PBOW
Groundwater

OhioEPA

State of Ohio Environmental Protection Agency

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Bob Taft, Governor
Christopher Jones, Director

Rec'd CELRN 12May03

Re: U.S. NASA Plum Brook
Erie County
Ohio ID# 322-0552
Comments for Fifth Quarterly Background Groundwater Report

May 7, 2003

Ms. Linda S. Ingram
Department of the Army
Nashville District, Corps of Engineers
P. O. Box 1070
Nashville, Tennessee 37202-1070

Dear Ms. Ingram:

The Ohio Environmental Protection Agency (Ohio EPA), Division of Emergency and Remedial Response (DERR), has reviewed the "Fifth Quarterly Background Groundwater Report." This document was submitted to the Ohio EPA by the International Technology Corporation (IT) on behalf of the Corps of Engineers, February 19, 2003, for review and comments.

The Ohio EPA, DERR, has completed its review of the Background Groundwater Report. The Ohio EPA, DERR finds the document acceptable. However, the Ohio EPA is providing the following comments in support of the Site-Wide Groundwater Investigation.

1. The purpose of the site-wide Groundwater Investigation (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 bedrock background monitoring well network consists of wells PB-BED-MW20, PB-BED-MW24, BG8-BEDGW-001, PB-BED-MW25, and PB-BED-MW26 while the overburden background monitoring well network consists of well IT-MW01.

   The following is a brief synopsis of background sampling activities at the NASA Plum Brook Station (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.

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c. **April 2002:** Due to an indentation in the PVC riser, overburden 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. 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.

For those wells with adequate recharge, purging and sampling was performed using low-flow equipment and methodologies. Remaining wells were purged and sampled using disposable High Density Polyethylene (HDPE) bailers.

IT should have provided an explanation in the submittal as to how the background overburden well IT-MW01 was repaired for the purpose of performing ground water sampling.

2. IT should include chain of custody documentation in this submittal and future analytical reports.

3. Per discussions at a September 11, 2002, meeting at NPBS, the following determinations have been made in support of the site-wide GWI.

   a. Overburden and bedrock background concentrations will be calculated using total (unfiltered) ground water analytical results. Total results will also be utilized for screening and risk assessment purposes.

   b. Analytical results from bedrock well PB-BED-MW26 will be excluded from the background database as the ground water was observed to be extremely turbid (muddy).

   c. Only those analytical results obtained from background wells sampled using low-flow equipment and methodologies will be used to generate background ground water concentrations.

   d. IT will utilize either 95% upper tolerance limit statistical methodologies or the maximum detected concentration of a constituent of concern (COC), whichever is less, to calculate background ground water concentrations.

   e. One-half (½) of the laboratory reporting limit will be used in background and statistical calculations for COCs which are non-detect.

Background data acquisition will be continued for at least one additional sampling event (April 2003) due to the detection of several nitroaromatics in several of the background bedrock wells.

f. Installation of two offsite background bedrock monitoring wells and one offsite downgradient well (Figure 1). And,

g. Abandonment of downgradient bedrock well PB-BED-MW27 due to hydrogen sulfide gas.

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). IT should review this table for accuracy per discussions during the September 11, 2002 meeting at NPBS.

Saturated Zone	Well	Sampling Dates
Overburden	IT-MW01	09/27/01 01/16/02 04/02/02 07/10/02 10/16/02 additional event scheduled for April 2003
Bedrock	PB-BED-MW20 PB-BED-MW24 PB-BED-MW25 BG8-BEDGW-001 Potentially two more; anticipated installation in 2003	09/26-27/01 - 10/09/01 01/15-17/02 04/03-04/02 07/10-12/02 10/17-19/02 additional event scheduled for April 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. Therefore, an additional quarterly sampling event(s) will be performed in part to determine the adequacy of the current network to provide upgradient ground water quality data in the bedrock and overburden saturated zones.

A decision on the future collection, use, and representativeness of the background data will have to be discussed between NPBS, US Army Corps of Engineers, IT, and Ohio EPA as (1) benzene, toluene, ethylbenzene, and xylene occur naturally as a free-phase liquid (hydrocarbon) in carbonate bedrock (Delaware Limestone) beneath NPBS and (2) at least one of the nitroaromatic compounds detected in the background bedrock well network was never manufactured at NPBS. Additional items for discussion concerning background ground water quality include;

a. Should locations of proposed additional background wells be re-evaluated.

b. How many data points (i.e., sampling rounds) are appropriate to be collected from the background monitoring well networks.

c. How data collected from any additional background bedrock monitoring wells should be incorporated into the database.

d. Specific methodologies for calculating background concentrations.

e. For which COCs should background concentrations be calculated. And,

f. How background and downgradient analytical data will be statistically evaluated.

6. As previously observed by Ohio EPA, several VOCs compounds were detected in the bedrock background monitoring well network. : As VOCs are normally non-naturally occurring, the bedrock wells with observed detections of VOCs may not be appropriate to characterize background bedrock ground water quality at the NPBS. As such, additional background wells may be warranted to be installed at different locales. NPBS, Ohio EPA, US Army Corps of Engineers, and IT need to discuss this situation as to how it will affect the following items:

a. Calculation of bedrock background concentrations.

b. How the detection of organics in background bedrock wells will affect the risk-based approach for the site-wide GWI. And,

c. How the source and rate and extent of contamination in the bedrock zone is defined due to the existence of naturally occurring hydrocarbons in the local bedrock saturated zone.

If the detection of organics in the bedrock background monitoring well network is determined to be related to natural hydrocarbons, then the development of an organic background database may be warranted similar to the inorganic COCs. Alternatively, the locations of current and future background (bedrock) monitoring wells may have to be re-evaluated where locations are secured further upgradient of NPBS.

If you have any questions or comments feel free to contact me at (419) 373-3147. If you care to discuss the groundwater comments, please contact John Weaver, Ohio EPA Northwest District Office, Division of Drinking and Ground Waters, at (419) 373-3098.

Sincerely,

Ron Nabors

Ron Nabors
Site Coordinator
Division of Emergency and Remedial Response

/llr

pc: DERR-NWDO File