

**DuPont Chambers Works FUSRAP Site
FUSRAP Community Board Meeting
Hampton Inn, Pennsville, New Jersey
October 14, 2010**

To: Interested Parties
From: Michael Hart, Project Manager, U.S. Army Corps of Engineers, Philadelphia District
Re: Meeting Summary, October 14, 2010, FUSRAP Community Board Meeting

Community Board Members Present	Affiliation
Scott Evans, Government Co-Chair	U.S. Army Corps of Engineers, Project Manager
Michael Hart, Government Co-Chair	U.S. Army Corps of Engineers, Project Manager
Glen Donelson, Community Co-Chair	Pennsville School District
Community Board Members Absent	
Janet Agnew	Community
Al Boettler	DuPont
Frank Faranca	New Jersey Dept. of Environmental Protection
Francis Faunt	Community
Mack Lake	Carney Point Township
Charles Morris	Community
Paul Morris	Borough of Penns Grove
Sin-Kie Tjho	U.S. EPA, Region II
James Warner, Community Co-Chair	Salem County Representative, Dept. of Health
Scott Northey	DuPont Chambers Works
Mel Beals	Pennsville Township Representative
John Prigger	Community
Facilitator Present	
Ann Johnson	Cabrera Services
Guests Present	
Brian Boettler	DuPont Chambers Works
Ed Lutz	DuPont Chambers Works
Ed McKenzie	Carneys Point resident
Betty Nuzzi	Pennsville resident
Tony Nuzzi	Pennsville resident
Nicki Fatherly	U.S. Army Corps of Engineers - Baltimore
Kim Nelson	Cabrera Services.
Mahmud Rahman	Cabrera Services
Claude Wiblin	Cabrera Services
Carl Young	Cabrera Services

Welcome (Michael Hart, Project Manager)

The meeting started at 7:15 p.m. Michael Hart, USACE Project Manager, introduced himself and welcomed everyone. Mike indicated that he and Scott Evans, USACE Project Manager, have assumed George Bock's responsibilities on the project. They are civil/environmental engineers with the U.S. Army Corps of Engineer (USACE) Philadelphia District. Mike then explained a recent request from USACE Headquarters to revise the name of the Restoration Advisory Board (RAB) to more clearly distinguish the group's role and mission. The RAB's mission has always been to specifically support USACE's Formerly Utilized Sites Remedial Action Program (FUSRAP) activities at DuPont Chambers Works. The group's new proposed name is the DuPont FUSRAP Community Board. Meetings and

activities will remain the same with no changes in priorities or mission for the group. It will be the same group, just a new name.

Mike then reviewed the agenda and provided an overview of the Manhattan Engineer District (MED) activities conducted at Chambers Works in support of the early atomic energy program. He showed a timeline of activities and provided background information on FUSRAP. Additional details are summarized below:

MED Program – Background: During World War II, MED was created by the Army to carry out much of the nation's early atomic energy work, referred to as the "Manhattan Project". In the 1940s, 1950s, and 1960s work was done at a number of sites across the country in support of this program. After the war the Atomic Energy Commission (AEC) was formed in 1946 to continue MED efforts and seek ways to use nuclear energy for peaceful purposes. AEC conducted radiological surveys and cleanup activities at sites that were used during the MED program. These sites were evaluated for residual radiological contamination and were cleaned up during the late 1940s and early 1950s based on the science and cleanup standards of the time. In March 1974, AEC established FUSRAP to address residual radiological contamination at some of these sites. The Department of Energy (DOE) was created in 1977 and assumed responsibility of FUSRAP. In late 1997, Congress transferred the program to the Army Corps of Engineers (USACE) for implementation of all cleanup activities.

MED History at Chambers Works: Operations involving uranium processing began at Chambers Works in 1942. The federal government contracted with DuPont to convert uranium oxide to uranium tetrafluoride and small quantities of uranium metal. A number of processes were used to convert the uranium oxide (brown oxide, recovery, green salt, metal, and hexafluoride processes) but no enrichment or depletion of uranium took place at the DuPont Chamber Works site. In 1948 and 1949 the Atomic Energy Commission (AEC) surveyed the site and decontaminated building surfaces based on the standards of the time. All buildings and areas were released back to DuPont for the company's use.

FUSRAP Background: During the 1970s and 1980s DOE went back and started preliminary investigations under FUSRAP to further evaluate and clean up areas on the DuPont property. However, a nationwide lawsuit at the time limited that work. When transferred to the USACE in 1997 all cleanup investigations were planned and conducted according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidelines (Superfund law). The steps in the CERCLA cleanup process were reviewed showing that after the FS finalized the project will move towards remedial decisions. The FS was submitted to regulatory agencies and DuPont for review in June 2010. Although USACE is the lead federal agency for site cleanup, NJDEP and EPA Region 2 review and comment on plans and remedial action documents.

Site History: Mike showed the FUSRAP site map, described the areas being investigated by the USACE for residual radiological contamination from MED operations, and summarized activities completed to date. He pointed out the six areas of concern (AOCs) that were grouped into the following three OUs to facilitate the USACE's phased investigation:

- OU 1: AOC 1 (Building 845 Area) and AOC 2 (F-Corral) Production Areas
- OU 2: AOC 3 (Central Drainage Ditch) and AOC 5 (Building J-26 Area) Drainage Ditches
- OU 3: AOC 4 (Historical Lagoon A) and AOC 6 (East Area) Disposal Areas

Mike summarized the Remedial Investigation results at each of the OUs (for soil, groundwater, sediment and surface water) at the Site. Baseline Risk Assessment results identified the two areas that pose an unacceptable risk to human health and the environment if no remedial action is conducted. These areas are OU 1 (AOCs 1 and 2) and AOC 6. Mike indicated that these areas have been evaluated for cleanup actions in the Feasibility Study (FS). USACE submitted the Draft FS to the regulatory agencies in June 2010 and have received preliminary comments. USACE is in the process of responding to comments and coordinating with NJDEP. Mike then reviewed the project schedule for FY11 and FY12. He expects that

the cleanup will occur in 2013, although actual start dates are always subject to FUSRAP funding availability and program priorities.

Cleanup Alternatives (Carl Young, Hydrogeologist, Cabrera Services)

Carl Young summarized the steps in the CERCLA cleanup process, showing where the FS and Proposed occur in relation to cleanup decisions. The public comment period is a critical step that occurs prior to any cleanup decisions. A minimum of 30 days, the comment period provides the public with the opportunity to be involved in the decisions at the site. The public is requested to comment on USACE's proposed actions for cleanup of the FUSRAP areas located on the Chambers Works property. The public is asked to review all alternatives evaluated in the FS and the USACE's preferred alternative as described in the Proposed Plan.

Carl then briefly described the remedial alternatives for soil and groundwater contamination that were evaluated in the draft FS (June 2010). Remedial alternatives for soil include: No Action (S1); Land Use Controls and Site Maintenance (S2); Capping (S3); Excavation Followed by Off-site Disposal (S4); Excavation Followed by Treatment and Off-site Disposal (S5). Groundwater alternatives include: No Action (GW1); Land Use Controls and Site Maintenance (GW2); Ex-Situ Treatment (GW3); and Monitored Natural Attenuation (GW4).

Carl explained that before making any cleanup decisions CERCLA requires that remedial alternatives be evaluated against nine specific criteria. These criteria are grouped as follows:

- **Threshold Criteria (must be met)** – Does the alternative protect human health and the environment? Does the alternative comply with federal and state regulations? If the answer to either question is “No” then the alternative is not evaluated any further. Only alternatives that meet the Threshold Criteria are further evaluated in the FS.
- **Balancing Criteria (which will work best)** – Is the alternative effective for long-term solution? Does the alternative reduce toxicity, mobility, or the volume of contamination? Is the alternative effective for short-term solution? Can the alternative be implemented at the site? Is the alternative cost effective? Based on the evaluation of these criteria the lead agency decides which remedial alternatives are most effective and decides on the best remedial action for the site.
- **Modifying Criteria (acceptable to stakeholders)** – Will regulatory agencies support the alternative? Will the community accept the alternative? These criteria are evaluated after the public has the opportunity to review and comment on the proposed plan and USACE's preferred alternative.

After comparison of alternatives in relation to the Threshold and Balancing Criteria, the USACE selects a preferred remedial alternative and presents it to the community for review in a document referred to as the proposed plan (PP). After the public comment period, USACE will address comments. The selected remedial action is documented in Record of Decision (ROD) and cleanup begins.

Remedial alternatives were evaluated for two FUSRAP areas determined to pose unacceptable risk if no action was taken. These areas are OU 1 and AOC 6. Based on current and future industrial land use considerations, USACE considers the construction worker to be the most critically-exposed receptor at the site. Remedial action objectives and goals were developed in the draft FS. The proposed remediation goal recommended for the Site is 65 pCi/g total uranium for soil. This means that contaminated soil within OU 1 and AOC 6 with concentrations exceeding this level will be cleaned up.

Carl then showed the assumed excavation areas for OU 1 and AOC 6 if excavation is selected. In OU 1 approximately 21,000 cubic yards of soil would be excavated. Contamination in AOC 6 covers a very small area and only 1,200 cubic yards of material would need to be removed in order to protect human health and the environment. Potential cleanup costs are estimated at approximately \$28 million for soil

cleanup actions and \$4 million for groundwater monitoring and sampling. Cleanup costs were estimated in 2008 dollars and are contingent on FUSRAP funding availability.

If the decision is to excavate the soil, USACE is considering offsite disposal at permitted facility. Facilities are strictly regulated and designed for the safe disposal of radioactive and chemical substances. The waste from Chambers Works will meet the Waste Acceptance Criteria for Resource Conservation and Recovery Act (RCRA)-permitted facilities. Carl explained that these facilities are typically located out west in arid climates where there is limited rainfall. He showed aerial views and operational photos of typical disposal facilities. Similar wastes are transported across the country on a regular basis, typically by railcar, by registered waste haulers in accordance with Department of Transportation requirements. Carl then asked if there were any questions.

Comment 1: A resident of Careys Point raised a concern about the condition of the railroad tracks that run through Careys Point. The integrity of the track and an underlying discharge pipe has been compromised to the point that he has observed the trains sway when passing over this section of track. The resident has attempted to get various entities to evaluate this and wonders who is responsible and inspects the rails/tracks prior to an offsite shipment of radioactive soil/waste.

The tracks/rail lines are inspected yearly – if a contractor expects to use a rail spur that goes close to where they are going to excavate, it must be inspected by the railroad prior to its use. There will be an evaluation of the tracks prior to any waste being taken offsite of the DuPont property. The contractor must demonstrate that the load on those rails does not exceed the specified limits for the tracks. A transportation plan, developed during the Remedial Design phase, will specify the details for offsite shipment of materials.

Two residents of Pennsville noted that this was their first RAB meeting and asked what FUSRAP stands for. FUSRAP is the acronym for the Formerly Utilized Sites Remedial Action Program, a DOE program to address residual contamination at sites used in support of the early atomic energy program. They also noted their appreciation to the USACE for cleaning up the residual radioactive contamination at the Site.

Tools for Assuring Effective Cleanups (Claude Wiblin, CHP, Cabrera Services)

Carl then introduced, Claude Wiblin, a certified Health Physicist, to discuss the tools that are used by the scientific team at the end of a cleanup to verify when cleanup is complete and had met the required cleanup standards. Claude discussed the different pathways scenarios, derived concentration guideline levels (DCGLs) and how we apply DCGLs to determine how much radioactive material needs to be removed from a site.

As mentioned, the cleanup is following the State of New Jersey's radiation regulations, specifically the 15 millirem per year (mrem/yr) dose limit. He explained that when cleanup is complete the radiation exposure may not exceed 15 mrem/yr at the FUSRAP areas. To provide a framework for discussion Claude listed various common, everyday sources of radiation in the U.S. and the average exposure for a typical person over a year's time. Sources of radiation include both natural background radiation and man-made sources.

On average, a person in the U.S. receives approximately 360 mrem/year from both natural and manmade sources of radiation. A millirem is a measure of radiation dose. Natural background radiation includes cosmic (from sun and outer space), terrestrial (Earth's crust), radon (soil containing radium), and internal sources (within our bodies). Manmade radiation sources include medical radiation, consumer products, industrial uses, testing of nuclear weapons, and nuclear power. Common consumer products that are sources of radioactivity include smoke detectors, watches/clocks, ceramics/pottery, fertilizers, lantern mantles, certain foods, and types of glass. More than 80% of a person's annual dose is from natural background sources and radon; less than 20% of the annual dose is from man-made sources.

For the DuPont site the proposed remediation goal for soil (DCGL) is 65 pCi/g total uranium. The DCGL (65 pCi/g) is derived from the regulatory guidance and site specific modeling which translates the acceptable dose limit (15 mrem/yr) to a measurable quantity of radiation (pCi/g). At DuPont the project team modeled the acceptable residual radioactivity for the most critically-exposed receptor at the site, the construction worker. Groundwater will be cleaned up so that uranium levels do not exceed 30 micrograms/liter (ug/L).

Claude explained that several governmental agencies are responsible for radioactive material safety and cleanup. Agreed-upon guidelines and procedures have been developed by these agencies to ensure consistent survey and laboratory methods are used throughout the federal government. The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) is the handbook followed during the cleanup of radioactive materials. A final status survey (FSS) is a survey or analysis, conducted at the end of a cleanup, to demonstrate that all radioactive components satisfy the remediation standards (i.e., residual radioactivity remaining is less than the cleanup goal of 65 pCi/g).

During the FSS the areas of contamination are classified into different categories (Class 1, Class 2, or Class 3 areas) depending on the level of contamination. Class 1 areas are contaminated and require cleanup, while Class 3 has little contamination, if any, and typically does not require a cleanup action. Contaminant distribution within the areas is evaluated for whether it is uniform across the site, or localized in elevated areas or hotspots. In the FSS, a number of measurements and samples are taken to verify that cleanup is complete. The number of measurements, locations of measurements, measurement method, and percentage of area needing to be scanned are all dependent upon how large, or small, the areas of contamination is on site. The integrated survey design ensures that larger, more uniform areas will have direct measurements or samples taken, while smaller more localized areas of elevated activity will have scan surveys performed to verify that cleanup is complete.

Class 1 and Class 2 areas must be cleaned up and are limited in size by MARSSIM. The size of the survey unit is dependent on whether it is a building structure or open land area. For land areas the survey areas cannot be larger than 2,000 square meters and 10,000 square meters for Class 1 and Class 2, respectively. As cleanup proceeds areas are evaluated by taking systematic samples or direct measurements or by scan surveys. Measurements collected are compared to the reference area measurement to determine if the survey unit meets the release criteria or if more cleanup is necessary in the unit. If a survey unit fails, the cleanup activities must resume in that area until it passes the release criteria. The regulatory agency will also conduct a verification survey to confirm the adequacy of cleanup.

Community Involvement (Ann Johnson, Cabrera Services)

Ann Johnson then discussed the proposed schedule for public involvement activities over the next year. The FS and proposed plan are expected to be completed in 2011. Public meetings and coordination with stakeholders will be an important objective for this year. The community will have an opportunity to comment on the FS and proposed plan during summer/fall 2011 as long as there is no major change in document schedules. A public meeting would be held early in the public comment period so that the USACE can present its plan and answer any questions from the community. Presently the meeting is tentatively scheduled for summer 2011. In order to plan for this meeting the community board suggested having a planning meeting in March.

One attendee suggested advertising FUSRAP community board meetings and other FUSRAP program information in the free newspaper that many Carneys Point residents rely on for news (New Paper Free).

The group scheduled its next meeting for Thursday, March 24, 2011 at 7:00 p.m. Updates to this schedule will be posted on the public website and postcard and email announcements will be sent to members and regular attendees.

Meeting Adjourned at 8:30 pm.