



**SRS Citizens Advisory Board**

**Facilities Disposition and Site Remediation  
Committee Meeting**

**Aiken Municipal Conference Center, Aiken, SC  
January 10, 2006**

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Facilities Disposition and Site Remediation Committee (FD&SR) met on Tuesday, January 10, 2006, 5:00 PM, at the Aiken Municipal Conference Center, Aiken, SC. The purpose of this meeting was to review and discuss the SRS Dynamic Underground Stripping Project; SRS Soil and Groundwater FY05 Accomplishments and FY06 Plans, and public comments. Attendance was as follows:

**CAB Members**

- Leon Chavous
- Perry Holcomb
- Wendell Lyon
- Mary Drye
- Manuel Bettencourt
- Joe Ortaldo
- Jimmy Mackey

**Stakeholders**

- \* Rick McLeod
- Russ Messick
- Lee Poe
- Clara Chance
- Cynthia Gilliard
- Bill Weiss

**DOE/Contractors**

- Nick Delaplane, DOE
- de'Lisa Bratcher, DOE
- Mary Bennington, DOE
- Jim Moore, WSRC
- Paul Sauerborn, WSRC
- Thomas Kmetz, BSRI
- Chris Bergren, BSRI
- Michael Graham, BSRI
- Bruce Schappell, BSRI
- Janet McClearn, BSRI
- Larry Simmons, BSRI
- Wade Whitaker, DOE

**Regulators**

- Chuck Gorman, SCDHEC
- Dawn Taylor, EPA
- Bob Adams, SCDHEC

*- FD&SR committee members*

*\* CAB technical advisor*

**Welcome and Introduction:**

Perry Holcomb, Chair, welcomed those in attendance.

**Dynamic Underground Stripping (DUS) Project:** Chris Bergren stated the purpose of this presentation is to give a brief overview of the A/M Area remediation, a description of DUS, application of DUS at Western Sector of M-Area and a summary. The remediation history of A/M Area shows that Volatile Organic Compound (VOC) discharges into the soil totaled 3.5 million pounds, and over 4 billion gallons of groundwater has been treated to remove VOC's since 1983. Treatment technologies include pump and treat, soil vapor extraction, and recirculation wells. The first DUS deployment removed over 70,000 pounds at the solvent storage tank area.

Mr. Bergren stated that DUS was originally used by the petroleum industry, used to remediate free phase Dense Non Aqueous Phase Liquid (DNAPL) voc's above and below the saturated

zone, noting that DUS does not require precise VOC location. The process injects steam into the subsurface with probes monitoring heating progress and greatly accelerates groundwater cleanup. The goal of DUS is to remove and or destroy DNAPL sources in both the vadose zone and groundwater in the vicinity of the closed M-Area Settling Basin, and its design is built upon the first deployment and significantly scaled up in size.

Mr. Bergren stated that the Western Sector Project will treat 10 million cubic foot area containing 1 million pounds of VOC's, it employs an innovative design with 63 injection, 33 extraaction wells (angled and vertical), 1 horizontal well, and 1,400 thermal monitoring points with steam injection up to 70,000 pounds/hour; 5,000 standard cubic feet per minute vapor extraction. Mr. Bergren said that controls on the project are achieved by underground imaging, Electrical Resistance Tomography (ERT). It will eliminate 300,000 pounds of contaminants in the saturated zone and 700,000 pounds in the vadose zone.

The Milestones for this project are as follows:

- Final design completed in May 2002
- Drilling started in July 2003
- Presentation to the CAB in November 2003
- Construction complete in March 2005
- Operations begun in August 2005
- Complete steam injection by September 2008

Mr. Bergen stated that the status of the facility operations show that the subsurface is heating up smoothly with no major problems. The operation is removing approximately 5,000 pounds of VOC's per week and that some pure phase DNAPL has been recovered and over 95,000 pounds of solvents removed since August 2005.

The following questions were asked of Mr. Bergren:

Q. Mr. Mackey asked; will there be any additional deployments of DUS at SRS?

A. There is no immediate intention to deploy DUS at SRS.

Q. Mary Drye asked if the VOC's had reached into Jackson, S.C.?

A. No, the plume is migrating in that direction.

Q. Rick McLeod asked why so many monitoring points?

A. There is redundancy built into the system, as information is gathered on a daily basis.

Q. Mr. Mackey asked if the microorganisms would survive and revive after the DUS process ceases.

A. Based on the previous deployment at SRS, the microorganisms revived themselves in the treated areas.

Q. Manuel Bettencourt asked how you will know when you are done with the project.

A. When the process reaches a point of diminishing return, the project will be complete.

**Soil and Groundwater FY05 Accomplishments and FY06 Plans:** Wade Whitaker stated that the objectives of this presentation is to review the area completion approach to environmental cleanup; communicate Soils and Groundwater (SGP) Projects FY05 Accomplishments and FY06 Plans; and review new technologies being deployed and evaluated to support soil and groundwater remediation. Mr. Whitaker stated that Safety is the top priority and demonstrated with SGP working over 7 million hours and 8 years without a lost time injury.

Mr. Whitaker stated that the area completion approach is a systematic approach to completing cleanup work integrating D&D and SGP scope. The historical process did not focus on any single area, it evaluated each waste unit individually with much paperwork and higher costs and did not include or address any D&D facilities. However, today's process addresses large groupings of waste units and facilities in a geographical area, integrates D&D and SGP cleanup, where area end states can be determined and allows for economies of scale in sampling, remediation, and documentation.

Mr. Whitaker pointed out the following accomplishments in FY05:

- Decontamination and Decommissioning (D&D) and SGP field work integration for T Area Completion
- Construction and startup of Dynamic Underground Stripping (DUS) Facilities
- General Separations Area Consolidation Unit (GSACU) construction
- F&H Barrier Wall construction and Base Injection system
- P Reactor Seepage Basin (PRSB) and L Area Hot Shop (LAHS) Closure
- R Reactor Seepage Basin (RRSB) closure
- Soils and Bioremediation at the Chemicals, Metals, and Pesticides (CMP) Pits

Note that all the above was made possible by the regulator's active involvement; reviewing 184 documents and participating in 58 Scoping and Comment Resolution meetings.

Mr. Whitaker cited some future technologies, which Bruce Schappell will address.

In summary, for FY05:

- Safety First
- Build on strong success realized through FY05
- Continue strong SGP and D&D integration being demonstrated in P Area Operable Unit completion planning
- Address issues early and openly to continue cleanup momentum and meet three Parties' and Public needs

Mr. Schappell stated that SRS is conducting evaluations on Dehalococcoides, which are bacteria found at the site and Twin Lakes. Samples of the bacteria were studied in FY05, which demonstrated the bacterial activity can tolerate mixtures of chloroethenes with complete degradation. The plan for FY06 is to develop and implement an assay for rapid determination for the presence of SRS Dehalococcoides, and perform bioaugmentation studies to evaluate performance of SRS Dehalococcoides.

Mr. Schappell introduced another technology to use soil fracturing to enhance SVE. The scope would demonstrate a process for introducing hydraulic fractures in low permeable soils; evaluate effect of the hydraulic fractures on the performance of a conventional well, and to evaluate the performance of a conventional well with isolated fractures. In FY05 a field demonstration was conducted with placement of three hydraulic fractures and baseline testing was conducted to measure well performance. It appears that SVE enhanced by soil fracturing is valuable for accelerating solvent extraction; and fractures can increase flow rate and VOC mass removal by at least one order of magnitude. In FY06 evaluations of injection methods in fractures, as well as

the effectiveness of injected edible oil within hydraulic fractures were reviewed. Then modeling will be performed to determine percolation ranges of various types of oils and evaluate methods for determining the location and effectiveness coverage in injected oils.

Mr. Schappell addressed another future technology as metal immobilization through bacterial melanin production. The scope is to determine capacity of microbially produced melanin for in situ metal reduction, and evaluate geochemical impacts on microbial produced melanin. In FY05 it was determined that the SRS soils contain microbes capable of melanin production and field demonstrations were conducted. The application of tyrosine greatly increased melanin production and the amended soils demonstrate increased sequestering of metals. The plan for FY06 is to continue the work under natural and accelerated bioremediation research grant.

Mr. Schappell identified groundwater pH control with macrocapsules as another future technology. In FY05 a demonstration was performed on a small scale within a well at D Area. The results showed the macrocapsules were more effective in raising the pH than limestone, no effect was noticed on precipitation of metals and determined a larger quantity and size of macrocapsules are needed for sustained pH control. There is no work required in FY06, as the work is complete.

**Public Comment:** Lee Poe asked that a presentation be given on the T-Area complex relative to a schedule for its final closure. In addition, he requested an update on P-Area to allow people time to provide input on end states, and suggested a lengthy risk analysis. Mr. Holcomb asked that Ms. Belencan provide a briefing on D&D in Aiken for the local public that attends the FD&SR Committee Meetings. In addition, he would like a presentation on intruder barriers and an FFA update and specifics on Appendix K.

Michael Graham thanked Mr. Holcomb for his actions during his tenure on the CAB and the leadership he demonstrated as Chairman of the FD&SR Committee.

**Adjourn:**

Mr. Holcomb adjourned the meeting at 7:04 P.M.