

Final
Action Memorandum

for

Pentolite Road Red Water Ponds
Interim Removal Action

at the

Plum Brook Ordnance Works,
Sandusky, Ohio

Prepared for:

U.S. Army Corps of Engineers
Huntington District
Huntington, West Virginia

June 2003

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1.0 Purpose

The purpose of this Action Memorandum is to set forth the selected response action for the former Pentolite Road Red Ponds Area (PRRWP). The United States Army Corps of Engineers (USACE) is the responsible authority under the Defense Environmental Restoration Program (DERP) at the former PRRWP. Based on the results of the completed Remedial Investigation/Feasibility Study (RI/FS) for soils, the USACE will conduct a Non-Time Critical Removal Action (NTCRA) in the former Pentolite Road Red Ponds Area. The removal action will be taken to prevent human exposure to site soil containing TNT, the constituent of concern (COCs) at concentrations that exceed the remediation goal. The removal action will also serve to reduce potential ecological hazards. The remediation goal is chemical- and receptor-specific risk based remedial criteria that capture all the exposure assumptions and toxicological data used in the PRRWP risk assessment. The removal action will consist of the excavation of approximately 148 cubic yards of material, backfilling of the excavation pit with clean material, ex-situ stabilization of the excavated material, and off-site disposal of stabilized waste.

If after completing the selected alternative, the results of this response action are found to have been sufficient to remediate soils at this site, the next procedural step for soils at this site would be a “no further action” Record of Decision. Additional remedial or removal actions might be required if it is determined during the site-wide remedial investigation of groundwater, that soils are a continuing source of groundwater contamination that pose a risk to human health.

1.1 Site History and Location

The site of the former Plum Brook Ordnance Works (PBOW) is located approximately 4 miles south of Sandusky, Ohio and 59 miles west of Cleveland, Ohio. Although primarily in Perkins and Oxford Townships, the eastern edge of the site extends into Huron and Milan Townships. PBOW is bounded on the north by Bogart Road, on the south by Mason Road, on the west by County Road 43, and on the east by U.S. Highway 250 (Figure 1-1). The surrounding area is mostly agricultural and residential.

The 9,009-acre PBOW site was built in early 1941 as a manufacturing plant for 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Production of explosives at PBOW began in December 1941 and continued until 1945. It is estimated that more than 1 billion pounds of nitroaromatic explosives were manufactured during the 4-year operating period.

The PRRWP is located just south of Pentolite Road and southeast of the Former Pentolite Area, see location map Figure 1-2. Wastewater from TNT manufacturing areas A and B was sent by wooden flumes and ceramic pipes to Waste Water Disposal Plant #1, located about 700 feet east of the PRRWP, then by discharge pipes to the PRRWP. Original PRRWP construction plans

**Figure 1-1 Former PBOW Vicinity Map
(USGS Topographical Map July 1986)**

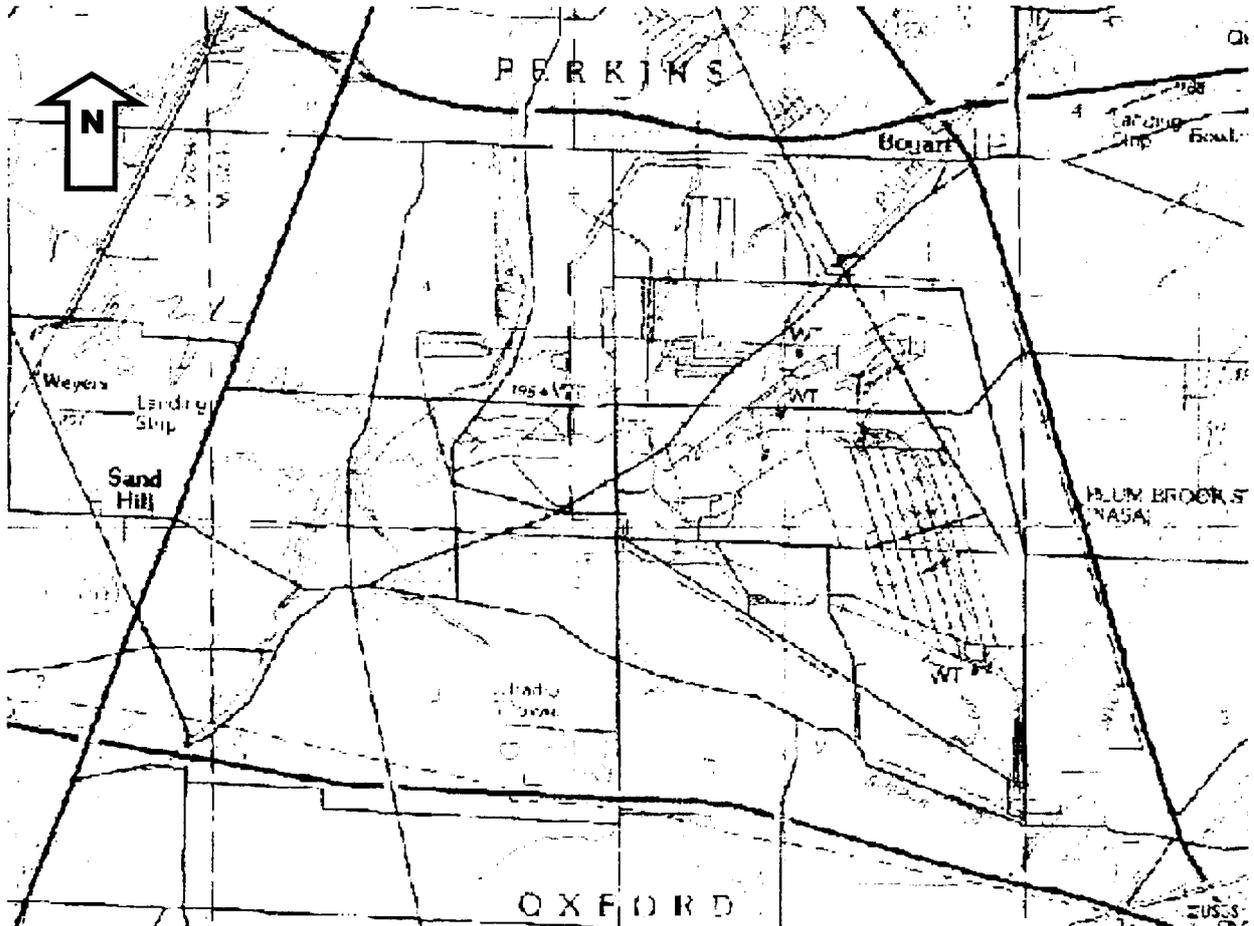
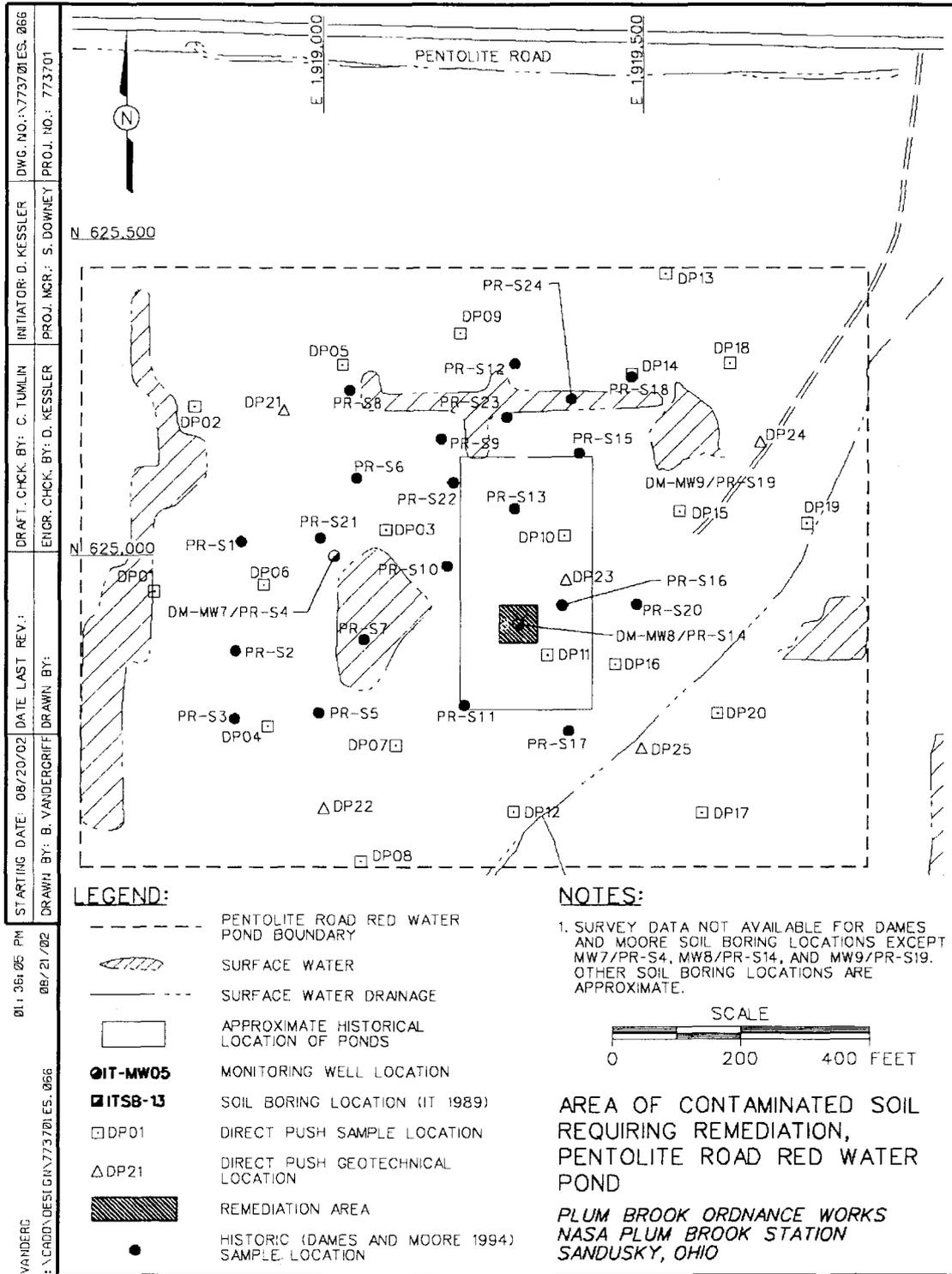


Figure 1-2 Pentolite Road Red Water Ponds Area and Contamination Area Map



DWG. NO.: 773701 ES. 066
 PROJ. NO.: 773701
 INITIATOR: D. KESSLER
 DRAFT. CHK. BY: C. TUMLIN
 ENGR. CHK. BY: D. KESSLER
 STARTING DATE: 08/20/02 DATE LAST REV.:
 DRAWN BY: B. VANDERGRIF
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indicate pond dimensions of 200 ft wide (east-west distance) by 400 ft long by 3 ft deep with a 1 ft high levee (Dames & Moore, 1997). The total PRRWP area is approximately 22 acres in size (IT, 2000).

The National Aeronautics and Space Administration (NASA) acquired the property on March 15, 1963 and currently utilizes the site and operates the Plum Brook Station (PBS) of the John Glenn Research Center at Lewis Field. Most of the aerospace testing facilities built in the 1960s at the site are in standby or inactive status. On April 18, 1978, NASA declared approximately 2,152 acres of PBOW as excess. The Perkins Township Board of Education acquired 46 acres of the excess acreage and uses this area as a bus transportation area. Government Services Administration (GSA) retains ownership of the remaining excessed acreage and currently has a use agreement with the Ohio National Guard for 604 acres of this land. NASA presently controls approximately 6,400 acres and is using the site to conduct space research as a satellite operation of the John Glenn Research Center at Lewis Field in Cleveland, Ohio. The details of land transactions are listed in the site management plan (ICI, 1995) and can be found at the NASA PBS.

1.2 Site Characterization

GSA performed decontamination efforts during 1963 to facilitate land transfer to NASA. An April 1977 memorandum (Teledyne Isotopes, 1977) stated PBS personnel discovered red-brownish water coming from an area of broken drain tile associated with the PRRWP. The memorandum stated that PRRWP associated dikes, sump pits, and 60,000 gallons of red water was removed, and grading and drainage improvements were made to alter runoff patterns (Dames & Moore, 1997).

In 1989 through 1991, rust colored water in the vicinity of the PRRWP was discovered by PBS personnel and sampled. Nitroaromatics were not detected in surface water. A Contamination Evaluation report (IT, 1991) investigated overburden groundwater (MW-05) and soil resulting in the discovery of 2,4-DNT and 2,6-DNT in soil (Dames & Moore, 1997). A Site Inspection was conducted in 1993, investigating PRRWP drainage ditch, adjacent to Pentolite Road, surface water and sediment. No samples showed detectable levels of contaminants (MK, 1994).

Overburden and bedrock groundwater had been investigated by Dames & Moore in 1994, and IT from 1996, 1997 and 1998. Nitroaromatics were detected in both overburden (MW-07,-08 and -09) and bedrock wells (Bed-15 and -16).

To provide a basis for taking an action at this site, a remedial investigation (RI) was conducted under the title Risk Assessment and Direct-Push Investigation of Red Water Pond Areas (IT, 2000). There were 20 surface soil, 39 sub-surface soil samples, and 20 direct-push groundwater samples in the PRRWP associated with the RI. Four co-located surface water and sediment samples, two in the east to west ditch and two in the east to southeast ditch. 1,3,5-TNB, 1,3-DNB, 2,4,6-TNT, 2,4-DNT, 2,6-DNT and 4-amino-2,6-DNT were in 11 soil samples. 1,3,5-TNB, 1,3-DNB, 2,4-DNT, 2,6-DNT, and tetryl were

detected in groundwater direct push samples. Nitroaromatics were not detected in surface water or sediment.

Human health risk assessment results for PRRWP are documented in the IT, 2000. Total incremental lifetime cancer risk (ILCR) and cumulative hazard indices (HI) for the groundskeeper and indoor worker based on a reasonable maximum exposure to surface soil result in *de minimus* risk of less than 1E-6 and cumulative hazard less than 1. Construction worker ILCR of 1E-5 and HI of 100 results from TNT (12,000 mg/kg) in total soil. TNT contributed to the majority of the ILCR of 9E-4 for the hypothetical resident, and HI of 360 for the hypothetical child resident. No unacceptable risk or hazard are associated with contact to site surface water and sediment.

A Screening Level Ecological Risk Assessment (SLERA) was documented in IT, 2000, and a Redwater Pond Areas Baseline Ecological Risk Assessment (BERA) was documented in IT, 2001. PRRWP terrestrial SLERA results were insignificant for the following indicator receptors: deer mouse, cottontail rabbit, shrew, raccoon, deer and hawk. Indicator specie marsh wren soil HI of 451 was the result in a soil maximum exposure calculation to 4-amino-2,6-DNT through an bio-concentrating invertebrate intake food chain model. Aquatic SLERA maximum exposure to sediment and surface water model results for indicator species great blue heron and raccoon are HI of 126 and 38, respectively. Food chain modeling indicated aluminum, iron, potassium, magnesium and carbazole were the main contributors to the calculated HIs. Because of SLERA inherent level of uncertainty and HIs in the 100s, a BERA was conducted. BERA conclusion is that PRRWP environmental media do not appear to pose significant potential for adverse ecological effects.

1.3 Evaluated Alternatives

The Feasibility Study (FS) and human health risk assessment revealed that approximately 148 cubic yards of material located in PRRWP presents an unacceptable risk to human health through exposure to TNT contaminated soils above a remedial goal option (RGO) of 12 mg/kg TNT in soil. The following alternatives were considered to achieve the remedial objectives for soils at PRRWP:

- Alternative 1 - No Action
- Alternative 2 - Excavation, Ex-Situ Stabilization, and Off-Site Disposal
- Alternative 3 - Excavation, and Off-Site Disposal of all contaminated soil

These alternatives were screened based on effectiveness, implementability, and cost. Detailed analysis of each remedial alternative is included in sections 4 and 5 of the FS.

All alternatives, with the exception of Alternative 1, would permanently treat/remove contaminated soil, thereby reducing human health risks to within levels considered acceptable by the US Environmental Protection Agency (USEPA). Alternatives 2 and 3 involve excavation and/or treatment of contaminated soil and are expected to provide a corollary benefit to long-term groundwater and surface water quality by removing or

mitigating the most significant source areas that contribute to contamination in these media. Alternative 1 does not employ removal, containment, or treatment response actions that would mitigate the impact of source areas on receptors or other environmental media. Therefore, Alternative 1, No Action, was not considered the recommended alternative.

Alternative 2 requires excavation of approximately 148 cubic yards of 2,4,6-TNT contaminated soil, and permanently removes any residual risk associated with the 148 cubic yards of soil. Alternative 2 would reduce off-site risk by stabilizing hazardous waste on-site prior to off-site disposal, thus reducing the potential for contaminants to leach into groundwater at an off-site facility. This would be a reduction in mobility of contaminants in soil through chemical stabilization, thus satisfies the statutory preference for treatment. Alternative 2 does not irreversibly destroy contaminants, but it does immobilize chemicals to prevent leaching to other media.

Alternative 3 requires excavation of approximately 148 cubic yards of 2,4,6-TNT contaminated soil, and permanently removes any residual risk associated with 148 cubic yards of soil. Alternative 3 would reduce off-site risk by managing hazardous waste in a secure facility designed and permitted to handle this type of waste. No on-site treatment is required under Alternative 3 to meet land disposal restrictions prior to disposal at a Subtitle C treatment, storage, and disposal facility.

Some or all of the 148 cubic yards of soil to be excavated from the hot spot area may be classified as a Resource Conservation and Recovery Act of 1976 (RCRA) hazardous waste based on the concentration of 2,4-DNT detected in the soil. For the purpose of evaluating and costing the proposed remedial alternatives, it is assumed that all of the soil will be a hazardous waste upon excavation. This assumption is based on the concentration of 2,4-DNT previously detected at the hot spot location. The actual waste classification of the soil will be determined after excavation by subjecting soil samples to a TCLP test. The results of the TCLP tests will determine whether the soil requires treatment, either on-site or off-site, prior to disposal to comply with EPA's land disposal restrictions. The results of the TCLP test will also determine the type of disposal facility that is appropriate for the contaminated soil.

Under Alternative 2, the excavated soil would be chemically stabilized on-site prior to disposal of the stabilized material off-site as a non-hazardous waste. Stabilization would immobilize any 2,4-DNT that is considered a RCRA hazardous waste, TNT and other nitroaromatic compounds within the stabilized soil matrix. No other treatment technology is required following stabilization, and the stabilized soil would pass the TCLP test. The main drawback to stabilization is that it does not destroy, transform, or remove the contaminants from the soil. It only alters their mobility and bioavailability. Therefore, disposal of the stabilized soil at a non-hazardous waste landfill is preferred over its on-site disposal as backfill because it reduces the potential residual risk of the waste material. Stabilization satisfies the statutory preference for treatment and allows the waste material to be transported off-site as a non-hazardous waste. For this reason, Alternative 2 is recommended over Alternative 3.

1.4 Community Involvement

Community relations activities are required under the 1990 National Oil and Hazardous Substance Pollution Contingency Plan (NCP) and Superfund Amendments and Reauthorization Act of 1986 (SARA). The objective of this program is to provide a mechanism for the communication and exchange of information among army agencies, government agencies and residences of local communities and those adjacent to Plum Brook downgradient from PBOW. In January 1997, a Restoration Advisory Board (RAB), comprised of local citizens with varying backgrounds, was established to promote a two-way dialog to not only keep local citizens informed about site progress, but to also allow them the opportunity to provide input to site decisions.

In compliance with Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 113, USACE has developed the Administrative Records (AR) to provide documentation as to how and why decisions specific to the remediation of the site are made. To date, the investigations completed for PRRWP are as follows:

- Contamination Evaluation, IT 1991,
- Site Inspection Report, Morrison Knudsen, 1994,
- Focused Remedial Investigation, Dames & Moore, 1997
- Site-Wide Groundwater Investigation, Dames & Moore, 1997,
- Risk Assessment and Direct-Push Investigation, IT, 2000,
- Baseline Ecological Risk Assessment, IT 2001, and
- Feasibility Study, Shaw, 2002.

The AR contains these final documents as well as all others for the PBOW site. The reports were prepared from data collection activities and other research that form the basis for the decisions affecting the remediation process for the Proposed Alternative 2. The RAB has been briefed on all reports and will be presented with the preferred alternative on 11 September 2002. Currently, the FS reports are located in the AR, located at USACE Huntington District Office (Huntington, WV), while the Public Repository is located at the BGSU Firelands Library (Huron, Ohio). All documents are available for public viewing.

As part of the community relations program, this Action Memorandum will be made available to the public for a 30-day review and comment period. To initiate this period and promote public understanding and awareness, a public meeting (in conjunction with the September 2002 RAB meeting) will be held to present the proposed Alternative 2 and tentative construction schedule. Notices announcing date, location and time of meeting will be placed in the local newspapers. At the end of the 30-day review period, all comments will be documented in the AR as well as evaluated and incorporated into the overall remediation plans, if deemed feasible by USACE.

2.0 Proposed Action and Estimated Costs

2.1 Proposed Action Description

Based on the results of the alternatives evaluation, Alternative 2, the excavation, ex-situ chemical stabilization of soil, off-site disposal of stabilized material, and backfilling using clean fill material is the preferred alternative. The proposed approach is to excavate all the areas in which the concentration of the COC in soil exceeds the RGO. The estimated volume of contaminated soil from PRRWP is 148 cubic yards. For estimating purposes, the entire volume of excavated soil that may be classified as RCRA hazardous waste based on 2,4-DNT concentrations. The entire excavated volume will be considered as a RCRA hazardous waste and would be treated to achieve non-hazardous waste classification prior to land disposal in a non-hazardous waste landfill.

Assuming a successful treatability study, chemical stabilization would be used to treat the excavated soil classified as hazardous waste. A mix box on-site would be used to mix stabilizing agents with the contaminated soil. Representative samples of the stabilized soil would be taken for every 150 tons of processed soil. The samples would be tested for hazardous characteristics using the TCLP test. If the soil tests non-hazardous, it will be disposed in a non-hazardous waste landfill. If the soil tests hazardous, further stabilization would be needed or an alternative treatment would be required.

Since stabilization only alters the physical availability of the contaminants, using stabilized material as backfill at the site will be prohibited. Therefore, clean fill material will be placed in the excavation pits, rough graded as necessary to achieve proper drainage, and reseeded.

2.2 Contribution to Remedial Performance

2.2.1 Overall Protection of Human Health and the Environment

Excavation of contaminated soil followed by treatment/disposal would permanently remove contaminated soil, thereby reducing human health risks to within levels considered acceptable by the EPA and significantly reducing the ecological hazard quotients. Stabilization of the waste would reduce the potential of the contaminants to leach to groundwater.

2.2.2 Compliance with Applicable or Relevant and Appropriate Requirements

The ARARs that need to be considered for Alternative 2 are presented in Appendix A. No location-specific ARARs (Table A-1) have been identified that need to be considered for this alternative. The remedial alternative would comply with all the action-specific ARARs (Table A-2), specifically the regulations that deal with the TCLP test and the storage/disposal of hazardous waste.

2.2.3 Long-Term Effectiveness

This alternative would result in the permanent removal of the COC in soil that currently exceed RGO. Human health risks caused by current (or future) human exposure to contaminated soil at the site would be reduced to within levels considered acceptable by the EPA and the Ohio Environmental Protection Agency.

2.2.4 Reduction of Toxicity, Mobility, or Volume

Alternative 2 would permanently reduce the mobility of contaminants in soil by stabilizing the COC in excavated site soil. The removal of the contaminated media from an uncontrolled release area to a secure facility designed and constructed to manage waste materials would significantly reduce the potential for the contamination to spread. Although the mass and volume of contaminated media remaining at the site would be reduced at the site, no net reductions in contaminant volume would be achieved, because the COC is transferred to another location.

2.2.5 Short-Term Effectiveness

This alternative would not pose any risk to the community or the environment during implementation. Measures would be taken to prevent excessive dust formation during excavation and stabilization activities. Remediation workers would be equipped with protective gear to prevent exposure.

The estimated time to complete this alternative is 6 - 12 months. This includes writing and review of work plans, health and safety plans, a treatability study, mobilization, excavation of 148 cubic yards of contaminated soil, ex situ stabilization of excavated soil, confirmatory sampling, disposal of treated soil, backfill, and demobilization.

2.2.6 Implementability

This alternative is technically and administratively implementable. No engineering or regulatory restrictions stand in the way of implementation. The stabilizing agents and equipment needed for the remedial alternative are readily available.

2.3 Project Schedule

The estimated time to complete the alternative is 6 – 12 months. This includes writing and review of work plans (including quality control and site-specific health and safety plans), mobilization, excavation of 148 cubic yards of contaminated soil, ex-situ stabilization of excavated soil, confirmatory sampling, disposal of treated soil, and demobilization.

2.4 Estimated Costs

The detailed cost evaluations associated with the implementation of Alternative 2 at PRRWP are presented in Table 4-1 of the FS. The estimated capital cost for Alternative 2 is \$108,000. The contingency capital cost allowance for Alternative 2 is 20 percent as shown at the bottom of Table 4-1 in the FS. Adding a 50% engineer implementation contingency cost, the estimated remedial costs is approximately \$150,000. There are no long-term O&M costs associated with this alternative. Therefore, the present value of this alternative is the same as its capital cost.

3.0 Threat to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities

3.1 Threats to Public Health or Welfare

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP), at 40 CFR §300.415, lists the factors to be considered in determining the appropriateness of a Removal Action. The following paragraphs of Section 300.415 of the NCP apply to the PRRWP site:

- o [Section 300.415(b)(2)(i)] - “Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.”
- o [Section 300.415(b)(2)(ii)] - “Actual or potential contamination of drinking water supplies or sensitive ecosystems.”
- o [Section 300.415(b)(2)(iv)] - “High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.”

A hazardous substances has been found in subsurface soil samples collected from location MW-8/PR-S14. This substance consists of TNT, a nitroaromatic compound. This hazardous substance as defined in Section 101(14) of CERCLA, 42 U.S.C. §9601(14). Concentrations 2,4-DNT in soil indicates that the potential exists for a small quantity of material to be classified as a RCRA characteristic hazardous waste if excavation of the material occurs. The potential exists for nearby human populations to be exposed to these hazardous substances or pollutants or contaminants if not addressed by this response action.

In addition, samples collected from groundwater bearing zones indicate that these zones have been impacted by nitroaromatic contamination emanating from sources located on the site. Therefore, the COC found in soil, if not addressed by this response action, may migrate, or result in actual or potential contamination of drinking water supplies.

3.2 Threats to the Environment

Based on results of the BERA, no further investigation or remediation are needed.

3.3 Statutory and Regulatory Authorities

Regulatory efforts for remediation activities within PRRWP fall under the Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS) program. Because the original PBOW was acquired by DOD in 1941 for the U.S. Army Plum Brook Ordnance Works and operated under their direction until late 1945, the PBOW is considered as a FUD and any contamination on the property that is a result of these activities is the responsibility of the Army under the DERP-FUDS program. This program has three major phases:

- Inventory – site id, records review to verify DOD ownership or usage and a preliminary assessment
- Study – site inspection if required to identify contamination, engineering, evaluations and costs analyses for removal action; remedial investigation/feasibility study (RI/FS); and/or litigation, negotiation, and settlement with other parties to define and resolve DOD liability
- Removal/Remediation – engineering design, removal and/or remedial actions, and/or operations and maintenance during remediation and/or for long-term monitoring, if required.

PRRWP Alternative 2 would be covered under the removal/remediation phase.

Under the CERCLA, the President delegated authority to DOD (Secretary of Defense) for clean up of active and formerly used defense sites. In addition, the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 211 required the Secretary of Defense to carry out the DERP, who in turn delegated these authorities to USACE, thereby granting USACE the authority to conduct removal/remediation projects such as PRRWP. The legislative context of DERP includes the following: CERCLA, SARA, RCRA, the Federal Facility Compliance Act of 1992 (FFCA), the National Environmental Policy Act (NEPA), and other environmental, safety, and occupational health laws and regulations (i.e., Clean Water Act, Clean Air Act, Toxic Substance Control Act, Safe Drinking Water Act, Occupational Safety and Health Act, endangered Species Act, National Historic Preservation Act of 1966). A detailed description of these laws can be found in the Plum Brook Site Management Plan, Part A, Section 2.0 Regulatory Framework. All ARARs that pertain to the PRRWP Alternative 2 removal action have been addressed in Section 2.2.2 and Appendix A of this Action Memorandum.

The Defense and State Memorandum of Agreement (DSMOA) Cooperative Agreement (CA) program was developed to involve states and territories in the cleanup of DOD

installation through the DERP. Ohio EPA is currently working under this agreement to provide the necessary technical services required for remediation of PBOWPRRWP.

4.0 Expected Change in the Situation Should Action Be Delayed or Not Taken.

Delayed or no action at the site would permit continued potential risk and hazard to humans from exposure to nitroaromatics in soil. Additionally, contamination from the source area could potentially migrate to groundwater and the surrounding environment, resulting in exposure to on-site and off-site receptors.

5.0 Outstanding Policy Issues

The NCP provides that in selecting a NTCR action, the alternatives must be evaluated in an engineering evaluation/cost assessment (EE/CA) which must be provided to the public for no less than a thirty (30) day comment period prior to the selection of the action. (See 40 CFR 300. 415 (b) (4) and (m) (4)). The project team has not prepared an EE/CA for this site; instead a Focused Feasibility Study (FFS) for soils at PRRWP has been prepared. This FFS is equivalent to the EE/CA and has been reviewed by the project team and Restoration Advisory Board (RAB). The RAB will be provided with the Action Memorandum during the public notification and comment and response period.

6.0 Public Notification

This Proposed Action Memorandum can be found in the Administrative Record file maintained at the USACE Huntington District located at 502 8th Street, Huntington, WV 25701 and in the Public Repository located at the BGSU Firelands Library, Huron, Ohio. The 30 day public comment period begins 11 September 2002 and ends 11 October 2002. In addition, a public meeting is to be held on 11 September 2002 to present the Proposed Action Memorandum. USACE representatives will answer questions about the removal action alternative now being proposed. Responses to comments received during the comment period will be included in the revised Action Memorandum, which will then be signed and placed in the Administrative Record. The newspaper announcement detailing date, time and location of public meeting as well as the request for public comments on the Proposed Action Memorandum will be published two weeks in advance of the public meeting (11 September 2002).

7.0 Recommendation

This decision document represents the Removal Action for soil contaminated with TNT at the PBOW's PRRWP site, in Sandusky, Ohio. This decision document was developed in accordance with CERCLA, as amended, and is consistent with the NCP. This action is based on the Administrative Record for the site.

8.0 Responsiveness Summary

The purpose of this responsiveness summary is to provide the public with a summary of citizen comments, concerns, and questions relating to the PRRWP site. This summary details the USACE responses to these comments, concerns, and questions.

The selected remedy for the PRRWP site is that a Non-Time Critical Removal Action will be conducted. The removal action will be taken to prevent human exposure to site soil and will also serve to reduce potential ecological hazards. The Ohio EPA and NASA concur that the selected remedy is protective of human health and the environment.

One comment was received from the public during the public comment period, at the public meeting where the Proposed Action Memorandum was presented.

Background on Community Involvement. Community relations activities for the final selected remedy include:

- A Restoration Advisory Board (RAB) was established for the PBOW in 1997. The RAB meets once every three months to discuss the status of each project. The RAB includes representatives of the Ohio EPA, USACE-Huntington and Nashville Districts, NASA, and the public. Meetings are typically held in the evening at 7:00 p.m. BGSU Firelands Library, Huron, Ohio.
- A copy of the remedial investigation report and the Proposed Action Memorandum were placed in a public repository at the BGSU Firelands Library, Huron, Ohio. A copy of the Proposed Action Memorandum was also placed at the Perkins Township (Town Hall) Building in Sandusky, OH.
- Newspaper announcements on the availability of the documents, the public comment period, and the public meeting were placed in the *Sandusky Register* on August 28, 2002.
- The USACE established a public comment period from September 12, 2002 through October 15, 2002, to present the Proposed Action Memorandum.
- A public meeting was held on September 11, 2002, to present the Proposed Action Memorandum for the Pentolite Road Red Water Ponds site. Seven people met with representatives of the USACE, the Ohio EPA, and NASA, at the BGSU Firelands Library.

The following concern was raised by Mr. Mark F. Bohne, RAB Community Co-chairperson, Milan, OH:

Mr. Bohne expressed his concern about disposing of the soil from the remediation activities at the Erie County Landfill. He said that although the landfill is approved to receive the solid waste generated from the remediation activities, if future enforcement actions are taken against the landfill, the USACE could be held liable.

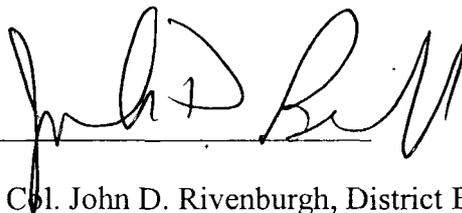
USACE response:

The USACE stated that it was aware of the Mr. Bohne's concern, and has investigated disposal in an alternate landfill. However, Erie County has "flow control" regulations in place that prohibit waste generated in Erie County to go to other landfills. Waste can only be disposed of at landfills outside the county if the Erie County Landfill grants a waiver allowing the generator to do so. The waiver process takes approximately 6-9 months, and in the past 10 years, all requests for waivers have been denied. Based upon the project schedule for remediation, and the issues previously mentioned, it was not feasible to pursue a disposal waiver. Also, with respect to the concern for USACE liability, the soil that will be taken to the landfill has been tested in accordance with USEPA SW-846 methods, and analytical data verified that it met the definition of a "regulated solid waste", which the Erie County Landfill is currently licensed to accept. The USACE will keep all documentation generated during the disposal efforts (manifests, analytical data, reports) on file indefinitely ("cradle to grave" requirement) so that this documentation would prove that the USACE was not liable should the landfill face future enforcement action.

9.0 Declaration

Conditions at the PRRWP Site continue to meet the criteria set forth in Section 300.415 of the NCP for a Removal Action. I approve the selection of Alternative 2 as the Removal Action at this site.

APPROVED:



DATE: 23 June 2003

Col. John D. Rivenburgh, District Engineer
U.S. Army Corps of Engineers, Huntington District
Huntington, West Virginia

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Dames & Moore, 1997. *Records Review Final Report, Plum Brook Ordnance Works, Plum Brook Station/NASA, Sandusky, Ohio for U.S. Army Corps of Engineers, Nashville/Huntington Districts*. Dames & Moore, Inc., April 1997.

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MK, 1994. *Site Inspection Report, Plum Brook Station, Sandusky, Ohio (prepared for NASA)*. Morrison Knudsen Corporation, 1994.

Teledyne Isotopes, 1977. *Memorandum: Analytical Data Relating to Plum Brook Station "Red Water"*, written by John E. Ross. Teledyne Isotopes, June 1977.

Table A-1

**Location-Specific Applicable or Relevant and Appropriate Requirements Feasibility Study
Pentolite Road Red Water Ponds
Plum Brook Ordnance Works, Sandusky, Ohio
Page 1 of 5**

Location Characteristics	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternatives Applicable	Comments
<i>Floodplains/Wetlands</i>						
Presence of floodplain [as defined in 40 CFR 6, Appendix A, Section 4.0(d)]	<p>Avoid, as practicable, the long- and short-term adverse effects associated with occupancy and modification of floodplain include, but are not limited to: minimum grading requirements, runoff controls, design and construction constraints, and protection of ecologically sensitive areas.</p> <p>Potential effects of any action taken in a floodplain shall be evaluated. Identify, evaluate, and implement alternative actions that may avoid or mitigate adverse impacts or floodplains.</p> <p>Design or modify selected alternatives to minimize harm to or within floodplains and restore and preserve floodplain values.</p>	Federal actions with potential to impact or occur within flood plains Applicable	<p>40 CFR 6, Appendix A</p> <p>40 CFR 6, Appendix A</p> <p>40 CFR 6, Appendix A</p>	NA	NA	No floodplains were identified at PRRWPs

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Location Characteristics	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternatives Applicable	Comments
<i>Floodplains/Wetlands (cont.)</i>						
Presence of wetlands as defined in 40 CFR 6, Appendix A, Section 4.0(j).	<p>Avoid, to the extent possible, the long- and short-term adverse effects associated with destruction, occupancy and modification of wetlands. Measures to mitigate adverse effects or actions in a wetland include, but are not limited to: minimum grading requirements, runoff controls, design and construction constraints, and protection of ecology-sensitive areas.</p> <p>Take action, to the extent practicable, to minimize destruction, loss or degradation of wetlands, and to preserve, restore, and enhance the natural and beneficial values of wetlands.</p> <p>Potential effects of any new construction in wetlands that are not in a floodplain shall be evaluated. Identify, evaluate, and as appropriate, implement alternatives actions that may avoid or mitigate adverse impacts on wetlands.</p>	Federal actions that involve potential impacts to, or take place within wetlands - Applicable	40 CFR 6, Appendix A 40 CFR 6, Appendix A 10 CFR 1022.3 (c) and (d)	NA	2, 3	Status of area as jurisdictional wetlands will be evaluated prior to remediation.

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Location Characteristics	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternatives Applicable	Comments
Aquatic Resources						
Within area impacting stream or any other body of water – and – presence of wildlife resources (e.g., fish)	The effects of water-related projects on fish and wildlife resources and their habitat should be considered with a view to the conservation of fish and wildlife resources by preventing loss of and damage to such resources.	Action that impounds, modifies, diverts, or controls waters including navigation and drainage activities -Relevant and appropriate	Fish and Wildlife Coordination Act (16 USC 661 et seq.)	NA	NA	Remedial activities are not anticipated to impact fish and wildlife resources.
Location encompassing aquatic ecosystem as defined in 40 CFR 230.3(c)	Except as provided under Section 404(b)2 of the Clean Water Act, no discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternatives that would have less adverse impact. No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps per 40 CFR 230.70 et seq. Have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.	Action that involves the discharge of dredged or fill material into waters of the U.S. including jurisdictional wetlands – Applicable	40 CFR 230.10(a) 40 CFR 230.10(d)		2, 3	

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Location Characteristics	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternatives Applicable	Comments
Cultural Resources						
Presence of archaeological resources	May not excavate, remove, damage, or otherwise alter or deface such resources unless by permit or exception	Action that would impact archaeological resources on public land – Applicable	43 CFR 7.4(a)		NA	Cultural resources have not been discovered within PBOW.
	Must protect any such archaeological resources if discovered.	Excavation activities that inadvertently discover archaeological resources – Applicable	40 CFR 7.5(b)(1)		NA	Cultural resources have not been discovered within PBOW.
	Must stop activities in the area of discovery and make a reasonable effort to secure and protect the objects discovered.	Excavation activities that inadvertently discover such resources on federal lands or under federal control – Applicable	43 CFR 10.4 ©		NA	Cultural resources have not been discovered within PBOW.
	Must consult with Indian tribe likely to be affiliated with the objects to determine further disposition per 40 CFR 10.5(b)	Same as above – Applicable	43 CFR 10.4(d)		NA	Cultural resources have not been discovered within PBOW.

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Location Characteristics	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternatives Applicable	Comments
Cultural Resources (cont.)						
Within area where action may cause irreparable harm, loss, or destruction of significant artifacts.	Must take action to recover and preserve artifacts.	Alteration of terrain that threatens significant scientific, prehistoric, or archaeological data.	National Archaeological and Historical Preservation Act (16 USC Section 469); 35 CFR Part 65	NA	NA	Cultural resources have not been discovered within PBOW.
Endangered, threatened or rare species						
Areas harboring Endangered species	Current conditions and potential remedial activities at PBOW must not destroy or adversely critical habitat	Threatened and endangered species were identified at PBOW, but not at TNT Area A	16 USC 1531 et seq., 50 CFR 17.21, 17.31, 17.61, 17.71, 17.94, 50 CFR 402.	NA	2, 3	No endangered wildlife species identified at PRRWPs. Remediation area will be re-vegetated with ground cover appropriate for the area.
	May not knowingly destroy the habitat of such wildlife species.	Same as above – Relevant and Appropriate		NA	NA	No endangered wildlife species identified at PRRWPs.
	Upon good cause shown and where necessary to protect human health or safety, endangered or threatened species may be removed, captured, or destroyed.	Same as above – Relevant and Appropriate		NA	NA	

- CFR - Code of Federal Regulations.
- NA - Not applicable.
- PBOW - Plum Brook Ordnance Works.
- TNT - Trinitrotoluene.
- USC - U.S. Code.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Waste Generation/Management						
Characterization of solid waste (e.g., contaminated PPE, equipment, wastewater)	Must determine if the waste is hazardous or if waste is excluded under 40 CFR 261.4; and	Generation of solid waste as defined in 40 CFR 261.2 – Applicable	40 CFR 262.11(a)	3745-52-11(a)	2, 3	Remedial activities might generate hazardous waste.
	Must determine if waste is listed under 40 CFR Part 261; or		40 CFR 262.11(b)	3745-52-11(b)	2, 3	Excavated contaminated soil is not classified as a listed hazardous waste because there is not definite documentation regarding the dates of disposal.
	Must characterize waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used. If waste is determined to be hazardous, it must be managed in accordance with pertinent provisions of 40 CFR 261 through 268.		40 CFR 262.11(c) and (d)	3745-52-11(c) through (e)	2, 3	Remedial activities might generate hazardous waste.
Characterization of hazardous waste	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) which at a minimum contains all of the information which must be known to treat, store, or dispose of the waste in accordance with 40 CFR 264 and 268.	Generation of RCRA hazardous waste for storage, treatment or disposal - Applicable	40 CFR 264.13(a)(1)	3745-59-07	2, 3	Remedial activities might generate hazardous waste.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
	Must determine if the waste is restricted from land disposal under 40 CFR 268 et seq. by testing in accordance with prescribed methods or use of generator knowledge of waste.		40 CFR 268.7	3745-59-07	2, 3	Remedial activities might generate hazardous waste.
	Must determine alternative land disposal restrictions under 40 CFR 268.49 by treating soil to 10 x UTS levels prior to land disposal.	Generation of RCRA hazardous waste for storage, treatment or disposal – Applicable	40 CFR 268.49		2, 3	Remedial activities might generate hazardous waste.
Storage						
Accumulation of hazardous waste in containers (e.g. PPE, rags, etc.)	<p>A generator may accumulate hazardous waste at the facility provided that:</p> <ul style="list-style-type: none"> • Waste is placed in containers that comply with 40 CFR 265.171 through 173 (Subpart 1); and • container is marked with the words [hazardous waste] or; • container may be marked with other words that identify the contents. 	<p>Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10 – Applicable</p> <p>Accumulation of 55 gallons or less of RCRA hazardous waste at or near any point of generation – Applicable</p>	<p>40 CFR 262.34(a)</p> <p>40 CFR 262.34©(1)</p>	<p>3745-52-34(a)</p> <p>3745-52-34©(1)</p>	2, 3	This applies to accumulation in 55-gallon drums at or near the point of generation, before the drum is filled. Upon filling the drum, it must be moved within 3 days to a designated container storage area. Upon a drum placement in the container storage area, if a temporary storage area, it must be disposed within allowed time frame.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Temporary storage of hazardous waste in containers	<p>Except noted below, a generator may accumulate(store) hazardous waste on-site for 90 days or less without a permit or without having interim status:</p> <ul style="list-style-type: none"> • A generator who generates greater than 100 kg but less than 1000 kg of hazardous waste in a calendar month may accumulate hazardous waste on-site for 180 days or less without need to meet long-term storage requirements (40 CFR 262.34(d)). • A generator who generates greater than 100 kg but less than 1000 kg of hazardous waste in a calendar month and who must transport his waste, or offer his waste for transportation, over a distance of 200 miles or more for off-site treatment, storage or disposal may accumulate hazardous waste on-site for 270 days without need to meet long-term storage requirements (40 CFR 262.34(d)) • A generator who generates greater than 100 kg but less than 1000 kg of hazardous waste in a calendar month and who accumulates hazardous waste in quantity less than 6000 kg or for fewer than 180 days (or for less than 270 days if he must transport his waste, or offer his waste for transportation, over a distance of 200 miles or more), is not required to meet long-term storage requirements (40 CFR 262.34(f)). 	A generator providing temporary storage pending off-site treatment, storage, and disposal.	40 CFR 262.34	3745-52-34	2, 3	Remedial activities might generate hazardous waste. On-site storage prior to disposal/treatment might be necessary.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Requirements for temporary storage of hazardous waste in containers	Except as noted above, a generator may accumulate hazardous waste on-site for 90 days or less without the need to meet requirements for long-term storage, provided than:	Temporary storage of RCRA hazardous waste pending off-site treatment, storage, and disposal.	40 CFR 262.34(a)(1)(l)	3745-52-34(a)(1)(a)	2, 3	Remedial activities might generate hazardous waste.
Requirements for temporary storage of hazardous waste in containers (continued)	The waste is placed in containers and the generator complies with Subpart I of 40 CFR Part 265.		40 CFR 262.34(a)(2)	3745-52-34(a)(1)(a)	2, 3	Remedial activities might generate hazardous waste.
	The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container.		40 CFR 262.34(a)(2)	3745-52-34(a)(2)	2, 3	Remedial activities might generate hazardous waste.
	While being accumulated on-site, each container and tank is labeled or marked clearly with the words, [hazardous waste] and		40 CFR 262.34(a)(3)	3745-52-34(a)(3)	2, 3	Remedial activities might generate hazardous waste.
	The generator complies with the requirements for owners and operators in Subpart C (Emergency Preparedness), and Subpart D (Contingency Plan), and with 268.7(a)(4) [testing and documentation for disposal]		40 CFR 262.34(a)(4)	3745-52-34(a)(4)	2, 3	Remedial activities might generate hazardous waste.
Use and management of hazardous waste in containers	If container is not in good condition (e.g., severe rusting, structural defects) or if it begins to leak, must transfer waste into container in good condition.	Storage of RCRA hazardous waste in containers – Applicable	40 CFR 264.171	3745-55-71	2, 3	Remedial activities might generate hazardous waste.
	Use container made or line with materials compatible with waste to be stored so that the ability of the container is not impaired.		40 CFR 264.172	3745-55-72	2, 3	Remedial activities might generate hazardous waste.
	Keep containers closed during storage, except to add/remove waste.		40 CFR 264.173(a)	3745-55-73(a)	2, 3	Remedial activities might generate hazardous waste.
	Open handle and store containers in a manner that will not cause containers to rupture or leak.		40 CFR 264.173(b)	3745-55-73(b)	2, 3	Remedial activities might generate hazardous waste.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Design and operation of a RCRA container storage area (no free liquids).	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or containers must be elevated or otherwise protected from contact with an accumulated liquid.	Long-term storage of RCRA hazardous waste in containers that do not contain free liquids – Applicable	40 CFR 264.175©	3745-55-75©	2, 3	Remedial activities might generate hazardous waste.
Design and operation of a RCRA container storage area (contains free liquids)	<p>Area must have a containment system designed and operated as follows:</p> <ul style="list-style-type: none"> • A base must underlie the containers that is free of cracks or gaps and is sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed. • Base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from the leaks spills or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids. • Must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. • Runoff into the system must be prevented unless the collection system has sufficient capacity to contain along with volume required for containers. 	Long-term storage of RCRA hazardous waste with free liquids – Applicable	40 CFR 264.175(a)	3745-55-75(a)	2, 3	Remedial activities might generate hazardous waste.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Storage of Remediation Waste in Staging Piles	<p>A staging pile must comply with the following design criteria:</p> <ul style="list-style-type: none"> • The staging pile must facilitate a reliable, effective, and protective remedy. • The staging pile must be designed so as to prevent or minimize releases of hazardous wastes and hazardous constituents into the environment, and minimize or adequately control cross-media transfer, as necessary to protect human health and the environment (for example, through the use of liners, covers, run-off/run-on controls, as appropriate). • The staging pile must not operate for more than two years, except when the EPA grants an operating term extension under 40 CFR. 	<p>Storage of RCRA hazardous remediation waste – Relevant and Appropriate.</p>	<p>40 CFR 264.554(d)(1)</p>	<p>NA</p>	<p>2, 3</p>	<p>Remedial activities might generate hazardous waste.</p>

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Waste Treatment						
On-site treatment of RCRA hazardous waste in a NPDES treatment system	<p>Wastewater treatment units (WWTUs), as defined in 260.10, are exempt from the requirements for permitting and interim status treatment, storage, and disposal facilities, which are codified in 40 CFR Parts 264 and 265.</p> <p>All applicable hazardous waste management standards apply to the waste prior to treatment in the WWTU and to any residue generated by the treatment of the waste. In other words, solid waste resulting from the treatment of a listed waste, and solid waste resulting from the treatment of a characteristic hazardous waste in an exempt wastewater treatment unit will remain hazardous as long as the solid waste continues to exhibit a characteristic as defined in 261.3 (3) and (d).</p>	Treatment of RCRA hazardous wastewater.	40 CFR 264.1(g)(6), 251.1 (c)(10), and 270.1(c)(2)(v)	3745-54(g)(5) and 3745-65(c)(8)	2	Contact water from stabilization treatment area may require treatment prior to disposal.
Classification of local water bodies for discharge of treated waters.	Discharge quality of treated waters from the site must attain the criteria for which the segment of the water body is classified.	Point source discharge of treated wastewater.	NA	3745-1-01	2	

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Discharge of Toxic Pollutants identified by the State of Ohio pursuant to Section 307(a)(1) of the Federal Water Pollution Control Act.	Concentrations of identified toxic pollutants in Ohio waters shall not exceed the criteria indicated in this regulation.	Point source discharge of treated wastewater.	NA	3745-1-07	2	
Land Disposal Restrictions (LDRs)						
Land disposal restrictions (LDRs) for contaminated soil.	<p>Must comply with LDRs prior to placing soil that exhibits a characteristic of hazardous waste, or exhibited a characteristic of hazardous waste at the time it was generated, into a land disposal unit.</p> <p>Prior to land disposal, contaminated soil must be treated according to the applicable treatment standards specified according to the Universal Treatment Standards specified in 40CFR268.48 applicable to the contaminating listed hazardous waste and/or the applicable characteristic of hazardous waste if the soil is characteristic.</p> <p>Treatment standards for contaminated soils. Prior to land disposal, contaminated soil must be treated according to all standards specified in the Universal Treatment Standards specified in 40CFR268.48.</p>	Hazardous waste – 40 CFR 268.49 - Applicable	<p>40 CFR 268.49(a)</p> <p>40 CFR 268.49(b)</p> <p>40 CFR 268.49(c)</p>	<p>3745-270-49(A)</p> <p>3745-270-49(B)</p> <p>3745-270-49(C)</p>	<p>2, 3</p> <p>2, 3</p> <p>2, 3</p>	Remedial activities might generate soil contaminated by a RCRA hazardous waste.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
PCB Wastes						
Characterization and cleanup of solid waste contaminated with PCBs	Waste containing PCB concentrations greater than or equal to 50 ppm are defined by USEPA as a PCB remediation waste.	Generation of a PCB remediation waste through excavation - Applicable	40 CFR 761.3	NA	NA	PCBs have not been detected at PRRWPs.
	Cleanup and disposal options for PCB remediation waste. Any person cleaning up and disposing of PCBs under section 40 CFR 761.61 shall do so based on the concentration at which the PCBs are found.		40 CFR 761.61	NA	NA	
	Any person may conduct self-implementing cleanup and disposal of PCB remediation waste in accordance with the requirements of 40 CFR 761.61(a) without prior written approval from EPA.	Self-implementing on-site cleanup and disposal of PCB remediation waste.	40 CFR 761.61(a)	NA	NA	PCBs have not been detected at PRRWPs.
	Self-implementing cleanups shall not be binding upon cleanups conducted under other authorities, including but not limited to, actions conducted under section 104 or section 106 of CERCLA, or section 3004(u) or section 3008(h) of RCRA.	Self-implementing on-site cleanup and disposal of PCB remediation waste.	40 CFR 761.61(a)(ii)	NA	NA	
	The cleanup level for bulk PCB remediation waste in high occupancy areas (residential exposure scenario) is <= 1 ppm without further conditions.	Self-implementing on-site cleanup and disposal of PCB remediation waste.	40 CFR 761.61(a)(4)(i)(A)	NA	NA	

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Characterization and cleanup of solid waste contaminated with PCBs (continued)	Any person disposing of non-liquid PCB remediation waste shall do so by one of the following methods:	Performance-based disposal of PCB remediation waste.	40 CFR 761.61(b)	NA	NA	PCBs have not been detected at PRRWPs.
	<ul style="list-style-type: none"> Dispose of it in a high-temperature incinerator approved under 40 CFR 761.70(b), an alternate disposal method approved under 40 CFR 761.60(e), a chemical waste landfill approved under 40 CFR 761.75, or in a facility with a coordinated approval under issued under 40 CFR 761.77. Decontaminate it in accordance with 40 CFR 761.79 					
	Any person wishing to sample, cleanup, or dispose of PCB remediation waste in a manner other than prescribed in 40 CFR 761.61(a) or (b) or store PCB remediation waste in a manner other than prescribed in 761.65, must apply in writing to the EPA Regional Administrator. Each application must contain information described in the notification required by 40 CFR 761(a)(3).	Risk-based cleanup and disposal of PCB remediation waste – Applicable.	40 CFR 761.61(c)	NA	NA	
	Notification and certification. At least 30 days prior to the date that site cleanup begins, the person in charge of the cleanup or the property owner shall notify in writing the EPA regional Administrator and the Director of the county or local environmental protection agency. Notification requirements are prescribed in 40 CFR 761.61(a)(3).	PCB remediation waste cleanup - Applicable.	40 CFR 761.61(a)(3)	NA	NA	
		Storage for disposal of PCBs at concentrations of 50 ppm or greater -- Applicable.	40 CFR 761.65(c)(9)	NA	NA	

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Characterization and cleanup of solid waste contaminated with PCBs (continued)	<ul style="list-style-type: none"> The waste must not generate leachate through decomposition or other reactions. The storage site must have: (a) a liner to prevent any migration of wastes off or through the liner into the adjacent subsurface soil, groundwater, or surface water, (b) a cover that meets the requirements of 40 CFR 761.65(c)(9)(iii)(A), is installed to cover all the stored waste likely to be contacted with precipitation, and is secured so as not to be functionally disabled by winds, and (c) a run-on control system designed, constructed, operated, and maintained according to the requirements of 40 CFR 761.65(c)(9)(iii)(C). 				NA	PCBs have not been detected at PRRWPs.
General Facility Requirements						
Emissions of hazardous air pollutants from remedial operations	<p>The steps necessary to indicate that the remediation systems are in compliance with the Ohio Environmental Protection Agency requirements are as follows:</p> <ul style="list-style-type: none"> Model each new or modified source of an air toxic using the SCREEN 3 model. Compare predicted 1-hour concentrations against 1/40 of the Threshold Limit Value (TLV). The guidance specifically calls for evaluation against the time-weighted average (TWA). TLVs published by the American Conference of Governmental Industrial Hygienist (ACGIH) and Biological Exposure Indices; Threshold Limit Values and Biological Exposure Indices, ACGIH, 1998. If this comparison shows that the predicted 1-hour concentration is greater than 1/40 of the TLV, further assessment is required. Applies to controlled or uncontrolled sources 	Emissions of potentially toxic air contaminants	Clean Air Act Amendments of 1990, Appendix G	3745-15 et. Seq.	NA	Remedial activities are not expected to result in the emission of hazardous air pollutants.

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Security system	Must prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock onto active portion of the facility or comply with provisions of 40 CFR 264.14(b) and (c)	Operation of long-term (>90) container storage – Relevant and Appropriate	40 CFR 264.14	3745-54-14	2, 3	
General Inspections	Must inspect facility for malfunctions and deterioration, operator errors, and discharges, often enough to identify and correct any problems.	Operation of long-term (>90 day) container storage – Relevant and Appropriate	40 CFR 264.15(a)	3745-15(a)	2, 3	
Personal Training	Must ensure personnel adequately trained in hazardous waste, emergency response, monitoring equipment maintenance, alarm system procedures, etc.	Operation of long-term (>90 day) container storage – Relevant and Appropriate	40 CFR264.16	3745-54-16	2, 3	
Contingency Plan	Must have a contingency plan, designed to minimize hazards to human health and the environment from fires, explosions, or other unplanned sudden releases of hazardous waste to air, soil, or surface water in accordance with 40 CFR 264.52	Operation of long-term (>90 day) container storage – Relevant and Appropriate	40 CFR264.51	3745-51	2, 3	Requirement for both temporary and long-term storage
	Must be at least one emergency coordinator on facility premises responsible for coordinating emergency response measures in accordance with 40 CFR 264.30 et seq.	Operation of long-term (>90 day) container storage – Relevant and Appropriate	40 CFR264.55	3745-55	2, 3	Contingency plan can refer to PBOW site wide, not PRRWPs area alone
Preparedness and Prevention	Facilities must be designed, constructed, maintained, and operated to prevent any unplanned release of hazardous waste of hazardous waste constituents into the environment and minimize the possibility of fire explosion. All facilities must be equipped with communication and fire suppression equipment and undertake additional measures as specified in 40 CFR 264.30 et seq.	Operation of long-term (>90 day) container storage – Relevant and Appropriate	40 CFR264.30-264.37	3745-54-30 through 37	2, 3	Requirement for both temporary and long-term storage of hazardous waste

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Action/Requirement	Requirement(s)	Prerequisite(s)	Federal Citation	Ohio Citation	Alternative Applicable	Comments
Closure of RCRA Container Storage						
Clean closure of RCRA container storage area	Must close the facility in a manner that: <ul style="list-style-type: none"> Minimize the need for further maintenance Controls, minimizes or eliminates potential hazards to human health and the environment, post-closure escape of hazardous waste, hazardous constituents, contaminated runoff or hazardous waste decomposition products to ground or surface waters or to the atmosphere; and Complies with closure requirements of 40 CFR 264.178 	Management of RCRA hazardous waste in long-term storage (>90 days) facility – Relevant and Appropriate	40 CFR264.111	3745-66-11	NA	Long-term storage of hazardous waste (<90 days) not anticipated during remedial operations.
Monitoring and Extraction Wells						
Monitoring/Extraction well construction	Monitoring and extraction wells shall be constructed in accordance with EPA Region V Standard Operating Procedures	Installation of groundwater monitoring or extraction wells	EPA Region V SOPs		NA	No additional monitoring wells or extraction wells are anticipated
Monitoring/Extraction Well Abandonment	Monitoring and extraction wells shall be abandoned in accordance with requirements specified in EPA Region V Standard Operating Procedures.	Closure or abandonment of groundwater monitoring or extraction wells	EPA Region V SOPs		2, 3	

ROUTING AND TRANSMITTAL SLIP

Date

06/06/03

(Name, office symbol, room number, building, Agency/Post)

		Initials	Date
1. Meadows	PM-P	REM	6/6/03
2. Clarke	OC	TC	6/16/03
3. Miller	PM	Cwm	4/19/03
4. Hardbarger	DD		
5. Rivenburgh	DE		23 June
Action	File	Note and Return	
Approval	For Clearance	Per Conversation	
As Requested	For Correction	Prepare Reply	
Circulate	For Your information	See Me	
Comment	Investigate	X	Signature
Coordination	Justify		

REMARKS

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

From: (Name, org. symbol, Agency/Post)

Timothy Patrick, CELRH-PM-P

Room No. - Bldg.
4415

Phone No.
(304) 529-5734

Summary Sheet

For use of this form, see CELRHR 25-2-1 (Draft); the proponent is CELRH-EA

Action Requiring Commander's Signature for Approval

● What?

Subject: Plum Brook Ordnance Works

Brief Description: Final Action Memoranda for Pentolite Road Redwater Ponds and TNT Area B at the Plum Brook Ordnance Works.

● Who?

Significant Players: _____

Respective Interests: _____

● Why?