



Restoration Advisory Board (RAB) Meeting

Former Naval Station Roosevelt Roads
Ceiba, Puerto Rico

Meeting #15
October 28, 2009

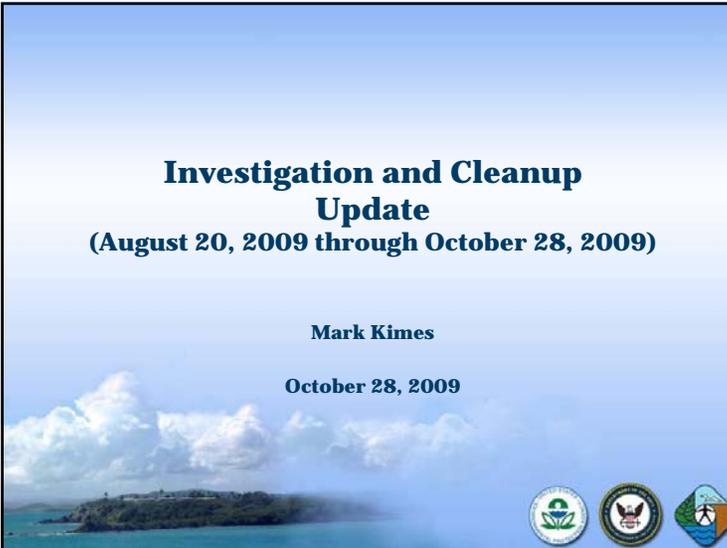
Tonight's Agenda

Welcome and Introductions	Mark Davidson, Navy Co-Chair
Investigation and Cleanup Update	Mark Kimes, Baker Environmental
• Field Work (Investigations)	
• Reports	
Remediation Planning	Mark Davidson
Break (7:00 – 7:15 pm)	
EQB's role in the clean up process	Wilmarie Rivera
Other public comments and questions	Community Members
Planning Next Meeting and Closing	Susana Struve, Facilitator



Investigation and Cleanup Update (August 20, 2009 through October 28, 2009)

Mark Kimes
October 28, 2009



Field Work (Investigations): SWMUs 1 and 2 Sampling Event

- To obtain data for an Interim Corrective Measure
 - Will remove "hot spots" of contamination in soils and metal debris on the surface
- Mobilized on September 8 and demobilized on September 17, 2009



SWMUs 1 and 2 Sampling Event (continued)

- Collected surface soil samples from eight “hot spots” at SWMU 1 to analyze for selected pesticides and metals
- Collected surface and subsurface soil samples from seven “hot spots” at SWMU 2 to analyze for selected metals



SWMUs 1 and 2 Sampling Event (continued)

- Laboratory analysis of the samples collected has been completed
- Data validation of the laboratory analysis is underway



SWMUs 1 and 2 Sampling Event (continued)

- The results from the soil sampling will be utilized to delineate the extent of the contamination of the hot spots
- The locations and approximate quantities of metal debris were identified during this investigation
- A work plan will be developed to conduct the Interim Corrective Measure for the removal of soils and surface metal debris



Field Work: Landfill Semi-Annual Groundwater Sampling

- Groundwater is sampled and landfill gas is monitored at the landfill twice every year
- Mobilized on September 29 and demobilized on October 2, 2009



Landfill Semi-Annual Groundwater Sampling (continued)

- Groundwater samples were collected from the 9 groundwater monitoring wells
 - To analyze for Appendix I volatile organic compounds (VOCs) and metals



Landfill Semi-Annual Groundwater Sampling (continued)

- Laboratory analysis of the groundwater samples collected is underway
- Then the laboratory analysis data will be validated by an independent validator



Reports Submitted: RCRA Quarterly Progress Report

- Submitted to EPA and EQB on August 21, 2009
 - EQB provided comments dated August 31, 2009
 - *Identified a few minor edits to be made in the next report*



Reports Submitted: Draft MNA AOC F Year 7 Annual Report

- Annual report on groundwater sampling
 - To determine if monitored natural attenuation (MNA) is continuing to reduce contamination at 8 underground storage tank sites
 - *Submitted to EPA and EQB on August 21, 2009*
 - *EPA and EQB provided comments dated September 29, 2009*
- EPA requested proposals to address the data gaps
 - Free product delineation at Sites 731, 734, and 735
 - Delineation of petroleum-related chemicals (BTEX, TPH and MTBE)



Draft MNA AOC F Year 7 Annual Report (continued)

- EPA agrees with the Navy recommendations
 - To conduct further work at Site 1738 to address MTBE in groundwater
 - *EPA asked the Navy to develop a Work Plan*
 - To replace certain groundwater wells at Sites 124 and 1738
 - To reduce the frequency of sampling for polycyclic aromatic hydrocarbons (PAHs) once every five years



Reports Submitted: Draft Statement of Basis for SWMU 68

- A Statement of Basis describes the proposed corrective measure for an environmental site
 - The public will have a chance to comment on the Statement of Basis before EPA makes a decision
 - *Submitted to EPA and EQB on September 30, 2009*
- SWMU 68 is the Former Southern Fire Training Area
 - The proposed corrective action is to excavate approximately 555 cubic yards of surface soil contaminated by metals (copper, lead, and zinc)
 - *Contaminated soil will be disposed of off-site, at a licensed facility*



Reports Submitted: SWMU 61 Additional Investigation Letter

- Proposes additional investigation at SWMU 61 (Former Bundy Area Maintenance Facilities)
 - Submitted to EPA and EQB on October 7, 2009
 - *The ongoing Corrective Measures Study investigation found that the extent of contamination at SWMU 61 is not fully defined*
 - Additional sampling of surface soil, subsurface soil, and groundwater in the upland areas of the site
 - Additional sampling of sediment from the adjacent freshwater wetland
 - *Will be conducted when funding becomes available*



EPA and EQB Comments dated August 11, 2009

- Draft Phase I RCRA Facility Investigation (RFI) Reports (June 2009) for SWMU 71 and SWMU 78
 - EPA and EQB approved the reports
 - EPA and EQB agrees with the Navy recommendation to conduct Full RFIs at these sites
 - *EPA requested that Work Plans be submitted*
- EPA and EQB also approved the Work Plan for a Final Phase I RFI at SWMU 76 (July 2009)





EPA and EQB Comments dated July 6 and 28, 2009

- Final Semi-Annual Groundwater Monitoring Report for SWMU 3 – September 2008 sampling event
 - EQB provided their approval of the document
- Draft Semi-Annual Groundwater Monitoring Report for SWMU 3 – March 2009 sampling event
 - EQB agrees with the report's conclusions and recommendations
 - *A few typographical errors to be corrected*
 - *Revise report will be submitted to EPA and EQB on October 30, 2009*



EPA and EQB Comments dated July 29, 2009

- Draft Landfill Gas Monitoring Report for SWMU 3 – March 2009 monitoring event
 - EQB concurs with the report conclusions and recommendations
 - EQB provided two recommendations for future sampling activities



EPA and EQB Comments dated September 17, 2009

- Draft Steps 6 and 7 of the Baseline Ecological Risk Assessment for SWMU 1 (dated July 1, 2009)
 - EPA concurs with the Navy recommendation for an interim corrective measure to remove contaminated surface soil "hot spots"
 - *Revisions to the document are underway, addressing the EPA and EQB comments*
 - *The Final Report will be submitted to the EPA and EQB on December 4, 2009*



EPA and EQB Comments dated September 17, 2009 (continued)

- Draft Full RFI Report for SWMU 9 Area B, Tank 214 Area (dated July 14, 2009)
 - EPA concurs with the Navy recommendation that a Corrective Measures Study is warranted
 - However, further delineation is needed before the CMS
 - *Revised document will be submitted to EPA and EQB on November 20, 2009*
- Draft Phase I RFI Report for SWMU 62 (dated February 6, 2009)
 - *Final Report will be submitted to the EPA and EQB on October 30, 2009*



Reports Under Review by EPA and EQB

- AOC F (Monitored Natural Attenuation sites), Year 7/Quarter 2 Report
 - Report on findings from groundwater sampling conducted in August 2009
 - To determine if monitored natural attenuation is continuing to reduce contamination



Reports Being Developed

- Airfield Soil Background Report Addendum
- Freshwater Drainage Ditch Background Report
 - *Report on the findings from freshwater drainage ditch sampling that was conducted in June 2009*
- SWMU 74 (Fuel Pipelines and Hydrant Pits)
 - The Draft Phase I report on the Corrective Measures Study Investigation
 - *Findings from soil and groundwater sampling that was conducted along the underground fuel pipelines and valve pits of the bulk fuel system*



Reports Being Developed (continued)

- SWMUs 13, 46, 53, and AOC C
 - Draft Project Closeout Report
- SWMU 2 (Langley Drive Disposal Site)
 - Draft Steps 6 and 7 of the Baseline Ecological Risk Assessment



Remediation Planning Update SWMUs 7/8, 54, and 55

(August 20, 2009 through October 28, 2009)

Tom Beisel, CH2M HILL

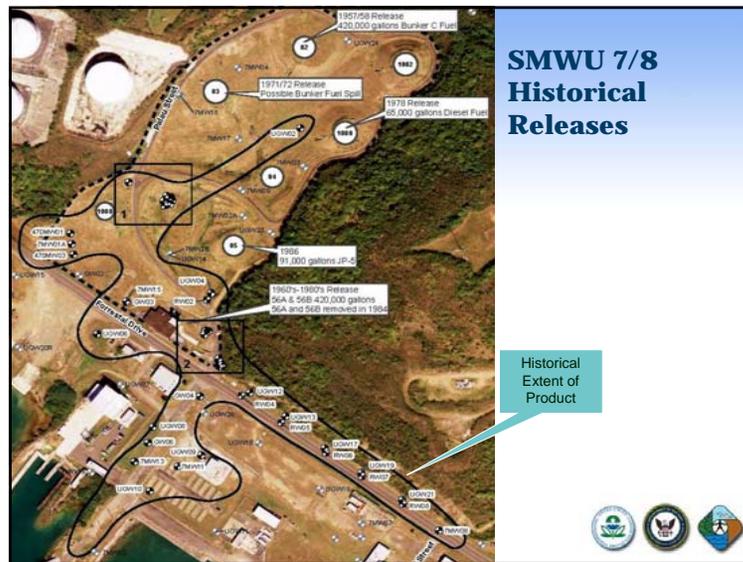
October 28, 2009





SWMU 7/8 History

- The Tow Way Fuel Farm is located on a hillside along Forrestal Drive north of Ensenada Honda.
- The fuel farm was constructed prior to 1957 and originally consisted of nine bomb-proof underground storage tanks (USTs).
- The tanks were used for the storage of marine diesel fuel, jet fuel (JP-5), and Bunker C fuel.
- After base closure, all USTs and associated piping were drained and are currently empty.
- During the facility's operational history, numerous releases occurred from various storage tanks.



SWMU 7/8 Cleanup

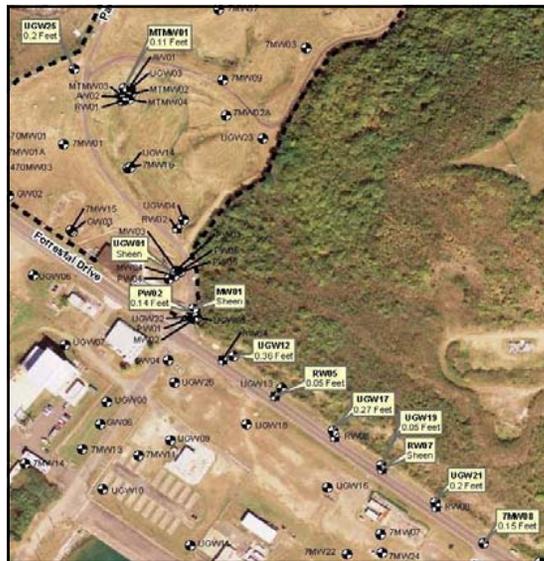
- **Surface Soil (Arsenic and PAH):**
 - Technical memo addressing Polynuclear Aromatic Hydrocarbons (PAH) and arsenic in surface soil
- **Groundwater:**
 - Free Product - Reduce product thickness to 1/8-inch (0.01 feet)
 - Dissolved Plume - Measure natural attenuation parameters to determine if monitored natural attenuation (MNA) is a viable remedial action for groundwater.

SWMU 7/8 Product Investigation South of Forrestal Drive - Results

- 48 test pits excavated to the water table
- 11 test pits completed as temporary sumps.
- Measurements in wells and sumps collected weekly.
- 3 of the temporary sumps had sheens (TS13, TS14, and TS16).
- None of the temporary sumps had a product thickness greater than the corrective action objective (CAO) of 1/8-inch (0.01 feet).



SWMU 7/8 Product Investigation South of Forrestal Drive



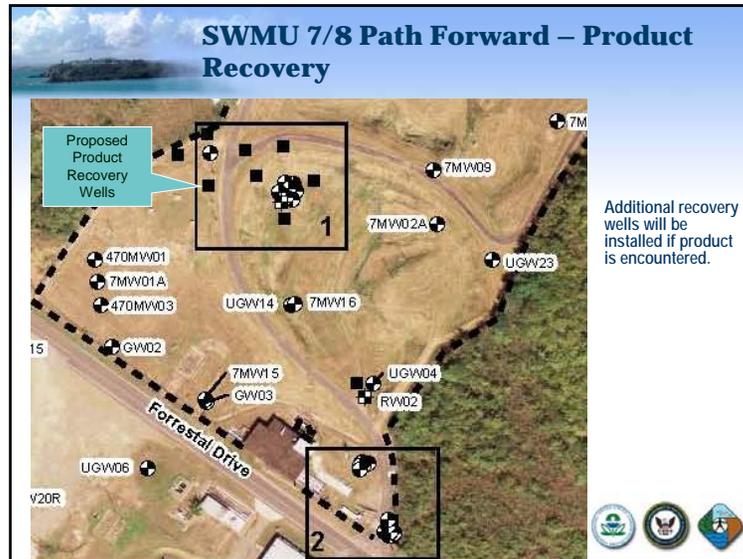
SWMU 7/8 Extent of Free Product



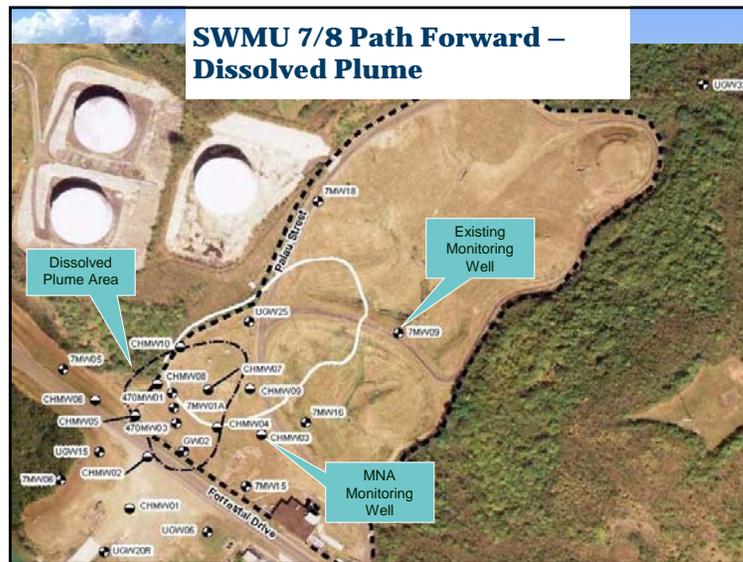
SWMU 7/8 Path Forward – Product Recovery

- Installing product recovery wells around monitoring wells with product
- Evaluate the performance of solar-powered pumps and high vacuum-extraction.
- Perform a pilot study using Enhanced Fluid Recovery
- Recover product

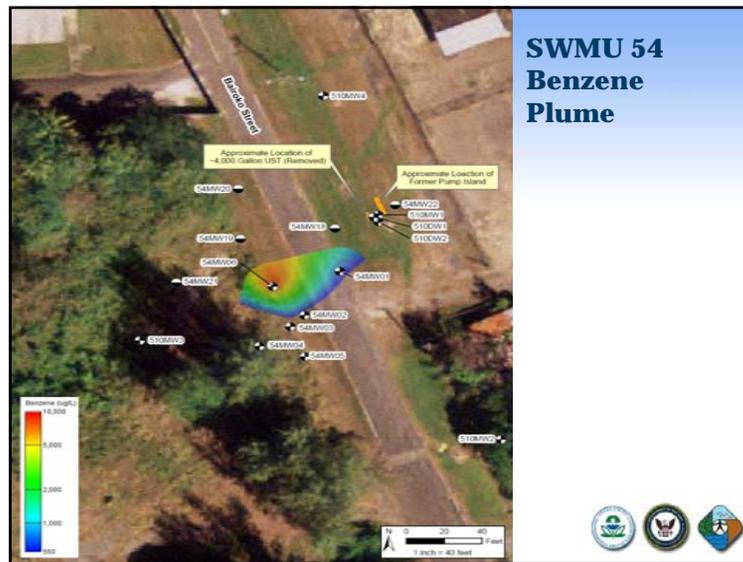
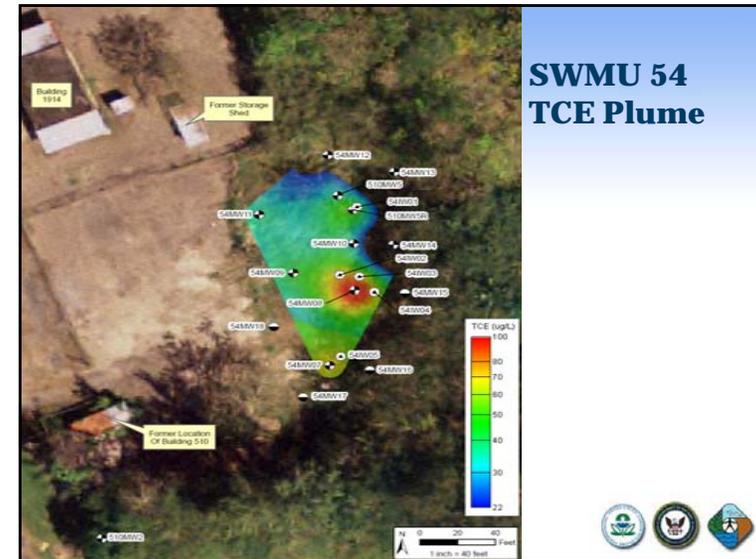
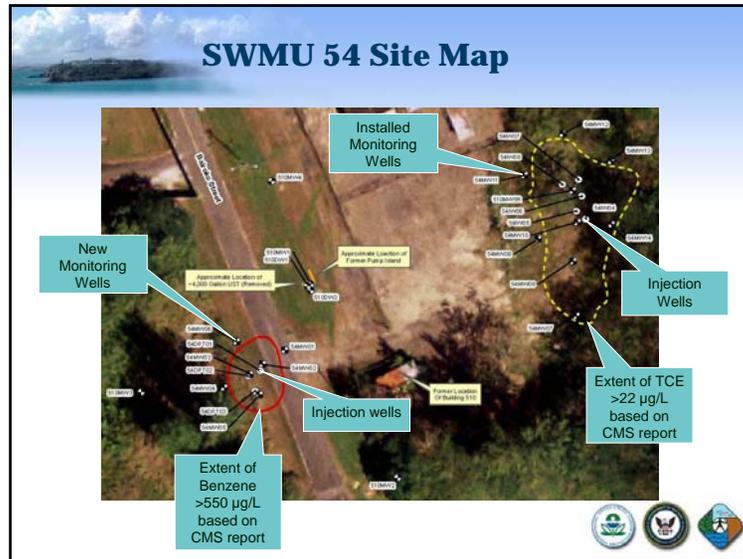




- ### SWMU 7/8 Path Forward – Dissolved Plume
- Currently installing additional monitoring wells within the dissolved plume.
 - Sample monitoring wells quarterly for monitored natural attenuation (MNA) parameters.
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- ### SWMU 54 History
- SWMU 54 - Former Naval Exchange (NEX) Repair/Maintenance Shop (Building 1914), constructed in 1979.
 - 4,000 gallon UST stored fuel until removed in December 1992.
 - Building used to perform vehicle maintenance.
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- ### SWMU 54 Cleanup
- In situ Biodegradation (ISB)
 - Enhance natural processes
 - Trichloroethylene (TCE) Plume
 - ISB anaerobic treatment
 - Inject vegetable oil solution (EVO)
 - Benzene Plume-Options
 - ISB aerobic treatment
 - Air Sparging



SWMU 54 - Recently Completed Activities

- Installed 6 wells within the benzene plume.
- Installed 9 wells within the TCE plume
- Baseline groundwater sampling



SWMU 54 Path Forward

- TCE Plume
 - Install 4 additional wells
 - Conduct pilot scale EVO injections of about 5,000 lbs
 - Measure injection radius, determine injection rates, and assess how long EVO stays in subsurface
 - Monitor TCE concentration over time to evaluate technology success



SWMU 54 Path Forward – Pilot Testing

- Benzene Plume
 - Install 4 additional wells
 - Conduct pilot scale Oxygen Release Compound (ORC) injections
 - Measure injection radius, determine injection rates, and assess how long ORC stays in ground
 - Monitor benzene concentration over time to evaluate technology success

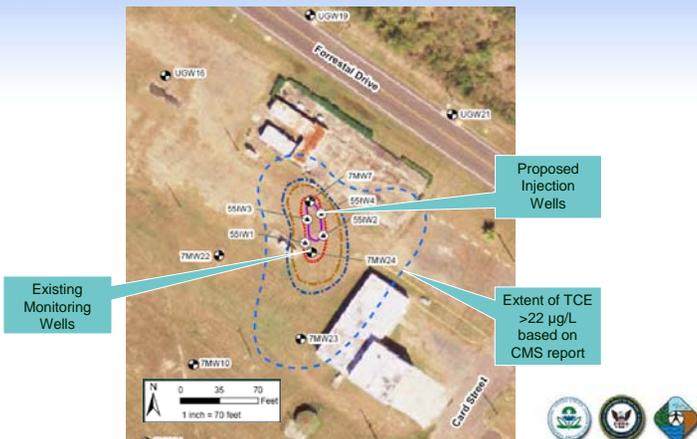


SWMU 55 History

- Prior to Hurricane Hugo in 1989, a building was used to store and maintain small watercraft
- Vertical extent of contamination ranges from 10 to 35 feet below ground surface (bgs)
- The size of the plume is approximately 150 feet by 180 feet



SWMU 55 Site Map



SWMU 55 Cleanup

- Evaluate use of in situ chemical oxidation (ISCO) with potassium permanganate (KMnO₄) to clean up contaminated groundwater
- Reduce TCE concentrations in groundwater below the human health based on the Corrective Action Objectives (CAO) of 22 micrograms per liter (µg/L)

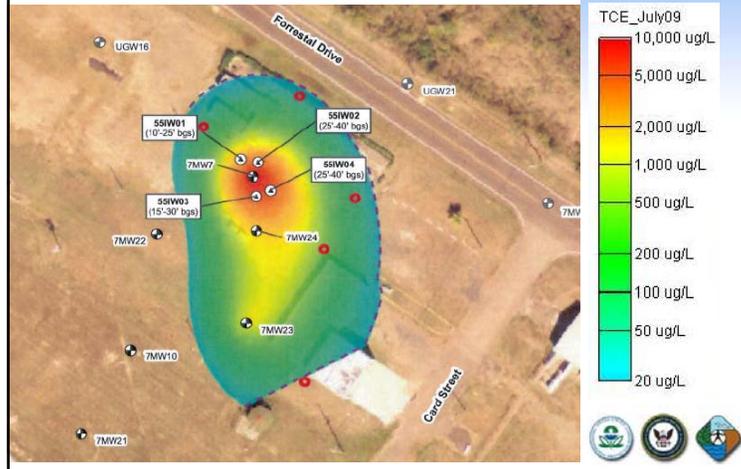
SWMU 55 Pre-injection Baseline Groundwater Sampling Event

- Installed injections wells
- Collected samples from monitoring wells and analyzed for TCE
- Completed aquifer tests to measure how quickly water moves underground

SWMU 55 Pre-injection Baseline Groundwater Sampling Event - Results

- Of the 6 groundwater samples analyzed, TCE was detected in 4 samples.
- TCE concentrations ranged from 1.86J to 14,500 µg/L.
- Three samples exceeded the groundwater human health-based CAO of 22 µg/L for TCE.

SWMU 55 TCE Plume



SWMU 55 Path Forward – Pilot Testing

- Install additional wells to focus test on source area
- In situ chemical oxidation (ISCO)
 - Conduct pilot scale potassium permanganate injections between 5,000 – 8,300 lbs
 - Measure injection radius, determine injection rates, and assess how long potassium permanganate stays in subsurface
 - Monitor TCE concentration over time to evaluate technology success



Puerto Rico Environmental Quality Board (EQB)'s Role in the Cleanup Process

Wilmarie Rivera and Gloria Toro
October 28, 2009



Role of the EQB in the Cleanup Process

EQB is a member of the BRAC Cleanup Team (BCT)

- Conducts oversight to ensure compliance with State's regulations
- Participates and coordinates meetings to ensure State participation in the decision-making process regarding cleanup.



Role of the EQB in the Cleanup Process

- Reviews documents
 - Work Plans and Reports of:
 - *RCRA Facility Investigation (RFI)*
 - *Corrective Measures Study (CMS)*
 - *Corrective Measures Implementation (CMI)*



Role of the EQB in the Cleanup Process

- Other documents requiring State input are also reviewed
 - Finding of Suitability to Transfer
 - Finding of Suitability to Lease
 - Other selected documents



Role of the EQB in the Cleanup Process

Provides field oversight on cleanup activities



Land Use Controls
Inspection



Site Visit to SWMU
77 –Small Arms
Range



Role of the EQB in the Cleanup Process



Field Oversight Sediment
Sampling Activities



Field Oversight
Background Sampling
Activities



Role of EQB in RCRA Corrective Actions

- EPA is the lead agency for the RCRA Corrective Action Program
 - EPA makes final cleanup decisions
- EQB is a stakeholder
 - Ensures compliance with EQB regulations
 - Provides field oversight
 - Works in close cooperation and coordination with EPA



Used Tire Storage at the Ceiba's Airport Update

- During the August 19th RAB Meeting the community expressed concern about used tire storage activity at the Ceiba Airport facility.
- This activity took place under PREQB's Government Board's Resolution R-09-2-2, which was effective until July 13, 2009 (then extended by Resolution R-09-20-1, effective until October 13, 2009).
 - Action conducted to address the imminent hazard to human health and the environment posed by the excessive and illegal disposal of used tires on the island.



Used Tires Storage at the Ceiba's Airport

- The storage of used tires in Ceiba (José Aponte de la Torre Airport) was performed and supervised by the Solid Waste Authority (ADS) and the transportation performed by different municipalities.
 - The Used Tires Temporary Drop-off Center (CAT) was opened on July 6, 2009 to cover the needs of the East Region.
 - During the operating period approximately 13,000 used tires were recovered and reclaimed.
 - Fajardo, Ceiba, Trujillo Alto, Naguabo, Maunabo, Vieques y Humacao utilized the CAT in Ceiba.
 - ADS activities on the CAT in Ceiba ceased on September 18, 2009.



Other public comments and questions?



Closing: next RAB meeting

- Next RAB meeting January 2010?
 - At Club Cívico La Seyba, if available
 - Please remember to call ahead, or send an alternate, if you cannot attend
- Agenda suggestions for next time?
 - Call Ramón Figueroa, RAB Community Co-Chair (787-235-1473)
- Thank you for participating!



Questions between meetings

Mark Davidson or David Criswell
Navy BRAC Program Management
Office Southeast

4130 Faber Place Dr, Ste 202
North Charleston, SC 29405

Teléfono:
843-743-2135 (Davidson)
843-743-2130 (Criswell)
Fax: 843-743-2142

E-mail:
mark.e.davidson@navy.mil
david.criswell@navy.mil

Wilmarie Rivera
Federal Facilities Coordinator

Junta de Calidad Ambiental
Edificio de Agencias Ambientales Cruz A.
Matos
Urb. San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604

Teléfono: 787-767-8181

E-mail:
wilmarierivera@jca.gobierno.pr

