Restoration Advisory Board (RAB) Meeting Summary
DuPont Chambers Works FUSRAP Site
Hampton Inn, Pennsville, New Jersey
April 10th, 2008

To: Interested Parties
From: George Bock, Project Manager, U.S. Army Corps of Engineers, Philadelphia District
Re: Meeting Summary, April 10, 2008 RAB Meeting

RAB Members Present	**Affiliation**
George Bock, Government Co-Chair	U.S. Army Corps of Engineers
Al Boettler	DuPont
Glen Donelson, Community Co-Chair	Pennsville School District
Paul Morris	Borough of Penns Grove
Gary Ricketts	DuPont Chambers Works
James Warner, Community Co-Chair	Salem County Representative, Dept. of Health
Mel Beals	Pennsville Township Representative
RAB Members Absent	
Janet Agnew	Community
Frank Faranca	New Jersey Dept. of Environmental Protection
Francis Faunt	Community
Mack Lake	Carney Point Township
Charles Morris	Community
Sin-Kie Tjho	U.S. EPA, Region II
John Prigger	Community
Facilitator Present	
Ann Johnson	Cabrera Services
Guests Present	
Pat McCaffery	Community, Pennsville Police Dept.
Carl Wentzell	Community, Salem County
Dave Polk	Community, Salem County
Tom Ei	DuPont
Cynthia McManus	DuPont Chambers Works
Nicki Fatherly	U.S. Army Corps of Engineers - Baltimore
Valrie Hames	Cabrera Services
Kim Nelson	Cabrera Services
Joe Weismann	Cabrera Services
Carl Young	Cabrera Services

Welcome (George Bock, Project Manager)
George welcomed everyone and reviewed the evening's agenda: status of project activities; discussion of natural background radiation (what it is, typical sources, and natural occurrence in southern New Jersey); and summary of the Sitewide RI report findings. Attendees then introduced themselves and their affiliations.

George then reviewed the status of the Sitewide RI report. Cabrera Services submitted the draft Sitewide Report to the Corps for review in March 2008. The technical team is scheduled to complete its review in early June and then Cabrera will address comments and revise the report over the summer. A meeting of the Corps technical team is planned for late April to review findings and facilitate the team's coordination and review of the multi-volume Sitewide RI report.

While the Corps reviews the RI and baseline risk assessment (BRA) reports the engineering phase or Feasibility Study is moving forward. Possible remedial technologies are being identified and evaluated for the residual radiological soil and groundwater contamination found at the site. George expects more coordination with NJDEP, EPA, and the community over the next 12 months as the RI and BRA reports are submitted and reviewed by the regulatory agencies.

The team includes technical resources from several Corps Districts across the country. The multi-disciplinary team ensures the sound technical results and consistency among Corps projects across the country. George illustrated a tool the project team utilizes during the review of large, complex projects similar to the RI and BRA. The DuPont Chambers Works FUSRAP Project Team Website allows reviewers to work collaboratively, by reviewing each other comments and evaluating data together online. George also reminded attendees about the new and improved public website for the project. George reviewed the project schedule indicating the RI and BRA will be available for public review in mid 2009. He anticipates a public meeting /open house to in spring/summer 2009 to present the results of the RI/BRA.

To follow-up on a community member's inquiry regarding human health risks to former MED workers at Chambers Works, George provided information on the Department of Energy (DOE) Occupational Illness Compensation Program and encouraged anyone with questions to contact: 1-866-888-3322. Additional information may also be found at:

http://www.whitehouse.gov/omb/expectmore/detail/10009004.2007.html and
http://www.energy.gov/index.htm

Naturally Occurring Background Radiation (Joe Weismann, Health Physicist, Cabrera Services)
Joe Weismann then discussed background radiation by first describing what it is, typical sources, and how it impacts the FUSRAP investigations. It is simply energy that we are exposed to by living on Earth. Earth has been radioactive since the beginning with over 60 radioactive elements present in nature. Radiation is the emission of energy and can have many forms. Joe explained that ionizing radiation (located at the high frequency end of the electromagnetic spectrum) comes from both natural and man-made sources. Ionizing radiation is radiation with enough energy so that during an interaction with an atom, it can remove tightly bound electrons resulting in a charged or ionized atom.

On average, people in the United States receive 360 millirem/year. A millirem is a measure of radiation dose. Natural background radiation includes cosmic (from sun and outer space), terrestrial (Earth crust), radon (soil containing radium), and internal (within our bodies) sources. Manmade radiation sources include: medical radiation, consumer projects, industrial uses, testing of nuclear weapons, and nuclear power. Common consumer products that are sources of radioactivity include: smoke detectors; watches and clocks, ceramics and pottery; fertilizers; lantern mantles, food, types of glass; and antique curatives.

Then Joe discussed the levels of background radiation in southern New Jersey. Radium and Radon are very common in southern New Jersey because of the regional and local geology. Concentrations of Radium 226 and 228 and Radon 222 in soils and groundwater are unusually high in the area of Chambers Works. The U.S. Geological Survery (USGS) has studied these occurrences in groundwater and have found Radium results to exceed the EPA standards in 33% of the samples.

The radioactive elements of concern at DuPont Chambers Works include the Uranium isotopes, Thorium 230, and Radium 226. U-234, U-235, U-238, Th-230, and Ra-226 are all found in nature. Corps looked at background levels of these radioactive elements within Chambers Works in an area unaffected by MED activities. It is interesting to note that the onsite background levels are actually lower than levels found in offsite areas due to the large quantities of fill material used to develop the Chambers Works manufacturing areas over time. Joe concluded by providing a number of links and sources of information on background radiation and health/environmental effects.

- USGS NJ Groundwater Fact Sheet: *http://**nj**.**usgs**.gov/publications/FS/fs-062-98.pdf*
- Health Physics Society – Ask the Experts: *http://hps.org/publicinformation/ate/cat10.html*
- EPA – Naturally-Occurring Radiation: Overview: *http://www.epa.gov/radiation/natural-radiation-overview.html*
- IAEA – Radiation, People, and the Environment: *http://www.iaea.org/Publications/Booklets/RadPeopleEnv/index.html*

Sitewide RI Report Summary (Carl Young, Hydrogeologist, Cabrera Services)
Carl Young then summarized the results of the Sitewide RI report. Although the results have been presented to the RAB throughout the investigation, Carl showed new figures and data presentations prepared for the Sitewide RI report. He showed maps illustrating the soil and groundwater contamination in each of the Areas of Concern (AOCs). In the uranium production areas (AOCs 1 and 2) uranium contamination in soil is limited to 20 feet in depth but is typically within the first 8 feet (below ground surface). The vertical extent of contamination in AOC 2 is deeper than the shallower contamination in AOC 1. This is because during the MED operation period uranium slurry was pumped, via a pipe, from Building 845 (AOC 1) to 708 (AOC 2). The pipe leaked in the area of building 708 in AOC 2 and the uranium entered the ground as a liquid and was able to travel to deeper depths. Uranium in groundwater is limited to the upper 20 feet as well.

Operable Unit 2 consists of former drainage ditches flowing from the production areas of OU 1. There is limited uranium impact in soils in the central drainage ditch and no impact to AOC 3 groundwater. No uranium contamination was found in soil and groundwater in AOC 5, Building J-26 Area.

Carl then described the results at OU 3, former disposal areas. Uranium was found in soil between 0 and 8 feet below ground surface and the groundwater is impacted only where uranium is present in soil. Uranium impacted groundwater is within the boundaries of the OUs and has not moved in 60 years since MED activities.

Community Questions
It was pointed out that DuPont wells show PFOA and residents in Pennsville are very concerned with this contaminant in the local wells. George was asked if the Corps sampled for PFOA during the FUSRAP investigations. Carl Young indicated that analyses for other organic constituents were performed but no sampling and analysis for PFOA.

One community member asked if George has the necessary funding for FY09. George indicated that funding has been approved.

George was then asked about the Corps' plan to coordinate with local officials over the next year. George indicated that an open house/public meeting is planned for mid-2009 and that he also plans to coordinate meetings with local officials to present RI and BRA results.

The group discussed next year's meeting schedule and set Thursday, October 23, 2008 at 7:00 pm at the Hampton Inn as the next meeting.

Meeting Adjourned at 8:05 pm