



US Army Corps of Engineers  
Huntington District

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## ***PLUM BROOK ORDNANCE WORKS*** ***Restoration Advisory Board***

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***Quarterly Fact Sheet***

***July-September 2008***

### **SITE DESCRIPTION**

The former Plum Brook Ordnance Works is located four (4) miles south of Sandusky, Ohio, near Lake Erie. Nitroaromatic explosives produced at the site included TNT, DNT, and pentolite; other products produced at the ordnance works included nitric and sulfuric acid. The plant operated for four years from 1941 to 1944, and was decontaminated by the end of 1945. Possession of the property was transferred to the Ordnance Department in 1946, then to the War Assets Department, and finally to the GSA in 1949. NASA acquired the property in 1963 and presently maintains and utilizes 6453.5 of the original 9009 acres.

### **SITE HISTORY**

The U.S. Army entered into a contract with Trojan Powder Company for the purpose of manufacturing this ordnance. The official title for the site during this time was the Plum Brook Ordnance Works (PBOW). Groundbreaking to construct the facilities to support the manufacturing of ordnance began on April 15, 1941. Production began on December 16, V-J Day (1941). During the production period more than one billion pounds of ordnance was manufactured.

PBOW was placed in standby condition from 1945 to 1946. Throughout this time, the Army conducted decontamination and decommissioning (D&D) of many of the buildings and structures associated with the manufacturing of ordnance. Decontamination efforts on all TNT and DNT lines began in September 1945. Decontamination of TNT lines, acid lines, pentolite lines, and DNT lines was halted during the last quarter of 1945. Typical D&D methods for buildings and structures involved removal and relocation of all explosives to a burning ground where they were burned. Where possible, remaining buildings and structures were burned to the ground. Steam lines, drain lines, etc., were flushed and dismantled. There is no indication in PBOW historical records of where lines were flushed.

It is estimated that 65 percent of the necessary decontamination of PBOW was completed by December 1945. On midnight of December 17, the physical custody of the PBOW was transferred from Trojan Powder Company to the U.S. Army Ordnance Department. The Ordnance Department became the accountable agency and the U.S. Army Corps of Engineers assumed responsibility for maintenance and custodial duties at the PBOW from January 1 through June 30, 1946.

After further decontamination efforts were completed, and the extent of contamination certified, PBOW was transferred to the War Assets Administration in August 1946. From 1946 to 1949 the property was protected and maintained by Matthew-Levio and Sons. In 1949 it was transferred to the General Services Administration (GSA), which maintained oversight of the facility. Ravenna Arsenal conducted further decontamination efforts from 1945 to 1958. NASA accepted the facility in 1963 after Ravenna Arsenal certified that the PBOW had been completely decontaminated and was suitable for unrestricted future use. After acceptance of the PBOW, NASA identified further areas that required decontamination. In 1964, NASA continued site decontamination and the removal of structures.

In 1956 an agreement was made to lease 500 acres of the north portion of the site to construct and operate the Plum Brook Reactor Facility (PBRF). NASA operated the PBRF from 1963-1973 under a license agreement with the Atomic Energy Commission (AEC). NASA currently has a license agreement with the Nuclear Regulatory Commission (NRC) for the safe protective storage of the PBRF. NASA acquired an additional 6,000 acres of the former PBOW on March 15, 1963, for the purpose of conducting various aerospace research activities. NASA continues to use the site today.

## **SUMMARY OF ACTIVITIES**

### **Red Water Ponds Area**

An interim soil removal action is complete at Pentolite Road, however additional excavation is required to obtain clean closure of the contaminated areas. In late 2006-early 2007, a bench-scale study was conducted at PRRWP to determine the effectiveness of lime-treatment on the reduction of nitroaromatics. Soil composting is underway and expected to be completed in early 2009.

### **TNT Area B**

During the RI/FS phase, LRN and LRH agreed to complete an action memorandum for a NTCRA for the soils. An Interim Soil Removal Action was completed and removed the contaminated soils that exceeded the RGOs. The Final Interim Soil Removal Action Report was submitted in July 2007. The preliminary Draft Decision Document and Proposed Plan were completed in early 2005 and have been held until completion of the groundwater Feasibility Study. The Draft Proposed Plan is scheduled for submission in October 2008.

### **TNT Area A and TNT Area C**

USACE will pursue the Interim Soil Removal Action as funding becomes available. The Preliminary Draft Decision Document and Proposed Plan for Area A and Area C were received in late May 2005 and late June 2005, respectively. The districts (LRH and LRN) reviewed the documents and the contractor submitted the revised documents in August 2005. Revised Draft Proposed Plans and addendums to the Feasibility Study are expected in May 2008. To support the evaluation of remedial alternatives for soil at the TNT manufacturing areas, a bench scale treatability study using alkaline hydrolysis for nitroaromatic contamination is underway in the summer 2008.

### **Groundwater - TNT A, B and C & Red Water Ponds Areas**

A Task Order was awarded to Shaw Environmental in late November 2005 for the Groundwater Feasibility Study (FS) in TNT Areas A, B, C, and Red Water Ponds Areas. The draft document was submitted in March 2007 and presented the following issues: Establishing remedial action objectives (RAO); Exploring scope of remedial alternatives; Agreeing on Chemicals of Concern (COC); and Outlining a basic remedial strategy. The review process has been lengthy and resulted in numerous reviewer comments and subsequent responses and revisions to the document by the contractor. The revised FS is scheduled for submission pending confirmation of future land use by NASA. The draft Proposed Plan will follow.

### **Reservoir No. 2 Burning Ground**

#### **Remedial Investigation Part 1**

In late February 2005, the Delivery Order was modified to include additional soil samples to further define a specific portion of the burning grounds. This additional soil sampling was conducted in late April 2005. The Interim Final Report was submitted in early July 2005 and included all soils and groundwater results. Comments on the report were received and discussed at the PBOW Team meeting in early December 2005. The final report was received in mid-January 2006.

#### **Engineering Evaluation/Cost Analysis (EE/CA)**

Based on discussions in the September 2005 PBOW Team meeting, an EE/CA was scoped and Delivery Order was awarded in late October 2005. Field activities were completed in early December 2005 and the Treatability Summary Report was delivered in April 2006. The alternatives were presented at the Team Meeting and RAB Meeting in May 2006. Comments from the HTRW-CX regarding need for proceeding with action memorandum and remedial action could not be resolved. The EE/CA was finalized in June 2008 and the findings may be incorporated in the CERCLA process in the future. A contract was awarded in late January 2008 to conduct a Risk Assessment at the site. The draft work plans for the RA were submitted in mid-May 2008 and the final work plans were submitted in August 2008. The draft report is scheduled for December 2008.

### **Acid Areas**

#### **Acid Areas 2 and 3**

The Draft Soils Remedial Investigation Report was submitted in early August 2005, comments on the report were received in late September 2005. The comment responses were discussed at the PBOW Team Meeting in December 2005. Based on the discussions, USACE decided to delay the delivery of the final document and modify the Delivery Order to include additional sediment and surface water sampling in the Acids Areas. Surface water sampling was conducted in mid-May 2006 and sediment sampling was conducted in early June 2006. The Final Site Characterization Report, Remedial Investigation, Part 1 at Acid Areas 2 and 3 was submitted in March 2007. Final risk assessment / screening level documents were submitted in February 2008. A contract was awarded in late January 2008 to complete delineation sampling, the Feasibility Study, Proposed Plan and Decision Document. Sampling for the delineation study is scheduled to begin in the fall 2008, pending resolution of the future property use issue. The draft FS is expected in spring 2009.

### Acid Area 1

A contract was awarded in late September 2006 to Jacobs Engineering, Inc. to continue the Remedial Investigation at Acid Area 1. Field work began in spring 2007 with soil sampling, piezometers installation and surface water reconnaissance, and surface water and sediment sampling in late spring 2007. Bedrock wells were installed in July 2007. Groundwater sampling was delayed until early November due to the absence of groundwater in the area. A contract was awarded in late January 2008 to complete a Risk Assessment for Acid Area 1. The draft work plan is expected in October 2008 for PBOW Team review.

### Waste Water Treatment Plants 1&3 and Ash Pits 1&3

Based on Limited Site Investigations (LSI) performed in 2000 for these areas, a contract was awarded in June 2008 to conduct a Remedial Investigation, a Human Health Risk Assessment and Ecological Risk Screening. Field data collection is scheduled to begin fall 2008 and interim draft report will be submitted for review in the spring 2009.

### Waste Water Treatment Plant 1 - Wooden Sewer Lines

To date no investigation has been conducted along the wood-stave sewer line extending from the TNT Area A pump house toward WWTP1. Several thousand feet of the sewer line remain intact. A contract was awarded in June 2008 to conduct an RI to delineate the traces of these sewer lines and to investigate potential nitroaromatic contamination which may have affected soil and groundwater along these traces. The collected data will also be utilized in a baseline human health risk assessment and a screening level ecological risk assessment. Field data collection is scheduled to begin late spring 2009 with draft site characterization report to be submitted spring 2010.

### Ash Pit 2

A contract was awarded 23 September 2008 to conduct Remedial Investigation, Human Health Risk Assessment and Ecological Risk Screening for this AOC. Schedules will be developed in the future.

### Restoration Advisory Board

Restoration Advisory Board (RAB) meetings are scheduled when sufficient technical information is available to present to the community members, or at the request of the RAB. A RAB meeting was held on September 18, 2008. The meeting included an update on current projects in at Pentolite Road Red Water Ponds, Acid Areas, Reservoir No. 2, and the Groundwater Feasibility Study. The date for the next RAB meeting is tentatively scheduled for mid-December 2008; PBOW Team and RAB Members will be notified when the meeting is scheduled.

### Project Team Meetings

Team meetings are conducted several times throughout the year to discuss project issues. A Full Team Meeting includes representatives from NASA, OEPA, USACE and USACE contractors. A USACE Team Meeting includes only project participants from LRH, LRN and other USACE representatives as appropriate.

**PBOW WEBSITE**

USACE Huntington continues to maintain the website which is dedicated to keeping the public informed about the PBOW activities. This site is continuously updated. Currently, USACE is working to have the Administrative Record (AR) accessible on the FUDS website, which is an ongoing process. The website is located at: [www.lrh.usace.army.mil/projects/current/derp-fuds/pbow](http://www.lrh.usace.army.mil/projects/current/derp-fuds/pbow).

**PBOW TOLL FREE NUMBER**

USACE Huntington has a toll-free number in place for your use. If you have any information such as personal knowledge, photographs, maps, newspaper articles of past activities or other information you would be willing to share, or if you have questions about current activities at the site, please feel free to use the toll free number. USACE is interested in hearing from you, so call toll free (800) 822-8413 and ask for Lisa Humphreys.

**PROJECT CONTACT**

The PBOW Project Manager is Richard L. Meadows in the Huntington District (CELRH-PM-P). You may contact Mr. Meadows at (304) 399-5388, fax (304) 399-5715 or via email at [Richard.L.Meadows@Lrh01.usace.army.mil](mailto:Richard.L.Meadows@Lrh01.usace.army.mil). He may be reached during the hours of 8:00 a.m. to 5:00 p.m, Monday - Friday. You may also call the toll free number (800-822-8413) and ask to be transferred directly to his office.