

## *INTER-OFFICE COMMUNICATION*

**TO:** Ron Nabors, Site Inspector, DERR-NWDO

**FROM:** John Weaver, through Geoff Leking, Geologist 4, DDAGW-NWDO

**DATE:** September 3, 2003

**SITE:** NASA Plum Brook Station, Erie County, OHD 800 015 379.

**SUBJECT:** Sixth Quarterly Background Groundwater Report, Former Plum Brook Ordnance Works, Sandusky, Ohio, document dated July 31, 2003; Shaw Environmental, Inc. Received by the Ohio EPA on August 1, 2003.

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### **Introduction:**

The Division of Emergency and Remedial Response (DERR) has requested that the Division of Drinking and Ground Waters (DDAGW) perform a review of the above referenced document.

The NASA Plum Brook Station, hereafter referred to as the NPBS, was built in early 1941 and consists of 6400 acres located 4 miles south of Sandusky, Ohio in Erie county. From December 1941 to 1945, the facility manufactured trinitrotoluene (TNT), dinitrotoluene (DNT), acid, and pentolite for use as explosives during WWII. NASA acquired the site on March 15, 1963 and is currently utilizing the site to conduct aerospace research.

The U.S. Army is conducting environmental investigations at previously owned U.S. Department of Defense (DOD) properties, of which the NPBS is one such facility. The work is being managed and technically overseen by the Nashville District of the U.S. Army Corps of Engineers (USACE) under the Defense Environmental Restoration Program (DERP) Formerly Used Defense Sites (FUDS). The USACE has contracted Shaw Environmental & Infrastructure, Inc. (Shaw), formerly International Technology Corporation, to provide engineering and consulting services for the NPBS investigation. NPBS and Shaw are currently performing a sitewide ground water investigation (GWI) at the facility. In support of the sitewide GWI, Shaw has completed several ground water sampling events at the background overburden and bedrock monitoring wells. The Sixth Quarterly Background Groundwater Report is the subject of this review.

### **Conclusions:**

1. NPBS/Shaw should review Comment 1 through 9 below to assist them in completing the site-wide ground water investigation at NPBS.

**Comments:**

1. In support of the site-wide ground water investigation (GWI) at the NASA Plum Brook Station (NPBS), US Army Corps of Engineers (USACE) Nashville District, and Shaw Environmental, Inc. (Shaw), formerly International Technology Corporation, performed several quarterly background ground water sampling events during a period of time from 2001 to 2003. Quarterly background ground water analytical results are contained in the following reports.
  - a. First quarter (September-October 2001) sampling results are contained in the document entitled, '2001 Groundwater Remedial Investigation, Former Plum Brook Ordnance Works, Sandusky, Ohio', International Technology Corporation, March 15, 2002.
  - b. Second quarter (January 2002) sampling results are contained in the document entitled, 'Second Quarterly Background Report, Former Plum Brook Ordnance Works, Sandusky, Ohio', International Technology Corporation, May 2002.
  - c. Third quarter (April 2002) sampling results are contained in the document entitled, 'Third Quarterly Background Report, Former Plum Brook Ordnance Works, Sandusky, Ohio', International Technology Corporation, July 2002.
  - d. Fourth quarter (July 2002) sampling results are contained in the document entitled, 'Draft First Annual Data Summary and Evaluation Report, International Technology Corporation', August 29, 2002 and '2002 Groundwater Data Summary and Evaluation Report, Former Plum Brook Ordnance Works, Sandusky, Ohio', Shaw, June 2003.
  - e. Fifth quarter (October 2002) sampling results are contained in the document entitled, 'Fifth Quarterly Background Groundwater Report, Former Plum Brook Ordnance Works, Sandusky, Ohio, document dated February 18, 2003; International Technology Corporation. Received by the Ohio EPA on February 19, 2003. And,
  - f. Sixth quarter (April 2003) sampling results are contained in this document under review.
2. The purpose of the site-wide GWI quarterly background sampling is to generate a database to calculate background concentrations in both the bedrock and

overburden (shallow) saturated zones. For clarification, the current bedrock background monitoring well network consists of wells PB-BED-MW20, PB-BED-MW24, BG8-BEDGW-001, and PB-BED-MW25. Bedrock background well PB-BED-MW26 has been removed from the network. NPBS/Shaw propose to install and sample 2-3 additional background monitoring wells in the summer/fall 2003. The overburden background monitoring well network consists of well IT-MW01.

The following is a brief synopsis of background sampling activities at the NPBS.

- a. **September-October 2001:** Due to an indentation in the PVC riser, overburden well IT-MW01 could not be sampled. All bedrock background monitoring wells were sampled for TCL VOCs, TCL SVOCs, TAL metals (total and dissolved), turbidity, alkalinity, hardness, TOC, TDS, TSS, chloride, total cyanide, nitrate, and sulfate.
- b. **January 2002:** Attempts to repair well IT-MW01 were unsuccessful; well could not be sampled. All bedrock background monitoring wells were sampled for the parameters noted in item a. above.
- c. **April 2002:** Due to an indentation in the PVC riser, overburden/shale well IT-MW01 could not be sampled. All bedrock background monitoring wells were sampled for the parameters noted in item a. above.
- d. **July 2002:** Well IT-MW01 was finally sampled for the parameters noted in item a. above. The well was not repaired but sampled using a peristaltic pump and tubing which was able to bypass the indentation. All bedrock background monitoring wells were sampled for the parameters noted in item a. above.
- e. **October 2002:** Overburden background well IT-MW01 and all bedrock background monitoring wells were sampled for the parameters noted in item a. above with the exception of well PB-BED-MW26 which was observed to be dry.
- f. **April 2003:** Overburden background well IT-MW01 and all bedrock background monitoring wells (PB-BED-MW20, PB-BED-MW24, BG8-BEDGW-001, and PB-BED-MW25) were sampled for the parameters noted in item a. above

3. Shaw has included ground water sampling logs in Appendix A and chain of custody documentation in Appendix F of the July 31, 2003 Sixth Quarterly Background Groundwater Report (data report) to represent the fifth (October 2002) and sixth (April 2003) quarterly background sampling events. NPBS/Shaw have adequately documented well purging and sampling activities.
4. Provided in the table below are dates of background sampling completed at both the overburden and background monitoring well networks at NPBS which will be utilized in part for background concentration calculations (refer to Table 2-2 of the submittal).

Saturated Zone	Well	Sampling Dates
Overburden	IT-MW01	07/10/02 10/16/02 04/09/03
Bedrock	PB-BED-MW20 PB-BED-MW24 PB-BED-MW25 BG8-BEDGW-001 Two additional wells installed in summer 2003	09/26-27/01 - 10/09/01 01/15-17/02 04/03-04/02 07/10-12/02 10/17-19/02 04/09-11/03 4 additional events beginning after well installation in 2003

5. Three nitroaromatic compounds and benzene, ethylbenzene, methylene, chloride, xylenes, and bis(2-ethylhexyl) phthalate have been detected in the bedrock background monitoring network during the period of background data acquisition (2001-April 2003). Therefore, NPBS/Shaw shall perform quarterly ground water sampling at the background bedrock monitoring well network for one year to '...confirm, deny, and enhance the values of the background data set.' Ohio EPA concurs with this approach as additional background data are necessary to adequately evaluate ground water conditions upgradient of the NPBS.
6. Appendix C of the submittal indicates that the 'reporting limit' or method detection limit (MDL) for bis(2-ethylhexyl)phthalate is 10 ug/l. The federal drinking water maximum contaminant level (MCL) for the constituent of concern (COC) is 6 ug/l. Ohio EPA requests that NPBS/Shaw provide the contracted laboratory's (Severn Trent Laboratories, Inc. of Knoxville, TN) MDL for bis(2-ethylhexyl)phthalate. NPBS/Shaw is reminded that the laboratory must be able to achieve MDLs which are below corresponding MCLs.

7. Figure 2-1 of the data report displays detected constituents in the overburden and bedrock background monitoring wells for all six quarterly sampling events completed to date. Based upon recent discussions with NPBS, Shaw, and USACE, the total inorganic (metals) data noted on Figure 2-1 appears to constitute the background database for use in the calculation of background concentrations for each inorganic COC. Ohio EPA requests clarification from NPBS/Shaw if this is an accurate statement.
8. NPBS/Shaw have provided an adequate discussion of the ground water analytical results, data validation, and data quality objectives in Appendices B, C, D, and E of the data report.
9. Based upon an evaluation of background ground water analytical data collected to date, NPBS/Shaw have scheduled the following activities in support of the sitewide GWI.
  - a. Expand the remedial investigation to further characterize background and downgradient ground water quality and the extent of COCs associated with the NPBS.
  - b. Install 5 downgradient bedrock monitoring wells to determine the full rate, extent, and concentrations of COCs in the bedrock saturated zone.
  - c. Collect additional ground water samples from the background bedrock monitoring well network (2 recently installed [August 2003] and 4 existing) on a quarterly basis for a period of at least one year.
  - d. Collect ground water samples from 8 downgradient bedrock monitoring wells (3 existing and 5 to be installed) on a semiannual basis for 1 year. Note: In Section 5.0, page 5-1, fifth bullet, of the data report, NPBS/Shaw state on a 'biannual' basis for one year which is incorrect grammar; wording should note semiannual. And,
  - e. Submittal of analytical results and investigative findings on a quarterly basis.

Ohio EPA is amenable with the above proposed activities.

For questions, please contact John Weaver, Ohio EPA Northwest District Office, Division of Drinking and Ground Waters, at (419) 373-3098. Any written correspondence should be sent to Ron Nabors, Ohio EPA Northwest District Office,

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September 3, 2003  
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