DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
INSTALLATION RESTORATION PROGRAM
JOINT BASE MCGUIRE-DIX-LAKEHURST, NJ 08641

4 February 2014

Mr. Curtis A. Frye
Chief, Environmental Restoration Program
AFCEC/CZO East Region, NE IST
2403 Vandenberg Avenue
JB MDL, NJ 08641-5104

Re: 8 August 2013 JB MDL RAB Meeting Joint Base McGuire-Dix-Lakehurst (JB MDL) Restoration Advisory Board (RAB) Meeting and Draft Minutes, 14 November 2013 JB MDL RAB Meeting

Dear Community Member,

Please reference the enclosed Final minutes from the 8 August 2013 Restoration Advisory Board (RAB) meeting. In addition, we have attached the draft minutes from the 14 November 2013 RAB meeting and a copy of the handouts that were distributed at the meeting. The next RAB meeting is scheduled for Thursday, 20 March 2014 at 6:30 PM, at the Edward Holloway Senior Citizen and Community Center on Main Street in Cookstown, New Jersey.

If you have any questions concerning this matter, please call Ms. Nicole Brestle at (609) 754-0068 or Mr. King Mak at (609) 754-3323.

Sincerely,

CURTIS A. FRYE, P.E., DAFC
Chief, Environmental Restoration Program

Attachments:
1. Final Meeting Minutes, 8 August 2013
2. Draft Meeting Minutes, 14 November 2013
3. Presentation Materials, 14 November 2013

Joint Base McGuire-Dix-Lakehurst (JB MDL)
Restoration Advisory Board (RAB) Final Meeting Minutes
Meeting No. 43 – 8 August 2013

SUBJECT: Restoration Advisory Board (RAB) Meeting No. 43 – Meeting Minutes

1) Place: Edward Holloway Senior Citizen Community Center, 5 Cookstown Browns Mills Road, Cookstown, New Jersey

2) Date/Time: Thursday, 8 August 2013; 6:30 PM

3) Co-Chairs: COL Charles E. Coursey, Deputy Joint Base Commander, JB MDL
Mr. Michael Tamn, Resident, Pemberton Township, New Jersey

4) Attendees:

Mr. Thomas Besselman	Pemberton Township, RAB Member
Mr. Doug Pocze	US Environmental Protection Agency, Region II
Mr. Haiyesh Shah	New Jersey Department of Environmental Protection
Mr. Phil Cole	New Jersey Department of Environmental Protection
Mr. Matt Csik	Ocean County Health Department
Mr. Chris Archer	JB MDL, 87 CES, Deputy Civil Engineer
Mr. Joe Rhyner	JB MDL, 87 CES/CEAN, Chief, Environmental Division
Mr. Curtis Frye	JB MDL, 87 CES/CEAN, Chief, Environmental Restoration Program
Mr. Michael Figura	JB MDL, 87 CES/CEAN, Environmental Restoration Program
Mr. King Mak	JB MDL, 87 CES/CEAN, Environmental Restoration Program
Mr. Michael Wierman	JB MDL, 87 CES/CEAN, Environmental Restoration Program (CN)
Mr. John Potosnak	JB MDL, 87 CES/CEAN, Environmental Restoration Program (CN)
Alexis McGee	JB MDL, 87 ABW/PA, Public Affairs
James A. Vaccaro, Sr.	Councilman, Manchester Township
Ms. Karen Vaccaro	Resident, Manchester Township
Ms. Kathy McGuire	Tetra Tech
Mr. Vlad Odarchenko	Tetra Tech
Mr. Connie Tsentas	PARS
Mr. Greg Kendall	ECC
Mr. Doug McClure	ECC
Mr. Mike Bolen	SAIC
Mr. Tim Llewellyn	Arcadis
Mr. Ola Awosika	Parsons
Ms. Christina Vail	Parsons
Mr. Ali Sadrieh	Plexus Scientific
Mr. Gerry Maresca	CB&I (formerly Shaw Environmental & Infrastructure)
Mr. Mark Tucker	CB&I (formerly Shaw Environmental & Infrastructure)
Mr. Mark Moese	AECOM
Ms. Judy Hackett	Weston
Mr. Mark Jaworski	Weston
Mr. Richard Jasaitis	Kleinfelder

Mr. George Leahy	URS
Mr. Peter Naumoff	URS
Mr. Paul Ferroni	CAPE
Ms. Amy Sponaugle	EA
Mr. Kevin Phillips	FPM
Ms. Stephanie Davis	FPM
Ms. Susan Ryan	Burlington County College

5) Handouts

- JB MDL Restoration Advisory Board, Meeting No. 42, 9 May 2013, Draft Meeting Minutes
- JB MDL Restoration Advisory Board, Meeting No. 43, 8 August 2013, Agenda
- JB MDL Restoration Advisory Board, Meeting No. 43, 8 August 2013, Presentation Slides
- JB MDL Restoration Advisory Board, Document Availability List, August 2013

6) Call to Order:

The meeting was then called to order by Mr. Curtis Frye.

7) Minutes of Previous Meeting and Review of Agenda Items:

Mr. Tamn asked for a motion to approve the minutes from the 9 May 2013 RAB meeting. Mr. Phil Cole made the motion which was seconded by Mr. Curtis Frye; the minutes were approved.

8) Review of Action Items from the May 2013 RAB:

Mr. Curtis Frye, Chief, JB MDL Environmental Restoration Program, issued a draft version of the Restoration Advisory Board Charter for review. He advised RAB members to contact Ms. Brestle with any comments or questions prior to the November RAB.

Joint Base McGuire-Dix-Lakehurst plans to issue a RAB Handbook at the November RAB. The RAB Handbook will include the RAB Charter, points of contact, the Community Involvement Plan (CIP), and JB MDL Site Fact Sheets.

9) McGuire Operable Units (OUs) 6, 7 and 8:

Mr. Michael Bolen, SAIC Project Manager, provided a comprehensive update on the environmental work that has been completed to date and projected path forward for sites located within OU's 6, 7 and 8. Key points included:

- Remedial Investigations completed in June 2013 at each OU.
    - Currently evaluating RI data sets and preparing draft RI reports.
    - Draft RI reports to be submitted for regulatory review in fall 2013.

10) McGuire Operable Unit 5, Site SS-26, Golf Course Pesticide Removal Action:

Mr. Gerard Maresca, Project Manager, Shaw Environmental & Infrastructure, provided an overview presentation of the Non-time Critical Removal Action (NTCRA) recently conducted at the McGuire Golf Course area to dispose of pesticide contaminated soil. Unexpected findings included:

- May 14, 2013: Near the southern corner of excavation a-crushed/rusted steel drum (approximately 10 gallons in size) was discovered and removed.

- May 22, 2013: Uncovered potential WWII munitions (M69 incendiary bombs).
    - UXO specialist later determined these to be spent M69s and M50s that still contained thermite/thermate.
    - Munitions are believed to be munitions debris isolated to this area. Further investigation and discussions with regulators is necessary to close out site.

- Pesticides were not detected in the post excavation sample.

11) BOMARC OT-16 TCE PLUME Pilot Study Status Update:

Mr. Gerard Maresca, Project Manager, Shaw Environmental & Infrastructure, provided an overview presentation of Site OT-16's Pilot Study that is being conducted on TCE contaminated groundwater at the BOMARC facility. To date, the following has been completed:

- Pre-injection phase;
- Phase I Permeable Reactive Barrier (PRB) injections; and
    - 30 PRB injection points completed (22 shallow, 8 deep).

12) Public Comments:

    - No public comments.

13) Meeting Adjourned:

- Mr. Michael Tamn, RAB Co-Chair, made a motion to adjourn the meeting which was approved by Mr. Doug Pocze, United States Environmental Protection Agency, and seconded by Mr. Phil Cole, New Jersey Department of Environmental Protection. The meeting was adjourned at 8:28 PM.
- The next RAB is scheduled for November 14, 2013.

Joint Base McGuire-Dix-Lakehurst (JB MDL)
Restoration Advisory Board (RAB) Draft Meeting Minutes
Meeting No. 44 – 14 November 2013

SUBJECT: Restoration Advisory Board (RAB) Meeting No. 44 – Meeting Minutes

1) Place: Edward Holloway Senior Citizen Community Center, 5 Cookstown Browns Mills Road, Cookstown, New Jersey

2) Date/Time: Thursday, 14 November 2013; 6:30 PM

3) Co-Chairs: COL Ivory Carter, Deputy MSG Joint Base Commander, JB MDL
Mr. Michael Tamn, Resident, Pemberton Township, New Jersey

4) Attendees:

Mr. Thomas Besselman	Pemberton Township, RAB Member
Mr. Haiyesh Shah	New Jersey Department of Environmental Protection
Mr. Phil Cole	New Jersey Department of Environmental Protection
Mr. Joseph Marchesani	New Jersey Department of Environmental Protection
Mr. Chris Archer	JB MDL, 87 CES, Deputy Civil Engineer
Mr. Joe Rhyner	JB MDL, 87 CES/CEAN, Chief, Environmental Division
Mr. Curtis Frye	JB MDL, AFCEC/CZO, Chief, Environmental Restoration Program
Mr. Michael Figura	JB MDL, AFCEC/CZO, Environmental Restoration Program
Mr. King Mak	JB MDL, AFCEC/CZO, Environmental Restoration Program
Mr. Michael Wierman	JB MDL, AFCEC/CZO, Environmental Restoration Program (CN)
Ms. Nicole Brestle	JB MDL, AFCEC/CZO, Environmental Restoration Program (CN)
Mr. Michael Brown	JB MDL, AFCEC/CZO, Environmental Restoration Program (BAH)
Mr. Mark Moese	AECOM
Mr. Michael Bolen	Leidos
Mr. Greg Kendall	ECC
Mr. Doug McClure	ECC
Mr Allen Fillip	AMEC
Mr. Everett Wessner	AMEC
Mr. Eric Stahl	Weston
Mr. Jim Richman	CB&I
Mr. Mark Jaworski	Weston
Ms. Kathy McGuire	Tetra Tech
Mr. Vlad Odarchenko	Tetra Tech
Mr. Jeff Parks	AMEC
Mr. Mark Tucker	CB&I
Mr. Mike Brewin	Plexus
Mr. George Leahy	URS
Mr. Constantine Tsentas	PARS
Mr. Van Ekambrem	URS
Ms. Chun-T Huang	BEM
Mr. John King	BEM

Ms. Charlotte Comisky	JB MDL
Ms. Susan Ryan	Burlington County College

5) Handouts

- JB MDL Restoration Advisory Board, Meeting No. 43, 8 August 2013, Draft Meeting Minutes
- JB MDL Restoration Advisory Board, Meeting No. 44, 9 November 2013, Agenda
- JB MDL Restoration Advisory Board, Meeting No. 44, 9 November 2013, Presentation Slides
- JB MDL Restoration Advisory Board, Document Availability List, November 2013

6) Call to Order:

The meeting was called to order by Mr. Curtis Frye who briefly introduced COL Ivory Carter as the RAB Co-Chair for this evening.

7) Minutes of Previous Meeting and Review of Agenda Items:

Mr. Tamn asked for a motion to approve the minutes from the 8 August 2013 RAB meeting. Mr. Phil Cole made the motion which was seconded by Mr. Haiyesh Shah; the minutes were approved.

8) Review of Action Items from the August 2013 RAB:

Mr. Curtis Frye, Chief, JB MDL Environmental Restoration Program, issued a second call for comments on the updated Restoration Advisory Board Charter. Comments on the Draft RAB charter are due no later than 1 December 2013. Members can contact Ms. Brestle with comments.

Joint Base McGuire-Dix-Lakehurst plans to issue a RAB Handbook is planned for issue at the February RAB. The RAB Handbook will include the RAB Charter, points of contact, the Community Involvement Plan (CIP), and JB MDL Site Fact Sheets.

Joint Base Information Repository/Administrative Record Update: Many hard copy documents at the Westampton Branch of the Burlington County Library are missing. An electronic copy of the IR/AR has been placed at the circulation desk. The Air Force is still in the process of getting a web based AR up and running.

The Fence the Fence Performance Based Contract is still scheduled for an FY14 award, please contact Susan Trussell (918) 669-7046 for updates.

9) Remedial Investigations/Interim Remedial Actions at 16 McGuire Petroleum Compliance Sites:

Ms. Kathy McGuire, Project Manager, Tetra Tech, provided a comprehensive overview on the environmental work that has been completed to date and projected path forward for compliance sites located on McGuire. Key points included:

- Remedial Investigations completed at 16 sites:
    - Soil borings, temporary and permanent groundwater monitoring wells to evaluate sources of contamination;
    - Vapor intrusion studies, risk assessments, and baseline ecological evaluations where necessary based on exceedences of specified standards; and
    - Interim removal actions by excavation of contaminated soils at six sites.

10) Dix Magazine-1 Area, Site SS007 Bioaugmentation System Update:

Mr. Mark Tucker, Project Manager, CB&I, provided an update on the progress of the Bioaugmentation recirculation system at the Magazine-1 site. The update included brief hydrogeology summary including a plume conceptual site model which provided a detailed explanation of site soil permeability and the relation to the Magazine-1 Area soil injection points. Key points included.

- Overview of treatment system and bioaugmentation process.
- System operation timeline.
- Overview of pre and post treatment results.
- Contract status and current scope of work. Current scope of work includes:
    - Addition of amendments every two weeks;
    - Conduct quarterly performance monitoring;
    - Evaluation of effectiveness;
    - Downgradient monitoring;
    - Long term monitoring; and
    - Quarterly reporting.

11) BOMARC OT-16 TCE PLUME Pilot Study Status Update:

Mr. James Richman, Project Manager, CB&I, provided an overview presentation of Site OT-16's Pilot Study that is being conducted on TCE contaminated groundwater at the BOMARC facility. To date, the following has been completed:

- Final Pilot Test Work Plan – April 2013
    - Initiated pre-injection activities on 11 April 2013
        - Mobilized on 13 May 2013
        - Initiated injections on 16 May 2013
        - Completed injections on 11 October 2013
- Final RI Report Group 4 Sites: WP-05, ST15, OT16, Hydraulic Oil (BOMARC Missile Sites) on 2 October 2013
    - NJDEP approved the RI report, concurred with the recommendation that the "groundwater contamination for WP-05 and OT-16 can be managed as one plume".

12) Public Comments:

- No public comments.

13) Meeting Adjourned:

- Mr. Michael Tamn, RAB Co-Chair, made a motion to adjourn the meeting which was approved by Mr. Phil Cole, New Jersey Department of Environmental Protection, and seconded by Mr. Haiyesh Shah, New Jersey Department of Environmental Protection. The meeting was adjourned at 8:08 PM.
- The next RAB is scheduled for March 20, 2014.

87th Air Base Wing

Joint Base McGuire-Dix-Lakehurst
Restoration Advisory Board
14 November 2013

87th Air Base Wing

Outstanding Action Items
from Previous RAB Meeting

Mr. Curtis Frye
Chief, Environmental Restoration Program
87 CES/CEAN

Outstanding Action Items

- **Update RAB Charter**
  - Copies of McGuire RAB Charter distributed at May RAB, solicited input from RAB members
  - Handed out new draft JB MDL RAB Charter at August RAB, requested comments by 01 October - no comments received
  - Second call – request comments by 01 Dec on draft JB MDL RAB Charter
- **RAB Handbook**
  - Plan to issue at February RAB - includes:
    - RAB Charter (sign at February RAB if final)
    - Community Involvement Plan (CIP) (awaiting final signature)
    - Site Fact Sheets
    - RAB member contact list

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JB MDL Information Repository/Administrative Record (AR/IR) Update

- Many documents at the Burlington County Library are "missing"
- Short term plan: JB MDL will be placing an electronic copy (DVD's) of the AR/IR for McGuire, Dix, and Lakehurst at the library main desk. The DVD's will need to be signed out, used at a set aside work station, and returned to the circulation desk
- Long term plan: Use Air Force-wide Administrative Record web site. Awaiting notice of web-site launch date
  - Contact Nicole Brestle for updates: (609) 754-0068 or nicole.brestle.ctr@us.af.mil

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Performance-Based Remediation Contract

- JB MDL planning a 10 year, fixed-price performance-based remediation contract (PBR) for approximately 100 sites
- Includes CERCLA and petroleum UST sites. No MMRP sites
- RFP will detail the Minimum Performance Objective (MPO) required for each site
  - Remedy in Place (RIP)
  - Response Complete (RC)
  - Site Closure (SC)
  - Optimized Exit Strategy (OES)

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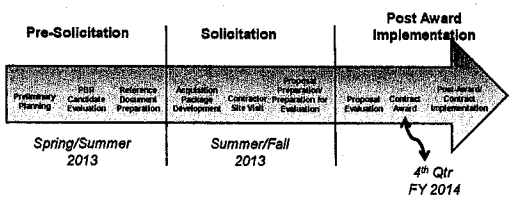
Performance-Based Remediation Contract

JB MDL PBR Schedule



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Performance-Based Remediation Contract

- Contract will be awarded through Army Corps of Engineers, Tulsa District
- Stand alone contract planned
- Award planned for summer 2014 (4th Qtr FY14)
- ACOE Tulsa POC: Susan Trussell, 918-669-7046

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Questions?

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Performance-Based Remediation Contract

- Award Schedule: (tentative)
  - Synopsis (Advanced Notice) - February 2014
    - Posted to FedBizOps
    - Draft list of Sites/MPO's
    - Link to Government furnished information (GFI) - Air Force Admin Record Web Site, supplemented by Google Docs site
  - Request for Proposal – March 2014
    - Pre-Proposal Conference / Site Visit
    - Proposal Period - Approximately 2 Months
  - Award – 4th Qtr FY 14

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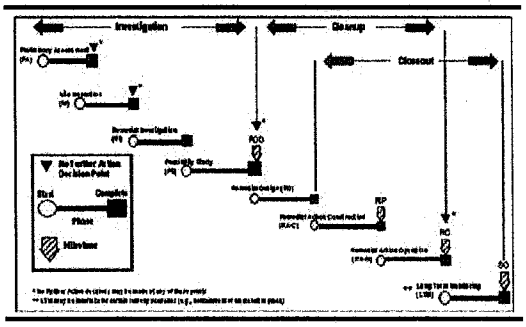
87th Air Base Wing

Remedial Investigations/Interim Remedial Actions at 16 McGuire Petroleum Compliance Sites

Mr. Michael Figura - Project Manager, JB MDL
Ms. Kathy McGuire – Project Manager, Tetra Tech

CERCLA Process



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Overview

- Tetra Tech contracted to conduct remedial investigations (RI) at 16 McGuire sites to further evaluate the extent of contamination in soils and groundwater

- TU010 (Building 1914)
- CF011 (Building 1907)
- TU013 (Building 3002)
- SS015 (Former Building 1735)
- SS017 (Former Building 1630)
- TU022 (Former Building 1754)
- TU023 (Former Building 1707)
- TU026 (Building 3310)
- TU027 (Building 3323)
- TU028 (Building 3350)
- TU029 (Building 3446)
- AT030 (BOMARC AST)
- TU033 (Former Fill-Stand 3432)
- LF500 (Building 3408)
- DP501 (Building 1907)
- SS502 (NJANG Fuel Oil Spill Site)

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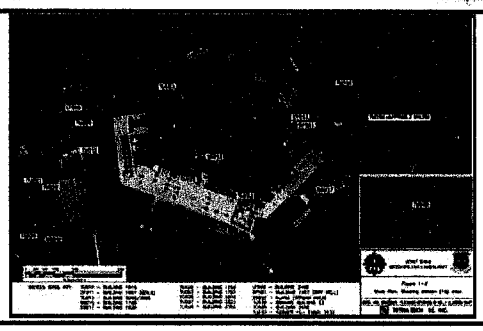
McGuire Compliance Site Map



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Remedial Investigation Overview

- Soil borings, temporary and permanent monitoring wells to evaluate sources, the extent of contamination in soils and groundwater, and to serve as long-term monitoring points
- Vapor intrusion studies, risk assessments (RAs) and baseline ecological evaluations (BEEs) where necessary based on exceedance of specified standards. Includes well search, land use, and receptor evaluation reports
- Evaluate groundwater quality and local flow patterns in the areas of investigation
- Interim Removal Actions (IRAs) by excavation of contaminated soils at six sites
- RI and IRA Reports

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Remedial Investigation Overview

- The following presents a summary of the RI Status for each of the 16 Sites:
  - Background
  - Work Completed
  - Work in Progress

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TU010 (Building 1914)

Background:
- Former 5,000 gallon, #2 fuel oil UST removed in 1995
- Historical incidents of discharges (80 gal and 350 gal) from day tank (1992-1995)
- Historical investigations conducted by Arecon Ltd (PA, 1997), URS (LSI, 2009) and Tetra Tech (SI, 2010)
- Impacted Media:
  - Soils and groundwater exceeding cleanup criteria

RI work completed:
- ✓ Installed 12 soil borings and four temporary groundwater wells. Samples collected/analyzed for VOCs, SVOCs, and metals
- ✓ Based on analytical results to date, soils have been delineated
  - COCs: Metals (aluminum, barium, cadmium, manganese)

RI work in progress:
- ❖ 2 new monitoring wells (Nov. 2013)
- ❖ Sample/analysis of 2 new monitoring wells and 3 existing monitoring wells. Analyses to include VOCs, SVOCs and Metals

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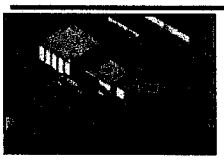
CF011 (Building 1907)



Background:
- During the removal of soils for a retaining wall installation in 1995, fuel contaminated soils were discovered
- Historical investigations were conducted by McGuire AFB (PA, 1996), URS (LSI, 2009), and Tetra Tech (SI, 2010)
- Impacted Media:
  - Residual soil contamination at the area of the former UST. Limited soils removal action recommended to assist in the removal of source materials
  - Extent of groundwater contamination not fully delineated

RI work completed:
- ✓ Installed 19 soil borings and 5 temporary wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Interim Removal Action – Excavated 216 cy soil
- ✓ Based on analytical results to date, soils have been delineated
  - COCs: PAHs; metals (aluminum, manganese)

RI work in progress:
- ❖ Installation of 4 monitoring wells (Nov. 2013)
- ❖ Sample 4 new monitoring wells and 3 existing monitoring wells Analyses to include VOCs, SVOCs and metals

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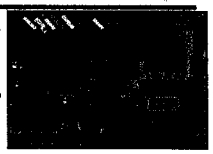
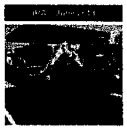
TU013 (Building 3002)

Background:
- Former spill incident; 5,000-gal. MOGAS UST removed in 1998
- Historical investigations conducted by Arecon Ltd (PA, 1997), URS (LSI, 2009) and Tetra Tech (SI, 2010)
- Impacted Media:
  - Residual soil contamination exists as a result of past discharges. Limited soils removal action recommended to assist in the removal of source materials
  - Extent of groundwater contamination not fully delineated



RI work completed:
- ✓ Installed 20 soil borings and 8 temporary wells. Samples collected/analyzed for VOCs, SVOCs and Metals
- ✓ Interim Removal Action – Excavated 31 cy of soil
- ✓ Based on analytical results to date, soils have been delineated
  - COCs: VOCs (BTEX); SVOCs; metals (aluminum)



RI work in progress:
- ❖ Installation of 6 monitoring wells (Nov. 2013)
- ❖ Sample 6 new monitoring well and 3 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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SS015 (Former Building 1735)

Background:
- Former Building 1735 (replaced by new Operations HQ)
- Historical incident of discharge from day tank (1992) resulting in release of 175 gallons #2 fuel oil
  - Some product reported to have entered storm drain leading to South Run
  - Soil removal conducted
  - Historical investigations conducted by McGuire AFB (1993) and URS (LSI, 2010)
- Impacted Media:
  - ➢ Soils and groundwater exceeding the cleanup criteria
  - ➢ Potential surface water/sediment impacts

RI work completed:
- ✓ Installed 8 soil borings and 3 temporary wells. Samples collected/analyzed for TPH, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated to the extent possible – due to the construction of new building over former spill area
  - ➢ COCs: VOCs; TPH

RI work in progress:
- ❖ Installation of 8 monitoring wells (Nov. 2013)
- ❖ Sample 6 new monitoring wells. Analyses to include TPH, SVOCs and metals
- ❖ Sediment & Surface Water Sampling (Nov. 2013)

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SS017 (Former Building 1630)

Background:
- Former 300 gallon diesel UST removed in 2003
- No historical impacts associated with UST; however, soil contamination detected (possible source other than UST)
- Historical investigations conducted by McGuire AFB (1996), URS (LSI, 2009) and Tetra Tech (SI, 2010)
- Impacted Media:
  - ➢ Potential soil and groundwater

RI work completed:
- ✓ Installed 6 soil borings and 2 temporary wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated
  - ✓ COCs: metals (aluminum)

RI work in progress:
- ❖ Installation of 1 monitoring well (Nov. 2013)
- ❖ Sample 1 new monitoring well and 1 existing monitoring well. Analyses to include VOCs, SVOCs and metals

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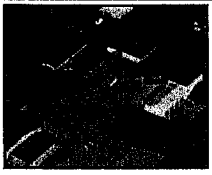
TU022 (Former Building 1754)



Background:
- Former vehicle fuel dispenser and 1,000-gallon diesel fuel, removed 1995
  - Visibly impacted soils
  - Limited soil removal
- Historical investigations conducted by Arecon Ltd (PA, 1997) and URS (LSI, 2010)
- Impacted Media:
  - ➢ Soils and groundwater exceeding the cleanup criteria

RI work completed:
- ✓ Installed 31 soil boring and 3 temporary wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: VOCs (benzene); PAHs

RI work in progress:
- ❖ Installation of 2 monitoring wells (Nov. 2013)
- ❖ Sample 2 new monitoring well and 3 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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TU023 (Former Building 1707)

Background:
- Former location of Pump House B; Six former 25,000 gallon USTs containing JP-4
  - Impacted soils encountered during UST removal
  - No groundwater encountered
- Historical investigations conducted by QantX (1999), Prestige Environment (1999), URS (SI, 2009) and Tetra Tech (SI, 2010)
- Impacted Media:
  - ➢ Soil and groundwater exceeding cleanup criteria

RI work completed:
- ✓ Installed 12 soil borings and 4 temporary wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Interim Removal Action – Excavated 178 cy of soil
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: VOCs (benzene, ethylbenzene, xylenes); PAHs

RI work in progress:
- ❖ Installation of 3 monitoring wells (Nov. 2013)
- ❖ Sample 3 new monitoring wells and 6 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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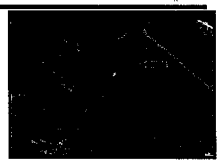
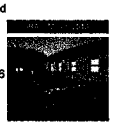
TU026 (Building 3310)



Background:
- Two (2) former fuel oil USTs (1,000 gal. and 500 gal.) removed in 1998
  - Evidence of leak and impacted soils observed
  - Limited soil removal
- Historical investigations conducted by Killam (1999) and URS (LSI 2010)
  - Recommended soil removal and GW investigation
- Impacted Media:
  - ➢ Soils exceeding cleanup criteria
  - ➢ Potential groundwater

RI work completed:
- ✓ Installed 1 soil boring. Samples collected/analyzed for ETPH
- ✓ Interim Removal Action – Excavated six cy soil
- ✓ Installed 2 temporary wells. Samples collected/analyzed for VOCs and SVOCs
- ✓ Based on analytical results to date, soils at TU026 have been delineated
  - ➢ COCs: No exceedances (historically SVOCs)



RI work in progress:
- ❖ Installation of 2 monitoring wells
- ❖ Sample 2 new monitoring wells and 2 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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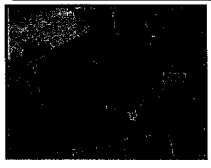
TU027 (Building 3323)



Background:
- Two (2) former 10,000 gallon #4 fuel oil USTs removed in 1998
- History of known releases (7,500 gal. and 5,000 gal.)
  - Product reported to have entered storm drainage system
- Historical investigations conducted by Killam (1999) and URS (LSI, 2010)
- Impacted Media:
  - ➢ Soils exceeding cleanup criteria
  - ➢ Potential groundwater

RI work completed:
- ✓ Installed 2 soil borings. Samples collected/analyzed for ETPH
- ✓ Installed 5 temporary groundwater wells. Samples collected/analyzed for VOCs and SVOCs
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: No exceedances (historically SVOCs)

RI work in progress:
- ❖ Installation of 5 monitoring wells (Nov. 2013)
- ❖ Sample and analysis of 5 new monitoring wells and 1 existing monitoring well. Analyses to include VOCs and SVOCs
- ❖ Pending Interim Removal Action – Excavation of Soils

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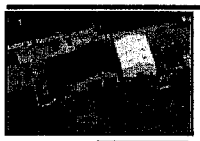
TU028 (Building 3350)



Background:
- Former 250 gallon waste oil UST
  - During removal of UST and associated OWS, impacted soil encountered
- Historical investigations conducted by Birdsall (1999) and URS (LSI, 2010)
- Impacted Media:
  - ➢ Soil and groundwater exceeding cleanup criteria

RI work completed:
- ✓ Installed 3 soil borings. Samples collected/analyzed for ETPH
- ✓ Installed 4 temporary groundwater wells. Samples collected/analyzed for VOCs and SVOCs
- ✓ Interim Removal Action – Excavated 10 cy of soil
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: No exceedances (historically TPH)

RI work in progress:
- ❖ Installation of 3 monitoring wells
- ❖ Sample 3 new monitoring wells and 1 existing monitoring wells. Analyses to include VOCs and SVOCs

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TU033 (Former Fill Stand 3432)

Background:
- Former fuel dispenser and two (2) AVGAS USTs (2K and 10K), replaced in 1991
  - Impacted soils observed during replacement
- Historical investigations conducted by EA (PA, 1995) and URS (Limited SI, 2011)
- Impacted Media:
  - ➢ Soils exceeding cleanup criteria
  - ➢ Potential groundwater

RI work completed:
- ✓ Installed 6 soil borings. Samples collected/analyzed for VOCs and lead
- ✓ Installed 2 temporary groundwater wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: No exceedances (historically VOCs)

RI work in progress:
- ❖ Installation of 4 monitoring wells
- ❖ Sample 4 new monitoring wells and 3 existing monitoring wells. Analyses to include VOCs, SVOCs and metals
- ❖ IRA – Excavation of impacted soils

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TU029 (Building 3446)

Background:
- Four (4) former AVGAS USTs (25,000 gal. each) removed in 1998
  - Impacted soils and sheen observed on water during removal
- Historical investigations conducted by EA, SAIC and URS (Limited SI, 2011)
- Impacted Media:
  - Soil and groundwater samples exceeding cleanup criteria

RI work completed:
- ✓ Installed 25 soil borings. Samples collected/analyzed samples for VOCs and lead
- ✓ Installed 6 temporary wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: VOCs (BTEX)

RI work in progress:
- ❖ IRA – Excavation of impacted soils (Nov. 2013)
- ❖ Installation of 5 monitoring wells
- ❖ Sample 5 new monitoring wells and 4 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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LF500 (Building 3408)

Background:
- During trenching of new sewer line, demolition debris, liquid and visually impacted soils encountered
- Historical investigations were conducted by McGuire AFB (1996), URS (SI, 2009), and Tetra Tech (SI, 2010)
- Impacted Media:
  - ➢ Soil and groundwater exceeding cleanup criteria
    - Pesticides and PAHs (shallow and at soil/groundwater interface)

RI work completed:
- ✓ Installed 35 soil borings and 5 temporary wells. Samples collected/analyzed for VOCs, SVOCs, metals, PCBs and pesticides
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: Pesticides (dieldrin, alpha-chlorodane); PAHs

RI work in progress:
- ❖ Installation of 6 monitoring wells (Nov. 2013)
- ❖ Sample 6 new monitoring wells and 3 existing monitoring wells. Analyses to include VOCs, SVOCs, metals, PCBs and pesticides
- ❖ Interim Removal Action – Soil excavation from 2 to 5 feet bgs

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AT030 (BOMARC AST)

Background:
- 840,000-gallon AST containing diesel or #4 fuel oil (decommissioned in 1972
- Historical investigations conducted by EA (PA, 1982) and URS (Limited SI, 2011)
- Impacted Media:
  - ➢ Potential Soil and Groundwater

RI work completed:
- ✓ Installed 12 soil borings. Samples collected/analyzed for ETPH
- ✓ Installed 3 temporary groundwater wells. Samples collected/analyzed for VOCs, SVOCs and metals
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: No exceedances (historically VOCs)

RI work in progress:
- ❖ Installation of 6 monitoring wells (Nov. 2013)
- ❖ Sample 6 new monitoring wells and 6 existing monitoring wells. Analyses to include VOCs, SVOCs and metals

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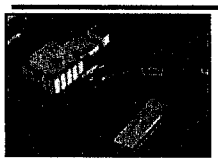
DP501 (Building 1907)



Background:
- Former Dry Well connected to floor drains within Bldg 1907 Personnel noted chemical and petroleum odors
- Historical investigations were conducted by McGuire AFB (1996), URS (SI, 2009), and Tetra Tech (SI, 2010)
- Impacted Media:
  - ➢ Soil and groundwater exceeding cleanup criteria
    - Extent of groundwater contamination not fully delineated

RI work completed:
- ✓ Installed 17 soil borings and 7 temporary wells. Samples collected/analyzed for VOCs, SVOCs, metals, PCBs and pesticides
- ✓ Based on analytical results to date, soils have been delineated
  - ➢ COCs: Metals (aluminum, manganese, iron, sodium)

RI work in progress:
- ❖ Installation of 4 monitoring wells (Nov. 2013).
- ❖ Sample 4 new monitoring wells and 2 existing monitoring wells. Analyses to include VOCs, SVOCs, metals, PCBs and pesticides

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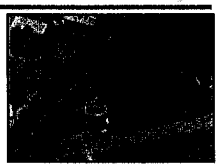
SS502 (NJANG Fuel Oil Spill Site)

Background:
- Two historical releases (7,500 and 500 gallons) of No. 4 heating oil - discharged into the South Run of Crosswicks Creek from a storm water outfall near NJANG facilities
- Historical investigations were conducted by Tetra Tech (SI, 2011)
- Impacted Media:
  - Soil and groundwater exceeding cleanup criteria
  - Potential surface water / sediment



RI work completed:
- ✓ Installed 11 soil borings and 3 temporary wells. Samples collected and analyzed for VOCs, SVOCs and metals
- ✓ 5 sediment samples collected from creek and analyzed for PAHs and TPH
- ✓ Based on analytical results to date, soils and sediment have been delineated
  - COCs: PAHs; metals (aluminum, manganese, lead)

RI work in progress:
- ❖ Installation of 3 monitoring wells (Nov. 2013)
- ❖ Sample 3 new monitoring wells and 3 existing monitoring wells. Analyses to include VOCs, SVOCs, and metals

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87th Air Base Wing

Dix Magazine-1 Area, Site SS007
Bioaugmentation Remedial System Update

Michael Wierman – Remedial Project Manager, JB MDL
Mr. Mark Tucker - Project Manager CB&I

Summary

- **Preliminary conclusions:**
  - **Possible "No Further Action" determination for five (5) sites: TU010, TU015, SS017, TU026 and SS502**
  - **Possible additional soil treatment or excavation recommended for five (5) sites: CF011, TU013, TU023, TU027 and TU029**
  - **Possible groundwater remedy recommended for eleven (11) Sites: CF011, TU013, TU022, TU023, TU027, TU028, TU029, AT030, TU033, LF500 and DP501**
- **Draft Report expected 30 December 2013**
- **Final Report expected 15 April 2014**

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Outline

I. Bioaugmentation Process
II. Treatment System Design
III. Operations
IV. Initial Results
V. Contract Status
VI. Current Plans

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Questions?

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Bioaugmentation Process

Bioaugmentation:
- **Addition of microbial populations to degrade groundwater contamination**

Sequential breakdown:
- **Trichloroethene (TCE)**
- **Dichloroethene (DCE)**
- **Vinyl Chloride (VC)**
- **Ethene**

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Bioaugmentation Process

Amendments:
- Sodium lactate – carbon source
- Diammonium phosphate – nutrients
- Yeast extract – nutrients and vitamins
- Sodium bicarbonate – pH buffer

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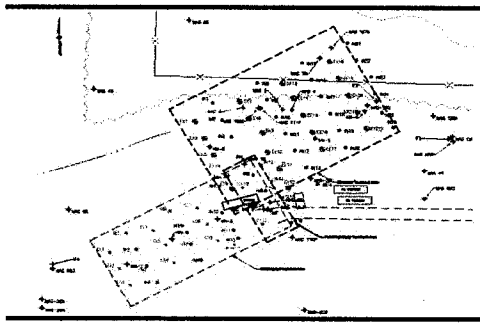
Treatment System Layout



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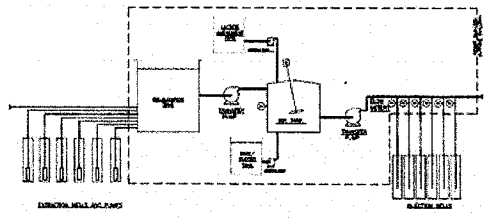
Process Flow Diagram



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System Operation

Treatment System Startup – October 2011

Aquifer Conditioning – October 2011 to November 2012

Introduce Microbes – December 2012

Performance Monitoring – February and April 2013

Additional Amendments – July and September 2013

Remedial Action Report – September 2013

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Initial Results

Pre-Treatment Conditions:
- TCE > 1,000 ug/l in two "hot spots"
- Some degradation to DCE
- Very limited degradation to VC
- No ethene production

Post–Treatment Conditions:
- TCE reduced to < 1,000 ug/l
- Significant degradation to DCE
- VC production observed
- Ethene production observed

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Contract Status

- Previous contract expired September 2013
- New contract awarded Sep 2013 to continue operations through Sep 2014
  - Option to extend for one year through Sep 2015
- Eventual transition to "fence-to-fence" PBR contract

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Current Scope of Work

- Add amendments for two weeks every two months
- Conduct quarterly performance monitoring
- Evaluate effectiveness and adjust operating conditions
- Prepare Quarterly Reports
- Establish downgradient monitoring program
- Initiate long term monitoring

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BOMARC OT-16 TCE Groundwater Plume

Current Status/Milestones:

- Final Pilot Test work plan – 24 April 2013
  - NJDEP approved 11 April 2013
- Initiated pre-injections activities – 11 April 2013
- Mobilized – 13 May 2013
- Initiated injections – 16 May 2013
- Completed 100% injections – 11 Oct 2013
- Final RI Report Group 4 Sites: WP-05, ST-16, OT-16 Hydraulic Oil (BOMARC Missile Sites) – 2 Oct 2013
  - NJDEP approved the RI Report, concurred with recommendation that *"groundwater contamination for WP-05 and OT-16 be managed as one plume"*

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Questions?

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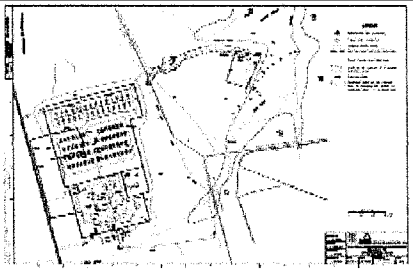
BOMARC OT-16 TCE Groundwater Plume



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87th Air Base Wing

BOMARC OT-16 TCE Plume Pilot Study Status Update

King Mak – Project Manager, JB MDL
James Richman- Project Manager, CB&I

BOMARC OT-16 TCE Groundwater Plume

Pilot Study Performance Objectives:

- ✓ Pre-injection
  - ✓ Clear vegetation, install gravel road (as necessary)
  - ✓ Install 4 monitoring wells (MW) (2 shallow/2 deep) at permeable reactive barrier (PRB) edges
  - ✓ Complete baseline groundwater and surface water sampling
  - ✓ Complete baseline hydraulic conductivity testing
- Phase I & II Injections
  - ✓ Complete Phase I PRB injections (to determine final specs)
  - ➡ ✓ Perform geochemical monitoring of GW to confirm target radius of influence (ROI)
  - ✓ Complete Phase II PRB injections (based on Phase I)
  - Complete GW monitoring to evaluate effectiveness and hydraulic monitoring, conductivity testing, and dye test to evaluate permeability

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BOMARC OT-16 TCE Groundwater Plume

Pilot Study Performance Objectives (cont'd):

- **Post-Injection**
  - **Prepare Remedial Action Report (RAR); establish Land Use Controls (LUCs)**
  - **Initiate PRB long-term performance monitoring (LTPM) of GW & SW**
  - **Initiate site-wide monitoring of GW & SW**

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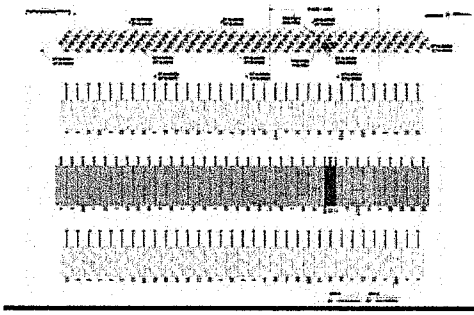
BOMARC OT-16 TCE Groundwater Plume



May 16 - June 30, 2013

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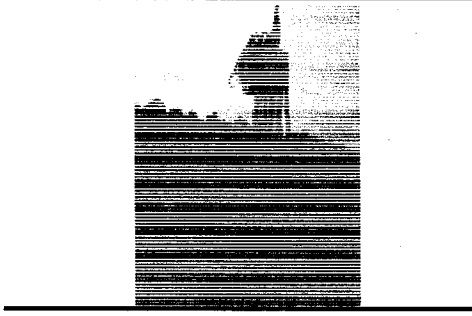
BOMARC OT-16 TCE Groundwater Plume



July 01 – August 31, 2013

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BOMARC OT-16 TCE Groundwater Plume

September 01 - October 11, 2013

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BOMARC OT-16 TCE Groundwater Plume

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BOMARC OT-16 TCE Groundwater Plume

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BOMARC OT-16 TCE Groundwater Plume

[illegible]

BOMARC OT-16 TCE Groundwater Plume

Future Schedule:

- ✓ Complete final injections (101 pts) – 11 October 2013
- Complete PRB evaluation:
  - ➡ Dye test, hydraulic monitoring, conductivity testing
  - Q0 – 10 January 2014
- Complete quarterly/semi-annual performance monitoring of PRB groundwater
  - Q1 & SA1 – 10 April 2014
  - Q2 – 9 July 2014
  - Q3 & SA2 – 7 October 2014
  - Q4 – 5 January 2015 (notional)
- Submit draft Yr-1 annual groundwater assessment report (GAR)
  - Yr1 – 21 March 2015 (notional)
- Submit draft pilot test report to NJDEP
  - 12 November 2015 (notional)

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BOMARC OT-16 TCE Groundwater Plume

Injection Status: (Complete as of 11 October 2013)

- Days in field: 111 (7 days with 2 crews)
- Injection points completed (% complete): 100
  - 66 shallow – 40 ft treatment zones (upgradient & downgradient rows)
  - 35 deep – 55 ft treatment zones (center row)
- Pounds of zero valent iron (ZVI) injected: 409,270
- Pounds (gallons) of water injected: 1,307,531 (156,778)
- Total pounds of ZVI/water slurry: 1,717,249
- Total batch injections (3-ft treatment zone) completed: 1,581
- Total treatment zones utilizing Ferox treatment: 1,112 (or 70%)
- Total feet of ZVI treatment injected: 4,545
- Total cubic feet (cyd) of ZVI treatment area: 802,760 (29,732)

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Questions?

BOMARC OT-16 TCE Groundwater Plume

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Injection Pts Completed	3	10	23	25	26	11	101
Batch Injection Interval	111	140	377	395	381	177	1,581
Atomized Injection Intervals	58	100	259	263	296	136	1,112
% of Interval Atomized	52.25	71.43	68.70	66.58	77.69	76.84	70.34
Pounds of ZVI Injected	28,309	35,470	86,483	100,975	97,165	50,625	409,270
Pounds of Water Injected	93,944	115,343	312,063	325,610	314,171	146,451	1,307,531
Gal. of Water Injected	11,264	13,830	37,418	39,047	37,664	17,560	156,778
lbs. of water / inj pt.	11,743	11,534	13,568	13,024	13,088	13,314	12,946
Gal. of water / inj pt.	1,408	1,383	1,627	1,562	1,569	1,596	1,552
lbs. of water / interval	846	824	828	824	824	827	827
Gal. of water / interval	101	99	99	99	99	99	99
lbs. of water / lbs. of ZVI	3.32	3.25	3.23	3.23	3.23	2.89	3.19
Gal. of water / lbs. of ZVI	0.40	0.39	0.39	0.39	0.39	0.35	0.38
Soil Thickness Treated (FT)	319	400	1,083	1,135	1,095	511	4,545
Volume of Soil Treated (CF)	56,343	70,650	191,638	200,460	193,404	90,755	802,761
Volume of Soil Treated (CY)	2,087	2,617	7,098	7,425	7,163	3,361	29,732
Field Days	19	20	21	22	20	9	111
Production (IP/Day)	0.42	0.50	1.10	1.14	1.30	1.22	0.91

February RAB Agenda Ideas

- Tentative RAB date
- Suggested agenda topics

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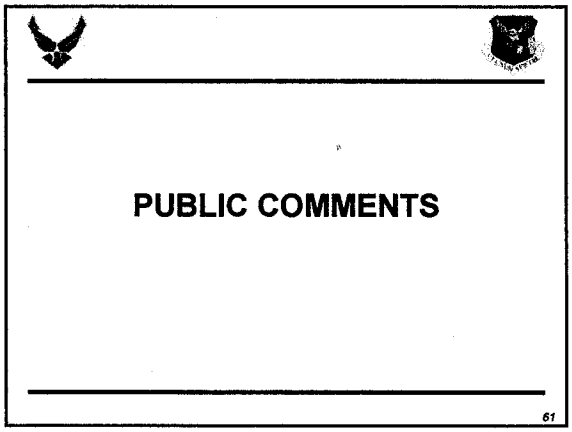
PUBLIC COMMENTS
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