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NAS SOUTH WEYMOUTH  
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MINUTES FOR RESTORATION ADVISORY BOARD (RAB) MEETING HELD ON 9 OCTOBER  
2014 NAS SOUTH WEYMOUTH MA (PUBLIC DOCUMENT)  
10/09/2014  
RESOLUTION CONSULTANTS



# Naval Air Station South Weymouth, MA Restoration Advisory Board (RAB) Meeting Minutes October 9, 2014

## 1. INTRODUCTION

John Goodrich, RAB facilitator from the Office of Public Collaboration, opened the meeting at approximately 7:00 PM. He requested that all attendees sign-in and pick-up a meeting agenda on the table at the back of the room. The sign-in sheet for the meeting is provided as Attachment A. Before the start of the meeting, each attendee introduced themselves and their affiliated organization. There were no comments or questions regarding the June 12, 2014 RAB meeting minutes.

J. Goodrich reviewed the guidelines for the meeting and reminded the attendees that the focus of the meeting was cleanup issues. The meeting presentation focused on the Building 82 Pilot Test, presented by Paul Dombrowski (Resolution Consultants). The scheduled discussion regarding the Industrial Operations Area (IOA) was postponed to a future meeting as the Navy and EPA continue to work through comments.

## 2. PRESENTATION

Paul Dombrowski began the presentation with the site background and history. The Site is comprised of three buildings: Building 82 (hangar), Building 15 (transportation building), and Building 41 (family services center). Several investigations were conducted which led to the development of the current pilot test:

- Remedial Investigation (RI): February 2010
  - The purpose of the RI was to further delineate the type and extent of the COCs requiring remediation in soil and sediment. The results of this study were used to support the planning of the Remedial Action (RA).
- Addendum to Remedial Investigation: July 2011

Results from the studies indicated the primary contaminant of concern was trichloroethene (TCE). Maximum concentrations (up to 25 µg/L) were detected 16 to 20 feet below ground surface (ft. bgs). No concentrations were detected above the remedial goal (5 µg/L) in the top 10 feet. Additional contaminants were detected above risk-based screening levels, including:

- n-nitroso-di-n-propylamine (NNPA)- 0.29 µg/L in well MW-200S
- 1,1-Dichloroethane (1,1-DCA)- 99 µg/L in well MW-01

A Feasibility Study (FS) was conducted in July 2012 to evaluate potential remediation options. The September 2012 Record of Decision (ROD) selected in-situ chemical oxidation (ISCO) as the remedy. ISCO has shown to be effective at reducing chlorinated solvents in groundwater, particularly TCE, through oxidizing or chemically destroying the contaminant in the impacted area. In addition to the planned ISCO, land use controls (LUCs) were proposed to prevent groundwater extraction wells from being installed. Lastly, long-term monitoring was planned to observe changes in concentration or migration.

A pilot test work plan was developed to determine the optimal injection parameters, including: injection well spacing, injection pressures, and flow rates. These parameters were necessary to plan the field-scale ISCO injection program. The focus of the pilot study was on the TCE impacted area, within the 20 µg/L

isopleth (approximately 4500 square feet). The target injection area was 16 to 24 ft. bgs where the highest TCE concentrations were detected.

**RAB Member: Is TCE a DNAPL?**

P. Dombrowski: Yes, however current concentrations did not indicate that pure-phase DNAPL was present in the subsurface. The pilot test was designed with the expectation that DNAPL historically entered the subsurface and sank to the top of bedrock. The pilot test was designed to address low-level concentrations present at the Site.

Sixteen new monitoring wells and numerous injection wells were drilled as part of the pilot test, which helped to refine the understanding of the subsurface. It was determined the upper 4 to 5 ft. bgs was composed of fine to medium grained sand. Native material began around 6 to 8 ft. bgs and was primarily very fine sand with silt and gravel. Beneath this layer, beginning at approximately 16 ft bgs was a highly compacted fine sand and silt where the majority of the injection and monitoring wells were screened. Bedrock coring was done to confirm auger refusal depth was in fact bedrock. Hydraulic conductivity testing was conducted in those wells screened in the anticipated injection interval.

A baseline sampling event was conducted in February 2013 to determine the pre-injection concentrations of TCE. Eleven of the eighteen wells samples had TCE concentrations below the remedial goal. The maximum concentration detected was 14 µg/L, which was lower than the maximum 25 µg/L concentration detected during the RI. Three of the four highest detections were located in the western portion of the pilot test area. Based on these results, a more focused pilot test was developed surrounding the most impacted wells.

The injections began in April 2014. Approximately 5,599 gallons of potassium permanganate (KMnO<sub>4</sub>) were injected at a 2% concentration by volume. Ten injection wells were used and six temporary injection points were used for the injection.

During the injections, groundwater with KMnO<sub>4</sub> entered a storm drain through a misaligned joint and began flowing out of a drainage ditch on the southern portion of the Site. A Spill Prevention and Response Plan was in place prior to the start of the injections and was immediately implemented. A berm was created from soil and mulch to impede the flow from the outfall and limit the migration within the drainage ditch. Sodium thiosulfate and acetic acid were used to neutralize the KMnO<sub>4</sub> in the storm drain before daylighting at the outfall. Monitoring and neutralization was conducted daily until the storm drain was lined to stop the infiltration of groundwater with KMnO<sub>4</sub> into the storm drain. Sediment and surface water samples were collected from the drainage ditch as well as up-gradient, down-gradient, and cross-gradient locations to evaluate potential impacts related to the KMnO<sub>4</sub> release. These results are currently being evaluated by the Navy and EPA.

Groundwater samples have been collected twice (1½ and 4 months) since the April 2014 injections. Results indicated the KMnO<sub>4</sub> remained in three of the four monitoring wells within the injection area (20-100 parts-per-million [ppm] concentration). These wells will not be sampled until the 6-month sampling event. Of the remaining monitoring wells samples, only three had TCE concentrations greater than the remedial goals.

**RAB Member: Were the observed TCE concentrations within the range expected based on the design of the pilot test?**

P: Dombrowski: Prior to injections, the TCE concentrations in some locations had decreased from concentrations observed during the Remedial Investigation to below the Remedial Goal of 5 ppb. The observed concentrations detected during the post-injection sampling were a product of naturally attenuating concentrations and the influence of the KMnO<sub>4</sub>.

**RAB Member: What's the chance that contamination escaped outside the injection area prior to the start of investigation and remediation at Building 82?**

P. Dombrowski: Sampling performed during the Remedial Investigation (RI) successfully bound the limits of the TCE plume to the 1 ppb isopleth. The focus of the pilot study was to eliminate the highest concentrations that could potentially act as the long-term source for these low-level concentrations. Any contamination outside the area of influence was below the 5 ppb standard and would be attenuated naturally.

**RAB Member: Where does chemical oxidation fit with respect to cost in comparison with other remediation alternatives?**

P. Dombrowski: Due to the size of the plume, targeted chemical oxidation is the most cost effective method. Other remediation technologies become expensive when addressing diffuse plumes and large treatment volumes.

**RAB Member: Does chemical oxidation work only for jet fuels?**

P. Dombrowski: Chemical oxidation will work on any organic contaminant. The one caveat is that the oxidation is only effective on dissolved jet fuels and not liquid fuel product. Additionally, jet fuel chemical oxidation has a higher oxygen demand to stoichiometrically break down fuel contamination. Note: A clarification was made to the RAB that TCE is a chlorinated solvent and not a fuel related contaminant.

**RAB Member: What was the target injection depth?**

P. Dombrowski: The target injection interval was 16 ft. bgs to the top of bedrock, approximately 24 ft. bgs. The main focus was on the interval between 16-20, at the interface of the sand and highly compacted silt.

**RAB Member: Did injection solution enter the TACAN outfall?**

There was no visual evidence of  $\text{KMnO}_4$  entering the TACAN outfall during the month of daily observations. Surface water and sediment samples were collected from the TACAN outfall and did not show any increases in metals concentrations in comparison to background levels.

**RAB Member: Where did the material that the solvents were used to clean the jet engines go?**

P. Dombrowski: The solvent use was likely for engine and small parts cleaning. A full suite of VOC analyses were performed during the RI phase and during recent analysis. If petroleum hydrocarbons were present, they would have been detected. No other fuel related contaminants were detected in the aquifer. It is not uncommon for other contaminants to be comingled in a TCE plume; however, this was not the case at Building 82.

**RAB Member: Was VPH/EPH analysis included in the suite of analyzed compounds? Did the analysis suite include other contaminants that might be present?**

Dave Barney: A complete analysis of the groundwater was performed during the RI to determine the nature and extent of contamination. Once the COCs were determined, analytes were removed not because of cost, but because they were determined to not be impacting groundwater at the Site.

**RAB Member: Are there specific chemical oxidants that can be used to treat petroleum hydrocarbons?**

P. Dombrowski: Yes. Before a chemical oxidation pilot test is performed, site specific information is gathered (chemical of concern, geology, hydrology, etc.) to determine the most effective chemical oxidant available to be used at a site. In the case of Building 82, it was potassium permanganate.

**RAB Member: Are there any potable aquifers within the TCE plume at Building 82?**

P. Dombrowski: No. However, there is a potable aquifer not far from the edges of the TCE plume associated with Building 82. This is the reason why clean up goals were set to drinking water standards.

**RAB Member: What is the current extent of the TCE plume at Building 81? Is there any mixing with the contamination observed at Building 82?**

P. Dombrowski: There are numerous wells associated with Building 81 which clearly delineate the contamination at that Site. There is a clear western extent of contamination in the overburden and bedrock aquifers in close proximity to Shea Memorial Drive.

**RAB Member: What is the purpose of Land Use Controls?**

P. Dombrowski: The LUCs are in place to prevent groundwater usage when concentrations are above the remedial goals set by the ROD. If concentrations reach the remedial goals, then the LUCs are no longer necessary.

**RAB Member: What is the timescale or duration for the pilot test?**

P. Dombrowski: On a molecular scale, the reaction is instantaneous and continuous until all the available oxidant is used up. The test will continue until all concentrations are below the remedial goals. Pending results will be evaluated by the Navy to determine the next step in the pilot test and whether additional injections are needed.

**RAB Member: Were there drains in Building 82? Has any investigation been conducted inside the hangar?**

D. Barney: The floor drains were removed from Building 82. Previous investigations determined there was no contamination beneath the Building 82 slab.

## 4. UPDATES

### Building 81

The ROD was signed September 30<sup>th</sup>. The Remedial Action/Remedial Design is currently being drafted. Finalized versions of these plans will be completed within the next year.

### Building 82

The 6-month post injection sampling will be conducted the week of October 20<sup>th</sup>. These results will be reviewed by the Navy to determine the next steps in the pilot test injection study.

### Rubble Disposal Area

Approximately 10 months of post methane gas mitigation system installation data has been collected. Results are somewhat favorable, we have noticed some successes, but there is still additional sampling work to be done. The monthly data will be summarized in a report. Based on the data, we will make decisions as to whether additional actions are necessary. LTM was conducted at the other landfill areas (Small Landfill, West Gate Landfill); results are pending.

### Sewage Treatment Plant

Sediment and soil were removed from the wetland headwall. Several pipes were cleaned and excavated. Additional underground pipes were identified which connected to the main lines flowing into the wetland. These pipes were also cleaned and excavated. Excavations across the site are confirming that the original demolition drawings were not followed. The Navy has adjusted the original remedial scope to address potential issues as they are uncovered during the excavation process.

## **SRA**

The two components of the Remedial Design are currently being developed by the Navy. The first component addresses injections across the source area and the second component addresses the installation of a permeable reactive barrier. The installation of the injection points will begin in the coming weeks.

## **West Gate Landfill**

LTM sampling was conducted a few weeks ago, and a land use control inspection was recently conducted by Navy with EPA oversight.

## **RA 11**

Sampling was conducted at the Fire Fighting Training Area. An RI Work Plan is being developed to address the PFC contamination at Hangar 1.

## **Industrial Operations Area**

Fieldwork was tentatively scheduled for fall. The original start date was delayed due to additional comments received from EPA which the Navy is still addressing.

## **Old Wooden Hangar**

The current work plan includes clearing off the soil from the slab that is north of the runway to expose the slab and looking for any additional subsurface vaults and chambers.

## **FOSTs**

The final components to the FOST 6A Grant of Environmental Restriction and Easement (GERE) are being completed.

D. Barney presented a draft figure illustrating the current LUC restrictions in place across NAS South Weymouth. This was an action item from the previous RAB Meeting. D. Barney will make this available in addition to a list of the current AULs.

**The next RAB Meeting is tentatively scheduled for February 12<sup>th</sup> 2015. Topics of discussion will include an update on the status of the Sewage Treatment Plant Site.**





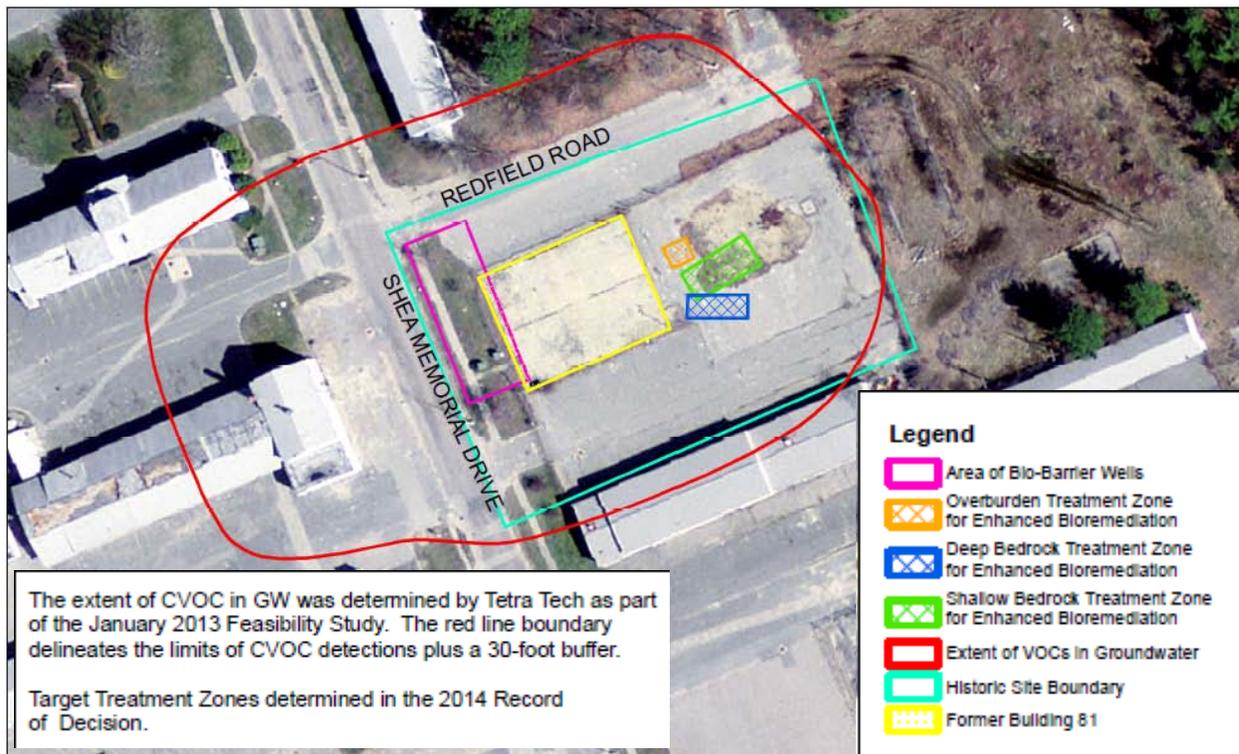
# Former Naval Air Station South Weymouth Restoration Advisory Board (RAB) Update January 2015

## Installation Restoration Program (IRP) Sites

Building 81 – The Record of Decision (ROD) was signed on September 30, 2014. The ROD selected remedy, shown in the figure below, includes the following components:

- In-situ (Overburden and Bedrock Source Area) Enhanced Bioremediation
- Bio-barriers
- Monitored Natural Attenuation (MNA)
- Land Use Controls (LUCs)
- Five-Year Reviews (as needed)

The Navy is preparing a Remedial Design (RD)/Remedial Action Work Plan (RAWP) to implement the remedy.



Building 82 – In April 2014 the Navy completed in situ chemical oxidation (ISCO) injections (using potassium permanganate) in the pilot study area.

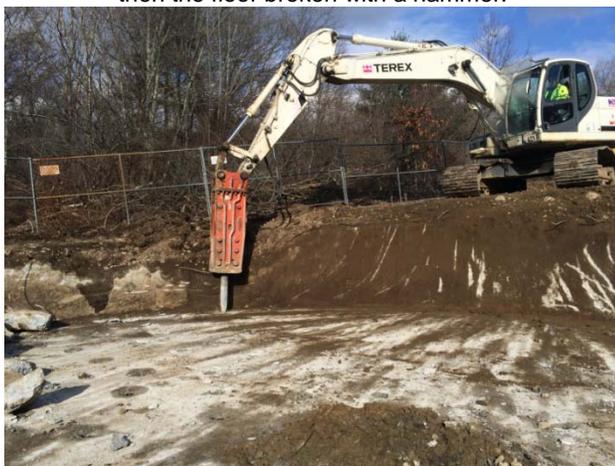
Results of the October post-injection groundwater sampling indicate that TCE concentrations have been reduced by the pilot test injection program. An additional post-injection groundwater sampling event is scheduled for late winter 2015. Following review of the data, Navy will evaluate if additional injections are necessary to reach Remedial Goals.

Rubble Disposal Area (RDA) –The Navy completed installation of a landfill gas mitigation project to reduce concentrations of methane gas adjacent to the landfill footprint in Fall 2013. The landfill gas mitigation system was monitored monthly during 2014 to evaluate the performance. The mitigation system has been effective in reducing methane levels; however, there are still some areas with elevated methane levels. A Remedial Action Completion Report (RACR) will be prepared in 2015 to document the corrective action and next steps required.

Sewage Treatment Plant (STP)

Additional excavation and removal of old pipes that may be a continuing source of contamination are ongoing. A ROD Amendment may be issued to add Land Use Controls (LUCs) and Long Term Monitoring (LTM) to the remedy. The LUCs would prevent residential use of the wetland area where there are minor exceedances of RGs and prevent disturbance of deep soil (>10') without proper management of the soil.

North Trickling Filter bed, where the filter material was excavated and then the floor broken with a hammer.



Small Landfill – The most recent sampling event was completed in September 2014 and the next event is scheduled for March 2015. The landfill was mowed in November 2014.

Solvent Release Area –The Navy submitted the Final Remedial Design (RD) for Phase I source area bioremediation injections in early January. Field implementation of the remedy began with tree clearing in November 2014 and the installation of the overburden monitoring and injection well network. Installation of the bedrock monitoring and injection well network will be conducted between January and March 2015. Injections will occur in Spring 2015. A Draft RD for the Permeable Reactive Barrier (PRB) walls will be submitted in September 2014. Additionally, a Land Use Control Implementation Plan (LUCIP) has been submitted and is under discussion.

Phase I RD overburden monitoring and injection well locations installed in December 2014.



West Gate Landfill – The most recent sampling event was completed in December 2014 and the next event is scheduled for March 2015.

**SUMMARY STATUS  
CERCLA SITES AT FORMER NAS SOUTH WEYMOUTH**

<b>CERCLA Status</b>	<b>Remedial Investigation</b>	<b>Feasibility Study</b>	<b>Proposed Plan/Record of Decision (ROD)</b>	<b>Remedial Design/ Remedial Action</b>	<b>Post-ROD Long-Term Monitoring (LTM)</b>
West Gate Landfill					X
Rubble Disposal Area					X
Small Landfill					X
Sewage Treatment Plant				X	
Building 81				X	
Building 82				X	
Solvent Release Area				X	

## **Massachusetts Contingency Plan (MCP) Sites**

There are currently no active MCP Sites at the Former NAS South Weymouth.

## **Environmental Baseline Survey (EBS) Sites**

- AOC 55C – Wetland evaluation and wetland species monitoring is continuing.
- RIA 11 (AFFF) –The second round of LTM sampling was conducted in October 2014 and the third round is planned for March 2015. A Remedial Investigation Work Plan to further evaluate the nature and extent of perfluorinated compounds (PFCs) at the Hangar 1 site (Aquifer Protection District Parcel) was submitted to EPA and MassDEP in November 2014.
- Industrial Operations Area (IOA) – Additional actions are required for soil. A Focus Feasibility Study evaluating additional remedial options was submitted to EPA and MassDEP in December 2014.
- RIA 111 (Old Hangar 2) – A work plan for additional investigations is the next action for this site.

## **Finding of Suitability to Transfer (FOST)**

FOST 6A –The Grant of Environmental Restriction and Easement (GERE) is under discussion by all stakeholders. Navy signature of FOST 6A is expected to occur in summer of 2015. This FOST includes AOC 55C, Small Landfill, West Gate Landfill and the Main Gate Encroachment Area. The FOST was submitted for public comment on December 21, 2011.

FOST 4 & 5A Addendum –An Addendum to FOST 4 and 5A to update and address the parcels that were held back from transfer due to the previously unresolved considerations from the presence of perfluorinated compounds (PFCs) at the FFTA has been signed by the Navy and the parcels are now suitable for transfer. The “Hold Back” parcels at the FFTA area, approximately 8.8 acres, will be transferred to the Southfield Redevelopment Authority (SRA) shortly.

Please feel free to contact Dave Barney, BRAC Environmental Coordinator, at 617-753-4656 (or by email at [david.a.barney@navy.mil](mailto:david.a.barney@navy.mil)), or stop by the Caretaker Site Office if you have any questions or concerns related to this memo or any restoration activities.



# AGENDA

## Former Naval Air Station South Weymouth, MA Restoration Advisory Board (RAB) Meeting Agenda

**Date:** February 12, 2015

**Time:** 7:00 PM

**Location:** Southfield Redevelopment Authority Office  
223 Shea Memorial Dr., So Weymouth, MA

<i>Agenda Items</i>	<i>Item Lead</i>	<i>Projected Time</i>
1. Introduction, Review of Meeting Notes	Facilitator	7:00 – 7:15
2. Sewage Treatment Plant Update	Navy	7:15 – 8:15
3. Updates and Action Items	Navy	8:15 – 8:30
4. Questions, Agenda Items, Next Meeting	Facilitator	8:30 – 9:00

**Facilitator:** John Goodrich, Massachusetts Office of Public Collaboration

### Restoration Advisory Board (RAB) Members:

**Abington:** (Alternate: Steve Ivas); Phil Sortin (Alternate: Beth Sortin)

**Hingham:** no current representation

**Rockland:** no current representation

**Weymouth:** James Cunningham (Community Co-Chair); Matthew Brennen (Weymouth BoH);  
Steve White

**Navy:** Dave Barney (Navy Co-Chair)

**EPA:** Carol Keating (Alternate: Lynne Jennings)

**MA DEP:** David Chaffin (Alternate: Anne Malewicz)

### BRAC Cleanup Team (BCT) Points of Contact:

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