



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

Approved April 9, 2014, Meeting Minutes

The Oak Ridge Site Specific Advisory Board (ORSSAB) held its monthly meeting on Wednesday, April 9, 2014, at the DOE Information Center, 1 Science.gov Way, Oak Ridge, Tenn., beginning at 6 p.m. A video of the meeting was made and may be viewed by contacting the ORSSAB support offices at (865) 241-4583 or 241-4584. The presentation portion of the video is available on the board's YouTube site at www.youtube.com/user/ORSSAB/videos.

Members Present

Jimmy Bell

Lisa Hagy, Secretary

David Hemelright, Chair

Bruce Hicks, Vice Chair

Howard Holmes

Jennifer Kasten

Jan Lyons

Fay Martin

Scott McKinney

Donald Mei

Coralie Staley

Scott Stout

Members Absent

Noel Berry

Alfreda Cook

Carmen DeLong¹

Bob Hatcher¹

Greg Paulus¹

Belinda Price

Mary Smalling

Wanda Smith

¹Second consecutive absence

Liaisons, Deputy Designated Federal Officer, and Federal Coordinator Present

Dave Adler, Department of Energy-Oak Ridge Office (DOE-ORO), Alternate Deputy Designated Federal Officer (DDFO)

Susan Cange (DOE-ORO) Deputy Manager for Environment Management (EM) and ORSSAB Deputy Designated Federal Officer

Jeff Crane, Environmental Protection Agency (EPA) (via telephone)

John Owsley, Liaison, Tennessee Department of Environment and Conservation (TDEC)

Melyssa Noe, ORSSAB Federal Coordinator, DOE-ORO

Others Present

Chloe Ashley, TDEC

Spencer Gross, ORSSAB Support Office

Gracie Hall, Student Representative

Pete Osborne, ORSSAB Support Office

Julia Riley, Student Representative
Ralph Turner

Fourteen members of the public were present.

Liaison Comments

Ms. Cange – Ms. Cange said work is nearing completion on the K-25 Building demolition project at East Tennessee Technology Park (ETTP). Work should be finished this summer, several months ahead of schedule. She said preparations are not complete to begin demolition of the K-27 Building, so the decision has been made to begin demolition of the K-31 Building, which is empty and ready for demolition. The change in sequencing allows heavy equipment and cleared workers to remain on site and continue working without interruption.

Ms. Cange said recent incidents at the Waste Isolation Pilot Plant (WIPP) in New Mexico have delayed shipments of transuranic waste from Oak Ridge to WIPP. Oak Ridge has sent both DOE and contractor personnel on detail to WIPP to help with resuming activities. Ms. Cange said other plans are being made to store transuranic waste in Oak Ridge until shipments can be resumed.

Ms. Cange said DOE Oak Ridge EM has received guidance from DOE Headquarters on developing the FY 2016 budget request. She said she has had meetings with some community representatives who have offered to help hold a public workshop on the FY 2016 budget request. She asked them to contact ORSSAB leadership to help plan the workshop.

Mr. Adler – Mr. Adler said there are no outstanding recommendations from the board that DOE needs to address. He noted that three recommendations were on the agenda for this meeting, but lacking a quorum to vote on those recommendations they were not considered. He said one of the proposed recommendations is on the FY 2016 DOE Oak Ridge EM budget request. That recommendation, he said, is somewhat time critical. He said if there is a quorum at the May meeting, DOE can pass the recommendation along with the budget request to DOE Headquarters. He said if it appears there will be no quorum in May some other method of considering the recommendation will be arranged.

The other two recommendations are timely, but not urgent, he said.

Mr. Crane – Mr. Crane said EPA and TDEC were working with DOE on the budget process of updating milestones and setting priorities.

Mr. Owsley – Mr. Owsley said the TDEC Bureau of Environment is being reorganized. Planning for the reorganization has been underway for two years, but implementation began recently. He said duties for a number of people have been re-assigned in order to reduce the number of supervisors and provide a career path for technical staff. Selections have been made for re-assigning staff for manager positions. Remaining staff will be reassigned as consultants, scientists, or environmental engineers. Mr. Hemelright asked if Mr. Owsley will continue to represent TDEC at ORSSAB meetings. Mr. Owsley said he will remain as director of the DOE Oversight Office in Oak Ridge, but changes within the management of the Federal Facility Agreement grant and the DOE Oversight grant could result in a different TDEC liaison at the ORSSAB meetings. The Federal Facility Agreement and DOE Oversight grants are provided by DOE to fund the TDEC offices in Oak Ridge.

Public Comment

None.

Presentation

The evening's presentation was on the "Strategic Plan for Mercury Remediation at Y-12" by Laura Wilkerson, the DOE Portfolio Federal Project Director for Y-12 Projects. The main points of her presentation are in Attachment 1.

She began by reviewing the history of mercury contamination at Y-12 National Security Complex. Mercury contamination at Y-12 was the result of operations that took place primarily in three buildings on the west end of Y-12, Alpha 4, Alpha 5, and Beta 4, and to a lesser extent as Alpha 2, which was where pilot processes were developed that were conducted later in the other three buildings (Attachment 1, page 3). Ms. Wilkerson said the area of the three primary buildings is known as the West End Mercury Area (WEMA). She noted the mercury recovery furnace no longer exists, but the pad on which it sat and the soil underneath has mercury contamination.

Ms. Wilkerson explained that from the 1950s to 1963 large amounts of mercury were used in the three buildings to separate lithium isotopes for weapons production (Attachment 1, page 4). About 20 million pounds of mercury were used, but about 2 million pounds were unaccounted for and of that about 700,000 pounds are estimated to have escaped in the air, surface water, soils, and sediments.

Ms. Wilkerson said the primary issue to address at Y-12 is mercury in surface water. The map on page 5 of Attachment 1 shows the location of the three main buildings in WEMA and the storm system pipes from that area to Outfall (OF) 200. She said mercury moves through the storm sewer system to OF 200, where the headwaters of Upper East Fork Poplar Creek emerge. The creek and mercury flow through Y-12 to Station 17, where the creek exits the plant, becoming East Fork Poplar Creek, which eventually empties in the Clinch River to the west.

She said the objectives for cleanup are to reduce mercury in water and stabilize and eliminate mercury in the soils. She said DOE has been working with EPA and TDEC (the regulators) to update plans to clean up mercury at Y-12. A draft mercury strategy plan was submitted to the regulators in March 2013 followed by a workshop where discussions were held about mercury challenges and what can be done. The consensus of the participants was that the problem was complex and will require a number of solutions that are complementary with an adaptive management plan. The strategic plan has both near-term and long-term actions and can be modified as needed.

The graph on page 7 of Attachment 1 illustrates the issue of mercury in East Fork Poplar Creek (EFPC) and mercury in fish tissue. The blue line indicates the amount of mercury measured in the creek from about 1990 to 2010 and shows a significant decline of mercury concentration in the water. The orange line indicates mercury concentrations in fish tissue during the same period. Even though the blue line indicates considerable reduction in mercury, concentrations are still above acceptable ambient water quality limits, the dotted blue line. The graph indicates that mercury in fish tissue is well above the FDA fish consumption advisory levels, the dotted red line. Ms. Wilkerson said the challenge is how to reduce the mercury in fish tissue to acceptable FDA levels and continue to drive down mercury concentrations in water.

The graph on page 8 of Attachment 1 illustrates the regulatory standards for mercury in water where it leaves Y-12 at Station 17. The levels for the Federal Drinking Water Standards and the State Ambient Water Quality Criteria for aquatic life are being met. But the goals for the interim record of decision and water quality criteria for recreational use are not being met.

Ms. Wilkerson said in order to reduce mercury leaving the plant, the water must be treated. A conceptual design for a mercury treatment facility has been developed. Water emerging at OF 200

would be treated at that point with a mercury treatment plant. The proposed plant would treat 3,000 gallons per minute and could be expanded as needed (Attachment 1, page 9). Ms. Wilkerson said the plant would be a line item capital project to be approved and funded by Congress. The expected operational date for the plant is FY 2020.

Ms. Wilkerson showed a timeline schedule for the mercury treatment facility (Attachment 1, page 10). A focused feasibility study and proposed plan is due to the regulators by the end of FY 2014. After regulator review and concurrence, the plan will be provided to the public for review.

Ms. Wilkerson said a number of activities are underway to control mercury in Upper EFPC and to learn more about mercury accumulation in fish (Attachment 1, page 11). One of the activities is to eliminate flow augmentation into UEFPC. In 1996, 4½ million gallons of water a day were added to UEFPC to ensure surface water quality. It was determined, however, that the augmentation re-suspended mercury in the sediment and increased mercury flux in the creek. A permit modification has been issued to stop the augmentation, which is expected to reduce mercury flux in the creek.

Several studies are underway to learn more about mercury in fish populations, mercury sources in Lower EFPC, floodplain mercury bioaccumulation in spiders, and methylation studies. The methylation studies are funded by the Office of Science. Methyl mercury is most hazardous to humans.

A number of additional near-term studies are proposed as well (Attachment 1, page 12). One of those studies is eco-enhancement that perhaps will slow the uptake of mercury in fish. Other projects could be adding chemicals to water to reduce mercury methylation, stabilizing the banks of the creek, and removal of sediments in UEFPC.

Ms. Wilkerson said the long-term goals for mercury is source remediation, which includes demolishing of the mercury buildings at Y-12 and remediate the soil underneath those buildings (Attachment 1, page 14). The four buildings are currently within the protected area of Y-12 so discussions are underway to try to change the security footprint so they are not within the protected area. Leaving the buildings within the protected footprint would increase remediation costs and make work more difficult.

The mercury cleanup schedule is noted on page 15 of Attachment 1. Ms. Wilkerson said it is an optimistic schedule because it is based on an annual appropriation of \$420 million, but recent appropriations have not been at that level, except for FY 2014.

She noted that if any of the proposed field and laboratory studies are implemented, the mercury building demolition and remedial activities would be pushed further into the future.

After Ms. Wilkerson's presentation a number of questions were asked. Following are abridged questions and answers.

Mr. McKinney – By eliminating augmentation is that to reduce the mercury flux or separate the mercury and have less water to treat? Ms. Wilkerson – The augmentation is being eliminated in an effort to reduce mercury flux in water. Mr. McKinney - Is Lake Reality a natural or manmade lake? Ms. Wilkerson – It is a catch basin..

Ms. Riley – Could you elaborate on eco-enhancement? Ms. Wilkerson – It's modifying the environment by perhaps changing trees, plants, rocks, or adding different features to the ecosystem that may slow down the methylation process. It could also change the fish species in the creek that may not accumulate mercury as much. Mr. Turner – The production of methyl mercury is a very

subtle process and it's relatively easy to manipulate the process. We don't understand all the possibilities, but that is some of the work being done currently at Oak Ridge National Lab. For example, flow augmentation changed the composition of the fish in the creek so a higher level of predators that eat other fish became dominant. By stopping augmentation there is an expectation that the composition of fish will change again possibly where the fish concentrations will be lower. There are a number of subtle things like that we hope to capitalize on.

Mr. Bell – (referencing page 7 of Attachment 1) Do you have an explanation for mercury concentration in water coming down, but the mercury in fish going up? And where is allowable drinking water on that scale? Ms. Wilkerson – The drinking water is 2000 parts per trillion, so it is at the top of the scale. To answer your first question, we don't know. We don't understand fully how the methylation process happens and how these fish bioaccumulate the mercury. That's one of the challenges we have and we need to continue work with Oak Ridge National Lab to understand it. They have discovered a gene in bacteria that may contribute to the methylation process. So can we use that in a way that we can affect the methylation process? Mr. Bell – Does the methylation process occur in animals? Mr. Turner – Bacteria are responsible for the methylation process. They are a particular kind of bacteria that are in the environment. The form of mercury that we see in fish predominantly is methyl mercury. But the mercury in the water is primarily inorganic.

Mr. Bell – How do you show this figure and justify your project when your drinking standards are acceptable? Ms. Wilkerson – We have ongoing releases from the Y-12 plant that are not in compliance with state regulations. Those regulations are to allow for fish consumption. There are postings along the creek that help protect against fish consumption, but the desire is not to rely on those forever. The ultimate goal is to complete the remediation and the cleanup so those postings can be removed.

Mr. Bell – Can you explain the chart on page 8 in regard to fish? Ms. Wilkerson – This chart says you can drink the water. The red bar is what is needed for fish and aquatic life to thrive. The 51 parts per trillion (ppt) for recreational use is to allow for fish in the creek to be consumed. Mr. Owsley – It's basically the science of methylation and bioaccumulation. If you are ingesting elemental mercury you can at the drinking water level. Fish can live in the water at 770 ppt. But through bioaccumulation fish that are raised in water that contains more than 51 ppt build up a concentration in their tissue that makes it harmful for human consumption. It is the expectation of both the federal government and the state to assure that fish, which are a natural resource of the public, are available for consumption. Mr. Turner – The mercury concentrations in water is total mercury. So the amount of methyl mercury in water is very low compared to the total mercury in water. When you drink the water you're not consuming very much methyl mercury, which is the form toxic to humans. But when you eat fish tissue with methyl mercury it's very concentrated. So you get a lot more methyl mercury from fish tissue than from drinking the water.

Ms. Hall – If the mercury level does get to 51 ppt how long will it take for the existing fish to have low enough mercury levels that they could be eaten? Ms. Wilkerson – We don't know.

Committee Reports

Budget & Process – Mr. Hemelright said the committee will now meet bi-monthly. The next meeting will be May 28 at 5:30 p.m.

He said the committee endorses the draft recommendation on the FY 2016 DOE Oak Ridge EM budget request, but Greg Paulus, chair of the committee, recommended that if DOE Oak Ridge has to make any cuts in its 2016 budget that ORSSAB be made aware of the decision-making process.

EM & Stewardship – Ms. Staley said the March meeting was combined with the Budget & Process Committee to discuss and approve the three draft recommendations that were on the agenda for consideration at this meeting.

Public Outreach – Mr. McKinney reported that work is being done to update the ORSSAB exhibit at the American Museum of Science and Energy.

The board will have a booth at the Oak Ridge Earth Day festival on April 26. Mr. McKinney said no decision has been made regarding whether to have a booth at the Secret City Festival later in the year.

Mr. McKinney reported that 24 public libraries in nine area counties have agreed to display the board's *Advocate* newsletter.

He said he is working with the University of Tennessee marketing department about how to enhance the board's public outreach activities.

Executive – Mr. Hemelright said the May presentation to the board is an update on the activities at the Transuranic Waste Processing Center. The center relies on WIPP to accept waste processed by the center. He said a question that must be addressed is how and where the center will store waste until WIPP is operational again.

The committee determined that groundwater will be the issue that ORSSAB will highlight at the spring EM SSAB Chairs' meeting. He said there will be an opportunity to ask questions of the DOE EM Senior Advisor at the meeting. Possible questions may be 'what are the criteria in deciding how cleanup funds are distributed,' and 'when budget cuts are made why are they not made proportionately across the DOE complex?'

Mr. Hemelright said most responses to a recent board member survey about when to hold the annual meeting were in favor of a Saturday morning. The responses to have a meal as part of the meeting were five respondents said 'yes' and seven said 'no or no preference.' Eight members did not respond to the survey. Mr. Hemelright said there will be no meal as part of the meeting, but perhaps a group meal or social event can be organized after the meeting if some members wish to do that.

He said the Budget & Process Committee will begin planning the details of the annual meeting.

The April meeting of the Executive Committee has been cancelled. Mr. Hemelright noted that the starting time for the committee is now 6 p.m. It is scheduled to meet again on May 28.

Announcements and Other Board Business

ORSSAB will have its next meeting on Wednesday, May 14, 2014, at the DOE Information Center.

The minutes of the March 12, 2014, meeting were approved.

Ms. Hall and Ms. Riley were recognized for their service as student representatives to the board.

Lacking a quorum to consider recommendations, the draft recommendations on Additional Off-site Groundwater Migration Studies, Additional Waste Disposal Capacity on the Oak Ridge Reservation, and the FY 2016 DOE Oak Ridge Environmental Management Budget Request were tabled.

The motion to consider Dr. Holmes' two consecutive absences was removed from the agenda as Dr. Holmes was present.

Mr. Hagy explained the reasons for Mr. Hatcher's absences (professional commitments) and that motion was removed from the agenda.

Federal Coordinator Report

Ms. Noe reported that membership appointment packages for new members and current reappointment packages for members for seeking their second and or third terms have been submitted to DOE Headquarters for approval. She said it is a six-step process, and the submission of packages is step 4. She said that is usually the longest part of the process.

She has approved travel for members going to the EM SSAB Chairs' meeting. She said if those members have not received their documentation from the travel coordinator to let her know.

Letters have been sent Oak Ridge High School and Hardin Valley Academy requesting new student representatives, but new students have not yet been selected by the schools.

Additions to the Agenda

Ms. Staley said the April edition of the board's *Advocate* newsletter has good background information that would be useful in considering the proposed recommendation on additional waste disposal capacity for the Oak Ridge Reservation. She encouraged members to read those articles.

Motions

4/9/14.1

Mr. McKinney moved to approve the minutes of the March 12, 2014, meeting. Ms. Staley seconded and the motion passed **unanimously**.

The meeting adjourned at 7:25 p.m.

Action items

Closed

1. Staff will poll members about the structure and logistics of the annual meeting. **Complete.** Survey was distributed to membership on March 17, 2014.

Attachments (1) to these minutes are available on request from the ORSSAB support office.

I certify that these minutes are an accurate account of the April 9, 2014, meeting of the Oak Ridge Site Specific Advisory Board.

Dave Hemelright

Lisa Hagy, Secretary

Dave Hemelright, Chair
Oak Ridge Site Specific Advisory Board
DH/rsg

May 15, 2014