Ohio Environmental Protection Agency (OEPA)

And

Ravenna Army Ammunition Plant (RVAAP)

1995 Correspondences

OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
(216) 425-9171
FAX (216) 487-0769

cc: J. Higgins

CONTRACTOR FWD FOR
☐ Information
☐ Compliance as applicable
☑ Reply NLT 7/5/95

George V. Voinovich
Governor

June 2, 1995

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE COUNTY
02-67-0209
OH5 210 020 736
GROUNDWATER MONITORING DATA

CERTIFIED MAIL

Mr. Robert J. Kasper, Commander
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

Dear Mr. Kasper:

This office has received the Supplementary Annual Report Forms and the Ground Water Monitoring information for 1992, 1993 and 1994 submitted by the Ravenna Army Ammunition Plant (RVAAP) on February 26, 1993, February 17, 1994 and February 28, 1995 respectively. These reports were submitted in a timely manner.

Based upon a review of 1992 and 1993 submittals, this office has the following comments:

1. RVAAP sampled its wells at the open detonation ("OD") area in May and September 1992. Wells in the open burning ("OB") area were sampled in April and December 1992. RVAAP has failed to sample its wells on a quarterly basis (four times a year) at each regulated unit. However RVAAP submittals for 1993 and 1994 indicates that these units have been sampled on a quarterly basis starting with 1993.

2. The OD area is monitored by four wells including upgradient well DET-1 and downgradient wells DET-2, DET-3 and DET-4. The OB area is monitored by four wells including upgradient well OBG-1 and downgradient wells OBG-2 and OBG-3. According to the water table contour maps submitted with the annual report forms, OBG-4 is sidegradient to the OB area. However, its close proximity to the unit appears to make it an acceptable monitoring point.

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JUN 5 1995
By

3. RVAAP did not sample monitoring well OBG-3 due to insufficient water levels during December 1992 and February 1993 sampling events. Sufficient water levels enabled sample collection at this well since February 1993. However if OBG-3 continues to have insufficient water for sampling in the future then an additional downgradient well should be installed.

4. RVAAP has not been consistent in the well ID designations used in its reports. Wells in OD area have been designated as DET and ODA wells. Wells in the OB area have been designated as OBG and BG. For consistency and clarity, RVAAP must use the well designations (DET and OBG) submitted on the well information forms. If the facility wishes to change these designations, revised well information forms should be submitted and the well identifiers on the base maps used for ground water contour maps should be modified accordingly.

5. The following table summarizes MCL exceedences at the site during 1992 and 1993:

PARAMETER	MCL	WELL	CONCENTRATION DETECTED	DATE
Cadmium	0.005 mg/L	OBG-3	0.0082 mg/L	April 1992
Antimony	0.006 mg/L	DET-3	0.014 mg/L	May 1992
Arsenic	0.05 mg/L	DET-3	0.29 mg/L	January 1993
Chromium	0.1 mg/L	DET-4	0.16 mg/L	January 1993
Lead	0.015 mg/L*	DET-4	0.19 mg/L	January 1993
Nickel	0.1 mg/L	DET-4	0.15 mg/L	January 1993
Arsenic	0.05 mg/L	OBG-4	0.052 mg/L	February 1993
Lead	0.015 mg/L*	DET-4	0.026 mg/L	June 1993
Lead	0.015 mg/L*	OBG-3	0.016 mg/L	November 1993

*Action level rather than MCL

Cadmium, antimony, arsenic, chromium and nickel have been detected in concentrations above MCLs. Lead has been detected in concentrations above its action level. Thus, the facility is affecting the quality of ground water at the site.

6. The following table summarizes the explosive compounds detected in ground water samples during 1992 and 1993:

COMPOUND	WELL	CONCENTRATION	DATE
TNB	DET-1	2.4 ug/L	September 1992
TNT	OBG-1	1.9 ug/L	December 1992
TNT	OBG-4	3.9 ug/L	December 1992
TNB	OBG-1	2.4 ug/L	December 1992
HMX	OBG-4	1.7 ug/L	February 1992
2,6-DNT	OBG-4	2.1 ug/L	February 1993
RDX	OBG-1	1.1 ug/L	August 1993
RDX	OBG-1	1.4 ug/L	November 1993
RDX	OBG-2	1.2 ug/L	November 1993
RDX	OBG-1 dup	2.0 ug/L	November 1993
TBN	OBG-4	15 ug/L	November 1993

Several explosive compounds including TNB; TNT; HMX; 2,6-DNT and RDX have been detected in ground water samples indicating the facility is affecting the quality of ground water at the site. Explosive compounds have been detected in samples obtained from upgradient well OBG-1. Thus, this well is not representative of background water quality at this site and should be replaced (Comment No.7).

7. The detection of explosive compounds in well OBG-1 indicates that samples obtained from this well are not representative of background water quality at the site. RVAAP shall install a new background well for the OB area at the site. This new well location must be selected to assure that no previous OB activity effected the soil and/or ground water quality at this location.

8. RVAAP did not perform any statistical analyses for its 1992 and 1993 ground water monitoring data. However, RVAAP included the statistical analysis with its 1994 submittal.

9. RVAAP shall notify Ohio EPA-Northeast District Office fifteen (15) days in advance prior to the future sampling events so that Ohio EPA can observe the sampling procedures.

RVAAP must incorporate the comments and concerns raised in this correspondence within the closure plan being developed for the facility. In addition, verification of meeting the closure performance standard will be contingency upon providing adequate ground water monitoring for the regulated units. Therefore within thirty (30) days of the receipt of this letter, RVAAP must submit to this office a schedule for implementation of corrective measures necessary to ensure that the ground water monitoring system is adequate.

RVAAP's 1994 Supplementary Annual Report Form and the Ground Water Monitoring information is currently being reviewed by this office and any findings and/or comments with regard to this documentation will be forwarded to RVAAP with a separate communication. If you have any questions regarding this letter, please do not hesitate to contact Ms. Diane Kurlich or myself at (216) 963-1200. Please note that I will be on leave between June 5, 1995 until July 31, 1995. In the interim, Mr. Gregory Orr will be the contact person for your facility. You can reach Greg at (216) 963-1189.

Sincerely,

Murat Tukel

Murat Tukel
Division of Hazardous Waste
Management

MT/fwn

cc: Paul Anderson, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
Dan Lukovic, DHWM, CO / CO File
Greg Orr, DHWM, NEDO
Frank Popotnik, DHWM, NEDO

CONVERSATION RECORD

TIME: 0910 | DATE: 24 Jan 95

TYPE
☐ VISIT ☐ CONFERENCE ☑ TELEPHONE
☐ INCOMING ☑ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Murat Tukel	OEPA	(216) 963-1192

ROUTING

NAME/SYMBOL	INT
M+H	

SUBJECT: Deactivation Furnace

SUMMARY

Backlog in review process. Will be delayed possibly 120 days or longer per Murat Tukel.

He tried to notify Whelan. Will try later to arrange a meeting in late Feb.

RECEIVED
JAN 24 1995

CONTRACTOR PMD FOR
☑ Information
☐ Compliance as applicable
☐ Reply NLT _____

ACTION REQUIRED

None

NAME OF PERSON DOCUMENTING CONVERSATION: R KASPER | SIGNATURE | DATE: 24 Jan 95

ACTION TAKEN

SIGNATURE | TITLE | DATE

OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
(216) 425-9171
FAX (216) 487-0769

CONTRACTOR FWD FOR
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☒ Compliance as applicable
☐ Reply NLT

TO 11/20/95
CR-COR
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CONTRACTOR 11/20/95
RETURN FOR FILE

George V. Voinovich
Governor

Routed:
Bob/Johnson
Johnson

November 16, 1995

RE: RAVENNA ARMY AMMUNITION PLANT
PORTAGE COUNTY
#02-67-0209/OH5 210 020 736

CERTIFIED MAIL

Mr. John Cicero
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

Dear Mr. Cicero:

Enclosed is the requested information concerning the ground water sample preservation and handling. This information was requested by Mr. Bob Whelove on your behalf during our November 9, 1995 meeting at the Ravenna Army Ammunition Plant (RVAAP). RVAAP's groundwater sampling data indicated high levels of metals which could be eliminated by filtering the sample media at the point of collection.

If you have any questions regarding the attached documents, please feel free to contact Ms. Diane Kurlich or myself at (216) 963-1200.

Sincerely,

Murat Tukel

Murat Tukel
Environmental Specialist
Division of Hazardous Waste
Management

MT/fwn

Attachment

cc: Carolyn Reierson, DHWM, NEDO
Diane Kurlich, DDAGW, NEDO
CF Ansio-EQE (R/R. Whelove)

RECEIVED
NOV 20 1995
By

From Technical Guidance Manual for Hydrogeologic Investigations & Ground Water Monitoring — Ohio EPA 1995.

SAMPLE PRESERVATION AND HANDLING

Once a sample has been removed from a well, appropriate procedures must be utilized to store and preserve it. This is necessary to ensure that the sample maintains its in-situ state as much as possible in transit to the laboratory. Issues that must be considered include filtration, preservation, containers, labels, holding times, and shipping.

FILTRATION

Background

Ground water samples collected from monitoring wells may contain noticeable amounts of sediment or particulate matter, often referred to as turbidity. This condition may be unavoidable when monitoring some geologic environments. The sediment may include particles that are too large to be mobile in the subsurface. The presence of these larger particles is due to the effects of well installation and the sampling.

Background Info

Turbidity is an important field concern for samples to be analyzed for metals (e.g., cadmium, nickel, zinc) or metalloids (e.g., arsenic, selenium). As stated previously, a goal of monitoring is to collect representative samples. Laboratory analyses of samples should quantify species that are dissolved, occur as mobile precipitates, or are adsorbed onto mobile particles (colloids). If immobile particles to which metals are bound are allowed to remain in field-acidified samples, laboratory "total" analyses will overestimate the true concentration of mobile species because acidification dissolves precipitates or causes adsorbed metals to desorb. Other potential problems involved with collecting "total" data are as follows:

- Well performance and amount of sample turbidity may vary temporally. Additionally, turbidity may vary with the type of sampling device used and the person conducting the sampling. Consequently, comparisons of ground water quality data over time may not reflect actual trends.

- The amount of sediment entering a well may be variable across a site due to natural hydrogeologic conditions. As a result, comparisons of ground water quality data may not be representative of actual spatial variations. Subsequently, it may be difficult to perform upgradient vs. downgradient comparisons to distinguish contamination.

Because of these problems, particulate matter is often removed by filtration prior to containerization and acidification; however, the question of whether to field filter remains controversial. Filtration has the potential to remove particles that may be mobile in certain hydrogeologic environments. As described by McCarthy and Zachara (1989) and Puls et al.(1990), colloidal material (particles less than 10 micron) may be transported large distances. Furthermore, the potential for filtration problems, including filter clogging, variable particles size retention, filter media leaching, and aeration, is well documented (Puls and Powell, 1992). Because of these difficulties, some investigators (Puls and Barcelona, 1989a & b; Kearl et al., 1992; Puls and Powell, 1992) have recommended against field-filtering. Their approach is buttressed by stringent adherence to well installation, construction, and development and sampling procedures that minimize turbidity. An important component of this approach is that samples must be collected at a very low rate using deciated pumps.

Ohio EPA Position

Filtration decisions for samples being analyzed for metals or metalloids may be guided by applicable regulatory requirements. New federal regulations [40 CFR 258.53(b)] for ground water monitoring at municipal solid waste landfills specify that analyses for metals be performed on unfiltered samples.

Why you can't filter at Solid Waste Landfill.

Background Info - You already have Ohio EPA permission to filter metals samples at OBA & OBC

Accordingly, Ohio EPA was required by U.S. EPA to propose a policy (DDAGW 04-03-220) banning field filtration for municipal solid waste landfills. As of June 1, 1994, no samples should be filtered for this type of facility.

Project requirements also can dictate the approach to filtration. For example, unfiltered samples may be appropriate to estimate exposure in a risk assessment when the unfiltered water is of potable quality (U.S. EPA, 1989). Samples filtered with a media with a small pore size (e.g., 0.1 micron for dissolved concentrations) may be appropriate for geochemical modeling (Puls and Powell, 1992).

For sites and facilities that are not municipal solid waste landfills and when project requirements do not pre-dispose an approach, filtration decisions should be made on a case-by-case basis. Filtration should be avoided if possible. It should not be necessary when monitoring formations that are likely to exhibit a high degree of particle mobility. For other types of formations, the best way to avoid filtration is to use well installation and sampling procedures that minimize turbidity. However, significant turbidity is unavoidable in some situations, and filtration is necessary to remove immobile particulates. For example, reducing turbidity may be difficult when a clay-rich glacial deposit is monitored. The particulates included in samples may be presumed to be immobile in the subsurface, as clay and natural organic matter can attract contaminants and physically retard particle movement.

Recommended Procedures

Deciding When to Filter

It is recommended that entities work closely with the Agency to define project and regulatory requirements. For instances where these requirements do not mandate any particular approach to filtration, Ohio EPA has developed a general framework (Figure 10.1) for making decisions. Once it is documented that monitoring well installation, design, and development practices were adequate, ground water samples should be collected with the chosen device in a manner that minimizes agitation. Water turbidity should then be determined using a nephelometer. The Agency believes that it is practical to establish a value (5 nephelometric turbidity units (NTUs)) to serve as a "cut-off" for determining when filtration is necessary. Water below 5 NTU should not be filtered. This is based on the assumption that any immobile component of turbidity present will impart an insignificant amount of species to a sample analysis. This approach is supported by the work of Puls and Powell (1992), who found that turbidity levels less than 5 NTUs generally can be achieved, even for fine-grained glacial tills, if low flow purging and sampling techniques are used. These methods consistently produced filtered and unfiltered samples that showed no significant differences in concentrations.

If the water exceeds 5 NTUs in turbidity, subsurface geology should be considered. Field filtration should not be necessary when sampling from karst; bedrock with open, interconnected fractures; clean, highly porous gravel-to-boulder sized deposits; and any other formation characterized by a high degree of particle mobility. If the water is not drawn from such an environment, then it is reasonable to assume that a portion of the turbidity may be attributable to immobile sediment. Field filtration can be used to remove the immobile fraction.

Regulated entities should exercise professional judgement when applying the approach described in Figure 10.1. Decisions may need to ensure data consistency and comparability over time and space. Deviations may be necessary if the practices would cause undesirable problems in data interpretation. For example, if a site is underlain by karst bedrock and the historical data base for metals has been based on analyses of filtered samples, filtration could be continued to ensure data consistentcy and comparablity. If a single zone is monitored both by wells that are capable of providing samples that meet the turbidity criterion and wells that are not capable of meeting it, it may be prudent to filter all of the samples to ensure spatial consistency and valid statistical comparisons.

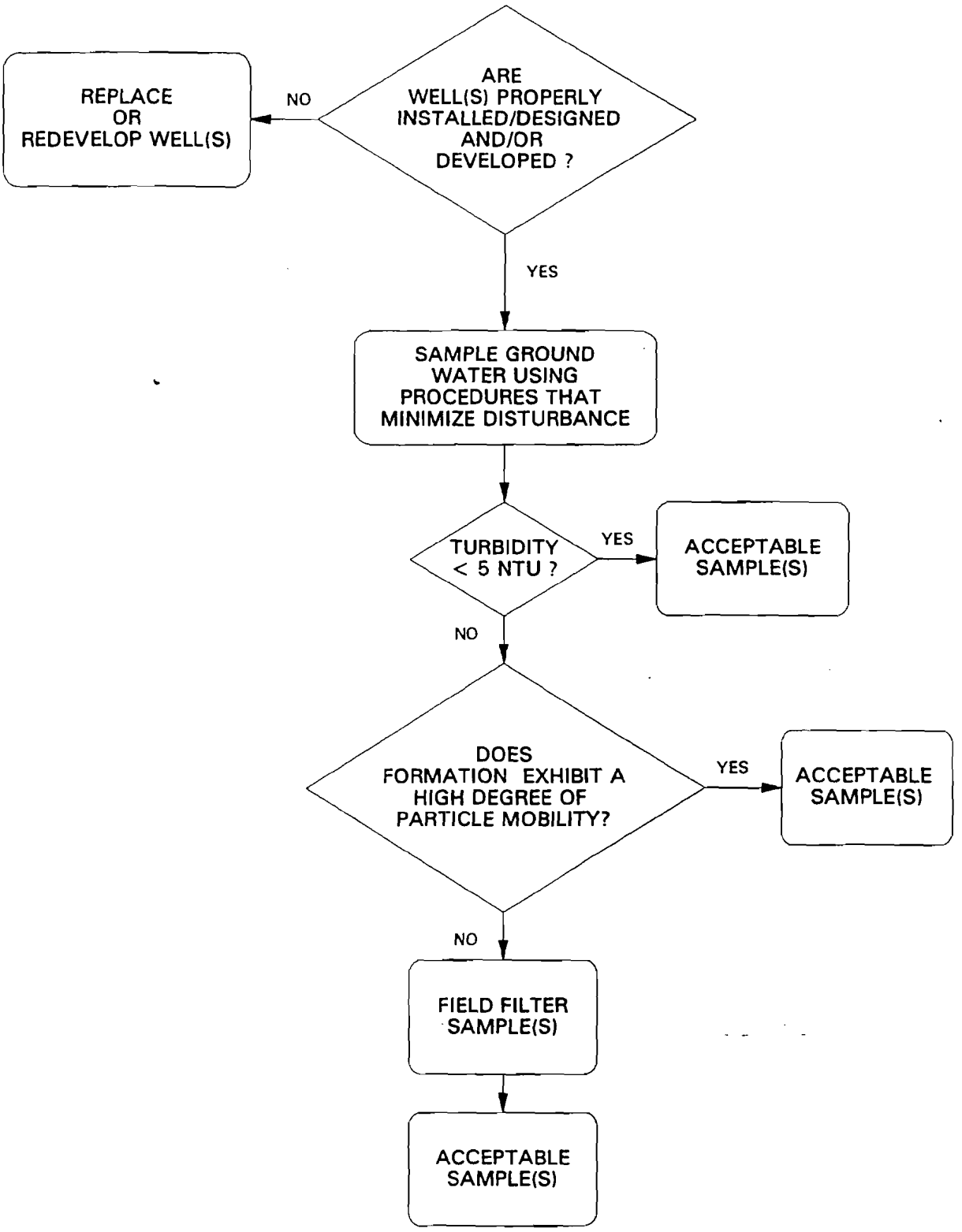

Figure 10.1. Ground water field filtration decision tree.

Filter Material - Filtering Procedures

IMPORTANT

Some entities may wish to collect both filtered and unfiltered samples. The advantage of having both types of data is that a comparison can help determine the form in which a chemical exists (e.g., primarily adsorbed to particulate matter or primarily dissolved) (U.S.EPA, 1989)[2]. The comparative data may help justify which data set is more appropriate.

Filter Media

Filtration media should be inert and selected to minimize bias. Polycarbonate membrane filters are recommended. Puls and Barcelona (1989b) have stated that this material should be used due to its more uniform pore size, ease of cleaning, and minimization of adsorptive losses. The NCASI (1982) also found polycarbonate to be most appropriate. Cellulose membranes and glass microfiber filters have been used commonly.

Theoretically, the filter pore size should equal the size of the largest mobile particles in the formation, although differences in particles passing different sizes may be lessened significantly by clogging. Traditionally, 0.45 micron filters have been used; however, different pore sizes can be used in specific instances if justified. Puls and Powell (1992) suggested use of a coarse filter size such as 5 micron. If estimates of dissolved metal concentrations are desired, use of 0.1 micron filters is recommended (Puls and Powell, 1992).

Unless factory-cleaned filters are employed, the media should be "pre-conditioned" or "pre-wetted" in the field prior to use. A media-specific solvent (e.g., deionized or distilled water, nitric acid, or methanol) should be used to: 1) remove residues from manufacturing, packaging or handling that may leach into samples and 2) create a uniform wetting front to prevent channel flow and increase efficiency. The appropriate procedure depends on the design of the filter, the configuration of the equipment, and the parameters of concern. It is recommended that entities contact the filter media manufacturer prior to establishing the methods to be used.

Filtration Procedure

Generally, filtration techniques may be subdivided into two categories, in-line and "open system." In-line methods involve the use of positive pressure provided by a sampling pump to force the sample through an attached filter. The advantage of this technique is that samples remain isolated prior to atmospheric exposure. Stolzenburg and Nichols (1986) compared different filtering methods and found in-line techniques to provide the best results. Ohio EPA recommends that in-line techniques be used whenever possible. If bailers are used for sampling, in-line filters cannot be used unless a pressure or vacuum hand pump (i.e., peristaltic) is utilized to force the sample through.

"Open system" techniques require a transfer of the sample before filtration, thus allowing for additional exposure and agitation. Open system filtration should be conducted ***immediately in the field, at the wellhead, and prior to sample acidification and containerization***. As previously stated, upon sample removal, alteration occurs due to a change to more aerobic conditions. If filtration does not occur immediately, metals can begin to precipitate and, upon filtration, be removed, causing laboratories to underestimate actual concentrations. Agitation should be kept to a minimum, and the use of "double" filtration is not recommended. "Double" as used here refers to filtering a turbid sample twice using filters with progressively smaller pore sizes. This technique has been used for sediment-laden samples to speed up filtration; however, it can cause excessive agitation.

[2]For example, if the concentration of a chemical is much greater in unfiltered samples compared to filtered samples, it is likely that the majority of the chemical is sorbed onto particulate matter and not dissolved in the ground water.

Important

There are two main types of devices routinely used for "open system" filtration, vacuum and pressure. Vacuum "pulls" the sample through the filter, whereas, pressure "pushes" the sample using compressed gas or a pump. These types offer varying degrees of portability and ease of decontamination. In addition, changes in pressure and aeration/oxygenation can alter sample representativeness. In fact, the vacuum system can cause extensive degassing, which can seriously alter metals concentrations (U.S. EPA, 1986a; EPRI, 1987; and Barcelona et al., 1985); therefore, vacuum is not recommended. The reason for the extensive alterantion is that the application of a vaccuum exacerbates the pressure decrease inherent with bringing a sample to the surface. For pressure filtration systems, only pure, inert gas should be used (i.e., nitrogen). If a pump is used as the driving mechanism, the peristaltic is commonly employed.

The filtration medium must be disposed between wells. If the ground water is highly turbid, periodic filter changes may be necessary (e.g., between samples). The filtration device, tubing, etc. must be appropriately decontaminated as sample-contacting equipment (see Decontamination Section).

SAMPLE PRESERVATION

Preservation is an important step that must be conducted to stabilize the collected sample and prevent physical and chemical changes from occurring during transport to the laboratory and storage before analysis. Preservation is intended to maintain sample integrity by retarding biological action, preventing hydrolysis of chemical compounds and complexes, and reducing volatility of constituents (U.S. EPA, 1982). Appropriate techniques, found in Table 10.5, should be implemented immediately upon collection (and after filtration) to minimize changes that begin when a sample is exposed to the atmosphere.

pH and Temperature Control

The most common preservation involves pH and temperature control. Acids are added to samples submitted for dissolved metals analysis because most metals exist in the dissolved state at low pH. If not preserved, most metals will oxidize and precipitate, which prevents representative analysis. Chemical preservatives can be pre-measured before entering the field and commonly can be obtained through the analytical laboratory. In addition, many laboratories place measured amounts in the requested sample bottles, so no field addition is needed. The most common method for temperature control is to place the collected samples in a portable cooler maintained at a temperature of 4° C with ice.

Containers

Upon collection, samples should be contained properly to maintain integrity. Various fluorocarbons (i.e., Teflon), polyethylene plastic, or glass bottles with Teflon-lined lids are recommended for metals analysis. Samples to be analyzed for VOCs should be containerized in 40 ml glass vials. Clean containers can usually be obtained from the contracted laboratory. If cleaning is necessary, decontamination should be performed and appropriate blanks collected to verify cleanliness.

Sample Labels

Samples should be properly identified with labels. The labels should be durable and remain legible when wet. The following information should be included:

- Sample identification number.
- Name of collector.
- Date and time of collection.
- Place of collection.
- Parameters requested for analysis.
- Chemical preservatives used.

from variations in the amounts of suspended particles between sampling events; and use of data in hydrogeochemical models that require exacting techniques to distinguish between dissolved and particulate fractions of a chemical species so that parameters such as partition coefficients, adsorption isotherms, and chemical equilibrium can be determined.

The U.S. EPA (1986) recommends that ground-water samples that are to be analyzed for metals be collected in two portions. One sample should be unfiltered for a "total" metals determination and a second sample should be field-filtered using 0.45 μm membrane filters to determine the "dissolved" fraction of metals. By using this approach, the difference in concentration between the total and dissolved fractions may be attributed to the stripping of metallic ions from the suspended particles and any ions sorbed to the particles. While this information may be of some significance at sites where sediment-laden samples are a problem, analytical costs for metals analyses are doubled.

Types of Filtering Devices

Once the decision to filter samples has been made, the filtration apparatus must be selected. There are three main types of filtration apparatus available for use in the field: vacuum filtration, pressure filtration, and in-line filtration devices. Table 11.7 summarizes the selection criteria which must be evaluated with site-specific conditions in mind when choosing filtration equipment. It is beyond the scope of this chapter to evaluate each of the varieties of filtration equipment available on the market today, but it has been addressed by other authors such as Stolzenburg and Nichols (1986). It is important, however, to understand how these three types of filtration equipment can affect ground-water sample chemistry.

Table 11.7. Filtration Device Selection Criteria.

Appropriate filter pore size
Speed of filtration
Sample volume capacity
Sediment loading rate
Compatibility of filter media with contaminants expected in sample
Field portability
Ease of operation
Ease of decontamination
Reliability of operation under field conditions
Cost to purchase and operate equipment

Both vacuum filtration and pressure filtration involve the transfer of ground water from a sample collection device to the field filtration device. Water is passed through a porous filter, typically made of glass microfibre or cellulose membrane, with a typical pore size of 0.45 μm. In the case of vacuum filtration, the sample is "pulled" through the filter, while in pressure filtration, the ground-water sample is "pushed" through the filter using compressed air or nitrogen as the driving

From: Practical Handbook of Ground-Water Monitoring, David Nielson, ed, Lewis Publishers Chelsea MI, 1991

force. In both cases, the filtrate that is generated flows either directly into the sample container, or more often, into a transfer vessel (usually made of glass) and then into the sample container.

While there are some significant differences in terms of use of vacuum and pressure filtration equipment, such as portability, relative filtration rates and ease of decontamination, both vacuum and pressure filtration have the same potential to alter the chemistry of the ground-water sample being filtered. Problems include sample aeration/oxygenation, degassing of volatile constituents, and imparting partial-pressure changes. In addition, both types of apparatus are typically composed of several parts, all of which must be disassembled for thorough decontamination between samples. Thus, the potential for cross-contamination of samples exists. To overcome this particular problem, some manufacturers have developed disposable filtration devices.

To overcome many of the other major inconveniences of use and potential for chemical alteration associated with vacuum and pressure filtration equipment, disposable, in-line filtration devices have been developed. These devices consist of a holder/filter system, typically in cartridge form, in which inlet and outlet connections can be made to enable pressure filtration. The filter cartridge is connected directly to the discharge tubing of the ground-water sampling device. Therefore, the use of in-line filters with any sampling devices which do not incorporate a discharge tube (e.g., bailers) is not possible. In-line filters do, however, reduce problems of sample aeration, exposure of the sample to atmospheric conditions, potential cross-contamination of samples caused by improper equipment decontamination, and degassing of volatile constituents from samples.

Sample Preservation

Introduction

The second most common in-field sample pretreatment process that must be addressed by the sampling and analytical program is sample preservation. It is critical to note that sample filtration, if performed, must be completed before sample preservation to avoid mobilizing constituents that may be attenuated to suspended particles (i.e., metals, PCBs) in the ground-water sample. This would result in the detection of erroneously high "dissolved" concentrations of those constituents when the samples are analyzed in the laboratory.

If a sample of ground water cannot be analyzed immediately upon collection, then it must be stabilized until analysis can be performed. The chemical quality of a ground-water sample begins to change as soon as the sample is extracted from the formation. Indeed, it may be changing as purging and sampling are progressing. If representative data are to be obtained from the analysis of samples, chemical and biological activity in the sample must be stopped or slowed as much as possible. The chemical and biological processes that occur in a water

RAVENNA ARMY AMMUNITION PLANT

8451 STATE ROUTE 5 • RAVENNA, OHIO 44266-9297

INTEROFFICE MEMO

December 20, 1995

From:	William Talmon, Jr. WBT	Location:	Ravenna, OH
To:	File	Location:	Ravenna, OH

Subject: Renewal of Ohio General Permit OHR000002 for Storm Water Discharges Associated With Industrial Activity

Reference: December 20, 1995 Telephone Conversation Between the Writer and Mr. Robert Phelps of the Ohio EPA

The subject General Permit is scheduled to expire on February 18, 1996. The installation's storm water discharges are currently covered under the permit. In an attempt to determine the status of the State's effort to renew the permit, I placed a telephone call to Mr. Phelps, this afternoon.

Mr. Phelps indicated that a draft of their new permit has been prepared and is being staffed. Following the receipt and incorporation of comments, the new permit will be issued. Mr. Phelps indicated that the existing permit will almost certainly expire before the new permit is issued. The new permit may not be issued until sometime next summer.

Mr. Phelps indicated, however, that those facilities covered under the permit will continue to be covered despite the permit's expiration, until a new permit is issued. When a new permit is issued, the Ohio EPA will send out letters to the interested parties requesting that they submit Compliance Status Reports and Notice of Intent (NOI) forms if they want to continue to be covered by the State's General Permit.

NOTE: When a similar letter was sent out by the Ohio EPA in August 1994, the interested parties had ninety days in which to respond. A $100 fee was also required.

OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

CONTRACTOR FWD FOR
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☑ Reply NLT 3/27/95

TO 3/17/95
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S: 3/27/95

March 16, 1995

Mr. Robert J. Kasper, Commander
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Kasper:

On July 30, 1992, the Director issued to Ravenna Arsenal, Inc. (Ravenna Arsenal) Final Findings and Orders authorizing Ravenna Arsenal to conduct treatment (open burning/open detonation) and storage of hazardous waste at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. These Orders were to remain in effect until the Part B permit application submitted by RVAAP was acted upon by the Hazardous Waste Facility Board.

On April 11, 1994, Ravenna Arsenal notified Ohio EPA of its intent to withdraw the Part B permit application. On April 14, 1994, members of the Ohio EPA staff met with representatives of Ravenna Arsenal to discuss this issue. On April 19, 1994, Ravenna Arsenal submitted a letter to Ohio EPA which confirmed Ravenna Arsenal's intent to withdraw the Part B permit application and cease further treatment and storage activities at the RVAAP. Since this permit application is being withdrawn and consequently will not be acted upon by the Hazardous Waste Facility Board, the Ohio EPA staff has prepared Final Findings and Orders which would supersede the Orders issued on July 30, 1992. A copy of the proposed Findings and Orders is enclosed for Ravenna Arsenal's review.

If you have any questions concerning the proposed Orders or if you wish to arrange a meeting to discuss the proposed Orders, please contact Mr. Mark Navarre of the Ohio EPA legal staff at (614)644-3037. Ravenna Arsenal's willingness to accept the Orders as written should be signified by signature of an authorized person at the "Waiver" section of the Order. Please contact Mr. Navarre within 10 days of your receipt of this letter concering Ravenna Arsenal's intentions in this regard. Thank you for your cooperation.

Sincerely,

Donald R. Schregardus
Director

RECEIVED
MAR 17 1995

cc: Linda Welch, DHWM
Mark Navarre, Legal

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

REPLY TO
ATTENTION OF

17 APR 1995

TO: Stiles
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☑ Information
☑ Compliance as applicable
☐ Reply NLT_____

Office of Counsel

Mr. Mark Navarre
Ohio Environmental Protection Agency
Post Office Box 1049
1800 Watermark Drive
Columbus, Ohio 43266-0149

Dear Mr. Navarre:

Enclosed for your consideration are revisions Ravenna Army Ammunition Plant respectfully requests be incorporated into the Director's Final Findings and Orders. Our suggestions correspond with the matters discussed with you by Mr. Rock and Dr. Crain on March 23, 1995.

The Force Majeure language has been lifted from other agreements the Army has been a party to. The inclusion of this provision will assist us in obtaining execution authority.

Also enclosed for your convenience is a disc with a copy of the ASCII file named OH_FINL. This contains all the changes and corrections noted on the original copy.

Any questions concerning this matter should be directed to Mr. John A. Rock, AMSMC-GCS, Area Code (309) 782-8440.

Sincerely,

DON E. LAPPIN
Chief, General Law/
Congressional Affairs Division

Encl

CF:
Cdr, RVAAP, ATTN: SMCRV-CR (Mr. Kasper)
AMSMC-EQ (Dr. Henry Crain)

RECEIVED
MAY 4 1995
By_____

RECEIVED
MAY 4 1995
By_____

Issuance Date _____
Effective Date _____

BEFORE THE
OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of

~~Ravenna Arsenal, Inc.~~	:	
Ravenna Army Ammunition Plant	:	Director's Final
8451 State Route 5	:	Findings and Orders
Ravenna, Ohio 44266-9297	:	

PREAMBLE

It is hereby agreed by and among the parties hereto as follows:

I. JURISDICTION

The Director's Final Findings and Orders ("Orders") are hereby issued to Ravenna ~~Arsenal, Inc. ("Ravenna Arsenal")~~ Army Ammunition Plant (RVAAP) pursuant to the authority vested in the Director of the Ohio Environmental Protection Agency ("Ohio EPA"), by Ohio Revised Code ("ORC") sections 3734.13 and 3745.01.

II. PARTIES

These Orders shall apply to and be binding upon ~~Ravenna Arsenal~~ RVAAP, its agents, assigns, and successors in interest. No change in ownership or operation of the ~~Ravenna Army Ammunition Plant~~ RVAAP shall in any way alter ~~Ravenna Arsenal's~~ the Army's responsibilities under these Orders.

III. DEFINITIONS

Unless otherwise posted, all terms used in these Orders shall have the same meaning as in ORC Chapter 3734 and the rules promulgated thereunder.

IV. FINDINGS OF FACT

The Director hereby makes the following Findings of Fact:

1. From April 1, 1950, through September 30, 1993, Ravenna Arsenal, Inc. ("Ravenna Arsenal") ~~operates~~ operated the ~~Ravenna Army Ammunition Plant ("RVAAP")~~ RVAAP located at 8451 State Route 5, Ravenna, Portage County, Ohio, a facility owned by the United States Army and engaged in the storage and treatment of munitions and munition derivatives.

2. On November 8, 1988, RVAAP/Ravenna Arsenal submitted a RCRA Part B permit application to the Ohio EPA, and on June 22, 1992, RVAAP/Ravenna Arsenal submitted a revised part B permit application to the Ohio EPA. The permit application states the Open Burning (OB) area encompasses approximately one third acre, the Open Detonation (OD) area encompasses approximately one acre; and identifies Building 1601 as the storage facility.

3. On July 30, 1992, the Director issued Final Findings & Orders which exempted Ravenna Arsenal from the permitting requirements for ~~open burning/open detonation (OB/OD)~~ OB/OD hazardous waste treatment activities conducted at the RVAAP, and for storage at the RVAAP of all hazardous wastes generated from such treatment at the RVAAP.

4. The July 30, 1992, Findings and Orders state that the exemption provided therein would be effective until the Hazardous Waste Facility Board makes a final determination on RVAAP/Ravenna Arsenal's Part B permit application.

5. On April 11, 1994, ~~Ravenna Arsenal~~ RVAAP transmitted a letter to Ohio EPA notifying the Ohio EPA of ~~Ravenna Arsenal's~~ RVAAP's intent to withdraw its RCRA Part B permit application for treatment and storage of hazardous waste at the RVAAP, and to cease OB/OD treatment activities at the RVAAP.

6. On April 14, 1994, Ohio EPA and ~~Ravenna Arsenal~~ RVAAP representatives met at the RVAAP to discuss ~~Ravenna Arsenal's~~ RVAAP's permit application withdrawal and subsequent closure activities for the OB/OD treatment and storage areas at the RVAAP.

7. On April 19, 1994, Ohio EPA received a letter from ~~Ravenna Arsenal~~ RVAAP which confirmed ~~Ravenna Arsenal's~~ RVAAP's intention to withdraw its Part B permit application for RVAAP, and to cease operation of OB/OD units at the RVAAP.

8. Ohio Administrative Code ("OAC") Rule 3745-66-12(D)(3) provides that the owner or operator of a hazardous waste facility shall submit a closure plan to the Director no later than fifteen days after issuance by the Director of an order to close the hazardous waste facility.

V. ORDERS

The Director hereby issues the following Orders:

1. Within fifteen (15) days from the effective date of these Orders, ~~Ravenna Arsenal~~ RVAAP shall submit to Ohio EPA a closure plan for the OB/OD treatment and storage areas at the RVAAP, in accordance with OAC Rule 3745-66-12.

2. If the Director does not approve the closure plan submitted by ~~Ravenna Arsenal~~ RVAAP pursuant to Order No. 3 of these Orders, and provides ~~Ravenna Arsenal~~ RVAAP with a written statement of deficiencies in the plan, ~~Ravenna Arsenal~~ RVAAP shall modify the plan or ~~resubmit~~ submit a new plan for approval that addresses the deficiencies within thirty (30) days of receiving such written statement. If significant revisions require more than 30 days to address, RVAAP shall provide specific justification for the extension. The Director will consider and grant such a request, if reasonable. If the Director modifies the closure plan, this modified plan shall become the approved closure plan.

3. Upon approval by Ohio EPA of ~~Ravenna Arsenal's~~ RVAAP's closure plan, ~~Ravenna Arsenal~~ RVAAP shall implement the approved closure plan in the manner and pursuant to the time frames set forth in the approved plan and OAC Rule 3745-66-13.

4. Within sixty (60) days of completion of closure, ~~Ravenna Arsenal~~ RVAAP shall submit certification of closure of the OB/OD treatment and storage areas at the RVAAP to Ohio EPA, pursuant to OAC Rule 3745-66-15.

5. The Director's Final Findings and Orders issued to Ravenna Arsenal on July 30, 1992, shall terminate upon approval by the Ohio EPA of ~~Ravenna Arsenal's~~ RVAAP's certification of closure of the OB/OD treatment and storage areas at the RVAAP.

6. ~~Ravenna Arsenal~~ RVAAP shall comply with the hazardous waste management requirements applicable to generators of hazardous waste under Chapter 3734 of the ORC and the regulations adopted thereunder. All shipment of hazardous waste shall be documented by manifest and copies of the manifest shall be maintained on-site at RVAAP for a period of at least three (3) years from the date of delivery, as required by OAC Rule 3745-52-20.

VI. OTHER CLAIMS

Nothing in these Orders shall constitute or be construed as a release of any claim, cause of action or demand in law or equity against any person, firm, partnership or corporation, not a signatory to these Orders, for any liability arising out of or relating to the operation of ~~Ravenna Arsenal's~~ RVAAP's hazardous waste facility.

VII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to these Orders shall be undertaken in accordance with the requirements of all applicable laws and regulations. Nothing in these Orders shall be construed as waiving or compromising the applicability and enforcement of any other statutes or regulations applicable to ~~Ravenna Arsenal's~~ the operation of the RVAAP. The Ohio EPA reserves the rights and privileges except as specified herein.

VIII. FORCE MAJEURE

A Force Majeure shall mean any event arising from causes beyond the control of RVAAP that causes a delay in or prevents the performance of any obligation under these Orders, including, but not limited to, acts of God; fire; war; insurrection; civil disturbance; strike or other labor disputes; explosion; unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance; adverse weather conditions that could not be reasonably anticipated; unusual delay in transportation; restraint by court order or order of public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than the Army; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; and insufficient availability of appropriated funds, if the Army shall have made timely request for such funds as part of the budgetary process. Nothing in this

Order shall be construed to require RVAAP or the Army to obligate funds in any fiscal year in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341. RVAAP will notify the Ohio EPA, in writing, within ten (10) workdays of any event giving rise to a Force Majeure.

~~VIII~~ IX. NOTICE

All documents demonstrating compliance with these Orders, and other documents required under these Orders to be submitted to the Ohio EPA shall be addressed to:

Ohio Environmental Protection Agency
Northeast District Office
Attn: RCRA Group Leader, DHWM
2110 East Aurora Road
Twinsburg, Ohio 44087

AND

Ohio Environmental Protection Agency
Attn: Manager, Data Management Section
Division of Hazardous Waste Management
1800 WaterMark Drive, P.O. Box 1049
Columbus, Ohio 43216-1049

or to such persons and addresses as may ~~be~~ hereafter be otherwise specified in writing by the Ohio EPA.

~~IX~~ X. RESERVATION OF RIGHTS

Nothing contained herein shall be construed to prevent the Ohio EPA from seeking legal or equitable relief to enforce the terms of these Orders or from taking other administrative, legal or equitable action as deemed appropriate and necessary, including seeking penalties against ~~Ravenna Arsenal~~ RVAAP, for noncompliance with these Orders except for a Force Majeuer. Nothing contained herein shall restrict the rights of ~~Ravenna Arsenal~~ RVAAP to seek administrative or judicial review, or to raise any administrative, legal or equitable claim or defense with respect to such further actions which the Ohio EPA may seek to require of ~~Ravenna Arsenal~~ RVAAP, to include any modification of the closure plan by the Director.

IT IS SO ORDERED:

Donald R. Schregardus, Director

Date

~~X~~ XI. SIGNATORIES

Each undersigned representative of a signatory to these Orders certifies that he or she is fully authorized to enter into these Orders and to legally bind such signatory to this document.

~~XI~~ XII. WAIVER

~~Ravenna Arsenal~~ RVAAP agrees that these Orders are lawful and reasonable, that the times provided for compliance herein are reasonable and that ~~Ravenna Arsenal~~ RVAAP agrees to comply with these Orders.

~~Ravenna Arsenal~~ RVAAP hereby waives the right to appeal the issuance, terms and service of these Orders and it hereby waives any and all rights it might have to seek administrative or judicial review of these Orders, but not as to any disapproval or modification of the closure plan, either in law or equity. Nothwithstanding the preceding, the Ohio EPA and ~~Ravenna Arsenal~~ RVAAP agree that, in the event that these Orders are appealed by any other party to the Environmental Board of Review or any court, ~~Ravenna Arsenal~~ RVAAP retains the right to intervene and participate in such appeal. In such event, ~~Ravenna Arsenal~~ RVAAP shall continue to comply with these Orders notwithstanding such appeal and intervention unless these Orders are stayed, modified or vacated.

IT IS SO AGREED:

Ravenna ~~Arsenal, Inc.~~ Army Ammunition Plant

_____ _____

By Robert J. Kasper Date
Commanding Officer's Representative

Ohio Environmental Protection Agency

_____ _____

Donald R. Schregardus Date
Director

WBT

TO 4/10/95
4CR
CONT ADM
PROP ADM
CONTRACTOR 4/10/95
RETURN FOR FILE

S: 14 Apr 95

AMSMC-GCS (27-1a)

S: 4/14/95 for comment
No Comments WBT

MEMORANDUM FOR AMSMC-EQ (Dr. Crain/Mr. Whelove)
SMCRV-CR (Mr. Kooper)

SUBJECT: Revised Ohio Environmental Protection Agency's (EPA) Final Findings and Orders Regarding Open Burning/Open Detonation (OB/OD) and Storage Closure at Ravenna Army Ammunition Plant (RVAAP)

1. Enclosed for your review and opportunity to comment, by close of business 14 April 1995, is our revised draft of the subject document. Please review it carefully! Please identify any funding or other compliance impediment. We propose to delete the lined out verbage and add those things which have been underlined

2. The point of contact is Mr. John Rock, AMSMC-GCS, DSN 793-8440, extension 28440, E-mail: jrock@ria-emh2.army.mil.

CONTRACTOR
FWD FOR
☐ Information
☐ Compliance as applicable
☑ Reply NLT 4/14/95
Comment

DON E. LAPPIN
Acting Chief Counsel

Encl

CF (w/encl):
AMCCC-G (Mr. Lingo)

RECEIVED
APR 10 1995
By_____

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 6

To Mr. Whelove	From John Rock
Dept./Agency AMSMC-EQ	Phone #
Fax # 21379	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

APR- 6-35 THU 15:43 309 782 4755 P. 01

CF: CDR, CAAA (LTC CONRAD)

Issuance Date _____
Effective Date _____

BEFORE THE
OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of

~~Ravenna Arsenal, Inc.~~	:	
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8451 State Route 5	:	Findings and Orders
Ravenna, Ohio 44266-9297	:	

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Nothing in these Orders shall constitute or be construed as a release of any claim, cause of action or demand in law or equity against any person, firm, partnership or corporation, not a signatory to these Orders, for any liability arising out of or relating to the operation of ~~Ravenna Arsenal's~~ RVAAP's hazardous waste facility.

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All actions required to be taken pursuant to these Orders shall be undertaken in accordance with the requirements of all applicable laws and regulations. Nothing in these Orders shall be construed as waiving or compromising the applicability and enforcement of any other statutes or regulations applicable to ~~Ravenna Arsenal's~~ the operation of the RVAAP. The Ohio EPA reserves the rights and privileges except as specified herein.

VIII. FORCE MAJEURE

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Order shall be construed to require RVAAP or the Army to obligate funds in any fiscal year in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341. RVAAP will notify the Ohio EPA, in writing, within ten (10) workdays of any event giving rise to a Force Majeure.

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AND

Ohio Environmental Protection Agency
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Division of Hazardous Waste Management
1800 WaterMark Drive, P.O. Box 1049
Columbus, Ohio 43216-1049

or to such persons and addresses as may ~~be~~ hereafter be otherwise specified in writing by the Ohio EPA.

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IT IS SO ORDERED:

Donald R. Schregardus, Director Date

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IT IS SO AGREED:

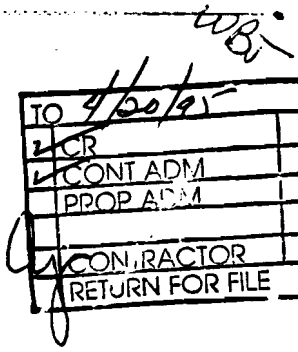
Ravenna ~~Arsenal, Inc.~~ Army Ammunition Plant

_____ _____
By Date

_____
Title

Ohio Environmental Protection Agency

_____ _____
Donald R. Schregardus Date
Director



AMSMC-EQE (200-1A) 14 APR 1995

MEMORANDUM FOR AMSMC-GCS (Mr. John Rock)

Subject: Comments on the Ohio Environmental EPA Order

1. Reference memorandum, AMSMC-GCS, undated, SAB (encl).

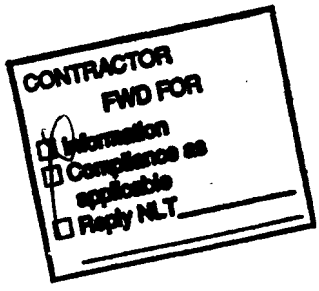
2. This division has one comment to the revised draft order: In Section V, Orders, paragraph 2., after the words - "such written statement.", insert the sentences: "If significant revisions require more than 30 days to address, RVAAP shall provide specific justification for the extension. The Director will consider and grant such a request, if reasonable."

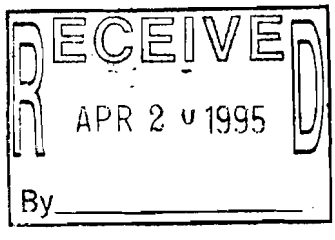
3. The POC for this action is Mr. Bob Whelove Jr., AMSMC-EQE, extension 21092, E-mail rwhelove.

Encl

HENRY CRAIN
Chief, Environmental Engr Div

CF (w/encl):
Commander's Representative, Ravenna Army Ammunition Plant,
ATTN: (SMCRV-CR, Mr. Kasper), 8451 State Route 5,
Ravenna, OH 44266-9297





S: 14 Apr 95

AMSMC-GCS (27-1a)

MEMORANDUM FOR AMSMC-EQ (Dr. Crain/Mr. Whelove)
SMCRV-CR (Mr. Kooper)

SUBJECT: Revised Ohio Environmental Protection Agency's (EPA) Final Findings and Orders Regarding Open Burning/Open Detonation (OB/OD) and Storage Closure at Ravenna Army Ammunition Plant (RVAAP)

1. Enclosed for your review and opportunity to comment, by close of business 14 April 1995, is our revised draft of the subject document. Please review it carefully! Please identify any funding or other compliance impediment. We propose to delete the lined out verbage and add those things which have been underlined

2. The point of contact is Mr. John Rock, AMSMC-GCS, DSN 793-8440, extension 28440, E-mail: jrock@ria-emh2.army.mil.

DON E. LAPPIN
Acting Chief Counsel

Encl

CF (w/encl):
AMCCC-G (Mr. Lingo)

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 6

To Dr. Crain	From John Rock
Dept/Agency AMSMC-EQ	Phone #
Fax # 21329	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Issuance Date _____
Effective Date _____

BEFORE THE
OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of

~~Ravenna Arsenal, Inc.~~	:	
Ravenna Army Ammunition Plant	:	Director's Final
8451 State Route 5	:	Findings and Orders
Ravenna, Ohio 44266-9297	:	

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significant
If ... requires more than 30 days ... RVAAP shall provide a ... a request for extension and ... justification ... The Director ... and grant such ... if reasonable.

4. Within sixty (60) days of completion of closure, ~~Ravenna Arsenal~~ RVAAP shall submit certification of closure of the OB/OD treatment and storage areas at the RVAAP to Ohio EPA, pursuant to OAC Rule 3745-66-15.

5. The Director's Final Findings and Orders issued to Ravenna Arsenal on July 30, 1992, shall terminate upon approval by the Ohio EPA of ~~Ravenna Arsenal's~~ RVAAP's certification of closure of the OB/OD treatment and storage areas at the RVAAP.

6. ~~Ravenna Arsenal~~ RVAAP shall comply with the hazardous waste management requirements applicable to generators of hazardous waste under Chapter 3734 of the ORC and the regulations adopted thereunder. All shipment of hazardous waste shall be documented by manifest and copies of the manifest shall be maintained on-site at RVAAP for a period of at least three (3) years from the date of delivery, as required by OAC Rule 3745-52-20.

VI. OTHER CLAIMS

Nothing in these Orders shall constitute or be construed as a release of any claim, cause of action or demand in law or equity against any person, firm, partnership or corporation, not a signatory to these Orders, for any liability arising out of or relating to the operation of ~~Ravenna Arsenal's~~ RVAAP's hazardous waste facility.

VII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to these Orders shall be undertaken in accordance with the requirements of all applicable laws and regulations. Nothing in these Orders shall be construed as waiving or compromising the applicability and enforcement of any other statutes or regulations applicable to ~~Ravenna Arsenal's~~ the operation of the RVAAP. The Ohio EPA reserves the rights and privileges except as specified herein.

VIII. FORCE MAJEURE

A Force Majeure shall mean any event arising from causes beyond the control of RVAAP that causes a delay in or prevents the performance of any obligation under this Agreement, including, but not limited to, acts of God; fire; war; insurrection; civil disturbance; strike or other labor disputes; explosion; unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance; adverse weather conditions that could not be reasonably anticipated; unusual delay in transportation; restraint by court order or order of public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than the Army; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; and insufficient availability of appropriated funds, if the Army shall have made timely request for such funds as part of the budgetary process. Nothing in this

Order shall be construed to require RVAAP or the Army to obligate funds in any fiscal year in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341. RVAAP will notify the Ohio EPA, in writing, within ten (10) workdays of any event giving rise to a Force Majeure.

~~VIII~~ IX. NOTICE

All documents demonstrating compliance with these Orders, and other documents required under these Orders to be submitted to the Ohio EPA shall be addressed to:

Ohio Environmental Protection Agency
Northeast District Office
Attn: RCRA Group Leader, DHWM
2110 East Aurora Road
Twinsburg, Ohio 44087

AND

Ohio Environmental Protection Agency
Attn: Manager, Data Management Section
Division of Hazardous Waste Management
1800 WaterMark Drive, P.O. Box 1049
Columbus, Ohio 43216-1049

or to such persons and addresses as may ~~be~~ hereafter be otherwise specified in writing by the Ohio EPA.

~~IX~~ X. RESERVATION OF RIGHTS

Nothing contained herein shall be construed to prevent the Ohio EPA from seeking legal or equitable relief to enforce the terms of these Orders or from taking other administrative, legal or equitable action as deemed appropriate and necessary, including seeking penalties against ~~Ravenna Arsenal~~ RVAAP, for noncompliance with these Orders except for a Force Majeuer. Nothing contained herein shall restrict the rights of ~~Ravenna Arsenal~~ RVAAP to raise any administrative, legal or equitable claim or defense with respect to such further actions which the Ohio EPA may seek to require of ~~Ravenna Arsenal~~ RVAAP, to include any modification of the closure plan by the Director.

IT IS SO ORDERED:

Donald R. Schregardus, Director _____ Date

~~X~~ XI. SIGNATORIES

Each undersigned representative of a signatory to these Orders certifies that he or she is fully authorized to enter into these Orders and to legally bind such signatory to this document.

~~XI~~ XII. WAIVER

~~Ravenna Arsenal~~ RVAAP agrees that these Orders are lawful and reasonable, that the times provided for compliance herein are reasonable and that ~~Ravenna Arsenal~~ RVAAP agrees to comply with these Orders.

~~Ravenna Arsenal~~ RVAAP hereby waives the right to appeal the issuance, terms and service of these Orders and it hereby waives any and all rights it might have to seek administrative or judicial review of these Orders either in law or equity. Notwithstanding the preceding, the Ohio EPA and Ravenna Arsenal agree that, in the event that these Orders are appealed by any other party to the Environmental Board of Review or any court, ~~Ravenna Arsenal~~ RVAAP retains the right to intervene and participate in such appeal. In such event, ~~Ravenna Arsenal~~ RVAAP shall continue to comply with these Orders notwithstanding such appeal and intervention unless these Orders are stayed, modified or vacated.

IT IS SO AGREED:

Ravenna ~~Arsenal, Inc.~~ Army Ammunition Plant

_____ _____
By Date

_____
Title

Ohio Environmental Protection Agency

_____ _____
Donald R. Schregardus Date
Director

cc: G. Higgins

OhioEPA
State of Ohio Environmental Protection Agency

STREET ADDRESS:
1800 WaterMark Drive
Columbus, OH 43215-1099

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

MAILING ADDRESS:
P.O. Box 1049
Columbus, OH 43216-1049

CONTRACTOR
FWD FOR
☑ Information
☐ Compliance as applicable
☐ Reply NLT

TO 7/17/95
CP
CONT ADM
REPOP ADM
CONTRACTOR
RETURN FOR FILE

July 7, 1995

Mr. Don E. Lappin
Chief, General Law/Congressional Affairs Division
Department of the Army
Headquarters, U.S. Army Armament, Munitions and Chemical Command
Rock Island, Illinois 61299-6000

Re: Ravenna Army Ammunition Plant, Ravenna, Ohio

Dear Mr. Lappin:

Thank you for your letter of April 27, 1995 regarding the above-referenced matter and the accompanying proposed revisions to the proposed administrative consent order which accompanied the Director's March 16, 1995 letter to Robert J. Kasper at the Ravenna Army Ammunition Plant. I regret the delay in responding to your letter. I understand that the discussions between Ohio EPA and Ravenna Army Ammunition Plant representatives on May 9, 1995 addressed a number of environmental remediation issues at the Plant. Accordingly, Ohio EPA staff are reviewing the proposed closure orders in light of these associated remediation issues. The delay necessitated by this review is therefore warranted.

As soon as a revised administrative consent order is completed, I will forward the document to you. Until then, should you have any questions in this regard, please feel free to contact me at (614) 644-3037. Thank you for your cooperation in this regard.

Sincerely,

Mark J. Navarre
Supervising Attorney

RECEIVED
JUL 17 1995
By

cc: Murat Tukel, DHWM, NEDO
Alan Harness, DHWM, CO
Dan Lukovic, DHWM, CO

Robert J. Kasper, Ravenna Army Ammunition Plant
John A. Rock, U.S. Army Armament, Rock Island

RAVENNA ARMY AMMUNITION PLANT

8451 STATE ROUTE 5 • RAVENNA, OHIO 44266-9297

September 29, 1995

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

Subject: Resource Conservation and Recovery Act (RCRA) Permits Study Questionnaire

Reference: AMSIO-EQ Memorandum dated 21 September 1995, same subject

Dear Sir:

As requested, we have reviewed the subject questionnaire and responded, to the best of our abilities, with respect to questions 2 and 8. Our response is transmitted herewith, for your review and use.

The writer will serve as Mason & Hanger's point of contact with respect to this matter. Please feel free to contact me if you have any questions or comments concerning the information that we have provided.

Sincerely,
MASON & HANGER-SILAS MASON CO., INC.,

W.B. Talmon, Jr.
Site Manager

WBT:wbt

cc: [redacted]
Reading File

ARMY RCRA PART B PERMITTING INFORMATION

MACOM: AMC Installation Name: Ravenna AAP

Installation POC: William Talmon Phone No: (216) 358-7400

Mason & Hanger-Silas Mason Co., Inc.

The following information is needed to determine funding requirements for projects related to RCRA Part B permitting activities (e.g., permit applications, O&M, corrective actions).

1. Provide the EPA identification number(s) for TSD units owned and/or operated by the installation:

EPA ID #: OH5210020736 EPA ID #: _____

2. Permit Information and Types and Status of TSD Units:

Type of TSD Unit	Total No. of Units	No. Interim Status Units	No. Permitted Units	No. Units to be withdrawn from Permit or Application in future
Container Storage (>90 Days)	1	1	0	**
Surface Impoundment - Storage	0	0	0	0
Above Ground Tank - Haz Waste Storage	0	0	0	0
Underground Tank - Haz Waste Storage	0	0	0	0
Explosive Waste Incinerator	0	0	0	0
Deact (Popping) Furnace	1	1	0	***
Deact Furnace Modified 1236	0	0	0	0
Other Incinerators	0	0	0	0
Open Burning	1	1	0	**
Open Detonation	1	1	0	**
Surface Impoundment - Treatment	0	0	0	0
Tanks - Haz Waste Treatment	0	0	0	0
Chemical/Biological/Physical Treatment	0	0	0	0
Hazardous Waste Landfill	0	0	0	0
Waste Pile	0	0	0	0
Process Vents	0	0	0	0
Other*:	0	0	0	0
Other*:	0	0	0	0
Total No. Units	4	4	0	0

* Please write-in the type of TSD unit (e.g., sumps, drains, other thermal treatment).

** Permit Application withdrawn 11 APR 1994

*** Closure in progress

7. Does the installation plan on permitting any new TSD units during FY95 through FY03? ___ Yes ___ No

If you answered "Yes", please identify below the 1383 project numbers for each new TSD unit:

TSD Unit Type/Description	1383 Project No.	% Project Funds Assigned to TSD Activities*	1383 Project No.	% Project Funds Assigned to TSD Activities*

** Enter 100% if the total "required" funds for a specific 1383 project submission is entirely related to permitting new TSD units. If the project includes funding for other activities not directly related to new permitting requirements, please enter the percent of the total required funds that are allocated for the new TSD units.*

8. Has a RCRA Facility Assessment (RFA) been conducted at the installation? X Yes ___ No

If "Yes", please attach a list of the SWMUs identified in the RFA that includes the following information:

- Number and type of each SWMU: (i.e., landfill, tank, surface impoundment, etc.)
- Size of each SWMU used for land disposal activities: (in acres)
- Statute primarily regulated under: RCRA (Corrective Action Program) or CERCLA.
- Status of SWMU (Provide the Defense Sites Environmental Restoration Tracking System (DSERTS) identification number for each site, where applicable)
  - Undergone closure (requires no further action) and the associated 1383 project number(s).
  - In the process of being closed and the associated 1383 project number(s).
  - Under investigation (or will be) to be closed during FY96 through FY03 and the associated 1383 project number(s).

9. Is the installation currently on a BRAC list? ___ Yes ___ No

a. If "Yes", is the installation undergoing: ___ Complete closure ___ Partial Closure
___ Realignment (Gain) ___ Realignment (Lose)

b. What type of impact will the BRAC action have on RCRA Part B activities:

___ No impact ___ Decrease activities ___ Increase activities ___ Terminate activities

10. Please provide the following information regarding compliance inspections on your RCRA permitted TSDs:

Number of RCRA permitted TSD Inspections During	Fees Paid/Budgeted for EPA/State Inspections	1383 Project Number (if applicable)	% 1383 Project Funds Assigned to TSD Inspections*
FY 1993			
FY 1994			
FY 1995 (projected)			
FY 1996 (projected)			

** Enter 100% if the total "required" funds for a specific 1383 project submission is entirely related to the TSD inspection fees. If the project includes funding for other activities not directly related to TSD inspection fees, please enter the percent of the total required funds that are allocated for the TSD inspections.*

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

September 29, 1995

SOLID WASTE MANAGEMENT UNITS IDENTIFIED DURING THE INSTALLATION'S RCRA FACILITY ASSESSMENT

DSERTS NO.	TYPE	SIZE	STATUTE	STATUS
RVAAP-01	Sanitary Landfill	10 Acres	RCRA-D	Closed, No Further Action Required
RVAAP-02	Open Burning Grounds	35 Acres	CERCLA	Future Investigation, #RVAP080195
RVAAP-03	Open Detonation Grounds	1.5 Acres	CERCLA	Future Investigation, #RVAP080195
RVAAP-04	Open Detonation Grounds	(1 Acre)/ 20 Acres	(RCRA)/ CERCLA	See Note 1.
RVAAP-05	Open Burning Grounds	(0.33 Acre)/ 200 Acres	(RCRA)/ CERCLA	See Note 1.
RVAAP-06	Landfill	0.3 Acre	CERCLA	Future Investigation, #RVAP080195
RVAAP-07	HW Storage Building		RCRA	See Note 2.
RVAAP-08	IWW Treat. Sys./ Settling Pond	1 Acre	CERCLA	Under Investigation, #RVAP050195
RVAAP-09	IWW Treat. Sys./ Settling Pond	2 Acres	CERCLA	Under Investigation, #RVAP050195
RVAAP-10	IWW Treat. Sys./ Settling Pond		CERCLA	Under Investigation, #RVAP050195
RVAAP-11	IWW Treat. Sys./ Settling Pond	2 Acres	CERCLA	Under Investigation, #RVAP050195
RVAAP-12	Settling Pond	0.3 Acre	CERCLA	Under Investigation, #RVAP050195

DSERTS NO.	TYPE	SIZE	STATUTE	STATUS
RVAAP-13	Settling Pond	0.5 Acre	CERCLA	Under Investigation, #RVAP050195
RVAAP-14	ConcreteTank		RCRA	Closed, No Further Action Required
RVAAP-15	Industrial Waste Water Treatment Plant		CERCLA	Future Investigation, #RVAP080195
RVAAP-16	Landfill/Ponds	3.5 Acre	CERCLA	Future Investigation, #RVAP080195
RVAAP-17	Deactivation Furnace		RCRA	Undergoing Closure, #RVAP031693
RVAAP-18	Industrial Waste Water Treatment Plant		CERCLA	Under Investigation, #RVAP050195
RVAAP-19	Landfill	10 Acres	CERCLA	Under Investigation, #RVAP050195
RVAAP-20	Sewage Treatment Plant		NPDES	Closed, No Further Action Required
RVAAP-21	Sewage Treatment Plant		NPDES	Closed, No Further Action Required
RVAAP-22	Sewage Treatment Plant		NPDES	Closed, No Further Action Required
RVAAP-23	Underground Storage Tank		LUST	Closed, No Further Action Required
RVAAP-24	Aboveground Storage Tank		CERCLA	Future Investigation, #RVAP080195
RVAAP-25	Aboveground Storage Tank		CERCLA	Future Investigation, #RVAP080195
RVAAP-26	Settling Tanks		CERCLA	Future Investigation, #RVAP080195
RVAAP-27	PCB Storage Building		TSCA	No Further Action Required
RVAAP-28	Landfill (Burial Site)	Less Than 0.01 Acre	CERCLA	Future Investigation, #RVAP080195
RVAAP-29	Settling Ponds	9 Acres	CERCLA	Under Investigation, #RVAP050195
RVAAP-30	Industrial Waste Water Treatment Plant		NPDES	Closed, No Further Action Required
RVAAP-31	Retention Pond	0.5 Acre		No Further Action Required

Note 1: The Closure Plan for the interim status RCRA site is under development. Investigation of the CERCLA site surrounding the RCRA site is currently underway, 1383# RVAP050195.

Note 2: The Closure Plan for this interim status RCRA site is under development.

RAVENNA ARMY AMMUNITION PLANT
INSTALLATION ACTION PLAN
SUMMARY

1. STATUS:

   No HRS score assigned. RCRA Part B submitted, undergoing review by US and Ohio EPA. WITHDRAWN DURING 3RD QTR FY 94

2. TOTAL NUMBER OF DSERTS SITES: 31

3. DIFFERENT SITE TYPES:

   4 OB/OD Areas, 9 Dilution/Settling Ponds, 5 Waste Water Treatment Tanks, 5 Landfills/Land Disposal Sites, and 8 Other Sites.

4. MOST WIDESPREAD CONTAMINANTS OF CONCERN:

   Explosives, Metals

5. MEDIA OF CONCERN:

   Soils, Ground Water, Surface Water

6. COMPLETED REM/IRA/RA

Landfill Closure (1989)	Total Cost	$ 437.0 K
UST Removal (1989)	Total Cost	$ 198.0 K

7. CURRENT IRP PHASE:

   PA at all sites.

8. PROJECTED IRP PHASE:

   SI at all sites.

9. IDENTIFIED POSSIBLE REM/IRA/RA:

   None

10. FUNDING:

FY94 Funds	30 K
FY95 Funds	1300 K
Future Requirements	11506 K
Total	12836K

11. DURATION:

Year of IRP Inception: 1989
Year of IRP Completion (Excluding LTM): 2001

1995
INSTALLATION ACTION PLAN
FOR
RAVENNA ARMY AMMUNITION PLANT (RVAAP)

1. INSTALLATION INFORMATION

Locale

– The Ravenna Army Ammunition Plant (RVAAP) is located in the northeastern portion of the State of Ohio, within Portage and Trumbull Counties (Figure1). The greater portion of the 21,419 acre installation lies within Portage County, which is bordered on the east by Trumbull and Mahoning Counties; on the north by Geauga County; on the west by Summit County; and on the south by Stark County and a portion of Mahoning County. Distances from the RVAAP to surrounding communities are listed in Table 1.

– The installation is contained within an 11-mile long, 3.5-mile wide tract and is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; State Route 534 on the east; the Garrettsville and Berry Roads on the west; and the CONRAIL Railroad on the north. Interchange No. 14 of the Ohio Turnpike (I-80) is located on State Route 5, 2.5 miles east of the eastern boundary of the installation. Land usage surrounding the RVAAP facility consists primarily of farmland, and sparsely scattered private residences.

Command Organization

– Major Command: U.S. Army Materiel Command, Environmental Quality Division

– Major Subordinant Command: U.S. Army Armament, Munitions, and Chemical Command, Environmental Quality Directorate

– Installation: RVAAP, Commander's Representative

– Installation Modified Caretaker Contractor: Mason & Hanger-Silas Mason Co., Inc.

Lead Executing Installation Restoration Program Agency

– U.S. Army Corps of Engineers

Regulator Participation

– Federal: U.S. Environmental Protection Agency, Region V

– State: Ohio Environmental Protection Agency

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

REPLY TO ATTENTION OF

S: 23 January 1995

AMSMC-EQ (200-1a)

15 DEC 1994

TO 1/9/95
CR
CONT ADM
PROP ADM
CONTRACTOR
RETURN FOR FILE

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: FY 95 Guidance for Required Installation Action Plans (IAP)

1. Reference memorandum, AEC, SFIM-AEC-IRP, 6 December 1994, SAB and enclosure thereto (encl).

2. Request that addressees review the referenced subject guide and update/develop an IAP to satisfy the IAP requirement. S: 1/23/95

3. Request that three signed copies of your updated IAP be sent to this Headquarters, AMSMC-EQE. Your updated IAPs must be signed by your commander. The IAP must be at this Headquarters, AMSMC-EQE, NLT 23 January 1995.

4. The point of contact for this action is Mr. Cyril Onewokae, AMSMC-EQE, DSN 793-1350, E-mail address conewoka@ria-emh2.army.mil.

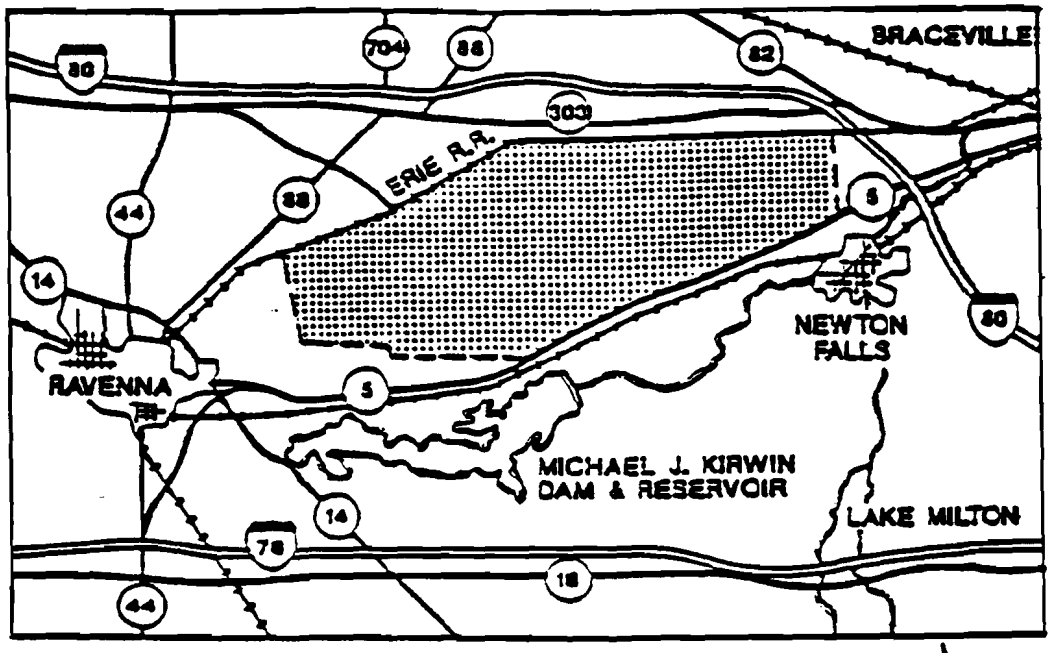
FOR THE COMMANDER:

Robert J. Radkiewicz
ROBERT J. RADKIEWICZ
Director, Environmental Qual Dir

Encl

Sent to VAAP by mistake.

1/4/95



3 0 3 6

SCALE IN MILES

LOCATION MAP

FIGURE 1

TABLE 1

Distances Between RVAAP and Nearby Communities

Community	Distance (Miles)
Akron, OH	23
Alliance, OH	13
Canton, OH	40
Cincinnati, OH	225
Cleveland, OH	35
Columbus, OH	125
Erie, PA	116
Kent, OH	15
Pittsburgh, PA	98
Toledo, OH	125
Warren, OH	15
Youngstown, OH	30

Regulatory Status

- RVAAP has not yet been assigned a score by U.S. EPA under its Hazard Ranking System (HRS).

Significant Changes to IRP from the Previous Year

- None

2. INSTALLATION DESCRIPTION

Current Status

RVAAP is a government-owned, contractor-operated (GOCO) U.S. Army Armament, Munitions, and Chemical Command facility. In FY93, the mission of RVAAP was changed from inactive-maintained to modified caretaker status. Mason & Hanger-Silas Mason Co., Inc. is the current modified caretaker contractor.

Historic Operations

In August, 1940 a tract of land covering 25,000 acres was purchased by the United States Government in the northeastern part of Ohio in Portage and Trumbull Counties. Construction of the plant started in September 1940 with the Hunkin-Conkey Construction Company as the principal contractor, Wilbur Watson and Associates as principal engineers, and the Atlas Powder Company as the operating contractor and consultant. The facility was completed and commenced operations during December 1941/January 1942, with the primary missions of depot storage and ammunition loading. To accomplish these two missions, the installation was divided into two separate units, the Portage Ordnance Depot and the Ravenna Ordnance Plant. The Portage Ordnance Depot's primary mission was depot storage of munitions and components, while the Ravenna Ordnance Plant's mission was ammunition loading. In August 1943, the installation was redesignated the Ravenna Ordnance Center and again in November 1945 as the Ravenna Arsenal.

Facilities were operated by the Atlas Powder Company from September 1940 until the end of World War II production in 1945 when the operation of the plant was turned over to the Ordnance Department. From 1946 to 1949, the ammonium nitrate line was operated by the Silas Mason Company for the production of ammonium nitrate fertilizer. The plant was placed in a standby status in 1950 and operations were limited to renovation, demilitarization, and normal maintenance of equipment and stored ammunition and components.

Beginning in April, 1951 facility operations were contracted with Ravenna Arsenal, Inc., a subsidiary of the Firestone Tire and Rubber Company of Akron, Ohio.

The plant was reactivated during the Korean conflict for the loading and packing of major caliber shells and components. In July, 1954, the Plum Brook Ordnance Works of Sandusky, Ohio and the Keystone Ordnance Works of Meadville, Pennsylvania were made satellites to Ravenna. All production ended in August 1957, and in October 1957 the installation was again placed in a standby condition. The Plum Brook Plant ceased to be under the jurisdiction of Ravenna in March 1958. The Keystone Ordnance Works was transferred to the General Services Administration in July 1959.

Rehabilitation work started in October 1960 to establish facilities in the ammonium nitrate line for the processing and explosive melt-out of bombs. These operations commenced in January 1961, thereby establishing the first operation of this type in the ammunition industry. In July 1961, the plant was again deactivated and in November 1961 the installation was divided once again. The industrial portion was redesignated as the Ravenna Ordnance Plant and the entire facility was designated the Ravenna Army Ammunition Plant.

The RVAAP was once again reactivated in May 1968 in support of the Southeast Asian Conflict for loading, assembling, and packing munitions on three load lines and two component lines. These facilities were subsequently deactivated in August 1972.

A mission for the demilitarization of the M71A1 90MM projectile extended from June 1973 until March 1974. Demilitarization of various munitions continued on a periodic basis through 1992.

In October, 1982 the Physics International Company, a subsidiary of Rockcor, Inc., purchased Ravenna Arsenal, Inc. from the Firestone Company. In June, 1985 Rockcor Incorporated was purchased by the Olin Corporation.

Regulatory Status

RVAAP has not yet been assigned a score by U.S. EPA under its Hazard Ranking System (HRS) and therefore has not, to date, been placed on the NPL. RVAAP has submitted a Part B permit application to U.S. and Ohio EPA. The application covered the installation's Open Burning and Open Detonation Grounds and a hazardous waste storage building. The permit application was withdrawn during the 3rd Qtr. of FY94.

3. CONTAMINATION ASSESSMENT

Studies to Date

To date, the following environmental studies have been conducted at RVAAP.

1. An Installation Assessment of RVAAP, conducted by USATHAMA in 1978, identified 15 potentially contaminated areas at the installation. A Re-Assessment was conducted by USATHAMA in 1982. Data evaluated under the Assessment and Re-Assessment did not indicate migration of contamination to ground water.

2. In 1988, the USAEHA conducted a ground water contamination survey and evaluation of solid waste management units at RVAAP. A total of 29 potentially contaminated solid waste management units were identified as part of this study. The study concluded that further investigation was required at 15 of the 29 sites to determine if contaminants have migrated from the units.

3. U.S.EPA contracted Jacobs Engineering Group to perform a RCRA Facility Assessment - Preliminary Review and Visual Site Inspection - at RVAAP in 1989. The draft report of their assessment identified 31 solid waste management units, 12 of which required no further action.

4. The USAEHA conducted a geohydrologic study of the RVAAP open burning and open detonation areas in 1992 as part of a response to a Notice of Deficiency issued by Ohio EPA regarding the installation's RCRA Part B permit application. Minor amounts of contamination were detected in the soils at these units.

The 31 sites identified in the draft PR/VSI report are listed as sites in the Defense Sites Environmental Restoration Tracking System (DSERTS) for RVAAP.

DSERTS Site Descriptions

A summary of the 31 RVAAP DSERTS sites is provided below; their locations within RVAAP are shown in Figure 2.

RVAAP-01 RAMSDELL QUARRY LANDFILL

This unit is an unlined 10 acre landfill in the bottom of an abandoned quarry. Water is ponded in the northern end of the quarry. During the period 1946 to 1950 the site was used as a surface burning site to thermally treat waste explosives and napalm bombs.

Since 1976, the site has been used strictly as a non-hazardous solid waste landfill. The site was permitted as a sanitary landfill by the State of Ohio from 1978 to its closure in 1990.

Because this unit is unlined, there is a high potential for releases from the landfill to surrounding soils and ground water. Five ground water monitoring wells have been installed around the landfill perimeter. The wells are monitored on a regular basis as part of the landfill closure requirements.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, ground water
RRSE Rating:	2B
Completed IRP Phase to Date:	PA, Closure (1383# RV0089F005)
Current IRP Phase:	SI, (1383# RVAP03289)
Future IRP Phase:	Long Term Monitoring (Post Closure - 30 yr.)

RVAAP-02 ERIE BURNING GROUNDS

This 35 acre site was used to thermally treat munitions by open burning on the ground surface. Bulk, obsolete, non-spec propellants, conventional explosives, rags, and large explosive contaminated items were treated at this location. The ash residue from the burns was left on site. Waste constituents of concern at this location include RDX, TNT, and heavy metals. There is a potential for release of contaminants from this unit to the surrounding soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-03 DEMOLITION AREA #1

This is a 1.5 acre site that was used for the purpose of thermal treatment of munitions by burning and detonation. The site consists of a circular 1 to 1.5 foot berm surrounding a grassed area approximately 1 to 1.5 acres in size. Operations took place on the ground. The area is unlined. Contaminants of concern at this site include explosive compounds. There is potential for release of contaminants from this unit to the surrounding soils and ground water.

Contaminant of Concern:	Explosives
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-04 DEMOLITION AREA #2

This is a unit that operated under RCRA interim status for the treatment of explosives by open detonation. The Part B permit application that covered the site was withdrawn in 1994. The site was used to detonate large caliber munitions and "off-spec" bulk explosives that could not be deactivated or demilitarized by any other means due to their conditions. Detonation was performed in a backhoe-dug pit with a minimum depth of 4 feet. After detonation, metal parts were picked up and removed from the site. Contaminants of concern at this site are white phosphorus, explosives, and heavy metals. An AEHA geotechnical study was conducted at this site in 1992, and minor amounts of contamination were detected in the soils at the site. Four ground water monitoring wells were installed at the site as part of the AEHA study. The wells are currently sampled on a quarterly basis.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, ground water
RRSE Rating:	1B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined.

RVAAP-05 WINKLEPECK BURNING GROUNDS

The total burning ground area consists of 200 acres. Prior to 1980, open burning was carried out in pits, pads, and sometimes on the roads within the 200 acre area. Burning was conducted on the bare ground, the ash was abandoned at the site. Since 1980, burns of scrap explosives, propellants and explosive-contaminated materials have been conducted in raised refractory-lined trays within a 15 acre area. Prior to 1980, wastes treated in the area included RDX, antimony sulfide, Comp B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes, and small amounts of laboratory chemicals. An AEHA geotechnical study was conducted at the active portion of this site in 1992. The Part B permit application covering the active portion of the site was withdrawn in 1994. Minor amounts of contamination were detected in the soils. Four ground water monitoring wells were installed at the active portion of the site as part of the AEHA study. The wells are currently sampled on a quarterly basis.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, ground water
RRSE Rating:	1B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-06 C BLOCK QUARRY

This site is an abandoned borrow pit approximately 0.3 acres in size. The site was used as a disposal area for annealing porches wastes for a short time during the 1950's. Liquid wastes were apparently dumped on the ground in the pit bottom. The site is now heavily forested with trees of 1 foot diameter or larger. Waste constituents of concern include chromium, lead, and mercury. A detailed sampling investigation of the soils from this unit in 1986 detected no metals above EP toxic limits.

Contaminant of Concern:	Metals
Media of Concern:	Soils
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-07 BLDG. 1601 HAZARDOUS WASTE STORAGE

This is a RCRA storage facility for solid ash residue and spent activated carbon. It was operated under interim status. No hazardous wastes are currently being stored in the building. The Part B permit application covering the facility was withdrawn during 1994. The building is a 20 by 22 foot concrete igloo. Wastes stored in this building were containerized in 55 gallon DOT drums. There is little potential for contamination resulting from operation of this unit.

Contaminant of Concern:	Metals
Media of Concern:	Soils
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-08 LOAD LINE 1 DILUTION/SETTLING POND

From approximately 1941 to 1971, building wash-down water and waste water from the load line operations was collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined earthen impoundment approximately 1 acre in size. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this unit are explosive compounds and heavy metals (lead, chromium, mercury). There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	2B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-09 LOAD LINE 2 DILUTION/SETTLING POND

From approximately 1941 to 1971, building wash-down water and waste water from the load line operations was collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond approximately 2 acres in size and 6 to 8 feet deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this unit are explosive compounds and heavy metals (lead, chromium, cadmium, mercury). There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosive, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-10 LOAD LINE 3 DILUTION/SETTLING POND

From approximately 1941 to 1971, building wash-down water and waste water from the load line operations was collected in concrete sumps, pumped through sawdust filtration units and then discharged to a drainage ditch leading to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. Contaminants of concern at this unit are explosive compounds and heavy metals (lead, chromium, mercury). There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-11 LOAD LINE 4 DILUTION/SETTLING POND

From approximately 1941 to 1971, building wash-down water and waste water from the load line operations was collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond approximately 2 acres in size and 6 to 8 feet deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this unit are explosive compounds and heavy metals (lead, chromium, cadmium, mercury). There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-12 LOAD LINE 12 DILUTION/SETTLING POND

From 1951-57, 1981-83 and 1989 to 1993, building wash-down water and waste water from the bomb melt out facility operations was collected in a house gutter system, and flowed through a piping system to two stainless steel tanks. The first tank was used for settling and the second tank was used for filtration. Prior to the 1980's, the water leaked under the building and ponded there. Building wash-down water from Building 904 was also swept out though doorways onto the ground surrounding the building. After 1981, the water was treated in the Load Line 12 waste water treatment system (RVAAP-18). Contaminants of concern at this unit are explosive compounds and heavy metals. There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-13 BLDG. 1200 DILUTION/SETTLING POND

From approximately 1941 to 1971, ammunition was demilitarized at this building by steaming munitions rounds. The steam decontamination generated pink water which drained to a man-made ditch. The ditch discharged into a 0.5 acre sedimentation pond, and the overflow from this pond discharged to Eagle Creek. Contaminants of concern at this unit are explosive compounds and heavy metals (lead, chromium, mercury). There is a high potential for releases from this unit to the soils, surface water and ground water.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3A
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-14 LOAD LINE 6 EVAPORATION UNIT

From 1981 through 1987, tenant operations at this load line generated building wash down and waste water which was discharged into an 18 by 14 by 4 foot concrete tank. This unit was closed under a RCRA closure in 1989. The closure required removal of all contaminated soils associated with the unit. Soil sampling conducted after removal of soils confirmed clean closure of this unit.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils
RRSE Rating:	Not Rated
Completed IRP Phase to Date:	PA, RCRA closure
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	NFA

RVAAP-15 LOAD LINE 6 TREATMENT PLANT

This was an active unit in operation since 1987 by a tenant organization, which closed in 1993. The unit consists of dual activated carbon units for filtration of pink water generated from load line operations. The waste water treatment system discharged under an NPDES-permitted discharge to the RVAAP sanitary sewer system. Contaminants of concern at this unit are explosive compounds. There is a low potential for releases from this unit.

Contaminant of Concern:	Explosives
Media of Concern:	Soils
RRSE Rating:	3B
Completed IRP Phase to Date:	PA, System no longer active
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-16 QUARRY LANDFILL/POND

This unit operated during the period 1945 through 1993. The site consists of three elongated ponds situated end to end in an abandoned rock quarry. The ponds are 15 to 20 feet deep and are separated by earthen berms. Since 1976, spent brine regenerate and sand filtration backwash water from one of the RVAAP drinking water treatment plants has been discharged to the ponds. This discharge was regulated under a NPDES permit. Prior to 1976, the quarry was reportedly used for open burning and as a landfill. The lands adjacent to the quarry were utilized as an impact area to test 40MM projectiles and to incinerate/deactivate fuze and booster components. Constituents of concern include sodium chloride, calcium chloride, manganese, iron, explosive compounds and heavy metals. There is a potential for release of contaminants to the ground water, soils and surface water from this unit.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-17 DEACTIVATION FURNACE

This unit is a No. 2 oil-fired horizontal rotary retort furnace used for the deactivation of small munitions items. It was operated from 1960 through 1983. The furnace is currently undergoing closure under a RCRA closure plan. Sampling during closure activities indicates heavy metals contamination to the soils surrounding the furnace area. The closure plan calls for the removal of all contaminated soils associated with the unit.

Contaminant of Concern:	Metals
Media of Concern:	Soils
RRSE Rating:	1B
Completed IRP Phase to Date:	PA
Current IRP Phase:	RCRA Closure (1383# RVAP 031693)
Future IRP Phase:	To be determined

RVAAP-18 LOAD LINE 12 PINK WASTE WATER TREATMENT

This is an active unit, consisting of dual mode activated carbon filters for the treatment of explosive contaminated waste water. This unit has operated from 1982 to the present. The waste water treatment discharge is regulated under the NPDES permitted discharge system. Contaminants of concern include explosive compounds. There is a low potential for releases of contaminants from this unit to the soils, surface water or ground water.

Contaminant of Concern:	Explosives
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-19 LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

This is a 10 acre unlined landfill site used for general plant refuse (sanitary wastes, possibly also explosive wastes and ash residue). It was used from 1969 until 1976. There is a high potential for releases of contaminants to the soils, ground water and surface water from this unit.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-20 SAND CREEK SEWAGE TREATMENT PLANT

This is an inactive domestic sewage treatment plant regulated under an NPDES discharge permit. This plant is no longer needed by the installation under modified caretaker status and was closed in FY93 in accordance with EPA requirements. There is a low potential for releases to the soil and ground water from this unit.

Contaminant of Concern:	Metals
Media of Concern:	Soils, ground water
RRSE Rating:	Not Rated
Completed IRP Phase to Date:	PA, Closure IAW EPA Standards
Current IRP Phase:	SI
Future IRP Phase:	To be determined

RVAAP-21 DEPOT SEWAGE TREATMENT PLANT

This is an inactive domestic sewage treatment plant regulated under an NPDES discharge permit. This plant is no longer needed by the installation under modified caretaker status and was closed in FY93 in accordance with EPA requirements. There is a low potential for releases to the soil and ground water from this unit.

Contaminant of Concern:	Metals
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA, Closure IAW EPA Standards
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-22 GEORGE ROAD SEWAGE PLANT

This is an inactive domestic sewage treatment plant regulated under an NPDES discharge permit. The plant was closed in FY93 in accordance with EPA requirements. There is a low potential for releases to the soil and ground water from this unit.

Contaminant of Concern:	Metals
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA, Closure IAW EPA Standards
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-23 UNIT TRAINING EQUIPMENT SITE UST

This unit was an underground waste oil storage tank used by an RVAAP tenant organization. The tank, and any associated contaminated soil, was removed in 1989.

Contaminant of Concern:	Waste oil
Media of Concern:	Soil
RRSE Rating:	Not Rated
Completed IRP Phase to Date:	PA, UST Removal
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	NFA

RVAAP-24 WASTE OIL TANK

This unit is an above-ground storage tank for waste oil from the vehicle maintenance operations of an RVAAP tenant organization located in the Depot Area, Bldg. U4, of RVAAP. Contaminants of concern include petroleum and metals. There is a potential for release of contaminants to the surrounding soils and ground water from this unit.

Contaminant of Concern:	Waste oil
Media of Concern:	Soils, ground water
RRSE Rating:	Not Rated
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-25 BLDG. 1034 MOTOR POOL AST

This unit is an inactive above-ground storage tank used to store waste oil from RVAAP vehicle maintenance operations. The tank was emptied of all contents in FY93 and remains inactive. Contaminants of concern include petroleum and metals. There is a low potential for release of contaminants to the surrounding soils and ground water from this unit.

Contaminant of Concern:	Waste oil
Media of Concern:	Soils, ground water
RRSE Rating:	Not Rated
Completed IRP Phase to Date:	PA, Tank Cleaning & Closure
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	NFA

RVAAP-26 FUZE & BOOSTER AREA SETTLING TANKS

The fuze and booster area covers approximately 450 acres and includes load lines 5, 6, 7, 8, 9, 10 and 11. These load lines were used for the manufacture of miscellaneous fuzes, boosters, primers, detonators and percussion elements from 1941 through 1971. Within the line areas are 14 concrete underground storage tanks and 1 concrete above-ground storage tank which were used as settling basins for explosive-contaminated waste water. The tanks were emptied, cleaned and covered in 1971. Contaminants of concern from these units are explosives, lead, lead azide, lead styphnate, mercury, and unknown compounds. Shallow monitoring wells were installed in 1981 around the perimeter of the fuze and booster area. Subsequent sampling of the wells did not detect heavy metals in the ground water. The wells were eventually destroyed by frost heave. There is potential for releases to the soils and ground water from these tanks.

Contaminant of Concern:	Explosives, metals
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-27 BUILDING 854, PCB STORAGE

This unit consists of a 50 ft. by 250 ft. area within a wooden frame building used for the storage of PCB contaminated materials. The PCB items are stored within secondary containment pans on the concrete floor of the building. This building has been used for the storage of PCB items since 1983 and is currently active. There is a low potential for releases to the environment from this unit.

Contaminant of Concern:	PCBs
Media of Concern:	Soils
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-28 MUSTARD AGENT BURIAL SITE

This unit is a possible mustard agent burial site approximately 15 ft. by 18 ft. by 18 ft. in size. Mustard agent may have been disposed of in barrels and buried at this site. There is a potential for release of contaminants to the soils and ground water from this unit.

Contaminant of Concern:	Mustard Agent
Media of Concern:	Soils, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-29 UPPER & LOWER COBBS PONDS

The Upper and Lower Cobbs Pond complex consists of two unlined ponds that received discharges from Load Line 3 and Load Line 12 explosive waste water treatment systems from 1941 through 1971. Upper Cobbs Pond is approximately 5 acres in size and Lower Cobbs Pond is approximately 3–4 acres in size. Contaminants of concern include explosives, metals and aluminum chloride. There is potential for releases to the soils, ground water and surface water from this unit.

Contaminant of Concern:	Explosives, metals, aluminum chlorine
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3B
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-30 LL7 PINK WASTE WATER TREATMENT

This unit is an inactive dual activated carbon pink waste water treatment unit that was used by an RVAAP tenant organization from 1989 through 1992. The discharge from the unit was regulated under the NPDES permit system. Contaminants of concern associated with this unit include explosive compounds. There is a low potential for releases of contaminants from this unit.

Contaminant of Concern:	Explosives
Media of Concern:	Soils
RRSE Rating:	3B
Completed IRP Phase to Date:	PA, System no longer in operation

Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

RVAAP-31 ORE PILE RETENTION POND

This unit consists of a small pond constructed to prevent potentially-contaminated surface runoff from strategic manganese ore piles from entering a receiving stream. The pond was constructed in the mid-1950's. Contaminants of concern include manganese and explosives. There is a potential for release of contaminants from this unit to the surrounding soils, ground water and surface water.

Contaminant of Concern:	Manganese, explosives
Media of Concern:	Soils, surface water, ground water
RRSE Rating:	3A
Completed IRP Phase to Date:	PA
Current IRP Phase:	SI, (1383# RVAP 03289)
Future IRP Phase:	To be determined

4. IRP SITE SUMMARY CHART

A site summary chart of the above-itemized sites is shown in Table 2.

5. SCHEDULE

For a schedule of IRP work completed to date and planned for the next few years at RVAAP, see below. A graphical representation of the schedule is shown in Figure 2.

a. PAST PHASE COMPLETION MILESTONES:

IRP PHASE	COMPLETION DATE
PA, Installation	Jul 1990

b. PROJECTED PHASE COMPLETION MILESTONES:

IRP PHASE	COMPLETION DATE
SI Action Plan	Dec 1994
SI Field Work	Mar 1996
RI/FS	Mar 1997
Remedial Design	Mar 1998
Remedial Action	Mar 2001

TABLE 2
IRP SITE SUMMARY CHART FOR
RAVENNA ARMY AMMUNITION PLANT

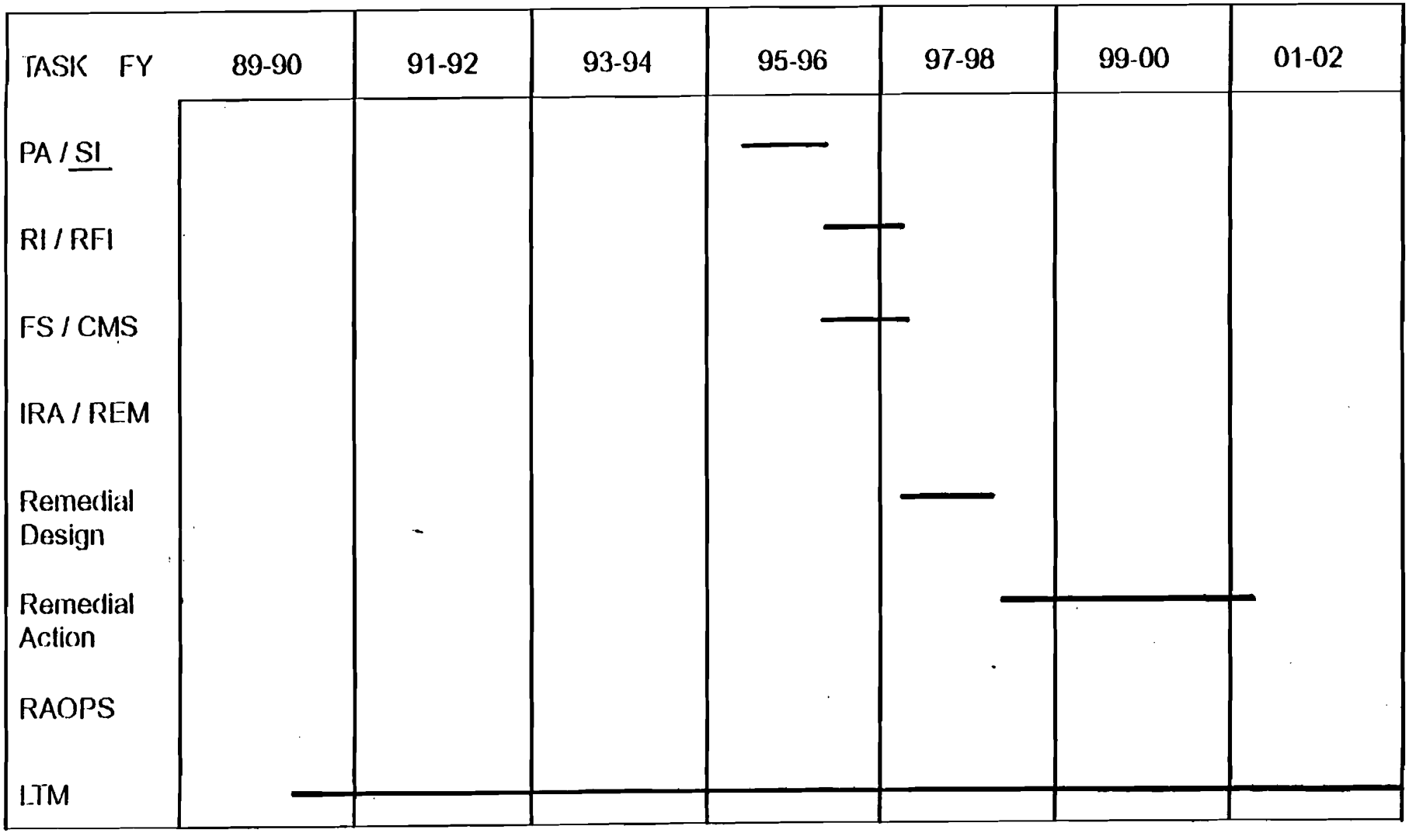
DSERTS NO.	RRSE RATING	MEDIA OF CONCERN	CHEM. OF CONCERN	COMPLETED IRP PHASE	CURRENT IRP PHASE*	FUTURE IRP PHASE
RVAAP-01	2B	Soils, GW	Expls, Mtls	PA	SI	Monitoring
RVAAP-02	3B	Soils, SW, Gw	Expls, Mtls	PA	SI	To be determined (TBD)
RVAAP-03	3B	Soils, GW	Explosives	PA	SI	TBD
RVAAP-04	1B	Soils, GW	Expls, Mtls	PA	SI	TBD
RVAAP-05	1B	Soils, GW	Expls, Mtls	PA	SI	TBD
RVAAP-06	3B	Soils	Metals	PA	SI	TBD
RVAAP-07	3B	Soils	Metals	PA	SI	TBD
RVAAP-08	2B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-09	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-10	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-11	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-12	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-13	3A	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-14	**	Soils	Expls, Mtls	PA	SI	No further action (NFA)
RVAAP-15	3B	Soils	Explosives	PA	SI	TBD
RVAAP-16	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-17	1B	Soils	Metals	PA	SI	TBD
RVAAP-18	3B	Soils, GW	Explosives	PA	SI	TBD
RVAAP-19	3B	Soils, SW, GW	Expls, Mtls	PA	SI	TBD
RVAAP-20	**	Soils, GW	Metals	PA	SI	TBD
RVAAP-21	3B	Soils, GW	Metals	PA	SI	TBD
RVAAP-22	3B	Soils, GW	Metals	PA	SI	TBD
RVAAP-23	**	Soils	Waste Oil	PA	SI	NFA
RVAAP-24	**	Soils, GW	Waste Oil	PA	SI	TBD
RVAAP-25	**	Soils, GW	Waste Oil	PA	SI	NFA
RVAAP-26	3B	Soils, GW	Expls, Mtls	PA	SI	TBD
RVAAP-27	3B	Soils	PCBs	PA	SI	TBD
RVAAP-28	3B	Soils, GW	Mustard	PA	SI	TBD
RVAAP-29	3B	Soils, SW, GW	Expls, Mtls, Aluminum Chloride	PA	SI	TBD
RVAAP-30	3B	Soils	Explosives	PA	SI	TBD
RVAAP-31	3A	Soils, SW, GW	Manganese, Explosives	PA	SI	TBD

* 1383 No. RVAP 03289

** Not Rated

FIGURE 2

RAVENNA ARMY AMMUNITION PLANT
IRP SCHEDULE



Long Term Monitoring (Landfill) Dec 2020

6. REMOVAL/INTERIM REMEDIAL/REMEDIAL ACTION ASSESSMENT

Remedial actions have been completed, or are underway, at several of the 31 listed solid waste management unit sites. RVAAP-01 has been formally closed under Ohio landfill closure rules, and 30-year post-closure ground water monitoring is now being conducted at that site. Ground water monitoring wells were installed in 1992 at the interim status portions of RVAAP-04 and RVAAP-05. Ground water monitoring is underway at these sites. RVAAP-14 has been closed under a RCRA closure plan. Removal of contaminated soils associated with the unit was included as part of the closure. RVAAP-17 is currently undergoing closure under a RCRA closure plan which calls for the removal of contaminated soils associated with the unit. RVAAP-23 has been removed, along with any contaminated soils associated with the unit. Any future remedial actions at these or the other RVAAP SWMU sites will be determined upon completion of the RFA/RFI phase.

7. Concurrence:

Michael L. Conrad
LTC, OD
Commanding

M. L. Conrad 19 Jan 95

Chief, Environmental Office
U.S. Army Materiel Command _____

ATTACHMENT 1

COST ESTIMATES:

An estimate of past, present and projected funding has been broken down by fiscal year and phase and is listed below.

FY94 EXPENDITURES

FY94 SI Scope of Work	$ 30.0 K

CURRENT YEAR FUNDS (FY95)

FY95 Site Investigation	$1300.0 K

PROJECTED FUNDS

FY96 RI/FS	$2000.0 K
FY97 Remedial Design	$ 570.0 K
FY98 Remedial Action	$2234.0 K
FY99 Remedial Action	$2234.0 K
FY00 Remedial Action	$2234.0 K
FY01 Remedial Action	$2234.0 K
Total Funding Projected	$12836.0 K

RAVENNA ARMY AMMUNITION PLANT
FUNDING PROFILE
(in thousands)

TASK FY	89	90	91	92	93	94	95	96	97	98	99	00	01
PA / SI						30.0	1300.0						
RI / RFI								1000.0					
FS / CMS								1000.0					
IRA / REM													
Remedial Design									570.0				
Remedial Action										2234.0	2234.0	2234.0	2234.0
RAOPS													
LTM													
TOTAL						30.0	1300.0	2000.0	570.0	2234.0	2234.0	2234.0	2234.0

ATTACHMENT 2

DSERTS REPORTS

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM

INSTALLATION PHASE SUMMARY

Report Date: 1995/01/17

Major Command: AMC

Installation: RAVENNA AAP

Program Category: IRP, OHW, BD/DR

Sites: 31

Phase / Status / Sites

PA

C	U	F	RC
31	0	0	0

SI

C	U	F	RC
0	28	0	0

RI/FS

C	U	F	RC
0	0	0	0

RD

C	U	F	RC
0	0	0	0

RA

C	U	F	RC
2	1	0	2

Remedy / Status / Sites (Actions)

IRA

C	U	F
1 (1)	0 (0)	0 (0)

FRA

C	U	F
2 (2)	1 (1)	0 (0)

RIP Total: 0
SC Total: 2
SC Total: 1

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM
SITE SUMMARY CHART

Report Date: 1995/01/17

Installation: RAVENNA AAP
FFID: OH521382073600

Major Command: ARC

Site Name	Site Description	DPM	CONTAM	Phase Status PA	SI	RI/FS	RD	RA	REMEDY IRA FRA	TYPE	STATUS	RIP	RC	SC.
RVAAP-01	RAMSDELL QUARRY LANDFILL	89585	B6 C1 C6 D1	C	U				1	II	C			
RVAAP-02	ERIE BURNING GROUNDS	15760	B6 D5	C	U									
RVAAP-03	DEMOLITION AREA #1	15760	B6 C7 D5	C	U									
RVAAP-04	DEMO AREA 2	15760	B6 C7 D5	C	U									
RVAAP-05	WINKLEPECK BURNING GROUNDS	15760	B6 D2 D5	C	U									
RVAAP-06	C BLOCK QUARRY DP	15760	A1 D5	C	U									
RVAAP-07	BLD 1601 HAZ WST STG	15760	D1 D2 D4	C	U									
RVAAP-08	LOAD LINE 1 DILUTION\SETTLING PONDS	15760	B3 B6	C	U									
RVAAP-09	LOAD LINE 2-DILUTION\SETTLING POND	15760	B3 B6	C	U									
RVAAP-10	LOAD LINE 3-DILUTION\SETTLING POND	15760	B3 B6	C	U									
RVAAP-11	LOAD LINE 4-DILUTION\SETLING POND	15760	B3 B6	C	U									
RVAAP-12	LOAD LINE 12-DILUTION\SETTLING POND	15760	B3 B6	C	U									
RVAAP-13	BLDG 1200-DILUTION\SETTLING POND	15760	B3 B6	C	U									
RVAAP-14	LOAD LINE 6 EVAPORATION UNIT	89585	B3 B6	C				C	2	S1	C		198906	
RVAAP-15	LOAD LINE 6 TREATMENT PLANT	15760	B3	C	U									

DEFENSE SITE ENVIRONMENTAL RESTORATION TRACKING SYSTEM
SITE SUMMARY CHART

Report Date: 1995/01/17

Installation: RAVENNA AAP
FFID: ON521382073600

Major Command: ARC

Site Name	Site Description	DPM	CONTAM	Phase Status PA	SI	RI/FS	RD	RA	REMEDY IRA FRA	TYPE	STATUS	RIP	RC	SC
			B6											
RVAAP-16	QUARRY LANDFILL/POND	15760	B6	C	U									
			B2											
RVAAP-17	DEACTIVATION FURNACE	89585	A3	C				U	2	E1	U			
			B5											
RVAAP-18	LOAD LINE 12 WWT PLANT	15760	B3	C	U									
			B6											
RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURN GRND	15760	B6	C	U									
RVAAP-20	SAND CREEK STP	15760	B3	C	U									
			B2											
RVAAP-21	DEPOT STP	15760	B3	C	U									
			B2											
RVAAP-22	GEORGE RD STP	15760	B3	C	U									
			B2											
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	89585	C1	C				C	2	J1	C		198911	198911
			C2											
RVAAP-24	WASTE OIL TANK	15760	C1	C	U									
			C2											
RVAAP-25	BLD 1034 MOTOR POOL AST	15760	C1	C	U									
			C2											
RVAAP-26	FUZE BOOSTER AREA SETTLING TANKS	15760	B3	C	U									
			B6											
RVAAP-27	BUILDING 354, PCB STORAGE	15760	C3	C	U									
RVAAP-28	MUSTARD AGENT BURIAL SITE	15760	B3	C	U									
RVAAP-29	UPPER AND LOWER COBB POND	15760	B6	C	U									
			B1											
RVAAP-30	LL 7 TREATMENT PLANT	15760	B3	C	U									
			B6											
RVAAP-31	ORE PILE RETENTION POND	15760	B6	C	U									
			B5											