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MINUTES FROM THE 5 FEBRUARY 2014 RESTORATION ADVISORY BOARD MEETING
ENGLISH LANGUAGE VERSION NAVAL ACTIVITY PUERTO RICO
2/5/2014
NAVAL ACTIVITY PUERTO RICO



**Restoration Advisory Board (RAB) Meeting
Former Naval Station Roosevelt Roads
Ceiba, Puerto Rico**

Meeting #30 – February 5, 2014

Note: This meeting summary is based on informal notes taken at the meeting. It is not intended as a verbatim transcript. Portions of some discussions may not have been captured. If comments or additional notes are provided within 30 days of distribution of these minutes, they will be added as an attachment to this summary.

I. Welcome and Introductions

The meeting began at 6:00 p.m. Thuane Fielding (Navy) and Susana Struve (CH2M HILL) welcomed everyone. Attachment 1 provides the attendance list.

Thuane announced that Gloria M. Toro Agrait and Wilmarie Rivera from the Puerto Rico Environmental Quality Board (EQB) are unable to attend the meeting.

II. New and Ongoing Action Items

The following summarizes the new and ongoing action items that will be carried forward to the next RAB meeting planned for May 7, 2014.

Action Item Description	Status as of 2/5/2014
Luis Velazquez (RAB member) will bring a copy of the Decibel Level Report from 1983 developed by the Navy including noise studies from F16 and F-18 aircraft.	COMPLETED. Luis provided Thuane and Ramon Figueroa (RAB Co-chairs) with a copy of the report
Ramón Figueroa (RAB Co-chair) will help EQB (Wilmarie Rivera) establish contact with the LRA regarding a new date to finish the site inspection of the Waste Water Treatment Plants and answer outstanding regulatory questions.	IN PROGRESS. The meeting is pending, with hopes that it can be scheduled before the next RAB meeting.

NEW Navy to present more details on SWMU 9 tank removal, and how wastes will be disposed	
NEW EQB to provide details from their oversight activities at SWMU3	
NEW Navy to present more information on the debris area (SWMU 1/ UXO 2) and the old hotel area cleanup activities	
NEW Navy will have a map showing the location of all the sites under clean up for the next meeting.	

III. Current and Planned Field Activities – Stacin Martin (Navy)

Stacin discussed the status of the ongoing field activities that are being conducted on different areas of the Base.

- **SWMU 75 and Upcoming Work Activities – Stacin Martin/Navy**

The area comprises less than 0.25 acre; is located along waterfront next to Pier 3 and includes Building 803 that operated as pump house for emergency fire fighting deluge system.

The underground storage tank (UST) was removed and soils and groundwater sampling was conducted; the analysis showed no detections/exceedance and the site was recommended for no further action.

Debris present in building prompted additional sampling. Wipe samples detected SVOCs and metals. Lead exceeded residential screening criteria. Additional soil sampling conducted outside of building. Some SVOCs and metals exceeded screening criteria.

Groundwater samples were collected because previous sampling was 15 years ago. No exceedances of groundwater criteria were identified.

Further evaluation of the data determined no risks present at the site. In January 2014 – received regulatory concurrence for no additional investigation at the site and no corrective action required.

- **Field Work Planned**

- AOC F – Long Term Monitoring (LTM) sampling.
- SWMU 3 – Begin delivery of soils for landfill cap. Conduct LTM sampling.
- SWMU 7/8 - Quarterly groundwater sampling and continued operation of the remedial system.
- SWMU 9 and AOC F 124 – Begin demolition and removal of tanks.
- SWMU 14 – Corrective Measures Study (CMS) groundwater sampling
- SWMU 55 – Groundwater sampling and injections as part of remedial system.
- SWMU 69 – Interim Correction Measure (ICM) soil removal.
- UXO 1 – Archaeological context study.
- UXO 2 (SWMU 1) – Debris delineation.

IV. SWMU 7/8 Site Update – Tom Beisel/CH2M HILL

Tom provided an update on activities underway at SWMU 7/8. Key points are summarized below.

Petroleum storage and distribution were discontinued at a NAPR in 2004 and the seven tanks and associated piping were drained and cleaned.

- **Dissolved Volatile Organic Compound Plume Remedial Action Objectives**
 - Reduce groundwater concentrations of Contaminants of Concern (COC) to their corrective action objectives (CAOs) through monitored natural attenuation (MNA).
 - COCs are 1,2,4-trimethylbenzene [TMB], benzene, ethylbenzene, and trichloroethene [TCE]
 - Light Non-Aqueous Phase Liquid (LNAPL) Plume: Reduce LNAPL thickness in all wells to 0.01 foot or less (CAO).
- **Dissolved Volatile Organic Compound Plume Objectives**
 - Evaluate MNA as a viable long-term approach to reduce dissolved hydrocarbon concentrations in groundwater.
 - Collect groundwater samples for lab analysis from the dissolved contaminant plume.
 - Evaluate the ability of the aquifer to naturally degrade dissolved hydrocarbons to the CAOs.
- **Eleven groundwater sampling events - May 2010 through September 2013.**
- **27 groundwater monitoring wells.**
- **Groundwater sample analysis for 1,2,4-TMB, benzene, ethylbenzene, arsenic, manganese and TCE.**
- **Groundwater samples were also analyzed for MNA parameters: total alkalinity, nitrate/nitrite, sulfate, sulfide, methane, ferrous/ferric iron, and total organic carbon (TOC).**
- **MNA Study Results**
 - Of the four COCs (benzene, ethylbenzene, 1,2,4-TMB, and TCE), only benzene and ethylbenzene exceeded their CAO of 160 µg/L and 493 µg/L, respectively.
 - TCE was not detected above the laboratory detection limit.
 - Benzene and ethylbenzene concentrations exceeding CAOs found only in wells north of Forrestal Drive close to the former tanks.
 - Concentrations of the COCs were significantly below their respective CAOs south of Forrestal Drive.
 - The dissolved hydrocarbon contamination is being biodegraded anaerobically through sulfate reduction.
 - Denitrification and methanogenesis are also important in the biodegradation of hydrocarbons.
 - Biodegradation has stabilized the dissolved volatile organic compound plume at this site.
 - Natural attenuation is adequate to meet remedial action goals.
 - The high natural attenuation capacity of the aquifer indicates that LNAPL removal is not a critical factor in protecting the water quality of the bay.
- **Light Non-Aqueous Phase Liquid Plume**
 - Very tight geologic formation at site inhibits movement of the LNAPL (petroleum product) floating on top of groundwater.

- The tight geologic formation severely limits removal of the petroleum with aggressive extraction technologies.
- Because petroleum movement is very slow at this site, low flow active and passive skimming devices were installed.
- The removal strategy involved the installation of mobile, active and passive skimmer systems, that allow for easy relocation between wells.
- Between 2009 and 2010, 45 recovery wells and 12 monitoring wells were installed.
- Active LNAPL removal began at SWMUs 7/8 in 2011.
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- **LNAPL Plume Recovery Results**
 - Since 2011, 700 gallons of LNAPL has been recovered.
 - The highest LNAPL recovery rates occurred from wells associated with the most petroleum.
 - Very dependable system with no unscheduled downtime.
 - LNAPL thickness and extent fluctuated throughout the recovery period, controlled by site geology and seasonal precipitation rates.
 - LNAPL plume is relatively stationary and has not moved south of Forrestal Drive.

V. SWMU 55 Site Update – Tom Beisel/CH2M HILL

Tom discussed the status of implementation of the remedy for SWMU 55. Key points are summarized below.

Details of the Remedy

- **In Situ Chemical Oxidation Pilot Test – August 2010**
 - Injected 10,000 gallons of dilute oxidant in the TCE source area using four injection wells.
 - 68% reduction in source area TCE levels by November 2012
 - Partial rebound of TCE indicated a persistent source of TCE 20 feet upgradient of well 7MW07
- **Excavation of TCE-contaminated source**
 - TCE source 20 feet upgradient of well 7MW07 and just south of former Bldg 2314
 - Approximately 200CY removed and properly disposed of as non-hazardous soils.
 - Gravel backfill placed in bottom four feet of excavation.
 - Sodium permanganate placed in gravel to oxidize any remaining TCE residual beneath the excavation.
 - Allowed six months for oxidant to react with TCE and move away from bioreactor before activating bioreactor.
 - Focused in situ oxidation at bottom of excavation.
- **Construction and start up of solar bioreactor**
 - Composted mulch and gravel was placed in upper 8 feet of the excavation to form the bioreactor.

- Solar-powered pump placed in nearby well MW07 to recalculate TCE contaminated groundwater through the organic-rich bioreactor.
- Goal is TCE biodegradation inside and outside of bioreactor
- CH2M Hill has 8 solar bioreactors in operation at other sites in the States, > 95% TCE removals at most sites
- Solar pumping system installed - Nov 2013.
- On sunny day system pumps 300-400 gallons per day.
- 2013 sampling will evaluate TCE biodegradation rates
- **Emulsified vegetable oil (EVO) injection - mid-plume**
 - Injecting 4,600 gallons per well of 1.5 % food grade EVO to stimulate TCE biodegradation
 - Continued monitoring of remediation progress

VI. Questions and comments from the Public

- Luis Velazquez (RAB member) said for SWMU 3 that proper procedures to protect water quality from the effects of construction runoff at the landfill are not being followed and that EQB has not made oversight visits to the site. Luis said he has tried three times to visit the site, but has been denied access. He also said he has photographs that show that the required erosion and sedimentation plan have not been implemented.
 - Stacin Martin (Navy) indicated that there is a Stormwater Pollution Prevention Plan in place and the Navy is following all permitting requirements for the work. Stacin also said the EQB has visited the site and the Navy can provide the dates of EQB visits to the area and copies of the permits obtained for the initial phase developed in SWMU 3.
 - Luis said that he wants to visit the site with EQB staff to confirm that the erosion prevention plan is being implemented.
 - Thuane (Navy) suggested he contact Gloria (EQB) and Wilmarie (EQB) to discuss the possibility of a RAB site visit to the site.
 - Ramón D. Figueroa (RAB Co-chair) said that he understands Luis' concerns; he doesn't believe the Navy intentionally violates the law, and the regulatory agencies (EPA and EQB) are adequately monitoring site activities.
- Stacin clarified that the above ground concrete tanks on SWMU 9 are the ones that will be demolished.
- Ramón asked Freddy de Jesús (LRA) if the Local Redevelopment Authority has considered using the tanks at SWMU 7/8 were ever considered for reuse. Freddy said that during the CAPECO Crisis, the LRA considered this, but the plan was never implemented.
 - Thuane clarified that the tanks Ramón asked about were above ground tanks and were not the ones Tom Beisel discussed in his presentation.
- Jesús Bonilla (member of the public) asked if the tanks removed are free from contamination and if they could present risk of gas explosion in the future that could affect developers.
 - Stacin/Thuane explained that the tanks removed were cleaned and all the piping grouted, so there is nothing left that could present a risk.

VII. Closure

Susana indicated that the next RAB meeting is tentatively scheduled for May 7, 2014. The meeting was adjourned at 8:20 p.m.

ATTACHMENT 1 - Meeting Attendees – February 5, 2014

RAB Community Members Present

Ramón D. Figueroa, Community Co-Chair
Michael Dalton
Agustín Velázquez
Luis Velázquez

RAB Community Members Absent

Samuel Caraballo
Naida Dávila
José Julio Díaz
Jorge Fernández Porto
William Lourido
Lirio Márquez D'Acunti
Debra McWhirter
Rafael Montes
Ramón M. Ríos

Community Members Visiting

Raul Sosa
Gilberto Camacho
Ricardo Alvarez

Jesús Bonilla
Nelida Rest

RAB Agency Representatives

Thuane Fielding, Navy Co-Chair
Stacin Martin
Doug Pocze (absent)
Wilmarie Rivera (absent)
Gloria M. Toro Agrait (absent)
Santiago Oliver (representative)

Navy – Deputy Base Closure Manager
Navy – Remedial Project Manager
Environmental Protection Agency, Region 2
Environmental Quality Board (EQB)
Federal Facilities Coordinator
EQB – Hazardous Waste Permit Division
Puerto Rico Conservation Trust

Other Agency Representatives

Malú Blázquez
Freddy de Jesús
Carmen Guerrero (absent)
Tom Beisel

Executive Director – Local Development Authority (LRA)
LRA
Puerto Rico Department of Natural Resources (DNER)
CH2M HILL

Support Staff

Susana Struve
Pedro Ruiz
Carmen Mangual

CH2M HILL, Inc. (Navy contractor – facilitator)
Navy
CH2M HILL, Inc. (Navy contractor)
