OHIO EPA DDAGW / BATTELLE MEETING

Meeting Minutes
June 29, 2007

Opening: The meeting of the Ohio EPA Division of Drinking and Ground Water (DDAGW), Battelle, and NRC was called to order at 10:30 a.m. on Friday, June 29, 2007 at the Ohio EPA by Linnea Sauko.

OEPA attendees: DDAGW Asst. Chief DDAGW Chief, *Mike Baker*; DDAGW Asst. Chief, *Tom Allen*; CDO Chief, *Craig Butler*; DDAGW- GW Manager, *Linnea Sauko*; DDAGW- DW Manager, *Scot Foltz*; DDAWG- GW Geologist, *Michael Bondoc*; OEPA Public Interest Center, *Jed Thorpe;* DDAGW-DW Admin. Asst. *Tiara Bryant*.

Battelle attendees: Environmental Protection Manager, *Gretchen Farnung*; Radiation Safety Officer, *Joe Jacobsen*.

NRC personnel present via phone conference for observation purposes: Project Manager NRC/US EPA Memorandum of Understanding Division of Waste Management, *Rafael Rodriguez*; Senior Hydrogeologist Environmental Performance and Assessment Directorate Performance Assessment Branch, *Jon Peckenpaugh*; Branch Chief Special Projects Branch Division of Waste Management, *Lydia Chang*; Chief NRC, Region III, Division of Nuclear Material Safety (DNMS) Decommissioning Branch (DB), *Patrick Louden*; Senior Health Physicist RIII, DNMS, DB, *Mike McCann*; Regional Liaison Officer NRC, Region III, Office of the Regional Administrator, *Sheri Minnick*.

Open Issues

The NRC's participation in the meeting between OEPA and Battelle was for observation purposes only. The NRC proposed setting up a meeting with OEPA in the up coming week. Mike McCann will set up meeting with OEPA CDO GW Manager, Linnea Sauko.

Within the past month it was brought to OEPA's attention by the USEPA that there are measurable levels of Strontium-90 (Sr-90) in certain ground water layers. This prompted a closer look at Battelle's annual Site Environmental Reports, which raised several questions.

Battelle Environmental Protection Manager, Gretchen Farnung managed the radio- analytical laboratory (that performed analytical analyses for site samples) and the environmental monitoring program for the decommissioning project at West Jefferson (WJ). In February 2004, this laboratory function was assumed by Department of Energy contractors who hired two former Battelle staff for the laboratory. The staff were already trained on the analytical procedures, quality control methods, and instrumentation.

Battelle provided the following site maps of the WJ site to all OEPA attendees:

1. WJ site map showing the three drinking water wells (north, south, and middle)
2. WJ site map with monitoring wells and surface water sampling locations and filter bed location
3. WJ North site map from Geology & Hydrogeology of WJ Site Report, showing ground elevations and well depths, dated 9/14/90
4. WJ site map of monitoring wells installed September-October 2006

Linnea has heard of the plans but has not seen them. Additional information was provided to Linnea for review (see list of documents at the end of meeting minutes). Letters from the hydrogeologist explain why wells are placed in set locations.

It was also noted during the meeting that none of the OEPA DDAGW staff present at the meeting had experience with radioactive materials.

Joe Jacobsen: The site is complicated by Battelle Lake (Silver Creek Reservoir) hydrogeoligical movement; it influences certain ground water movement in the "bog" area layer and the 885' layer.

Linnea Sauko: Do the three wells (6-855, 6-805, and 6-885) to the east and possibly down gradient of the bog area show Sr-90 contamination? Have they been sampled?

Joe: These three wells have been sampled and they do not show any Sr-90 contamination. The sample results were given to Linnea along with letters that summarizes all the wells on Map 3. Information also includes water flow in part for decommissioning buildings to present. NRC already has a copy of the documents provided (see listing of documents provided at the end of the meeting minutes).

Linnea: Has questions about analytical samples. Wasn't sure what the sample results meant. The Minimum Detectable Activities (MDAs) are higher than the drinking water MCLs. [MDA means radioactivity may be present at or below that value but is not an actual activity.]

Mike Baker: Questions MDAs higher than the MCL for Strontium 90, and Uranium (from 2005).

Gretchen Farnung: Historically, MDA values are reported when no radioactive material were detected in the annual Site Environmental Reports. Table 19 in 2005 annual report shows two types of analysis for uranium. Because Battelle historically reported uranium Gamma Spec data in the annual Site Environmental Report, it continued reporting uranium Gamma Spec data even after new methods were developed for specific uranium isotopic separations [advanced technology]. Uranium isotopic data are the results used by regulators. Gamma Spec results are used mainly as a screening tool to determine if additional isotopic separations are required.

Gross Alpha and Beta in water samples were filtered and analyzed for dissolved and suspended activity. [This is a National Pollutant Discharge Elimination System reporting requirement for surface water.] Weekly water samples were composited monthly and filtered for gross alpha/beta analysis. The gamma spec analysis was performed on unfiltered water samples.

Linnea: What size filter is/was being used?

Gretchen: Micron sized filter. Samples are collected, acidified, and sit for a set period of time (per procedural requirements) before they were filtered for gross alpha/beta analysis.

Linnea: How was the list of radioactive isotopes of concern developed?

Joe: Based on radioactive materials present and scope of work conducted, a scaling ratio was developed for the radionuclides and reviewed by the NRC as part of the decommissioning process.

Linnea: Were background ground water samples collected?

Joe: Background ground water samples were not obtained off-site of the West Jefferson facility.

Linnea: How was the filter bed remediated?

Joe: The WIDE filter bed area was composed of sand. The area was dug out and the waste was managed/disposed of as radioactive waste.

Soil samples were collected according to NRC regulation guidelines and were within volumetric release criteria based on 100mR/yr and actually met NUREG 1757 criteria for soils [25 mrem standard]. When the sand filter bed was being removed, any shallow existing wells that became part of the dig out area were removed.

Linnea: Was ground water sampled around filter bed to see if it was clean?

Joe: Two wells are located north of filter bed towards Darby Creek as well as several other wells in the filter bed area which were removed during remediation. These wells have been historically sampled and data given to Linnea.

Linnea: Residual Sr, U, and Pu in bog? Is it possible to do additional remediation to remove contamination from the bog?

Joe: Contaminated soil layers were removed in the "bog" area. Final status surveys were conducted, documented, and verified by NRC and ORISE. There is no need for additional remediation.

Linnea: Ground water has Sr-90, U, and Pu-239 in it. Darby Estates has two wells and their 5 year protection zone lies just south of this contamination. Also, there are more than 90 wells within one mile of the site serving approximately 5,000 people. What prevents migration? Will Plutonium with a half life of more than 24,000 years pose a risk?

Joe: No, the "bog" area is isolated, (a report was given to OEPA with details). Plutonium is below regulatory concern. Strontium 90 will decay; groundwater is isolated in the "bog" area and is not suitable for use as a drinking water source due to the very low yield volumes of water (see additional information provided to OEPA Document 3 listed at the end of the meeting minutes). Groundwater will not move measurably down due to the type of clay layer.

Linnea: How deep was the hot cell?

Joe: The JN-1 facility had a basement in the older side and a fuel pool in the north end. During remediation work, the basement area was removed and surrounding soils verified clean down to approximately 18-20 feet. The fuel pool had the top 14 feet removed and the rest of the pool depth to approximately 50 feet was verified clean and left in place and filled with flowable grout.

Linnea: Exposure for wading in the Darby was not mentioned in the risk assessment. Is it safe for kids? There is a Girl Scout Camp across the Darby which has a creeking event which takes place in the Darby. The creek is like a magnet for all the kids that live near it. (Linnea points to Darby Estates across the Darby with over 1,500 homes.)

Joe: Potential exposure to residents of Darby Estates and the Girl Scout Camp across the Big Darby Creek was never a concern; it was never brought up as an issue during the decommissioning process. Due to the conservative nature of our remediation efforts, radioactive contaminated discharge pipes and soil from the filter bed, and contaminated soil from the "bog" area have been excavated and shipped offsite. Environmental samples were collected/analyzed for sediments, soil, water, and air [for nearly 20 years]. [Radioanalytical data generated from the environmental monitoring program has not shown any level of concern tied to applicable requirements.]

Linnea: MDAs have been going up over time, why?

Gretchen: Lab on site used was in JN2, this was a shielded (brick and concrete walls) facility reducing natural background radiation. The location changed to a mobile lab (trailer) in late fall 2004 and at times backlogged environmental samples were contracted out to other labs for analyses. MDA values are lab specific (based on natural background radiation, instrument counting efficiencies, and sample count time) making it difficult to maintain consistent MDA values when samples were contracted out for analyses within the last few years of the remediation project. Some higher MDAs were reported as a result of these changes. Reminder: MDA values are not actual activity, they represent detection limits.

Mike Baker: Methods used, how are they compared to methods used for drinking water analysis?

Gretchen: The only difference was the required filtering of water for gross alpha/beta analysis. The gamma spec analyses were performed before samples were filtered for gross alpha/beta analysis.

Linnea: The dam contains sands and gravels. Is it possible that there is an area near the bog where the contamination could come through?

Joe: Unsure. Tom Naymik (Hydrogeologist) could help answer this question. [However, historical sampling of the lake (Battelle Lake) and discharges from the lake do not indicate radioactive contamination concerns per Battelle's Environmental Monitoring Program.]

Scot Foltz: Made statement that - Public drinking water well has higher MDAs than that of drinking water MCLs for I-129. New standard came out in the fall of 2006 – I-129 MCL 1pCi/L.

Linnea: If the acid rain goes into the bog area will it make it easier for contaminants to migrate?

Joe: I don't think so. [Historical sampling of the lake (Battelle Lake) and discharges from the lake do not indicate radioactive contamination concerns per Battelle's Environmental Monitoring Program. Hence, we conclude that the low level of contamination in the "bog" area doesn't pose a threat to the lake, environment, or human health.]

Scot: Analysis of drinking water well levels for uranium were alarming.

Gretchen: The ratio of the isotopes (U-238, U-235, U-234) listed for the samples indicates natural uranium. Don't review the Gamma spec data, only use uranium isotopic results. The uranium isotopic results reported are not alarming because they are within regulatory standards.

Linnea: The 2005 annual report, page 25 shows wells 206, 506 and C-16 had contaminants. Table 18 of this report states these wells are not contaminated. Which is correct?

Gretchen: Table 18 data has been reviewed/approved by multiple staff and is the correct information.

Craig Butler: What is the bog area? Is it a wetland? It still has remaining contamination, how and why?

Joe: I am from Upper Michigan, we have bogs all over. At our site, the "bog" is just a low lying area as a result of a dam construction. The use of the term "bog" may confuse the nature of the area. Contaminated soil layers were removed in the "bog" area. Final status surveys were conducted, documented, and verified by NRC and ORISE.

Craig: Was there a sediment assessment?

Gretchen: Yes, the environmental sediment sampling locations are shown on the Map 2.

Linnea: Upstream, downstream data on Table 7 in the 2005 annual report shows downstream was much higher, indicating some release from Battelle.

Gretchen: All sample results are reported as below MDAs (sample activity is below detection limits).

Mike Baker: Thank you, Gretchen and Joe. There will be a site visit on Tuesday with Linnea Sauko, Susan Hampton, and Michael Bondoc.

Samples will be collected (on July 3, 2007) from the three drinking water wells at Battelle's WJ site and analyzed for gross alpha and beta. We will do the initial screening and if concerns arise we will go back and do isotopic screenings.

Linnea will check the north area and the bog, when at site.

Mike: What will cause concern?

Scot: We will look at the results and compare them to safe levels and regulations. When we collect samples they will not be filtered and ODH will analyze them.

Gretchen: John Tholen will collect samples for Battelle at the same time.

Scot: It would be helpful if you do analyze them.

Gretchen: We figure they will be a back up. [The back up samples were analyzed by ODH. OEPA and Battelle's sample results were either below detection limits or below regulatory concern for drinking water. NRC is proceeding with the public meeting scheduled in September.]

Mike: While Linnea is on the site visit she will note any questions to keep us posted.

Joe: Battelle's goal is to have the site available for unrestricted future use.

Mike McCann: Will call Linnea on Monday with the name of the parties on the phone conference with NRC.

Scot: Water samples will take up to two weeks and will be provided to our Hydrogeologist.

Gretchen: Cameras may be permitted at Battelle but no camera phones.

The following is a list of additional documents provided by Battelle to the OEPA during the meeting for their review:

1. WJ North Facility Monitoring Cluster Location Plan, 8/3/06
2. Letter – Summary Results of Installation and Sampling of Additional Groundwater Monitoring Wells at the Battelle WJ North Site, 11/15/06
3. Letter – Response to Request for More Information on Battelle WJ North Site Groundwater as Directed by NRC Phone Conference Record Dated 3/21/06, letter dated 5/23/06
4. Report DLZ Spring 2003 Well Installation & Geotechnical Testing, 9/11/03
5. WJ North Site Dose Assessment, July 2006, Rev. 0
6. Well Installation and Geotechnical Testing WJ North Site, 9/24/02
7. GW Monitoring Well Installations at Battelle WJ North Site West Jefferson, Ohio, 10/30/06, Report No. 138455-1006-292

[A copy of the Geology and Hydrogeology of West Jefferson North Site Report dated 09/14/1990 was mailed to Linnea after the site visit on July 6, 2007.]

Adjournment:

Meeting was adjourned at 12:15 p.m. by Mike Baker, OEPA DDAGW Chief.

Minutes submitted by: Tiara D. Bryant, Admin. Asst. I CDO DDAGW

Approved by: [**Type name here**]