

MEMORANDUM

TO: Mark Bohne, PBOW RAB Co-chair and RAB members

FROM: Julie Weatherington-Rice, Ph.D., RAB TAPP Coordinator

RE: Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3; and Work Plan Remedial Investigation Locomotive Building Area, Former Plum Brook Ordnance Works Sandusky, Ohio; – Shaw Environmental, Inc.

DATE: February 13, 2009

Per our current contractual arrangement with US ACE which require both a technical memorandum for each report and an educational explanation to the RAB, this memorandum constitutes the educational review of the Shaw Environmental, Inc. November 2008 Draft “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3”; and “Work Plan Remedial Investigation Locomotive Building Area, Former Plum Brook Ordnance Works Sandusky, Ohio”; which are companion documents to the “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Phase 1 Remedial Investigation Former Plum Brook Ordnance Works Sandusky, Ohio”; “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Wastewater Treatment Plant No. 1 Sewer Lines”; and “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Remedial Investigation Ash Pit 2” documents just reviewed. Please forward these comments to the other RAB members.

This review is completed in several sections. The first section reviews the overarching considerations that need to be revisited at this point in time as to the role of a stand-alone Site-Specific Sampling and Analysis Plan or a Work Plan as this role seems to have been blurred over the years. The second review designed to discuss the Site-Specific Sampling and Analysis Plan for the Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 consists of both a general review and a specific review which references specific section language in the text for change or enhancement. The review of the Site-Specific Health and Safety Plan for the site is more problematic. There have been historic legal challenges and assignment of responsibility to outside reviewing firms when they have made sustentative changes to health and safety plans where they had no on-site program review. Since Bennett & Williams does not act as an on-site reviewer of activities at the Plum Brook Ordnance Works and has no interaction with the work as performed, I have taken the more prudent position of reading previous Site-Specific Health and Safety Plans and relegated my comments to the identification of typographical errors. This Site-Specific Safety and Health Plan is a copy of previous

documents. Therefore there can be no question of Bennett & Williams or my explicit or implicit approval of this plan. Any untoward events that may occur at the site that are caused and/or aggravated by any shortcomings in this Site-Specific Safety and Health Plan are NOT the responsibility of Bennett & Williams Environmental Consultants Inc. or me. We neither approve nor disapprove this plan. The third review is a specific review of the Work Plan for the Locomotive Building Area. There is no Site-Specific Safety and Health Plan attached to this document.

What Should a Site-Specific Sampling and Analysis Plan or a Work Plan Cover?

These documents are two more in a series of site-specific sampling and analysis plans and work plans that have recently been submitted by Shaw Environmental, Inc. for review before additional phases of work were to begin at locations on the Plum Brook Ordnance Works (PBOW) site. These are just a few of many such documents that have been developed by Shaw for the PBOW site and for other sites around the country where they work. By their very nature, site-specific sampling and analysis plans and work plans tend to be “boiler plate” documents. Standardized texts for specific sites and/or specific work efforts are developed. When a new plan is needed, the author selects from a series of already prepared materials and crafts a specific document required for a specific activity, making edits and revisions as necessary. The completed document is supposed to be a “stand alone” document that can be taken to the field site and used as the set of written instructions for completing the work effort scheduled to be undertaken. The document should be complete enough so that any qualified scientist and/or engineer not intimately familiar with the project should be able to pick up the document and without having to access additional information, complete the work efforts in a manner approved by the US Army Corps of Engineers (USACE) for the PBOW clean-up effort.

In the beginning, the original site-specific sampling and analysis plans and work plans may have met that requirement. But this project has been on-going for many years with the same basic team of contractors and oversight from USACE. Over the years, there have been small modifications to various work activities that have not made it into the “boiler-plated” text. Over time, some plans have referenced other documents not here included and that reference has remained to be carried forward, requiring previous knowledge of historical work efforts and/or the need to find the earlier referenced documents for review. In some cases activities are summarized, giving a general outline of how a specific activity should be undertaken but not listing all the detailed steps. Now we no longer have a “stand alone” document that is self-contained. In addition, because the contractors and their reviewing USACE oversight team have worked so closely together for so many years, when they write and edit these documents, they “see” what they know is the proper procedure each step of the way, even if the text itself does not state exactly what the “field practice” consists of.

A perfect example of this situation is my continued questioning of how a temporary piezometer is constructed. As described in the various work plans, the constructed temporary piezometer will probably fail. However, at the December 2008 RAB meeting, I specifically asked Shaw representatives just how they constructed a temporary

piezometer. They described their process but added that they installed a plastic garbage bag over the top of the casing and spread it around the hole BEFORE they added the bentonite. It is the addition of this plastic garbage bag, which acts as a temporary seal that makes it possible to install a temporary piezometer that does not plug up with bentonite. Representatives of USACE from Nashville were certain that this “missing” step was in the text of the site-specific sampling and analysis plan. As you will see later in this educational memo, it is not. But since everyone involved with the process had been using the plastic garbage bag method, they “saw” that step in their writing and editing of the plans; even though it was not there.

So why does it matter that the plans be self-contained and accurate? In a practical sense, as long as the same team of consultants and USACE reviewers are involved in the process, it probably does not make a great deal of difference. Bugs have been worked out of the system, problems have been solved, and everyone is happy at the end of the day. There are, however, several situations where an incomplete and/or inaccurate plan can be problematic. The first situation is that the plan serves as a document of how work was actually done. Barring the creation of a set of “as built” documents that would directly document each and every change made during the investigation from the original work plan, this is the only document that exists that tells anyone at any point in time how an investigation was carried out. Given a site as complex as the PBOW and the extended period of time needed to complete the clean-up effort, there is a very real possibility that someone else, at some point in time, may need to know how some facet of the investigation was completed. If all they have is the work plan and the work plan is missing information and/or is wrong, the reviewer at a later point in time will not be able to determine just how the work was done.

There is, additionally, a more immediate possible need for an accurate and complete work plan. It is possible that a new staff member from Shaw, USACE or Ohio EPA may be involved at the site in some supervisory and/or oversight position. If all they have as guidance to perform their work is an inaccurate and/or incomplete work plan, then they will be unable to correctly perform/review the needed work efforts. Additionally, if a third party is reviewing/auditing the work efforts, that third party will have an inaccurate/incomplete document to review the work. While it is not very exciting and somewhat costly to create a specific stand-alone document for each work effort at PBOW at this point in time, without them, the next generation involved in the clean-up effort will never know for certain just what was done here.

At this point in time, work plans are developed for the PBOW by at least Shaw Environmental, by Jacobs Engineering and by McTech. I have reviewed documents from all three firms. As a general rule, the documents developed by McTech are the most detailed and accurate. They are also the easiest to follow.

Site-Specific Sampling and Analysis Plan Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Former Plum Brook Ordnance Works Sandusky, Ohio – Shaw Environmental, Inc.

General Comments

1. This document is much better written than the previously reviewed documents. The connection and linkages between the sections continues to be stronger, more references to topics that are discussed in more than one place. It is even easier to follow than the second and third documents. A number of site-specific deficiencies that I noted in the earlier documents have been corrected in this text. The second paragraph on page 1-1 in the section 1.0 Project Description is especially helpful

Specific Comments

1. 1.1 Plum Brook Ordnance Works Facility History on Page 1-2
Second line from bottom of page “In 1963, *accountability* for and custody of the entire PBOW property (6,030 acres) was transferred to NASA by the Department of the Army.” Have we absolutely determined that NASA has “accountability” of the PBOW site since 1963? If so, the lawyers will read this as NASA having the sole responsibility of clean-up of the site from their budget only. The legal usage of the term “accountability” under CERCLA and other Federal applications is different from the everyday usage of this term. If this is not the intended legal understanding of the assignment of the “responsible party” for the PBOW clean-up effort, consider revising this term to something more neutral and recalling this draft page (my previous comments to the previous reviewed plan). To this the next sentence has been added “The Judge Advocate General, Department of the Army, Washington, D.C., became the custodian of title for the property”. I’m not certain that this additional language resolves NASA of liability. I recommend that USACE get a legal opinion for this section.
2. Top paragraph page 3-5 references the construction requirements for limestone bedrock wells and overburden/shale wells as “Requirements are listed in EM 1110-1-4000 (USACE, 1998).” These requirements should be included in this document as well. They could be included in an appendix at the back of the document, but they should be included so that the reviewer does not have to go look up an additional document. See comments above RE: “What Should a Site-Specific Sampling and Analysis Plan or a Work Plan Cover”
3. Third bullet, page 3-10 Listing of what the samples were screened for. Virtually all Ohio coals and their resulting coal ash are also radioactive. USACE should be instructing their contractors to be checking all ash pits for radioactivity as well as the parameters listed. This information has been included in previous reviews. Please see the following Ohio Dept. of Natural Resources Division of Geological Survey publications for further information:

RI 103. Trace elements in Ohio coals, by Norman F. Knapp. 12 p., 2 figs., 8 tables, 1977. \$3.00.

IC 47. Analyses of Ohio coals, by George Botoman and David A. Stith. 148 p. of tables and 8 folded tables, 1978. \$8.00.

IC 50. Analyses of Ohio coals, 1977-1978, by George Botoman and David A. Stith. 51 p. of tables and 4 folded tables, 1981. \$8.00.

C 52. Analyses of Ohio coals, 1979-1980, by George Botoman and David A. Stith. 26 p. of tables and four folded tables, 1986. \$8.00.

IC 55. Analyses of Ohio coals, 1982-1984, by George Botoman and David A. Stith. 17 p. of tables and four folded tables, 1988. \$8.00.

These comments conclude my review and recommendations to the text, figures, and tables of the “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3, Former Plum Brook Ordnance Works Sandusky, Ohio” – Shaw Environmental, Inc.

Site-Specific Health and Safety Plan Site Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3 Former Plum Brook Ordnance Works Sandusky, Ohio – Shaw Environmental, Inc.

Specific Comments

This text has been reviewed for typographical errors several times and so was not reviewed this time.

Work Plan, Remedial Investigation Locomotive Building Area, Former Plum Brook Ordnance Works Sandusky, Ohio – Shaw Environmental, Inc.

Specific Comments

1. 1.3 Sitewide Hydrogeology 1st paragraph, 2nd sentence, page 1-4. The second sentence refers to an overburden unit, “composed of glacial outwash materials”. The term “glacial outwash materials” references materials deposited by flowing glacial meltwater. That is an incorrect term for these materials. Its use here creates the illusion of a coarser material than is actually present. Unless actually discussing the glacial depositional components of the site, a more general term, such as “glacial drift” would be more familiar to Ohio readers. Please replace when using this text again in other documents.
2. 3.2.2 Soil Sampling Procedures, 1st paragraph, 1st line page 3-6. Change the word “to” to the word “too”, typo.
3. 3rd paragraph this section page 3-6. Include a copy of Figure 4-5 of the SWSAP, typical piezometer construction form in this document for completeness of information.

4. 3.4.3 Piezometer Installation bottom page 3-9 and top page 3-10.
In discussing the installation and completion process for the piezometers, the following statements are made; “No filter pack material will be placed around the well screen. Because the sampling will occur reasonably quickly after the piezometers have been installed, semipermanent seals are not necessary. The top 1-2 feet of the borehole will be sealed with bentonite to prevent precipitation water or surface runoff from infiltrating the borehole”. I specifically asked Shaw representatives at the December 2008 RAB meeting how temporary piezometers were installed to prevent the bentonite from plugging the well screens and they provided additional information that resolves the missing information provided in this section in each of the plans I reviewed. Again, here is a reference to Figure 4-5 of the SWSAP that is supposed to show a “typical piezometer construction” but that figure is NOT here included in this document. If that figure had been included, perhaps the confusion caused from the missing steps in the text could have been resolved earlier. See comments in the previous three reviews for additional details.
5. 3.4.4.1 Monitoring Well Installation, pages 3-10 and 3-11.
Two figures showing typical overburden/shale wells and limestone wells installation should be included in this work plan for clarification. This description should be expanded to at least list the basic steps of drilling, core logging, and monitoring well installation so that readers who are not part of the installation team do not have to reference another document to see how the well should be installed.
6. 3.5 Land Surveying, page 3-17 middle of paragraph. “and referenced to the 1929 National Geodetic Vertical Datum. If the 1929 datum is not readily available, the existing local vertical datum will be used.” This is a placeholder paragraph suitable for any project in the United States. Given the number of monitoring wells that have been installed and surveyed at PBOW over time, Shaw should know whether the 1929 datum is readily available at the PBOW site and should rewrite this paragraph with the information specific to the PBOW site identified.

These comments conclude my review and recommendations to the text, figures, and tables of the “Work Plan, Remedial Investigation Locomotive Building Area, Former Plum Brook Ordnance Works Sandusky, Ohio” – Shaw Environmental, Inc.

This concludes my educational comments on these Draft “Site-Specific Sampling and Analysis Plan & Site-Specific Health and Safety Plan Phase 2 Remedial Investigation Waste Water Treatment Plants 1 and 3 and Ash Pits 1 and 3; and Work Plan Remedial Investigation Locomotive Building Area, Former Plum Brook Ordnance Works Sandusky” documents. If you have any questions and/or need further clarification on any point discussed in this memorandum, please feel free to contact me.