NASJRB WILLOW GROVE
RAB MEETING MINUTES

Meeting Date: MARCH 7, 2007
Meeting Time: 6:00 p.m.
Meeting Place: Navy Conference Room, Building 1, NASJRB Willow Grove

Attendance:

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Kaye-Maxwell-Martin</td>
<td>RAB Member</td>
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<td>Eric Lindhult</td>
<td>RAB Member</td>
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<td>Thomas Hibbs</td>
<td>RAB Member</td>
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<td>Ray Leopold</td>
<td>RAB Member</td>
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<td>Gary Horne</td>
<td>RAB Member</td>
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<td>Jack Dunleavy</td>
<td>RAB Member</td>
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<td>CDR Gilbert Viera</td>
<td>NASJRB Willow Grove (Co-Chairperson)</td>
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<td>Jim Edmond</td>
<td>NASJRB Willow Grove</td>
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<td>Hal Dusen</td>
<td>ARS Willow Grove</td>
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<td>Charanjit Gill</td>
<td>ARS Willow Grove</td>
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<td>Julie Widman</td>
<td>Montgomery Watson</td>
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<td>Lt. Mark Medvesky</td>
<td>ARS Willow Grove</td>
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<td>Jim Colter</td>
<td>NORTHDIV</td>
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<td>Jeff Dale</td>
<td>NORTHDIV</td>
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<td>Russ Turner</td>
<td>Tetra Tech NUS, Inc</td>
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<td>Kevin Kilmartin</td>
<td>Tetra Tech NUS, Inc</td>
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<td>Carl Reitenbach</td>
<td>EA Engineering and Science</td>
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<td>April Flipse</td>
<td>PA DEP</td>
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<tr>
<td>Pamela Trowbridge</td>
<td>PA DEP</td>
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Jim Edmond opened the meeting by welcoming those present. Mr. Edmond mentioned that upcoming events at the Air Station include the Air Show on September 8th and 9th. The Navy Blue Angels will be the featured act this year. Tickets will be available for RAB members. The Lady Luck Club (formerly the Pitcairn Club) is open to the public. Also, the swimming pool on base has been covered and is now heated. Swimming pool hours are Monday through Friday 6:00 to 8:00 a.m., 11:00 a.m. to 1:00 p.m. and 3:00 to 6:00 p.m. Saturdays the pool is open 10:00 a.m. to 3:00 p.m. ID at these facilities is not checked and entry is free. RAB members are invited to use these services.

Jim Edmond noted NASJRB Willow Grove has been nominated for award by the U.S. Department of Energy “Clean Cities” program for use of alternate fueled vehicles. The outcome of this nomination should be known in about a month or two.

Jim Edmond reported that in January 2000, the Navy began to institute an ISO 14001-based Environmental Management System (EMS) on the Air Station. The goal of the program is to strive for continuous environmental improvement. Automobile manufacturers, their suppliers and other firms doing business internationally, embrace the international standard ISO 14001. U.S. Government agencies and organizations are faced with Executive Order 13148 requiring implementation of EMS by October 2005. The NASJRB Willow Grove EMS is being implemented concurrently with an electronic information management system (EIMS) via Internet technologies. The program is currently underway with approximately ten continuous improvement Environmental Programs (EMP’s) underway. EMP’s range from ensuring no methyl tertiary butyl ether (MTBE) is present in Air Station drinking water supplies, to programs to reduce the use of pesticides and to systematically reduce the use of toxic compounds on the Air Station. As part of this effort, environmental issues and the Administrative Record will documented on the Web. RAB meeting minutes and anything significant in the environmental field will be placed on the Web to give RAB members opportunity to see it on a regular basis.
Jim Edmond introduced Jim Colter to summarize a TRC (technical review committee) meeting with EPA held previously to discuss Phase II RI comments and Site 5 groundwater updates.

Jim Colter mentioned that the draft RI Report that was sent out in April '98. The EPA responded with comments that became a list of about seven "action items" for the Navy to follow-up. The action items were formulated in about April of '99, and the Navy has been working on them ever since. At the meeting held with EPA to discuss progress against the "action items" EPA seemed generally pleased with the results of Navy response.

A RAB Member asked if RAB members will be able to see what the EPA comments were and the response to those comments. Mr. Colter mentioned that he will attach these meeting minutes a status document (Attachment A) he has been keeping to document progress against "action items."

Mr. Colter proposed to briefly summarize each of the items.

EPA had requested additional graphic presentation of the interrelationship between the three sites on the south end of the Air Station (Sites 2, 5 and 3). In response the Navy prepared a series of three new figures showing water levels and contaminant distribution across the three sites.

There was a question on the effect of geologic structure at Site 5 on contaminant transport. That is, how does dip and bedding plane natural geology influence contaminant flow? Kevin Kilmartin (Tetra Tech NUS) will cover that issue tonight.

EPA wanted additional groundwater quality work at Site 5. A work plan was prepared and submitted in May of 2000 and was implemented this past Fall. Kevin Kilmartin will also cover that.

A "pump" test was performed on Horsham Township well number 26 back in January to gauge potential connections with Navy sites. Results were presented by USGS at previous RAB meetings.

EPA has a program called EPIC (Environmental Protection Insurance Company) which reviews historical aerial photos to outline what they call anomalies. Jeff Dale (Navy Facilities Engineering Command, Lester, PA) reviewed the EPIC reports last October to ensure (soil sample) investigations were conducted at each of the locations that EPIC identified as an anomaly.

The issue of whether bedrock would be holding chlorinated solvent to act as a source was investigated by extracting a rock core for analysis. At the last RAB meeting Ron Sloto (USGS) presented the results of their analysis. Basically, the result of that analysis showed that there is not much being retained in bedrock that would act as a continuing source.

The last item was to consider if a soil removal project would be warranted to remove a source of groundwater contaminants or to reduce human health or ecological risks at Site 5. There will be a separate feasibility study apart from the feasibility study underway for groundwater at Site 5. Tetra Tech will give the Navy recommendations for soil sampling since no samples have been done here for a number of years.

Comments from the EPA were focused on the human health and ecological risk assessment sections, indicating a preference to rewrite these sections to expand on certain aspects. That activity doesn't have any bearing on conclusions about the groundwater plume at Site 5. We have a good understanding of the nature and extent of the plume, and the Navy wants to move on to a feasibility study (FS). In a few months the FS for groundwater should be finalized, recommending alternatives for Site 5 groundwater. We hope to implement the recommended groundwater remediation either at the end of this fiscal year or early next fiscal year.
A RAB Member asked about the newest EPA program (managers). Is anyone from EPA here at this meeting? Is there some reason why they don't attend these meetings? Staffing problems? Mr. Edmond replied that no one from EPA is at this meeting but they were at the last RAB meeting.

Kevin Kilmartin passed out copies of his presentation (Attachment B). Mr. Kilmartin mentioned that his presentation will cover some of the "action items" touched on by Jim Colter relating to hydrogeology and the volatile organic compounds (VOCs) found in groundwater at Site 5. Mr. Kilmartin presented the analytical results from the recent comprehensive groundwater sampling, and discussed local groundwater flow in the vicinity of Site 5. This work refines and confirms earlier results. In addition, the groundwater taken "down dip" geologically from Site 5 from monitoring well 05MW12 was found to contain levels of solvent concentration similar to the wells around it, but the levels are not nearly suggestive of a concentrated product presence.

Jim Edmond asked what assumptions can be made? The data from '91 and '00 are virtually the same, but the plume extent does not increase. Can we make any conclusions now? Mr. Kilmartin stated that two things are suggested. There appears to be a source remaining in the vicinity of the concentrated plume center near monitoring well cluster 1. The nature of the remaining source may be residual solvents trapped in the soil or in the very narrow fractures of the weathered bedrock. A RAB Member commented that it seems as if the plume has reached a state of equilibrium. The plume isn't getting bigger or smaller. Mr. Kilmartin agreed that the plume appears to have reached steady state. Because of the limited level of solvents entering groundwater, natural factors like dilution, dispersion and biological processes act to keep the concentrations relatively constant at the far end of the plume from the source. Mr. Edmond asked if we do nothing, then over a period of time it would just shrink in size? Ms. Flipse mentioned it might take 30 years or it might take 100 for the plume to finally collapse. A RAB Member asked if the ratio of trichlorinated solvent to dichlorinated solvent changed over the period? The higher ratio of dichlorinated compounds to trichlorinated compounds at the fringe compared to the source area, indicates that chemical decomposition appears to be occurring. Have you ever found vinyl chloride (chemical breakdown product). Russ Turner mentioned that no vinyl chloride has been detected. However, natural biodegradative processes appear to be working, at least in the fringe areas of the plume where hydrogen is saturated beyond the concentration our tests can measure. Conditions appear to be favorable for biologically mediated dechlorination and test results indicate chemical degradation of the source material is occurring. A complete discussion will be included in the remedial investigation report.

Jim Edmond introduced Carl Reitenbach (EA Engineering and Science) to present an update on the Navy fuel farm remediation project. Carl Reitenbach presented a brief history of the former Navy fuel farm configuration, use, and a history of investigation/remediation. The spilled petroleum (jet fuel) product recovery system was installed in 1998. The system was designed to recover the free phase (floating) product using vacuum-enhanced product recovery. A water pump is used to depress the groundwater level. Treated groundwater is discharged to the sanitary sewer. A separate pump is used to collect the free product that is measured and stored in a holding tank for off-site disposal. Vapor from the vacuum enhancement action is treated by thermal oxidation to ensure no organic compounds are emitted to the atmosphere.

A RAB Member asked if there is some sort of computerized control system on the equipment? Mr. Reitenbach replied that the controls are computerized and can be checked by calling from a remote site to check flow rates, etcetera.

A RAB Member asked if the treated groundwater is discharged to the on-Base water treatment system? Mr. Reitenbach replied that the treated groundwater is discharged to the NASJRB Willow Grove wastewater treatment plant.
Mr. Reitenbach showed a map of the area and a series of groundwater elevation figures showing the reduction in the area of the plume since the remediation system has been in operation. About 1,900 gallons of free product have been collected. Recently, the rate of collection of free product has slowed. It seems that there is still recoverable product there, but the limits of diminishing returns for this particular technology may have been met.

A RAB Member asked if the volume of petroleum vapor discharged via the thermal oxidizer has been estimated? Also, how long will the system be kept operating? Mr. Reitenbach mentioned that a rough estimate of the volume of petroleum recovered and treated via the thermal oxidizer is another 800 gallons. The treatment of vapor can be pretty expensive, so, considering the lower rate of product recovery, the Navy tested turning off the vacuum enhancement and the thermal oxidizer to see what impact that would have on the free product recovery rate. More product was collected during the vacuum enhancement shut down test than during the previous couple of months. No time for how long the system will be run can be stated now. Right now, other alternatives are being considered.

Jim Edmond asked how does the weather, wet or drought, effect the recovery system? Mr. Reitenbach stated that recovery is better during dry periods.

A RAB Member asked if there was any Av gas? This Base had that for years. Isn't it more volatile or more of a pollutant? Is there anything from prior years? Mr. Edmond replied that at the time of the spill (in the early 80's), there was no Av gas being used at the Air Station. The spill was limited to JP-4 and 5. If there had been Av gas leaked, the more volatile fractions like benzene would have been detected at high concentrations in the sampling conducted.

Charanjit Gill introduced Julie Widman (Montgomery Watson) to summarize recent results of sampling performed at the six Air Force sites proposed for "no further action." EPA requested the Air Force to collect more soil and groundwater samples. The Air Force is hoping to close these sites this year.

Julie Widman mentioned that she would summarize preliminary results from the six sites recommended for no further action. EPA requested additional sampling at each of the sites. Analytical results have only recently been received from the laboratory, so the results are going to be preliminary. Work included installation of a groundwater monitoring well near the wash rack to determine the concentration of TCE in the groundwater. Results are not in from the laboratory. The concern at the former drum storage area was for arsenic in soils and a possible volatile organic carbon (VOC) other than the recognized benzene, toluene, ethyl benzene and xylene (BTEX) problem in groundwater. No VOC's other than BTEX were found in the monitoring well selected for sampling. Arsenic in soils was not as high as the levels previously reported. The sediment from the ponding basin was sampled, but results are not yet available. Near the heating plant the concern was the storage of hazardous substances. No sampling had been done there. Soil samples showed trace levels of petroleum compounds, a little bit of pesticides, similar to concentrations found scattered around the Base, and some metals, but nothing high that would indicate an impact. The old well house, in the northern corner of the base, was installed in the '60s and was used briefly as a drinking water source. The well was sampled in addition to soils near the doorway. The well house was knocked down and the well was closed by placing grout using a tremie pipe. There wasn't anything found in the groundwater or soil samples that would suggest an impact from activities that went on in the well house. Remaining work is to finish data validation and update the existing report. It seems likely that the Air Force will be able to close out the sites with the exception of the wash rack.

A RAB Member asked what about the used oil tank? Ms. Widman stated that soil was sampled there in 1998. There wasn't anything in it, so there was no need to go back in the end of 2000 to take more samples.

A RAB Member asked if there are reports generated for the work done by the Navy? The Navy sends all kinds of reports for review. Mr. Gill mentioned that they are located in the Administrative Record (Repository) in the Horsham Township Building, right next to the Navy's.
Mr. Edmond clarified that the Repository is a couple of boxes located in the Horsham Township Building where the Navy and Air Force keep copies of reports for public access.

A RAB Member asked if the Air Force deals with the same EPA project staff as the Navy. Mr. Gill replied that the same staff is dealt with.

A RAB Member mentioned that the Navy seems to look at all of their sites and do something with all of the sites, while the Air Force seem to do little things with each of their sites at different times. Mr. Gill replied that the Air Force recommended no further action at these sites. EPA came back and said sample this, this and this. Mr. Colter mentioned that the Navy also has six or seven no further action sites. A report was written in the mid-‘90s. No official comments have been received. At the time of the report, human health and ecological risk assessment was handled differently. Now it seems likely that the Navy will be required to obtain additional samples at these sites as well.

Jim Edmond announced that the next RAB meeting was scheduled for Wednesday, June 6, 2001, at 6:00 p.m.
Ms. Lisa Bradford  
U.S. Environmental Protection Agency, Region III  
Federal Facilities Section  
1650 Arch Street  
Philadelphia, PA 19103-2029

Dear Ms. Bradford:

SUBJ: NAVY’S RESPONSES TO USEPA REGION III COMMENTS ON DRAFT PHASE II REMEDIAL INVESTIGATION (RI) REPORT DATED APRIL 1998; NAVAL AIR STATION JOINT RESERVE BASE (NASJRB) WILLOW GROVE, PA

The Navy had issued a Draft Phase II RI Report in April 1998 for which comments were requested. At a technical meeting held at Northern Division, NAVFAC offices in Lester, PA in April 1999, representatives from the USEPA Region III office and Pennsylvania Department of Environmental Protection (PADEP) offered several comments and recommendations that the Navy took as Action Items.

Since that meeting, the Navy has been addressing each of the Action Items and is now forwarding enclosures (1) and (2) that basically serve as the Navy’s responses to regulator comments on the Draft Phase II RI Report. Enclosure (1) contains nine attachments that address specific Action Items. Enclosure (2) is being re-issued and are the Navy’s responses to comments submitted by the USEPA Region III’s toxicologist that was assigned to this project at that time.

If found to be acceptable, the Navy will incorporate the information contained in enclosures (1) and (2) into Final versions of the Phase II RI Report. As explained at our last meeting held at the USEPA Region III offices on December 5, 2000, the Navy will finalize a separate Phase II RI Report for each individual site rather than a four-site package as was done for the Draft Report.

The Navy would like to request that enclosures (1) and (2) be reviewed and that the regulators be prepared to discuss each of the Action Items at our next technical meeting that has been scheduled for Wednesday, February 7, 2001 at Building 1 located at NASJRB Willow Grove.
If you have any questions regarding the enclosures, please give me a call at (610) 595-0507, extension 163.

Sincerely,

[Signature]

JAMES L. COLTER
Remedial Project Manager
by Direction of the
Commanding Officer

Enclosures:  
(1) Nine Attachments Addressing Specific Action Items  
(2) Navy Responses to EPA Toxicological Comments on Draft Phase II RI Report

Copy to:  
PADEP, April Flipce  
NASJRB Willow Grove, Jim Edmond  
Tetra Tech NUS, Russ Turner
SITE 5 REMEDIAL INVESTIGATION:

ITEM 1: The Navy will generate a map that shows IR Sites 2, 3, and 5 and the surrounding area. The map should include building numbers, location of wells and water level readings.

RESPONSE: See Attachment (1) that includes three figures. Figure 1 shows the locations of all monitoring wells installed at Sites 2, 3 and 5 on a USGS Quadrangle. Figure 2 shows the same monitoring well locations on an aerial photo background. Figure 3 shows the potential locations for additional monitoring wells at Site 5.

ITEM 2: What are the effects of the geologic structure on the groundwater flow patterns at SITE 5? How are the dip and bedding planes influencing contaminant movement?

RESPONSE: See Attachment (2). Upon acceptance, this information will be made part of the Final RI for Site 5.

ITEM 3: The Navy will propose a plan to further characterize the groundwater in the area west of well cluster 11 at Site 5.

RESPONSE: Attachment (3) is the Navy's Remedial Investigation Workplan Addendum for Site Investigations at Site 5. This letter workplan was submitted for review on 26 May 2000 and no adverse comments were received.

Implementation of the workplan was completed in the Fall 2000. Attachment (4) is being submitted that is a compilation of the recently collected analytical data. The Navy is currently evaluating this data. The Navy's evaluation consists of using a GIS-based software program (EVS) that analyzes and portrays the data in a three-dimensional view. This effort is not yet completed but should be in the next couple of weeks. The Navy is expecting to be able to present this analysis at the upcoming technical meeting scheduled for February 7, 2001. At this meeting, the Navy will also discuss its recommendations and conclusions for Site 5. If accepted, these recommendations and conclusions will be made part of the Navy's Final RI for Site 5.

ITEM 4: Navy is to approach Horsham Township Water District about conducting a Pump Test on municipal well #26 in order to assess the impacts, if any, that this well may have on groundwater near Site 5.

RESPONSE: Ralph McQuaid (Horsham Township Water District) was contacted on 7 June 1999. Water demand over the summer was high and other maintenance activities on other wells made running Well #26 more imperative. For these reasons, the District was reluctant to shut down the well. Mr. McQuaid suggested that a pump test on Well #26 may be possible in the Fall when demand is typically lower, the other maintenance work would be completed and construction of a new well (Well #40) in the same vicinity as Well #26 would also be completed and could be used to supplement water when #26 is shut down.

Russ Turner will follow up with Mr. McQuaid regarding the status of the above and the possibility of performing the pump test on Well #26 in the near future. This follow up was conducted on 13 October 1999 and it was suggested that the shutdown for Well #26 could take place after the first of the year when the water demand has been historically at its lowest.

The actual shutdown, and subsequent pump test for Horsham Well #26 was conducted during the week beginning 17 January 2000 and was concluded during the week of 22 February 2000. The collected data has been evaluated by the USGS and was presented to the members of Willow Grove's RAB on 7 June 2000. A copy of that presentation is enclosed and discussions regarding Well #26 begins on Page 5 of Attachment (5).
SITE 5 REMEDIAL INVESTIGATION (Continued):

**ITEM 5:** Navy will review EPIC photos for all of NASJRB Willow Grove received from EPA on 15 April 1999. The Navy will review the photos to see if there are other possible sources in the vicinity of the IR Sites.

**RESPONSE:** The Navy's review of the EPIC photos was completed for IR Site 5 ONLY in October 2000. The results of this analysis are presented in Attachment (6). Upon approval, the information will be made part of the Final RI for Site 5.

Subsequent conclusions for the other IR Sites will be made part of the Final RI's for each individual site.

**ITEM 6:** Navy will consider using USGS to investigate weathered bedrock layer as a source of continuing groundwater contamination. This will involve taking cores of the shallow bedrock layer and eluting any VOCs from the core.

**RESPONSE:** The Navy conducted the coring of the weathered bedrock during the week of 4 September 2000. The analytical results from that effort are presented in Attachment (7). A discussion of the rock core procedures and the results of the lab analysis will be part of the agenda for the next scheduled meeting of Willow Grove's RAB that is to be held on December 6, 2000.

**ITEM 7:** The Navy will consider whether a soil removal project is warranted either to remove as a source of groundwater contamination or to reduce Eco/human health risk.

**RESPONSE:** This evaluation will be made part of the Feasibility Study for Site 5 which is currently being developed. The FS will be forwarded concurrently with the submission of the Final RI for Site 5 or shortly thereafter.

**LOW-FLOW SAMPLING PROCEDURES:**

**ITEM 1:** EPA expressed concerns that the Low-Flow sampling protocols may not have been followed resulting in a question regarding usability of the analytical data. The following action items resulted:

- Review field logs to determine if protocols were followed
- Examine historical data and compare with the data in question
- Determine if the conceptual site model changes if the concentrations were higher (Assumption: the highest level ever detected or 2 times the latest concentration)
- Determine if multiple fractures present within the screened interval

**RESPONSE:** Tetra Tech NUS's responses to the first three bullets listed above are shown on Attachment (8). Discussions regarding the last bullet are shown on Attachment (9). If found to be acceptable, the Navy will include this information into the Final RI Report for each IR Site.

**ITEM 2:** The Navy will look at the effect the suspect data may have on the human health risk assessments.

**RESPONSE:** Tetra Tech NUS's review of the effects, if any, that the suspect data may have on the human health risk assessments conducted at each of the IR Sites is included in Attachment (8) which discusses data quality issues. If the discussions included in Attachment (8) are found to be acceptable, the Navy will include the information into the Final RI Reports for each IR Site.
Reply to comments from Jack Dunleavy

1. Agree. The order of the Executive Summary (ES) will be revised as suggested. Please note that considering the long period of time elapsed since the draft Phase II RI report was issued, and the slow rate of comment response from EPA, the Navy has decided to issue individual revised RI reports for each of the four IR sites.

2. Agree. The magnitude of the investigation will be discussed in the ES. The cost of Phase II RI activities at all four RI sites has been approximately 1.5 million dollars.

3. Agree. The subject removal action was taken some time ago. Discussions will be included in the individual RI report for Site 1.

4. In the Site 1 RI Report, the word “impossible” will be changed to “difficult”. Additional studies of other nearby potential sources, packer testing at the Navy production wells, and tabletop surveys of other available information have been undertaken and, as of yet, a source of the contamination in the production wells can not be definitized. This substantiates the difficulty that the Navy is having to resolve this issue.

5. The Navy agrees with your perspective on this issue. It is anticipated that the Navy will take a similar stance when our conclusions and recommendations are presented in the RI Report for Site 1.

6. Agree. EPA requires site specific human health and ecological risk assessment to help determine remedial action goals for Superfund sites.

7. Agree. The date to discuss pond sediments with BTAG is yet to be set.

8. Agree. This site has not been selected as the highest priority for additional groundwater investigation (Sites 1 and 5 have consumed most of the available budget over the past few years) but in turn, additional investigations can be performed here.

9. At Sites 1 and 2, there is no fear that contaminants may be migrating from a source on Navy property to locations off-station. At Site 5, there have been significant efforts to ensure no contamination is moving off-station. Site 3 groundwater contamination does appear to be involved in off-station migration, but no imminent threat to human or ecological receptors has been identified.

10. Agree. The feasibility study (FS) will consider human health and ecological risk assessment results in determining appropriate remedial action alternatives.

11. Agree. Thanks for this comment. It will help us all keep a realistic perspective of the level of concern that is appropriate for our IR sites.

12. The Navy has found that it is less costly in the long run (to avoid lengthy arguments about data quality and preclude need for costly resampling efforts) to use the more costly but very reliable EPA-endorsed laboratory program.

Reply to comments from Eric Lindhult

1. Agree. The change will be made in the individual site RI report for Site 1 (see reply to Jack Dunleavy comment 1).

2. Agree. The subject Figure reference will be revised.

3. Agree. The issue will be clarified in all individual RI reports.

4. Agree. The references will be revised.

5. This removal action was completed some time ago. Confirmation sampling on-site and in the laboratory ensured that sufficient soil was removed to essentially eliminate any future potential exposure. The Navy’s reason for expanding the limits for the removal action was made based on the fact that the removal action itself was of limited size and relatively inexpensive when compared to the time and effort that would be involved in negotiating institutional controls with the regulators and then ensuring that the restrictions are maintained over an infinite amount of time. In addition, this approach was not deemed satisfactory to the
Commanding Officer of the Base who wished to maintain his ability to develop this area, without restrictions, it space limitations dictated that future expansion would be required.

III  Reply to comments from Kaye Maxwell-Martin

13. Agreo. An attempt was made to use (packer testing and borehole geophysics) in existing wells in the vicinity of the golf course to clarify nature and extent of contamination. Site 3 groundwater contamination does appear to be involved in off-station migration, but no imminent threat to human or ecological receptors has been identified.
AGENDA FOR
RESTORATION ADVISORY BOARD
FOR
NAS JRB / ARS WILLOW GROVE
7 March 2001

6:00-6:15 Welcome
Community Member Agenda Items/Comments

6:15-6:25 Update of EPA meeting about Phase II RI comments

6:25-6:50 Update sampling results at Navy Site 5

6:50-7:00 Update of work at Navy Fuel Farm

7:00-7:15 Break

7:15-7:45 Update Air Force POL Site Remediation

7:45-8:00 a.) Questions & Comments
b.) Set Date for Next RAB Meeting
   (6 June 01)
c.) Meeting Adjourned
NASJRB WILLOW GROVE

VOC PLUME
SITE 5
FIRE TRAINING AREA
The maximum total VOCs concentration = 6005.5 ug/L.
Sample Location Concentrations (ug/l):
- Non-detect
- 1.2 - 5
- 5 - 50
- 50 - 100
- 100 - 500
- 500 - 1000
- Greater than 1000

Notes:
1. Common laboratory contaminants acetone, chloroform, and methylene chloride are not plotted.
2. Monitoring well 15 also contains 1,2-dichlorobenzene (4.5 ug/l), 1,4-dichlorobenzene (21 ug/l), and methyl tertiary butyl ether (118 ug/l).
TOTAL VOCS
PLAN VIEW

VOCs Exceeding 20 ug/L

VOCs Exceeding 1500 ug/L

Plume
Concentrations:

- 3000 ug/L
- 1000 ug/L
- 300 ug/L
- 100 ug/L
- 30 ug/L
- 10 ug/L

Sample Location
Concentrations (ug/L):

- Non-detect
- 1.2 - 5
- 5 - 50
- 50 - 100
- 100 - 500
- 500 - 1000
- Greater than 1000

The maximum total vocs concentration = 6005.5 ug/L
Sample Location Concentrations (ug/l):
- Non-detect
- 1.2 - 5
- 5 - 50
- 50 - 100
- 100 - 500
- 500 - 1000
- Greater than 1000

Plume Concentrations:
- 3000 ug/L
- 1000 ug/L
- 300 ug/L
- 100 ug/L
- 30 ug/L
- 10 ug/L

CROSS SECTION LOCATION

Note: View is facing north-northeast

TOTAL VOCs CROSS SECTION VIEW

The maximum total VOC concentration = 6035.5 ug/L.
Fuel Farm Remediation Update

Naval Air Station Joint Reserve Base
Willow Grove, Pennsylvania
RAB Meeting
March 7, 2001

Presented by:
Cárl Reitenbach, Technical Manager
EA Engineering, Science, and Technology, Inc.
Fuel Farm Site History

- 1950 to 1991 - Two 210,000-gal UST’s (JP-4/JP-5)
- 1986 - Tank 115 was overfilled; a release occurred.
- 1986 - LNAPL was discovered in a utility trench.
- 1989 - JP-5 was observed emanating from two patches of dead grass west of Tank 115.
- 1991 - UST’s removed.
- 1992 - New Navy Fuel Farm constructed
Figure 2-3. Site plan showing relevant site features, prior to 1991, Navy Fuel Farm facility, Naval Air Station, Willow Grove, Pennsylvania.
Site Investigations

- 1991 - Interim Site Investigation Report
- 1993 - Additional Site Investigation Report
- 1994 to 1996 - Pilot Study
- 1998 - Sampling and Analysis Report
- 1998 to Present - Full Scale LNAPL Recovery
Remedial Action Objective

- Recovery of LNAPL from the subsurface

Remedial Technology

- Vacuum Enhanced LNAPL recovery
NA NOT AVAILABLE FOR GAUGING

QNAPL ISOPACH CONTOUR
CONTOUR INTERVAL = 1 FT.

DASHED LINES INDICATE APPROXIMATE LOCATION OF STORAGE TANKS THAT HAVE BEEN REMOVED

BASE MAP DEVELOPED FROM EA FIELD MEASUREMENTS AND SITE PLAN DEVELOPED BY EA (1993). NO AS-BUILT DRAWINGS OF NEW FUEL FARM FACILITY WERE AVAILABLE FROM NAVY PERSONNEL PRIOR TO DEVELOPMENT OF BASE MAP. BASE MAP IS INTENDED AS A REFERENCE ONLY. ANY DECISIONS MADE BASED ON THE CONTENT OF THIS MAP ARE THE SOLE RESPONSIBILITY OF THE USER.
Summary of System Performance

- Pilot system recovered 1,516-gal LNAPL
- Full scale vacuum enhanced LNAPL recovery started in January 1998.
- 60.5-gal of LNAPL recovered in 1999.
- 41.4-gal of LNAPL recovered in 2000.
- Total LNAPL recovered = 1,900-gal
Conclusions

- Reduced the areal extent & thickness of LNAPL
- Recoverable LNAPL remains
- Effectiveness of vacuum enhanced recovery reduced
- Continue LNAPL recovery under non-vacuum enhanced conditions