# Naval Air Station South Weymouth, MA
## Restoration Advisory Board (RAB) Meeting Minutes
## October 14, 2010

## 1. INTRODUCTIONS/ APPROVAL OF PRIOR MEETING MINUTES

John Goodrich, RAB facilitator, opened the meeting at approximately 7:00 PM. He requested that all attendees, including RAB members, regulators, and audience members, introduce themselves. He noted that the meeting agenda, handouts, and the sign-in sheet were available on the back table. The sign-in sheet for the meeting is provided as Attachment A to this meeting summary. J. Goodrich asked if everyone had time to read the minutes from the September 2010 RAB meeting and if there were any comments. There were no comments on the minutes.

J. Goodrich reviewed the guidelines for the meeting and reminded the meeting attendees that the focus of the meeting is cleanup issues. Any issues and/or comments not related to base cleanup will be noted and referred to the appropriate agency or organization. He reminded the participants when asking questions to wait to speak until they are acknowledged, to state their names and affiliations, and to speak clearly or into the microphone when they have questions.

He then reviewed the agenda for the meeting. The meeting agenda and the Action Item Tracking List are provided as Attachment B to this meeting summary. In accordance with the agenda, the presentation and discussion would be followed by the Updates and Action Items portion of the meeting. The minutes, agenda and action items for the meeting are posted on the BRAC PMO website: http://www.bracpmo.navy.mil/.

## 2. PRESENTATION

J. Goodrich stated that the presentation would be on the Solvent Release Area (SRA) Remedial Investigation (RI). D. Barney noted that only half of the listed presentation would actually be presented. While putting together a presentation on both the SRA RI and Feasibility Study (FS), it became clear that it would be too much to cover in one RAB, so he proposed presenting the SRA FS in December. He commented that the investigation at SRA has been ongoing since 2005. D. Seiken will present the work that has been conducted at the Site. Selected slides from the presentation are provided as Attachment C.

D. Seiken stated that the RI at the SRA was performed by the Navy between 2005 and 2010. The objectives of the presentation are to review the components of the RI, describe the nature and extent of contamination, identify potential source areas, summarize the human health and ecological risk assessments, and present conclusions and next steps.

The SRA is located just north of the East Mat. It is approximately 8 acres, undeveloped, and predominately forested wetland. It was designated a Site in 2005 after high concentrations of VOCs (tetrachloroethene [PCE]) were detected during soil sampling at an assumed background location. The Former Pistol Range (AOC 35) is located in the southern portion of the SRA. AOC 35 was remediated and closed out with a ROD in 2006. Between the mid-1980's and early 1990's the former Pistol Range area was used for recreation.

The objectives of the RI were to characterize the nature and extent of the contamination at the Site, evaluate the contaminant migration, and identify any potential human health and ecological risks posed by site-related contaminants.

Removal actions completed at the Site prior to the RI work are summarized on Slide 2. In 2004, a geophysical survey was conducted and identified metallic objects. These objects were cataloged and some were removed. Soils at the Pistol Range that exceeded the lead cleanup goal and the de-armament embankment associated with the Pistol Range was also removed. Waste and debris were removed from the East Mat Ditch, which borders the SRA to the south, and sediment was excavated from the drainage ditch as part of TACAN work (AOC 60). Information and data from these removal actions were used in planning the RI field program and in analyzing the RI data.

There were seven previous investigations performed at the SRA between 1998 and 2004 that included collection and analysis of soil, groundwater, surface water, and sediment samples. Based on the information gathered during these investigations it was determined that additional data were needed to completely characterize the Site, so an RI field program was developed. The data from previous investigations were used in planning the RI field program and were also included in the RI Report.

Slide 3 presents the components of the SRA RI field program. The field program consisted of separate soil, groundwater, surface water/sediment, and soil vapor investigations. Slide 4 presents a summary of the soil investigation which was performed in phases. Phase 1 was conducted to identify the highly contaminated areas and Phase 2 then focused on those areas. Soil borings were completed in the overburden and the bedrock.

Slide 5 presents the components of the groundwater investigation. Eight new overburden wells and 19 new bedrock wells were installed. Existing wells on the Site were used to supplement the new monitoring

wells. The groundwater flow direction is north to south, towards the East Mat Ditch. Slide 6 presents the components of the surface water and sediment investigation. This information was used to characterize these media and determine the groundwater and surface water interaction.

Slide 7 presents a photograph of a rig in forested wetland drilling an overburden boring. There are two basic methods to install borings: augers and drive and wash. Drive and wash was used at the SRA. Steel casing is driven into the ground and then flushed out with water to install the overburden boring. Soil samples are collected and screened as the casing is advanced. The depths of the soil samples collected for laboratory analysis are based on the field screening for VOCs in the soil. Bedrock well installation begins with an overburden boring advanced a short way into the bedrock. Steel casing is then grouted into the bedrock and allowed to dry. The drill bit is then advanced downward through the steel casing into the bedrock to the required depth. The rock chips are flushed out by re-circulated water. Slide 8 is a photograph of a rig drilling a bedrock well.

Borehole geophysics was conducted at the bedrock boring locations to determine water flow through fractures. The geophysical tools are lowered into the borehole and are used to determine the diameter of the borehole, electrical resistance of the water, the rate of flow, and other inferred properties of the rock. Based on the geophysical data areas of likely contamination can be targeted for sampling purposes.

Piezometers were also installed, following the same procedures as monitoring well installation. Piezometers are typically used for additional groundwater flow control, and not groundwater sampling. Water levels were collected during periods of high and low water levels to determine the groundwater flow direction.

Discrete interval sampling in the bedrock boreholes was conducted using packers. The packers are lowered into the borehole and then inflated, which isolates an area of the borehole. This packed off, or isolated, area can then be sampled. Fractures were targeted by placing packers above and below the fracture; a discrete interval sample was then collected. Multiple discrete interval samples were collected at various depths in each borehole. Quick turn-around analytical results were obtained and the permanent monitoring well screen intervals were selected based on the highest concentrations in the intervals sampled.

Soil vapor sampling is used to check for contamination in soil vapor in soil below ground surface, but above the water table. Since the water table at SRA is so high, only one sample was collected.

During the RI field programs in 2006 and 2009, a total of 157 soil samples, 80 groundwater samples, and 12 surface water and sediment samples were collected and analyzed (Slide 9). In addition, previous analytical results were included in the RI if they were deemed to represent current conditions. The

surface and subsurface soil, groundwater, surface water, and sediment were analyzed for VOCs, SVOCs, pesticides, PCBs, metals and cyanide. All of the data were validated and screened against risk-based screening criteria, Base background values, and drinking water MCLs.

Slide 10 summarizes the contaminants found in the various media sampled during the RI. The major contaminant at the Site is PCE and its breakdown products. PCE is a solvent used in dry cleaning and tool cleaning. A PCE plume was found in both the overburden and bedrock groundwater. Polycyclic aromatic hydrocarbons (PAHs), which are a byproduct of incomplete combustion of fuel, were widely detected. There were infrequent detections of pesticides and PCBs. Metals were present in all media, but most concentrations were below Base background values. Slide 11 presents PCE concentrations in overburden groundwater and soil. The colors in the figure show soil PCE concentrations (yellow is the highest concentration) and dashed pink lines are the PCE concentrations in overburden groundwater. The outermost dashed line is 5 ppb and the innermost dashed line is 10,000 ppb. The overburden PCE contamination basically ends at the East Mat Ditch.

Slide 12 presents the bedrock groundwater PCE plume. Again the outermost contour line is 5 ppb, but the innermost contour is a concentration of 1,000 ppb. The contamination is greater in the overburden than the bedrock. The overburden and bedrock plumes vary in shape and size. PCE is a 'sinker' and is found at greater depth in groundwater if concentrations are high enough. The PCE plume is found in the rock, and is bounded by the concentrations found in the upgradient and downgradient wells at the Site.

One of the objectives of the RI was to determine the potential source area. The potential source area located on the Site may be due to a release of solvents adjacent to the dirt access road. The PAHs found in the East Mat Ditch may be due to historical disposal of debris and possibly fuel in the East Mat Ditch. In addition, there are background sources of pesticides, metals, and PAHs common to all urban areas of Massachusetts.

The human health risk assessment conclusions show no risk based on the current site use. Future site use scenarios were also evaluated and there is a potential future risk to residential and construction workers. The future human health risk exposure pathways are to a resident drinking groundwater and a construction worker exposed to air or groundwater in a trench (Slide 13). Slide 13 also lists the contaminants of concern for the future resident and construction worker exposure pathways. The ecological risk assessment showed a slight risk to aquatic invertebrates due to pesticides and PCBs and non-site related PAHs in a small area of the East Mat Ditch.

The conclusions of the RI are summarized on Slide 14. A VOC plume exists in the overburden and groundwater. PCE and its breakdown products are the primary contaminants of concern in groundwater. PCE does biodegrade naturally. The potential risks to human health are future residential use of

groundwater as drinking water and future construction worker exposure during excavation. It was determined that a Feasibility Study was needed to evaluate remedial alternatives. The Final RI and the Draft FS were issued in August. The FS is currently under review. The Final FS and Proposed Plan are anticipated in the spring of 2011 and the ROD is anticipated to be completed in the fall of 2011.

D. Galluzzo asked what the overburden is. D. Seiken stated that it was the soil above the bedrock.

H. Welch asked if you are drilling with casing and water, aren't you watering down the sample. D. Seiken responded that the water is contained and it is all re-circulated. There are occasions, especially in bedrock, where you hit a fracture and lose water into that fracture. Since you know how much water is being re-circulated, you can calculate how much water you lost during drilling. The protocol is that if water is lost during drilling, the water must be removed as part of the well development process, prior to groundwater sampling. In the overburden, the casing is advanced first, so the water is being re-circulated within the casing while it clears out the boring and it doesn't get out into the overburden and bedrock.

M. Bromberg asked about the results of the one vapor sample that was collected. D. Seiken stated that no PCE was detected. The soil vapor sample is located by the East Mat Ditch. M. Bromberg asked if there should be more samples taken from the higher concentration areas. D. Seiken stated that they know from the risk assessment that vapor is a problem (i.e. construction trench). M. Bromberg asked if there would be a problem if tents were set up at the Site. D. Seiken stated that the vapor would be dispersed into the atmosphere. The only risk is associated with digging a trench and working within the trench.

R. Lester asked if vapor intrusion risk is being considered. Yes, it is being considered.

M. Parsons asked when the samples were collected. D. Seiken stated that the majority of the samples were collected in 2006, and then based on the review of this information more data were collected in 2009 to refine the conceptual site model. M. Parsons asked what time of year the samples were collected in 2006. D. Seiken responded that the program started in the spring and finished in December. Additional groundwater sampling was conducted in December 2007. M. Parsons stated that 2006 was a wet summer so water table was high. D. Seiken stated that they looked at the seasonal water table levels and the effect on concentrations, but there was only a negligible change.

M. Parsons asked about the non-site related contamination with regard to the ecological risk. D. Seiken stated that there were fuel releases in the East Mat Ditch and that the PAHs may be associated with these releases. D. Chaffin stated that the PAHs in the East Mat Ditch are probably left over from AOC 60, and are not related to the SRA. The East Mat Ditch was investigated separately and the PAHs are not associated with the PCE plume.

D. Galluzzo asked why there were a different number of samples in 2009 and 2006. D. Seiken stated that the 2006 work was intended to fully characterize the Site. EPA and MassDEP commented on the draft RI Report and suggested more characterization in certain areas. In response to the comments a supplemental work plan was written to address the data gaps. Additional sampling was conducted in 2009 to fill the data gaps.

D. Galluzzo asked what the media of most concern was. D. Seiken stated the groundwater had the greatest amount of contamination. D. Galluzzo asked why more groundwater samples were not collected in 2009. D. Seiken stated that the conceptual site model (what was thought to be the source, shape of the plume, location of the plume, etc.) did not really change between 2006 and 2009. The supplemental samples collected in 2009 validated the information gathered in 2006 and helped fill in the gaps. The Site has been adequately characterized.

H. Welch asked how the widely detected PAHs from fuel are not considered a problem. P. Call reminded everyone that PAHs are also naturally occurring in wetlands and SRA is a forested wetland. D. Chaffin stated that the PAHs are widely dispersed, but are found at low concentrations. The concentrations are at levels that do not pose a risk. Not all of it is from the fuel either; PAHs are result of incomplete combustion and are found everywhere. D. Barney added that the East Mat Ditch contains runoff from the East Mat, and PAHs are found in asphalt as well.

M. Bromberg asked if all the PCBs were below the unacceptable risk. D. Seiken stated that for human health there was no risk due to PCBs and for ecological there was a slight risk due to PCBs in the East Mat Ditch. He asked if a slight risk requires remediation. D. Chaffin stated that it is not an SRA concern and there have been removals during the AOC 60 work. These PCB concentrations are most likely residual from the AOC 60 actions.

H. Welch asked if there was any evidence or history of spills. D. Seiken said there are no records. D. Chaffin added that the hypothesis is that solvent was dumped on the ground in the woods. It could be related to gun cleaning or the hobby shop on Pidgeon Road, but it is not known for sure.

M. Smart asked about the history of existing structures. D. Barney stated there are no structures on the SRA site, just the former embankment and canopy associated with the Pistol Range.

M. Smart asked how much could have been dumped to get that much into bedrock. D. Seiken stated that the mass estimate will be included in the FS. It could be as little as one bucket, and PCE is the primary contaminant in the SRA area. The other contaminants are associated with activities at the East Mat

Ditch. He then asked about the drilling techniques. D. Seiken responded that drive and wash is considered a better technique with borehole geophysics versus looking at a solid core.

D. Galluzzo asked if the SRA is near the motor pool buildings. D. Barney responded that the hobby shop north of Pidgeon Road was a vehicle repair shop. The motor pool at Building 81 is too far away to have impacted the SRA. D. Galluzzo asked if the plume will move. D. Barney stated that it has moved over time and that plume migration will be looked at more during long term monitoring.

A question was asked that if the PCE depth has reached about 80 feet, is that typical. D. Seiken stated that PCE can reach that depth because it is a sinker and it moves through the fractures in the bedrock. D. Barney stated that it is difficult to visualize and map the path of PCE in bedrock.

## *3. UPDATES AND ACTION ITEMS*

Action Items: D. Barney addressed the two items from the last RAB meeting.

1. What is the half-life of TCE? TCE will reduce its mass by half in a "normal" biodegradation in about 500 days. The process can be accelerated by adding an electron donor (molasses) and then the degradation rate is about 50 days.

2. What could be the source of NNPA at the Building 82 site? There was one location at Building 82 where NNPA was detected. NNPA was a contaminant in herbicides, and is most likely associated with herbicide use at this site.

MassDEP Update: None.

IR/EBS Program Site Update: D. Barney stated that he received a letter from Jim Cunningham in support of post and rail fences around the landfills at the Base. The letter is included as Attachment D.

D. Barney stated that the WGL is in full construction mode. They are excavating materials out of the wetland area and establishing the cap limits. Confirmatory samples are being collected to ensure that an adequate amount of material has been pulled back out of the wetlands. Right now the cap has a very low profile.

He noted that additional maintenance actions have been completed at the Building 82 site. The removal of four gas-trap manholes (end of floor drain systems) and associated soils has been completed. The work also included a limited removal action of petroleum impacted soils discovered during the

construction of Memorial Grove Avenue, at the northern perimeter of the Hangar 2 apron. There was also a small amount of sediment removed from the ditch north of the Hangar 2 apron.

He added that there have been no other significant changes since the last RAB.

M. Bromberg asked if this excavation was part of the fuel farm. D. Barney responded that it was not.

D. Galluzzo asked what the edge of the cap will be after the cap is installed. D. Barney stated that fundamentally that is the post and rail fence. The fence will be outside the drainage swale which is constructed outside the limits of the cap. The cap will extend over the limits of the debris. D. Galluzzo asked if this would be the same as the RDA. D. Barney stated that it is similar to the RDA (which does not have a liner) but the same as Small Landfill. No digging is allowed inside the fence.

M. Smart asked when the construction at the landfill will be completed. D. Seitz stated that construction would probably be completed by the middle of February (depending on the weather). The membrane liner should be on by the end of November. Prior to installing the liner the debris is being consolidated and then a 6-inch layer of common fill added. That layer will be compacted with a 40-ton roller and density testing will be done to ensure it is compacted to 90 percent. Compaction depends on moisture content and temperature to some extent. The regulators are out there at least once a week.

M. Parsons asked if there will be signage and gas vents at the WGL. D. Barney said there will be signage and gas vents. In response to her further questions he stated that there is not a flexible membrane liner at the RDA because at the time RDA was constructed clay was readily available. The liner at WGL and Small Landfill was used as a substitute for the clay layer used at RDA. The gas vents will be located at the peak.

M. Bromberg asked how much sediment was removed from the ditch to the north of Building 82. D. Barney stated that it was about 5 to 10 cubic yards. He added that there are many potential sources that could have had contributed to the presence of the PAHs. The sediment was deposited on top of the concrete flange associated with the headwall at that location.

H. Welch asked if the WGL soil consolidation from the STP is complete. D. Barney responded that it has been completed. There are no plans to consolidate any more soil, even though there are about 100 cubic yards of soil available at Building 82. Shaw does not need any additional fill for the WGL cap. Approximately 3,300 cubic yards of fill were added to the WGL. It was spread out as a sub-layer where soil/fill was needed anyway. It did not add to the overall size of the landfill; soil would have had to be brought in for this purpose otherwise.

M. Parsons asked when the FS and remedy selection will occur for Building 82. D. Barney stated that the Proposed Plan is expected to be out in February. There will be a public hearing and a comment period.

M. Bromberg asked about SSTTDC activities. S. Ivas stated that they have been to a conservation commission meeting on the East-West Parkway. M. Bromberg asked why SSTTDC isn't commenting on the Navy documents. S. Ivas will take back the question back to SSTTDC.

Conclusion/Next Meeting

J. Goodrich wrapped up the meeting. The next RAB meeting will be the second Thursday in December (December 9, 2010). The meeting will again be held at the New England Wildlife Center, 500 Columbian St., Weymouth, MA.

Suggestions for topics for the next meeting include:

- SRA FS – various alternatives to remediate the groundwater