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**USACE PBOW
RAB MEETING MINUTES
PLUM BROOK ORDNANCE WORKS
March 5, 2014**

ATTENDEES

USACE Huntington (2)
USACE Nashville (1)
Ohio EPA NWDO (1)
RAB Members (3)
Visitors (3)
Contractors (5)

RAB MEETING AGENDA

1. Opening of Meeting – USACE Huntington District
2. TNT A Remedial Action- Construction Completion Report – OTIE
3. Status of Decision Documents – USACE Huntington District
4. Status of Funding for Acid Area 2 and Acid Area 3 – USACE Huntington District
5. Status of Other Studies/Documents – CB&I
6. Poster Sessions with John Blakeman – USACE Huntington District
7. Open Topics
8. Schedule Next Meeting

OPENING OF MEETING - INTRODUCTION

The USACE PBOW Project Manager opened the meeting and reviewed the meeting agenda.

STATUS OF TNT A RA-C PHASE II

The OTIE presented an overview of the completion of TNT Area A Remedial Action – Construction (RA-C) project. The RA-C project was completed in two phases. Phase I was implemented by TMG Services, Inc. in January 2012 and completed in March 2013. Phase II was implemented by OTIE in May 2013 and field activities were completed in December 2013. The draft report details both phases of the RA-C and was submitted to USACE in February 2014. The draft report is currently under review by USACE, Ohio EPA and NASA. The presentation is included as an attachment to these minutes.

- TNT A consisted of 18 AOCs
- Contaminants of Concern (CoCs) consisted of nitroaromatics, PCBs and lead
- Alkaline hydrolysis treatment of hazardous soil
- Off-site disposal and on-site placement of remediated soil
- Off-site disposal of non-hazardous soil
- Backfill with clean fill soil
- Remediation is 100% complete

STATUS OF RESERVOIR NO. 2 BURNING GROUND RA-C

The USACE Huntington Technical Coordinator provided a brief overview of the Reservoir No. 2 Burning Ground project. The briefing is included as an attachment to these minutes.

- 7400 cubic yards of soil to be remediated
- Completion is anticipated in May 2017

STATUS OF DECISION DOCUMENTS/FUNDING

The USACE Huntington Project Manager provided a brief review of the Decision Document approval process and the success of the Project Review Board.

- With the approval of the Reservoir No. 2 Burning Ground DD, USACE is anticipating a June 2014 contract award
- Groundwater DD – Moving forward with No Further Action
- Acid Areas 2 and 3 – Targeting 1st quarter (October-December 2014) award

PROJECT UPDATE AND DOCUMENT STATUS

The CB&I Project Geologist provided an update on the USACE projects at PBOW. The presentation is included as an attachment to these minutes. The presentation included the following projects:

- Reservoir No. 2 Burning Ground
- Wastewater Treatment Plants 1 and 3 / TNT A Sewer Line / TNT B Sewer Line
- Wastewater Treatment Plant 2 / TNT C Sewer Line / Steel Sewer Line
- Pentolite Road Redwater Pond Area
- Acid Area 1
- Garage Maintenance Area
- Powerhouse No. 2 Ash Pits and Coal Yard
- Ash Pit No. 1 and Coal Yard No. 1
- Ash Pit No. 3 and Coal Yard No. 3
- Groundwater (TNT and Red Water Pond Areas)

POSTER SESSION AT SANDUSKY LIBRARY

USACE participated in a “Box Lunch” poster session activity at the Sandusky Library in coordination with the RAB Member who has prepared historical account (based on his perspective) of the former Plum Brook Ordnance Works. There were approximately 30 people in attendance. The speaker is scheduling future presentations and USACE will coordinate with him on their participation in those events.

SCHEDULE NEXT MEETING

The next RAB Meeting was tentatively scheduled for Thursday June 26, 2014.

TNT Area A Remedial Action - Construction

Project Manager

Oneida Total Integrated Enterprises

March 5, 2014

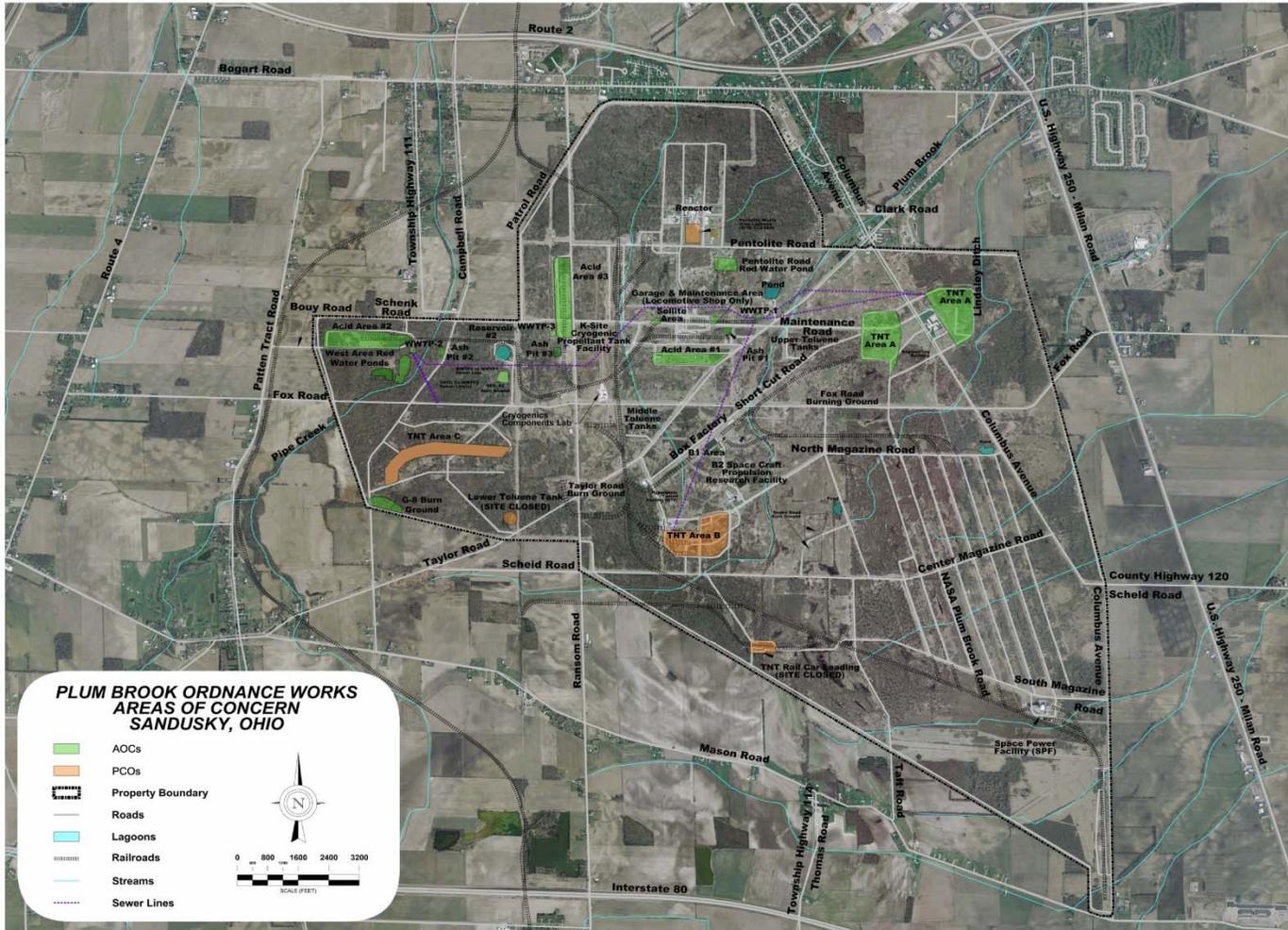


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TNT Area A Soil Remediation

- Phase I
 - Performed by TMG Services, Inc.
 - Field Work Completed December 2012
 - Final Report Submitted by TMG in March 2013
- Phase II
 - Performed by Oneida Total Integrated Enterprises (OTIE)
 - Field Work Completed December 2013
 - Draft Report is Under USACE Review



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TNT A - Phase I

- 18 Areas of Concern (AOCs)
- Contaminants of Concern (COCs)
 - Nitroaromatics
 - PCBs
 - Lead
- Hazardous Soil
 - On-Site Treatment
- Non-Hazardous Soil
 - Off-Site Disposal



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TNT A - Phase I

- 12,069 CY Excavated
- 18,260 Tons of Non-Hazardous Soil
 - Transported to Erie County Landfill for Use as Daily Cover
- 1,849 CY of Hazardous Soil
 - Staged on the Remediation Pad
 - Alkaline Hydrolysis Treatment During Phase II
- 6 AOCs Remained Opened
 - Due to Exceedances of Risk Criteria (ILCR $\leq 1E-5$, HI ≤ 1 or NTE)



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TNT A - Phase II

- 6 Areas of Concern (From Phase I)
- Contaminants of Concern
 - Nitroaromatics
 - PCBs
 - Lead
- Hazardous Soil - On-Site Treatment
- Non-Hazardous Soil – Off-Site Disposal



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TNT A - Phase II

- 6 AOCs Remained Open (From Phase I)
 - Bldg. 119 – 150 cy
 - Bldg. 126 – 108 cy
 - Bldg. 142 – 20 cy
 - Bldg. 143II - 15 cy
 - Bldg. 192 – 179 cy
 - Bldg. 195 – 196 cy
 - Total Volume of Soil Excavated = 668 cy



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TNT A - Phase II

- Test Pitting to Identify the Extent of Contamination
- Confirmation Sampling
- Surveying Excavation Boundaries
- Excavation of Contaminated Soil
- Characterization of Stockpiled Soil
 - Non-Hazardous
 - Hazardous



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TNT A – Phase II

- Six AOCs
 - Excavated 668 CY
 - Confirmation Results – Below Risk Criteria
 - All AOCs Were Closed and Backfilled
- Non-Hazardous Stockpiles
 - 216 Tons to ECL
 - Used As Daily Cover
- Hazardous Soil
 - 540 CY Transported to Remediation Pad
 - Configured in Windrows
 - Alkaline Hydrolysis Treatment



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TNT A – Phase II

- Soil Remediation Using Alkaline Hydrolysis
- Phase I and Phase II Hazardous Soil
 - Phase I – 1,849 cy of Hazardous Soil
 - Phase II – 540 cy of Hazardous Soil



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TNT A Remediation

- Blending Soil With Windrow Turner
 - Break up soil clumps
 - Homogenize soil
- Baseline Sampling of Windrowed Soil
- Alkaline Material Addition
- Process Monitoring
- Disposal Sampling
- pH Adjustment



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TNT A Remediation Results

- Reduction of Nitroaromatics to Below Hazardous Levels
 - Average 2,4-DNT Reduction – 99%
 - Average 2,4,6-TNT Reduction - >99%
- 2,6-DNT Problematic
 - Highest Baseline Concentrations ~600 mg/kg
 - Average 2,6-DNT Reduction – 90%
 - Limited Use for On-Site Placement
 - Acceptable for Use As Daily Cover at Landfill
 - Additional Time May Have Been Beneficial



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TNT A RA-C Summary

- Phase I and Phase II Field Activities Completed
- Remediation of Nitroaromatic-Contaminated Soil
- Draft Construction Completion Report (CCR) to USACE for Review – February 10, 2014
- Final CCR – Late May 2014



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“How do you know where to dig?”



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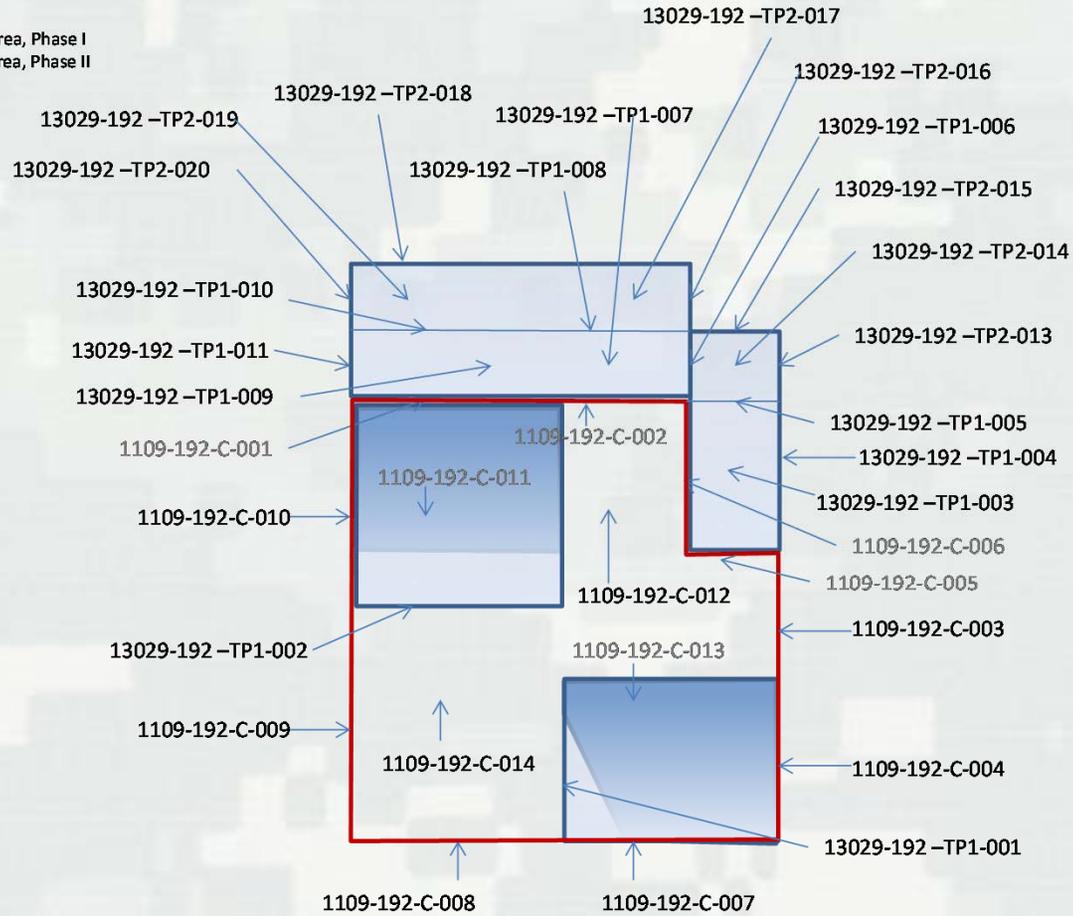
TNTA Phase II Excavation Notes:

- Rounds 1 and 2 wall samples collected at 4 or less if hit bedrock

- Greyed out sample locations excavated during Phase II
- Not to scale

Sample Locations:

- Nitroaromatic Remediation Area, Phase I
- Nitroaromatic Remediation Area, Phase II
- 1109 TMG Samples, Phase I
- 13029 OTIE Samples, Phase II



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Questions?



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Reservoir 2 Burning Ground

PBOW Technical Coordinator

USACE Huntington District

March 5, 2014



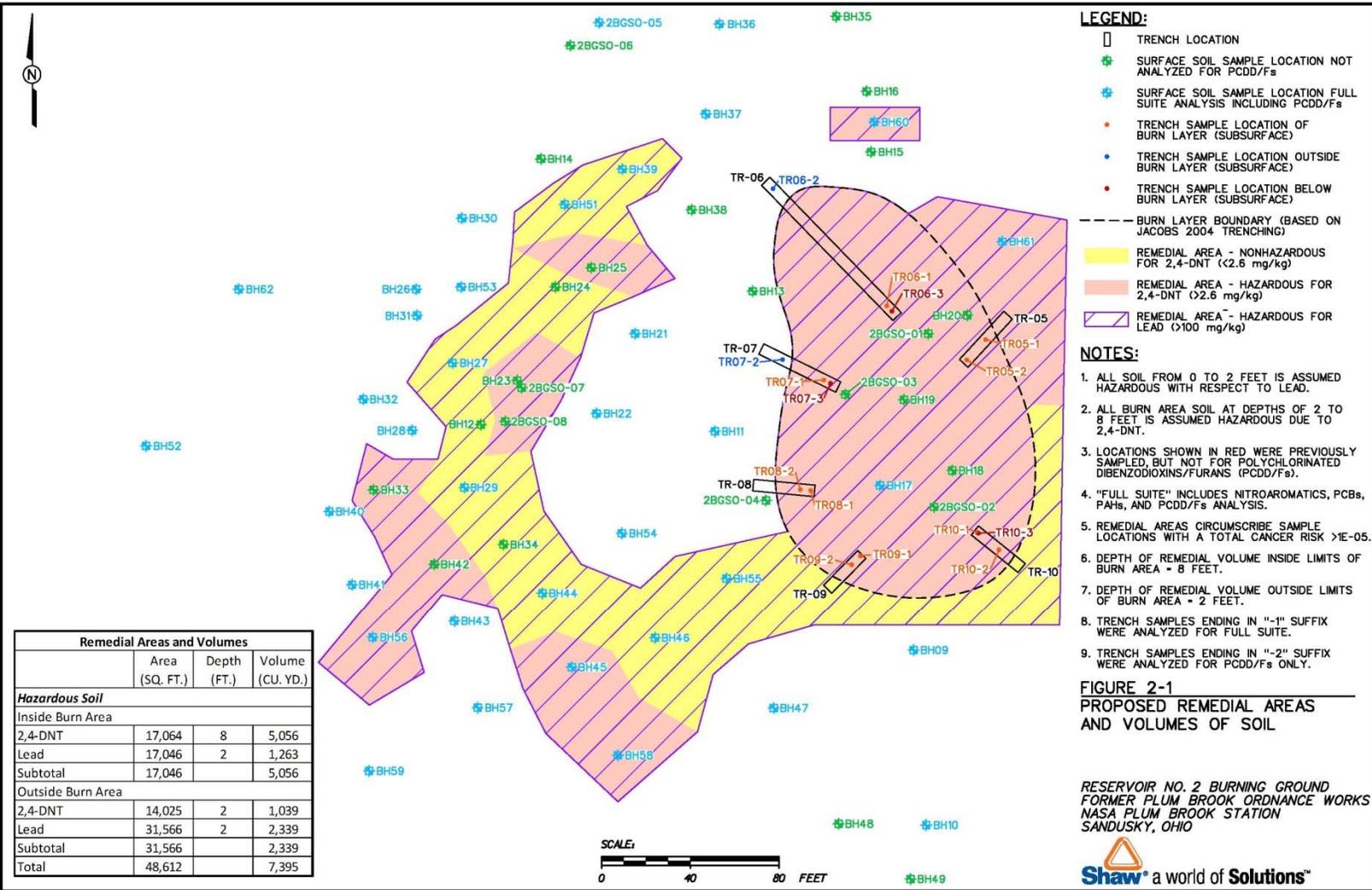
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- LEGEND:**
- TRENCH LOCATION
 - ⊕ SURFACE SOIL SAMPLE LOCATION NOT ANALYZED FOR PCDD/Fs
 - ⊕ SURFACE SOIL SAMPLE LOCATION FULL SUITE ANALYSIS INCLUDING PCDD/Fs
 - TRENCH SAMPLE LOCATION OF BURN LAYER (SUBSURFACE)
 - TRENCH SAMPLE LOCATION OUTSIDE BURN LAYER (SUBSURFACE)
 - TRENCH SAMPLE LOCATION BELOW BURN LAYER (SUBSURFACE)
 - - - BURN LAYER BOUNDARY (BASED ON JACOBS 2004 TRENCHING)
 - REMEDIAL AREA - NONHAZARDOUS FOR 2,4-DNT (<2.6 mg/kg)
 - REMEDIAL AREA - HAZARDOUS FOR 2,4-DNT (>2.6 mg/kg)
 - REMEDIAL AREA - HAZARDOUS FOR LEAD (>100 mg/kg)

- NOTES:**
1. ALL SOIL FROM 0 TO 2 FEET IS ASSUMED HAZARDOUS WITH RESPECT TO LEAD.
 2. ALL BURN AREA SOIL AT DEPTHS OF 2 TO 8 FEET IS ASSUMED HAZARDOUS DUE TO 2,4-DNT.
 3. LOCATIONS SHOWN IN RED WERE PREVIOUSLY SAMPLED, BUT NOT FOR POLYCHLORINATED DIBENZODIOXINS/FURANS (PCDD/Fs).
 4. "FULL SUITE" INCLUDES NITROAROMATICS, PCBs, PAHs, AND PCDD/Fs ANALYSIS.
 5. REMEDIAL AREAS CIRCUMSCRIBE SAMPLE LOCATIONS WITH A TOTAL CANCER RISK >1E-05.
 6. DEPTH OF REMEDIAL VOLUME INSIDE LIMITS OF BURN AREA = 8 FEET.
 7. DEPTH OF REMEDIAL VOLUME OUTSIDE LIMITS OF BURN AREA = 2 FEET.
 8. TRENCH SAMPLES ENDING IN "-1" SUFFIX WERE ANALYZED FOR FULL SUITE.
 9. TRENCH SAMPLES ENDING IN "-2" SUFFIX WERE ANALYZED FOR PCDD/Fs ONLY.

FIGURE 2-1
PROPOSED REMEDIAL AREAS AND VOLUMES OF SOIL

RESERVOIR NO. 2 BURNING GROUND
 FORMER PLUM BROOK ORDNANCE WORKS
 NASA PLUM BROOK STATION
 SANDUSKY, OHIO



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Project Update and Document Status

CB&I Federal Services

Knoxville, Tennessee

5 March 2014



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Site Updates

- ▶ Reservoir No. 2 Burning Grounds
- ▶ Wastewater Treatment Plants 1&3 / TNTA Sewerline / TNTB Sewerline
- ▶ Wastewater Treatment Plant 2 / TNTC Sewerline / Steel Sewerline
- ▶ Pentolite Road Redwater Pond Area
- ▶ Acid Area 1



Site Updates (continued)

- ▶ Garage Maintenance Area
- ▶ Powerhouse No. 2 Ash Pits and Coal Yard
- ▶ Ash Pit No. 1 and Coal Yard No. 1
- ▶ Ash Pit No. 3 and Coal Yard No. 3
- ▶ Groundwater



Reservoir No. 2 Burning Ground

- ▶ Total of approximately 7,400 CYs lead and/or 2,4-DNT-contaminated soil to remediate
- ▶ OEPA review of DD completed September 2013
- ▶ Final DD issued February 2014 for USACE Headquarters approval.



Wastewater Treatment Plants 1&3/ TNTA Sewerline / TNTB Sewerline

- ▶ Feasibility Study USACE-CX review complete
- ▶ Minimal surface soil contamination only
- ▶ Issued Draft FS in December 2013 for OEPA and RAB
- ▶ Final FS report anticipated March 31, 2014



Wastewater Treatment Plant 2/ TNTC Sewerline / Steel Sewerline

- ▶ Remedial Investigation Report (SCR, BHHRA, & SLERA) USACE internal review complete
- ▶ USACE-CX Draft issued in January 2014
- ▶ Anticipate April 2014 for OEPA and RAB review of RI Report



Pentolite Road Redwater Pond Area

- ▶ Proposed Plan - internal USACE review complete by LRH and LRN
- ▶ CX review to begin March 2014
- ▶ Total of approximately 36,600 CYs nitroaromatic-contaminated soil to remediate
- ▶ Anticipate mid 2014 for OEPA and RAB review of Proposed Plan



Acid Area 1

- ▶ Total of approximately 28,000 CYs PCB contaminated soil to remediate
- ▶ Proposed Plan - internal LRN/LRH USACE review complete; Office of Counsel review ongoing
- ▶ Anticipate mid 2014 for OEPA and RAB review of Proposed Plan and start of 30-day public comment period



Garage Maintenance Area

- ▶ Final Unloading Area Risk Documents (BHHRA/SLERA) issued January 2014
- ▶ Final Sellite Area Risk Documents (BHHRA/SLERA) issued February 2014
- ▶ Feasibility Study – preparation of draft to begin March 2014



Powerhouse No. 2 Ash Pits and Coal Yard

- ▶ Internal Draft Proposed Plan issued February 2014
 - No Action Required
 - Currently under internal USACE review
 - OEPA and RAB review anticipated June 2014



Ash Pit No. 1 and Coal Yard No. 1 Ash Pit No. 3 and Coal Yard No. 3

- ▶ Internal Draft Proposed Plan issued January 2014
 - No Action Required
 - Currently under internal USACE review
 - OEPA and RAB review anticipated May 2014



Groundwater (TNT and Redwater Pond Areas)

- ▶ Draft Decision Document issued January 2014
 - No Further Action Required
 - Final Decision Document anticipated June 2014
- ▶ Contract modification being prepared to abandon select overburden and bedrock wells at inactive/closed sites.

