 6 RI	TOTAL RI + FS	(COMPOST) EXP VOL (CY)	(FIXATION) METALS VOL (CY)	OTHER CONTAM OR FEATURE CONTAM	OTHER CONTAM OR FEATURE VOL (CY)	VOL UXO CLEAR (CY)	TOTAL HTRW COST ($K)	TOTAL UXO COST ($K)	TOTAL RA COST ($K)	TOTAL RD COST ($K)	LONG TERM MONIT # WELLS	LONG TERM MONIT # RDS	LONG TERM MONIT REMARKS
1999	668	134		101	86/18																				
			PH II RI	15	12/12		10	50	4	YES				NONE		FENCE 35 ACRES 5000 FT							10	5	SEMI 2-1/2 YRS
1999	406	55		119	4/4																				
			REMAINING WORK TO BE UNDER RVAAP-38, NACA TEST AREA																						
			PH II RI	100	12		12	40	4	YES						FENCE: 50 ACRES --- 6000 FT							14	60	QTR/15 YRS
														50' x 150' x 6' dp = 1700 CY METALS - TAKE AS SPEC WASTE, METALS CONTAM											
														50' x 150' x 6' deep = 1700 CY UXO CLEAR ON STEEP BANK ADJ SAND CREEK											
1998	1,210	158		226	26/8		24	40		YES															
2000	525	100	ECOLOGICAL FIELD TRUTHING EFFORT & REPORTS																						
2000	40	40		158	2/2		7	40	17																
			UXO EE/CA (DIFF FUNDING SOURCE)											16,300	16,300			28000 (DIFF FUNDING SOURCE)					17	20	QTR/5 YRS
			IRA DECISION DOCUMENT				4	30	1						1,000	FENCE 0.35 ACRES --- 500 FT							4	5	SEMI 2-1/2 YRS
2000	1448	243		390	24/24		14	35	2	YES															
			FS	60	12/12		14		1					8520	1700								14	8	QTR/2 YRS
2001	970			215	43/20	6	12	30	1	YES															
			FS	40	10/10		12		1					655	726								12	8	QTR/2 YRS
2001	554			205	31/19	6	12	30	1	YES															
			FS	40			12		1					400	500								12	8	QTR/2 YRS
2001	603			161	22/22	6	8	40	1	YES															
			FS	20	21/15		8		1					200	200								8	8	QTR/2 YRS
2000	1054			194	24/24	6	14	35	1	YES															
			FS	30	16/16				1					110	200								14	8	QTR/2 YRS
			IRA DECISION DOCUMENT				4	35	1					100	100								4	8	QTR/2 YRS
			PH II RI	200	60/60	6	8	40	1	YES				1600	1600								8	8	QTR/2 YRS
			PH II RI	50	4/4	4	4	40	1	YES						2 FT THICK LANDFILL COVER ON 3 ACRES							4	8	QTR/2 YRS
			IRA DECISION DOCUMENT													FENCE OFF AREA, ABOUT 150' x 250' WITH 8' HIGH FENCE									
			PH II RI	15	30/10		4	40	1	YES	(W/60 FISH TISS. SAMP.)												4	8	QTR/2 YRS
			PH II RI	40	6/0					YES					2000										
			UXO EE/CA ON 8,000 SF													UXO CLEARANCE ON 8,000 SF									
			PH II RI	92	44/15		8	40	1	YES					2000								8	8	QTR/2 YRS
			IRA DECISION DOCUMENT													4,000 CY OF DEBRIS REMOVAL W/ UXO AVOIDANCE, CONFIRMATORY SAMPLING									
			IRA DECISION DOCUMENT													REMOVE TOP FOOT SOIL, TAKE TO SPECIAL WASTE LANDFILL, BACKFILL CLAY									
1999	435	44		120	6/5																				
			PH II RI	40	8/8	6	12	40	1	YES						CAP AREA ABOUT 200 x 300 W/ 1FT CLAY = 2,222 CY							12	8	QTR/2 YRS
			PH II RI	92	44/15		8	40	1	YES						EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY							8	8	QTR/2 YRS
			PH II RI	92	44/15		8	40	1	YES						EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY							8	8	QTR/2 YRS
			PH II RI	92	44/15		8	40	1	YES						EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY							8	8	QTR/2 YRS
			PH II RI	92	44/15		8	40	1	YES						EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY							8	8	QTR/2 YRS
			PH II RI	92	44/15		8	40	1	YES						EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY							8	8	QTR/2 YRS
2000	1,000	40		92	44/15		8	40	1	YES													8	8	QTR/2 YRS
2001	600	50														EXCAVATE & DISPOSE OF 5 LEAD LINED SUMP PITS & ABOUT 300' OF BURIED SANITARY									
			PH I RI	[illegible]						NO						REPORT TO FINALIZE NO FURTHER ACTION									
			PH II RI	32	8/0					YES				200	200								NONE		
			IRA DECISION DOCUMENT											30	30	REPORT TO FINALIZE NO FURTHER ACTION							NONE		
			PH II RI	[illegible]	6/4	6	6	40	1	YES					1000	ADDITIONALLY REMOVE 400 CY OF METAL CONTAM DEBRIS, TAKE TO OFF SITE LANDFILL							6	8	QTR/2 YRS
			[illegible]	120	4/4	6	6	40	1	YES															

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 8, 2002

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE/TRUMBULL COUNTIES
SMALL MAMMAL LITERATURE

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

Dear Mr. Patterson:

The following comments represent the Ohio Environmental Protection Agency's (Ohio EPA) risk assessment review of the small mammal literature references that were requested in a May 30, 2002 email, and received during the meeting held on June 4 - 7, 2002 at Mohican State Park.

The following comments are from Laurie Eggert (OFFO, SWDO) and Brian Tucker (DERR, CO). Please note that it is necessary to have the Small Mammal Consensus Outline on hand while reviewing these comments, as many references are made to specific sections in the outline.

Lachance, *et. al.*, 1999. Cytotoxic and Genotoxic Effects of Energetic Compounds on Bacterial and Mammalian Cells In Vitro. Mutation Research 444:25-39: This article summarizes the findings of a study conducted to characterize the cytotoxicity and genotoxicity (bacterial and mammalian) of energetic compounds (e.g., TNT, RDX, 2,4-DNT) and their metabolites. A fluctuation test was used for this purpose. For mammalian cell studies, the V79 Chinese hamster lung cell mutagenicity assay was used. Cytotoxicity measurements were also evaluated using lymphoblastic TK6 and V79 cells and the Neutral Red Retention assay for lysosomal damage. Basically, the researchers conducted experiments/tests using rat liver homogenate and Chinese hamster lung fibroblast cells using assays to determine the relative potencies of each compound investigated. This article did not discuss effects of these compounds on sperm parameters.

Therefore, it is inappropriate to reference this paper in the small mammal consensus outline under the following sections:

a. Section I.a.iii, which states: "Morphology of sperm is altered when sperm are exposed to high doses in the range from 0.05 to 3.0 ppm in vitro." Sperm morphology was not evaluated in this study.

b. Section I.b.iii, which states: "Morphology of sperm is altered when exposed to high doses over 1.0 ppm in vitro." Sperm morphology was not evaluated in this study.

c. Section I.b.v, which states: "When organs (liver, blood) are exposed to 0.01% concentrations in vitro, they have begun to show lesions and DNA alterations becomes apparent." The journal article does not mention anything about observing lesions. In addition, blood was not specifically evaluated, nor were effects seen at 0.01% [RDX].

Hendricks, *et. al.*, 1995. Modeling and Monitoring Organochlorine and Heavy Metal Accumulation in Soils, Earthworms and Shrews in Rhine-Delta Floodplains. Env. Contamin. & Tox. 29:115-127: This article summarizes a study in which the researchers went out to the field and collected sediment/soil samples, as well as earthworms and shrews from the Rhine-Delta Floodplain, in order to investigate the accumulation of contaminants (heavy metals and organochlorine) in floodplain foodwebs. They basically collected samples from field and then looked at the concentrations found in sediment vs. floodplain soil vs. earthworm and shrew livers and kidneys. The paper does not make any statements on renal failure due to cadmium exposure, nor does the study involve feeding contaminants to test organisms.

Therefore, it appears inappropriate to reference this paper in the small mammal consensus outline under the following sections:

a. Section I.d.v, which states: "Cd caused renal failure to occur when large doses were fed. Cadmium also reduced body weights and enlarged both the liver and the spleen." This study did not look at cause and effect relationship of Cd on the kidney, body weight or liver.

Bucci et. al., 1987. Effects of Busulfan on Murine Spermatogenesis: Cytotoxicity, Sterility, Sperm Abnormalities, and Dominant Lethal Mutations. Mutation Research: 176:259-268: This study investigated the effects of busulfan (an alkylating agent used for maintenance of remission for leukemia) on sterility, sperm abnormalities, and sperm mutations. The study attempted to answer three questions: (1) was sensitivity of stem spermatogonia to busulfan greater than sensitivity to other cytotoxic chemicals; (2) what is the relationship between testicular stem cell survival, sperm production and fertility after treatment with busulfan and different cytotoxic agents; and (3) is there a possibility of genetic toxicity towards spermatogonia from busulfan? The study concluded that "busulfan is a potent, preferential agent for killing testicular stem cells in mice, causing a high potential for sterility at all doses that do not seriously affect other organ systems."

Therefore, it appears inappropriate to reference this paper in the small mammal consensus outline under the following sections:

a. Section II.a.i, which states: "Rodents are robustly fertile and produce 10 to 20 times more sperm than necessary." Ohio EPA did not find this statement or conclusion being made in this paper, therefore, it should not be used as a reference.

Zhang et. al., 1993. Study of the Effects of Lead Acetate on Spermatogenesis in Male Mice: Ohio EPA received an abstract and not the entire journal article. Based on the abstract, four groups of 20 male mice (per group) were fed lead acetate at four concentrations (0, 1000, 3162, 10,000 ppm) for a total of 12 weeks (sub-samples collected after two weeks, then seven weeks exposure). Blood and blood lead was assayed, as well as epididymis evaluated for total sperm count, motility and morphology. The conclusions were: blood lead levels were elevated in a dose-dependant manner; sperm motility was greatly affected after two weeks in ALL experimental groups (*i.e.*, at all concentrations), morphology changed in mice exposed to 1000, 3162, and 10,000 ppm for 12 weeks (these are the only concentrations tested - the 0 ppm is assumed to be the control); at the end of exposure (not sure if this is the end of the 12 week exposure or the end of each sub-sample interval, meaning week two and week seven) sperm count decreased in the group exposed to 10,000ppm.

Therefore, it appears inappropriate to reference this paper in the small mammal consensus outline under the following sections:

a. Section 1.c.i, which states: "Count is reduced at lower food doses but showed no effect for Zhang when they received low food doses." The study conducted by Zhang did not show reduced sperm count in low doses, but did show reduced sperm count at 10,000 ppm. This finding should be noted.

b. Section 1.c.ii, which states: "Motility is reduced at medium food doses." The study concluded that motility was reduced at all test concentrations investigated (i.e., 1000, 3162, 10,000 ppm), therefore, the word "medium" should be removed and the sentence revised to reflect the concentrations administered in the Zhang study.

This reference appears to support the statement made in Section 1.c.iii, which states: "Morphology of sperm is altered.....", since the Zhang study concluded that morphology changed in critters exposed to 1000, 3162, and 10,000 ppm for 12 weeks (these are the only concentrations tested - the 0 ppm is assumed to be the control). This reference should be used as supporting information in Section 1.c.iii.

Gray et. al., 1992: Ohio EPA did not receive a copy of this literature article. What the Agency received was a photocopied piece of paper with "Gray et. al., 1992" hand written on it. Therefore, this reference should be removed from the small mammal consensus outline/document.

Ma, et. al., 1989 Effect of Soil Pollution with Metallic Lead Pellets on Lead Bioaccumulation and Organ/Body Weight Alterations in Small Mammals. Archives of Env. Contamin. and Tox. 18:617-622: In summary, the researchers went out and collected small mammals (specifically wood mice, shrews, and bank voles) from an acidic sandy soil environment contaminated with metallic lead pellets from shotgun ammunition. The article states that 25 ug/g dry weight is the critical renal lead concentration considered diagnostic of lead intoxication in small mammals. They looked at kidney weights, liver weights, and femur weights in the species collected. Basically, the study concluded that their results support the validity of the use of the 25 ug/g dry weight as the critical renal lead concentration considered diagnostic of lead intoxication in small mammals. Other results worth noting: animals from the shooting range were exposed chronically to lead as suggested by higher average Pb concentration in kidney than in the liver, and high concentration of lead in femur bone, which is main storage organ of Pb in vertebrates. Average body weights and kidney weights were different between sampling locations for only the wood mice (lower at the shooting range than at the control area). However, the voles or shrews did not show a difference in body or organ weights between locations.

This article is referenced in Section I.c.iv.1., which states: "Body weights and larger livers (with concentrations of >25 ppm) are observed in wild captured animals." This statement really doesn't say anything about body weights (other than the words body weights are observed in wild captured animals - which would be expected, since the animals should weigh something or else they wouldn't have been observed). Therefore, the statement under this section should be revised to reflect the conclusions of the report (their results support the validity of the use of the 25 ug/g dry weight as the critical renal lead concentration considered diagnostic of lead intoxication in small mammals), if this reference is to be used.

Wadi, et. al., 1999. Effects of Lead on the Male Reproductive System in Mice: This study was conducted to investigate lead toxicity to male reproductive system. Treatments for this experiment include: control, low dose group, high dose group for six week exposure. Seven week old mice were administered 0.25% lead acetate in water (low dose group) and 0.5% lead acetate in water (high dose group), the control group received only distilled water. The researchers looked at blood and tissue, sperm motility, sperm morphology, sperm count, and hormonal assays. The results: (1) decrease in body weights of mice in high dose group compared to mice in both the low dose group and the control (only decreased consumption of water was statistically significant in high dose group, even though both the low and high dose groups consumed less water than the control); (2) significant decrease in weight of both the seminal vesicles and epididymis in the high dose group compared to the control. Organ to body weight ratios were significantly different in the high dose group compared to the control. The ratio of seminal vesicle weight to body weight was significant in the low dose group compared to the control; (3) the number of sperm within the epididymis was significantly lower in both the low dose and high dose groups compared to the control. Only sperm from the high dose group showed a significant decline in motility and a significant increase in morphologically abnormal sperm compared to the control (i.e., coiled tails); and (4) no significant difference in hormonal levels of either group compared to the control.

Therefore, this reference is determined appropriate to use in the following sections of the Small Mammal Consensus Document:

a. Section I.c.i

b. Section I.c.ii

c. Section I.c.iii - The paper stated that coiled tails were the primary morphological abnormality. Please revise the comment to reflect this rather than what is currently stated in parentheses (*i.e.*, head problems and death).

Meistrich et. al., 1996. Deficiency in Fertilization by Morphologically Abnormal Sperm Produced by azh Mutant Mice: This paper basically looked at sperm parameters in male mutant mice to investigate the deficiency in fertilization. This paper does state that: "In normal rodents, the numbers of sperm vastly exceed those required for fertility."

This reference is appropriate to use in the Small Mammal Consensus outline under Section II.a.i, which states: "Rodents are robustly fertile and produce 10 to 20 times more sperm than necessary." However, it is unclear as to where the "10 to 20 times more sperm" statement is made in this paper or where this figure is supported by the literature.

Pascoe, et. al., 1996. Food Chain Analysis of Exposures and Risks to Wildlife at a Metals Contaminated Wetland: This study basically used information from literature and data collected from investigations at the Milltown Reservoir Sediments Superfund site in Montana to conduct a food chain analysis of exposure and risk to wildlife. A toxicity assessment was conducted by reviewing toxicological studies that were conducted on As, Cd, Cu, Zn for the five different receptor groups under investigation. The literature review conducted for this portion of the study did support the statements that arsenic reduced body weights and enlarged the liver, as is stated in Section I.d.ii of the Small Mammal Consensus Outline. Also, the literature supported the statement that Cd reduced

body weights and enlarged the liver and spleen, as stated in Section I.d.v of the small mammal consensus document. Therefore, this reference is appropriate to use in the consensus document.

If you have any questions concerning this correspondence, please do not hesitate to contact either Laurie Eggert (937-285-6457) or Brian Tucker (614-644-3120).

Sincerely,

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

ETM/kss

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

ec: Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, NEDO