

The Bulletin DuPont Chambers Works

FUSRAP Site

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of Engineers
Philadelphia District

Notes From My Desk: A Year End Review

George Bock, FUSRAP Project Manager

2004 was a busy and very productive year in our environmental cleanup program at the Dupont Chambers Works FUSRAP Site. The Project Team and I recently completed a long-range technical and financial plan for the environmental work. This effort secures the necessary resources for the project over the next three to five years so we may accomplish our environmental goals at the six identified sites (see page 2). For our investi-



OU1 groundwater monitoring wells

gation purposes these six sites have been grouped into three main areas, referred to as Operable Units, or OUs. During the summer and fall we were busy with additional field investigations at all three Operable Units. We revisited OU 1 and OU 2 and installed permanent groundwater monitoring wells to get a more detailed look at groundwater quality and flow underneath areas with soil contamination. At OU 3 we used an effective exploratory technique called cone penetrometer testing (CPT) to help us better understand site conditions as we plan the next phase of field investigations (see page 3). The Project Team is now focused

on data analysis and report preparation as we start 2005. Looking ahead, we are planning one last major sampling effort for the project. Field investigations will take place at OU 3 and any other areas where data gaps are identified. We then will compile all OU results into one Remedial Investigation (RI) report for the entire site and will start evaluating site risks and cleanup options. With this increased activity and as we move closer to cleanup decisions, I encourage all interested community members to get involved and work with us. There are many ways to get involved. Join us for one of our Restoration Advisory Board (RAB) meetings (see page 5), review and comment on technical documents, and visit the Information Repository and project website to get more information (<http://hq.environmental.usace.army.mil/programs/fusrap/fusrap.html>). Many activities are planned for 2005 including additional opportunities for you to meet with Corps, NJDEP, EPA, and DuPont representatives working on the project with me. In addition to our regular RAB meetings, we will host an Environmental Open House in Fall 2005. Look for all meeting announcements in future newsletters and in *Today's Sunbeam*. I look forward to working with you as we start another busy year.

What is "FUSRAP"?

The Department of Energy (DOE) created the Formerly Utilized Sites Remedial Action Program, commonly referred to as "FUSRAP". This program addresses potential residual radiological contamination at sites used by the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC) during the early atomic energy program (1940s through the 1960s). FUSRAP was transferred from the DOE to the U.S. Army Corps of Engineers in 1998. There are currently 23 active FUSRAP sites across the country being evaluated and cleaned up by the Corps. For more information, visit the FUSRAP program website at: <http://hq.environmental.usace.army.mil/programs/fusrap/fusrap.html>



Site Map

Operable Unit 1

F Corral: 150' x 175' paved parking lot

Former Building 845 Area: 4-story, 50,000 square foot building, demolished in 1999

Operable Unit 2

Building J-26: built on the former Building J-16 site

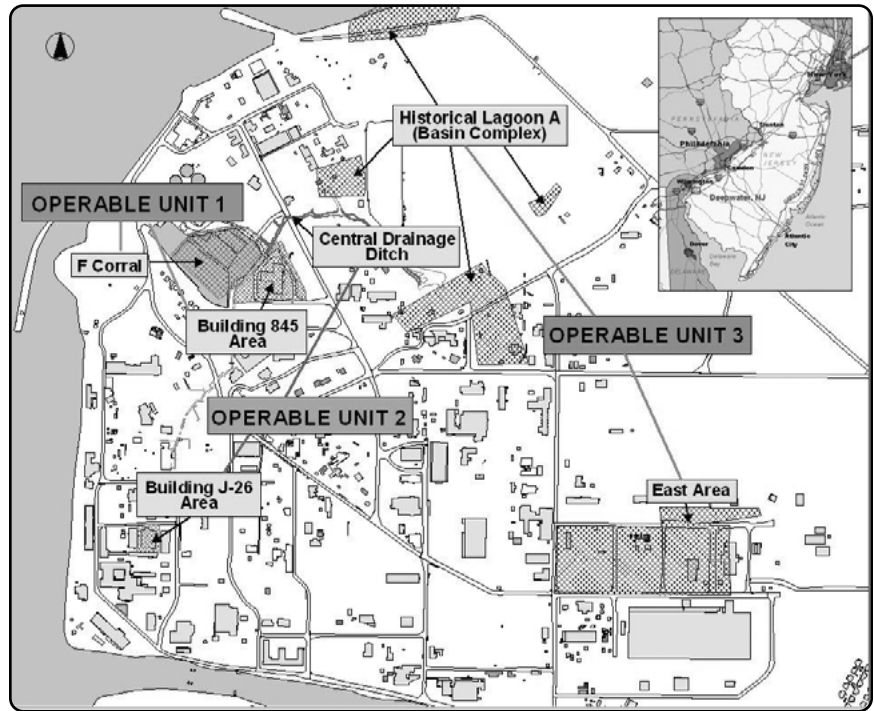
Central Drainage Ditch: drainage area located between the F Corral and Building 845

Operable Unit 3

East Area: site of former MED buildings and disposal area.

Historical Lagoon A (Basin Complex)

Complex): former wastewater lagoons



Groundwater Investigations Continue

In Summer 2004 the Corps conducted additional groundwater investigations at OU 1 and OU 2. Earlier work identified low level uranium contamination in soil and potentially in the groundwater. To take a

more detailed look at the potential impact to groundwater, field crews installed 18 groundwater monitoring wells in the vicinity of Building 845 (OU 1), the F Corral (OU 1), and part of the Central Drainage Ditch (OU 2) and collected groundwater samples for analysis. The investigation was designed to evaluate:

Most of the world's fresh water is stored underground, as groundwater. Groundwater fills openings or pore spaces between sand grains, soil particles, and rock fractures. Underground rivers, pools, or lakes really do not exist. Generally, the underground water-bearing environment is divided into two zones, an unsaturated zone and a saturated one. The first zone, referred to as the unsaturated zone, is typically close to the surface and the open spaces between soil and rock particles are filled with both air and water. Below this zone is where water completely fills the open spaces. The top of this saturated zone is called the water table.

Soil and rock units that are saturated with water have the ability to store and transmit water. These units are referred to as aquifers. When rainwater seeps into the soils and reaches the water table, it enters the saturated zone and continues to move downward and laterally under pressure gradients to areas where groundwater is discharged or makes its way to the surface. As water moves underground, soil provides a valuable function for water supplies because it acts like a filter and removes impurities.

What is Groundwater and How Does It Move?



Monitoring well installation

Several factors control the groundwater's movement, including the composition of soil, how well the open spaces are connected, the soil's pH, and hydraulic gradient (movement from higher to lower elevation). Also, other external factors affect the occurrence and movement of groundwater, such as the amount of precipitation, pumping of wells, and tidal influences.

Monitoring wells, soil and groundwater samples, various aquifer tests, and other methods provide valuable information about underground conditions. By evaluating data and using computer models, scientists are able to determine how and where contaminants may move in the groundwater.



- the impact, if any, to groundwater in the uranium oxide area and elevator shaft area at the former Building 845;
- the nature and extent of uranium contamination in groundwater in Building 708 area (F Corral);
- physical conditions and uranium mobility in these areas;
- flow conditions in the two uppermost aquifers; and
- potential pathways by which contaminated groundwater may affect surface waters in the OU 1 drainage ditches.

Now the team is compiling and reviewing the available data to answer the following key questions:

- Is the uranium detected in groundwater mobile?
- Is the uranium dissolved in the groundwater or is it attached to mobile clay particles?



- How far could the uranium travel? and
- If the uranium is mobile, where could it travel to?

A draft data summary report from these field investigations has been prepared and is available for review. Results from the recent groundwater investigations will be discussed at future RAB meetings.

Field Investigations Start at OU 3

In Fall 2004 the Corps completed the first phase of fieldwork at OU 3. OU 3 includes the East Area and Historical Lagoon A (known as the Basin Complex). These areas have been used for many different industri-



CPT truck

al and waste management purposes over the last several decades. It is believed that demolition debris and low level radiological waste may have been disposed of here and possibly commingled with other chemical and medical wastes. Because of this, planning the site investigation at OU 3 posed many technical challenges.

Using a step-by-step, phased approach, the Corps first conducted an extensive review of historical documents including aerial photographs and worked with DuPont employees to define the boundaries of possible radiological contamination resulting from past MED activities. A Historical Site Assessment report was completed in 2004, helping the Technical Team plan and focus OU 3 field investigations. Next, in Fall 2004, the Corps completed the first phase of the RI field investigation. This effort was designed to characterize radiological contamination present and to recommend further sampling locations for the next phase

of fieldwork (planned for later in 2005).

Field methods, similar to those used during the OU 1 and OU 2 investigations, included:

- **Geophysical surveys** using ground penetrating radar and electromagnetic detectors to locate underground metallic, man-made structures, and geologic features by mapping changes in the subsurface magnetic field;
- **Gamma walkover surveys** to detect near-surface radiation sources;
- **Cone Penetrometer Testing** with down hole spectral gamma logging to investigate subsurface soils, identify underground

Cone Penetrometer Testing

Underground exploration made easy and cost effective

CPT is a field technique used for expediting site characterization. It uses testing probes that are hydraulically driven into the ground to take direct measurements of environmental conditions. Because CPT takes direct, real time measurements it is a fast and cost-effective way to gather site data as compared to the time and cost of conventional drilling and sampling. In addition, health and safety issues are minimized since potentially contaminated material does not easily come in contact with site workers or the public.



CPT sampling (view under truck)

obstructions, and collect soil and vapor samples for analysis.

To investigate subsurface soils the Corps used CPT at approximately 135 locations around Lagoon A and in the East Area. These investigations were done in two steps. First, CPT probes were pushed into the ground to collect soil texture data and to identify any obstructions. An innovative tool, a spectral gamma probe, was then lowered into the hole to take readings of radiological

contamination in the soils. This probe is unlike other gamma logging probes because it can distinguish uranium from other underground gamma sources. Next, soil samples were taken at locations with elevated readings from the down-hole spectral gamma logging.



Sampling (inside truck)

A draft data summary report from these field investigations has been prepared and results will be discussed at the Spring 2005 RAB meeting.

RI Results Are In at OU1 and OU2

The RI field program at OU 1, Building 845 and the F Corral, was completed in Fall 2002 and the RI report was issued in early 2004. NJDEP reviewed and commented on the draft RI report. Results indicate that there is uranium-contaminated soil that may need to be cleaned up.

The Corps completed the RI field program at the Former Building J-16 and the Central Drainage Ditch (OU 2) in September 2003. The purpose of the RI was to define the nature and extent of radiological

contamination in these areas, conduct a baseline risk assessment, and to identify appropriate remedial or cleanup actions. Results indicate no significant radiological contamination at OU 2. A total of 164 samples were collected and analyzed in the Central Drainage Ditch. Ten samples had uranium activity above the screening value of 14 picoCuries per gram (pCi/g) with 60 pCi/g being the highest level detected. At Building J-26 a total of 64 samples were collected and all showed uranium levels below the screening value. At this time the Corps expects no further action at OU 2.

How to Contact Us for More Information

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Information Repository

Salem Community College Library
Donaghay Hall
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Project Website

<http://hq.environmental.usace.army.mil/programs/fusrap/fusrap.html>



Community Involvement Makes a Difference
Restoration Advisory Board

Our Restoration Advisory Board, or RAB, meets 3-4 times a year to discuss and plan the environmental program at the DuPont Chambers Works FUSRAP Site. RAB meetings are open to the public and are a great way to meet the individuals from the Corps, NJDEP, EPA, DuPont, and your community that are working together to manage the FUSRAP environmental program. It's also the best way to hear the latest status of the investigations. The RAB typically meets from 7:00 pm – 9:00 pm at the Hampton Inn in Pennsville, NJ. Meeting announcements are sent to those on our RAB mailing list and are placed in *Today's Sunbeam* on the Sunday before the meeting as well as on the day before the meeting.

Be sure to send in the enclosed postcard if you would like to continue to receive this newsletter and to let us know what you think about the program.

RAB Members

Agency and Dupont Representatives:

- George Bock, USACE, Government Co-Chair
- Al Boettler, DuPont
- Frank Faranca, NJDEP
- Andrew Park, EPA, Region II
- Stephen Rogers, DuPont Chambers Works

Community RAB Members:

- Janet Agnew, Community
- Mel Beals, Pennsville Township Rep.
- Robert Bender, Community
- John Clemente, Jr., Community
- H. Glen Donelson, Community Co-Chair, Pennsville Board of Education
- Francis Faunt, Community
- Armando Fernandez, Community
- Mack Lake, Mayor, Carneys Point
- Charles Morris, Community
- Paul Morris, Mayor, Penns Grove
- John Prigger, Community
- James Warner, Salem County Rep., Alternate Community Co-Chair

Community Involvement Plan Update

This year the Corps is planning to update its Community Involvement Plan for the DuPont Chambers Works FUSRAP Site. The current plan was prepared in 1999 when the Corps first started this project. Through a series of community interviews with DuPont representatives and former employees, local government representatives, and various citizens, civic, and business groups, the Corps gathered valuable information about the surrounding communities, their concerns, and the best ways to get information out to interested parties.

We need you again! At this point in the FUSRAP cleanup process, the Corps would like to reassess community concerns, information needs, communica-

tion methods, and revise the current community involvement plan. To accomplish this, the Corps, working closely with the RAB, will develop a list of community representatives to contact and interview about the program. Telephone and some in-person interviews will be conducted over the next several months.

The Corps invites you to share your ideas as we update the community involvement plan. Please let us know your interest by:

- returning the enclosed postcard, or
- contacting George Bock, Corps Project Manager, via email at george.o.bock@usace.army.mil



A Note of Thanks to All RAB Members

I am committed to involving the public throughout the environmental program at Dupont Chambers Works FUSRAP Site. On behalf of the Corps of Engineers and the entire Project Team I wish to thank all RAB members for their dedication and enthusiasm in carrying out their responsibilities since 2000. Glen Donelson and James Warner, the Community Co-Chairs, have been instrumental in guiding the RAB and making sure the community's voice is heard. Now, as we resume our regular meetings I look forward to hearing your ideas, and working with each of you to move the project towards cleanup decisions. Your efforts truly make a difference.



November, 2004 RAB meeting

-George Bock, Corps Project Manager, RAB Co-Chair

Mailing List Update

We are currently updating our mailing list.

To continue to receive future newsletters, please return the enclosed postcard.



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Philadelphia District

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U.S. Army Corps of Engineers, Philadelphia District
DuPont Chambers Works FUSRAP Site

- Yes, I would like to be on the mailing list to receive future newsletters
- Yes, I am interested in helping the Corps update its community involvement plan.
I may be contacted at the phone number/email listed below.

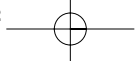
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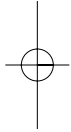
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