

APPENDIX A

Field Sampling Logs

Discrete Surface Soil Samples
Incremental Sampling Method Surface Soil Samples
Soil Boring Samples

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DISCRETE SURFACE SOIL SAMPLES

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HTRW DRILLING LOG			DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7SS-070	
1. COMPANY NAME SAIC			2. DRILLING SUBCONTRACTOR NA		SHEET 1 OF 1	
3. PROJECT RVAAP PBACB-RI			4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266			
5. NAME OF DRILLER MIKE DENNLO			6. DIRECTION OF BOREHOLE ☒ VERTICAL ☐ INCLINED DEGREES			
7. NOTES PID MAKE/MODEL: _____ WATER LEVEL MAKE/MODEL: _____			PID SERIAL#: _____ Colors from Munsell Soil Color Chart, Rev 1994			
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
	0.05	ML	(0-4") SILT (ML). some sand; rare angular Gravel. dark yellowish brown 10YR 4/1. loose. moist. non-plastic; trace organics.	NA	NA	Q954, Q3. 11. 2010 COLLECTED: LL7SS-070-5080-SS FOR HEXAVALENT CHROMIUM AND TOTAL CHROMIUM.
	0.5	SM	(4"-1') Silty SAND (SM). and Silt, some Gravel. dark grayish brown 10YR 4/2 with brownish yellow iron staining 10YR 6/8. soft. loose. moist. non-plastic; trace organics (roots).	NA	NA	
	0.85					
	1		BORING TERMINATED AT 1' BGS. BORING COMPLETE USING A 3" SS HAND AUGER			
COMMENTS / SKETCH 						
GEOLOGIST SIGNATURE/DATE Emily Cunningham 3-11-10			QA/QC SIGNATURE/DATE Mike Daulton 03/11/10			BOREHOLE NUMBER LL7SS-070

HTRW DRILLING LOG			DISTRICT		BOREHOLE NUMBER	
1. COMPANY NAME SAIC			USACE - Louisville		LL7ss-071	
2. DRILLING SUBCONTRACTOR NA					SHEET 1 OF 1	
3. PROJECT RVAAP - PBA03 - RI			4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266			
5. NAME OF DRILLER MIKE DENALLO			6. DIRECTION OF BOREHOLE ☒ VERTICAL ☐ INCLINED DEGREES			
7. NOTES PID MAKE/MODEL: NA WATER LEVEL MAKE/MODEL: NA			PID SERIAL#: NA WATER LEVEL SERIAL#: NA		Colors from Munsell Soil Color Chart, Rev 1994	
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
		GC	FILL MATERIAL: some Gravel; some Silt; little Clay; (etc); angular gravel; fine silt; dark grayish brown clay (lovr 412) with yellowish brown mottling (lovr 516). loose; wet; trace organics (roots).	NA	NA	1040: 05-11-2010 COLLECTED: LL7SS-071-5081-30 FOR HEXAVALENT CHROMIUM AND TOTAL CHROMIUM. BUILDING EXCAVATION AREA HATE BACKFILLED.
	1		BORE HOLE TERMINATED AT 1' BGS BORING COMPLETE USING A 3" SS HAND AUGER			
COMMENTS / SKETCH						
GEOLOGIST SIGNATURE/DATE Emily Cunningham 03/11/10			QA/QC SIGNATURE/DATE Mil D. Mo 03/11/10		BOREHOLE NUMBER LL7ss-071	

HTRW DRILLING LOG			DISTRICT		BOREHOLE NUMBER	
1. COMPANY NAME SAIC			USACE - Louisville		LL7ss - 089	
2. DRILLING SUBCONTRACTOR NA			4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		SHEET 1 OF 1	
3. PROJECT RVAAP - PBA08 - RT			5. NAME OF DRILLER MIKE DENALLO			
6. DIRECTION OF BOREHOLE ☒ VERTICAL ☐ INCLINED			DEGREES			
7. NOTES PID MAKE/MODEL: NA WATER LEVEL MAKE/MODEL: NA			PID SERIAL#: NA Colors from Munsell Soil Color Chart, Rev 1994 WATER LEVEL SERIAL#: NA			
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
			ML (0-2") SILT (ML). medium soft, dark grayish brown (10YR 4/2), damp, trace organics (roots).			1010. 03-11-2010 Collected: LL7SS-089-5062-S0
	0.3'		(2"-10") FILL MATERIAL. COARSE ANGLULAR GRAVEL; gray (10YR 4/1), loose, moist.			FOR HEXAVALENT CHROMIUM and TOTAL CHROMIUM.
	0.5'					
	1'		SM (10"-12") SAND (SM). fine to medium coarse, loose, moist, yellowish brown (10YR 5/4); trace organics.			
	12'		BORING TERMINATED AT 1' BGS BORING COMPLETE USING A 3" SS HAND AUGER			
COMMENTS / SKETCH 						
GEOLOGIST SIGNATURE/DATE Miley Cunningham 03-11-10			QA/QC SIGNATURE/DATE Mike Denallo 03/11/10		BOREHOLE NUMBER LL7SS - 089	

HTRW DRILLING LOG			DISTRICT USACE - Louisville		BOREHOLE NUMBER LL755-080-5809-S	
1. COMPANY NAME SAIC			2. DRILLING SUBCONTRACTOR NA		SHEET 1 OF 1	
3. PROJECT RVAAP PBA 08 RE			4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266			
5. NAME OF DRILLER AMANDA TRENTON ; 3" HAWK			6. DIRECTION OF BOREHOLE ☒ VERTICAL ☐ INCLINED DEGREES			
7. NOTES PID MAKE/MODEL: NA WATER LEVEL MAKE/MODEL: NA			PID SERIAL#: NA WATER LEVEL SERIAL#: NA		Colors from Munsell Soil Color Chart, Rev 2000 REV ED	
ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
		ML	(0.0'-1.0') SILT (ml); some clay; little fine sand 10YR4/3 brown, little 10YR5/2 grayish brown + 10YR5/6 yellowish brown. soft; damp; medium plasticity; some organics throughout big root @ ~0.4' bgs 3" concrete (blue) fragment at 0.5' bgs	NA	NA	LL755-080-5809-SO collected on 10/18/10 @ 1210 from 0-1 for Hx + Total Chromium.
	1		Boring terminated at 1.0ft bgs			

COMMENTS / SKETCH

DATE: 4.1.18.190
LONG: -81.10596

NA083:

GEOLOGIST SIGNATURE/DATE Amanda Trenton 10/18/10	QA/QC SIGNATURE/DATE S. J. Rice 10/11/16	BOREHOLE NUMBER LL755-080-5809-SO
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**INCREMENTAL SAMPLING METHOD (ISM)
(FORMERLY MULTI-INCREMENTAL)
SURFACE SOIL SAMPLES**

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RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP PBA 2008 RI

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: *Rich Sprinkel*

2. Location ID:

LL755-072M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL755-072M-5063-S0

5. Sample Date and Time:

3/15/10 1115

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

NA

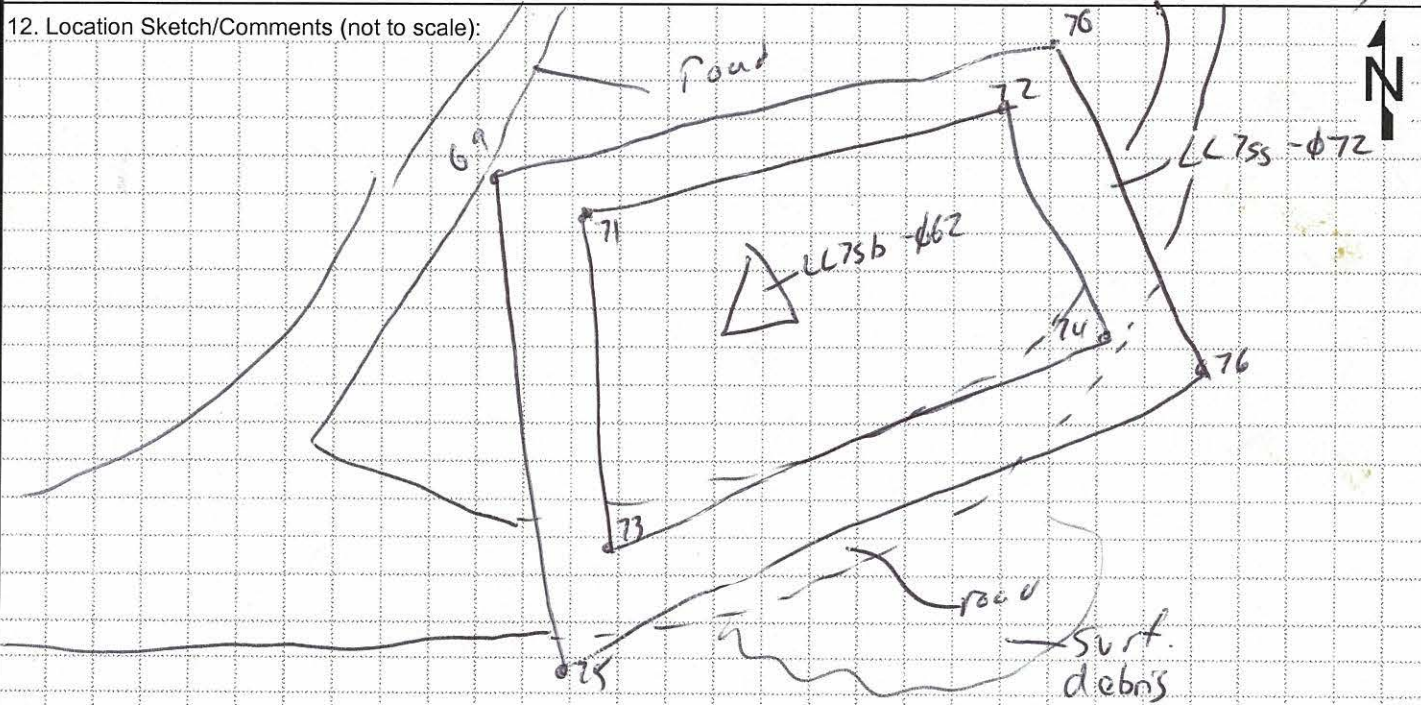
10. Activities in the Area:

None

11. Soil Description and Field Notes: *SILT (ML), little sand, Trace Gravel, Trace Clay, Dk greyish brown 10% 4/2, soft, damp, low plasticity, Slag, Surface debris*

85% open field 15% Brush

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

De Wier *3/15/10*
(Signature and Date)

QC Checked By:

[Signature] *03/31/2010*
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team: Mike Donallo

RVAAP PBA 2008 RI

Ravenna, OH 44266

2. Location ID:

LL755-~~073~~ M

3. Revised Coordinates Recorded:

NA

4. Sample ID:

LL755-~~073~~ M

5. Sample Date and Time:

3/15/10 1430

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

None

11. Soil Description and Field Notes:

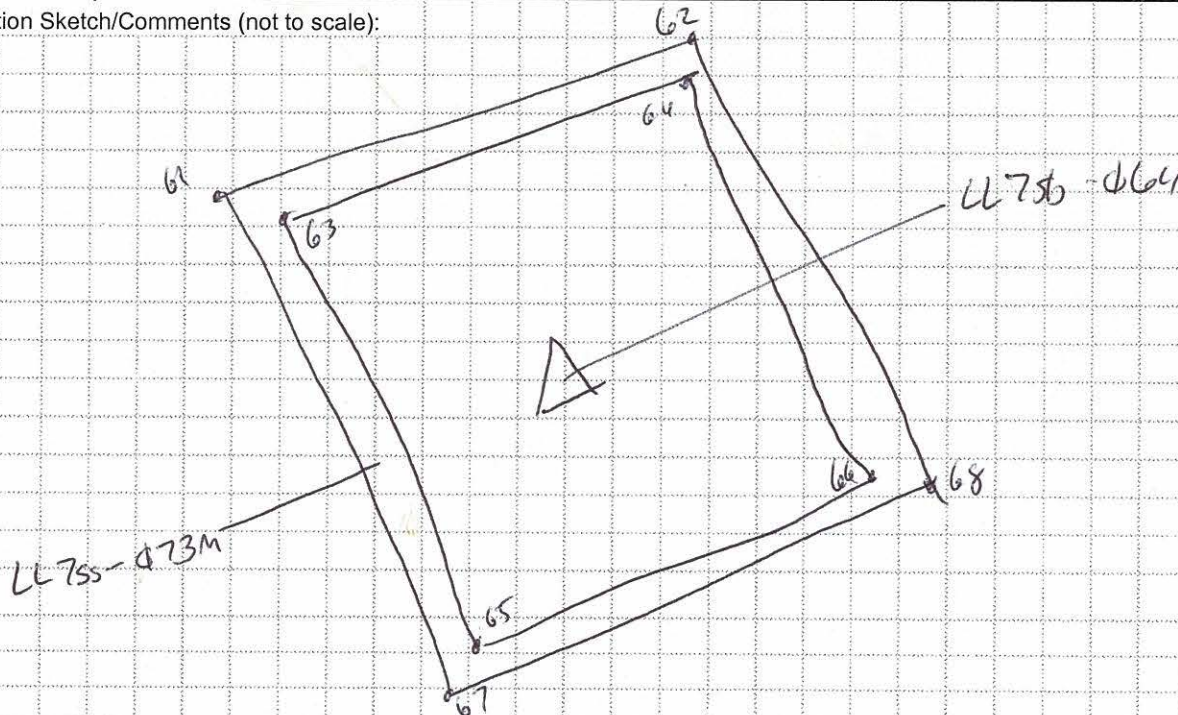
SILT (MI), Trace Clay, Trace Sand, Trace Gravel, DK. Grayish
Brown 10YR 4/2, soft, Damp, Low plasticity, limestone/star

50% Area gravel/Degraded Asphalt

100% open Area

Munsel 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:



EXPLOSIVES



TAL METALS



SVOCs



PAHs



OTHER



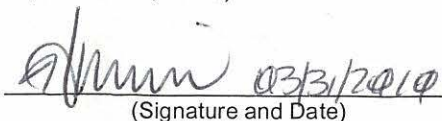
FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

JL King 3/15/10
(Signature and Date)

QC Checked By:

JL King 03/15/2010
(Signature and Date)





RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville
RVAAP PBA 2008 RIRVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: Mike Denallo

2. Location ID:

LL755-075M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL755-075M-5066-50

5. Sample Date and Time:

3/15/10 1145

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

50 Bowl 1 Push Probe

9. MS/MSD Collected:

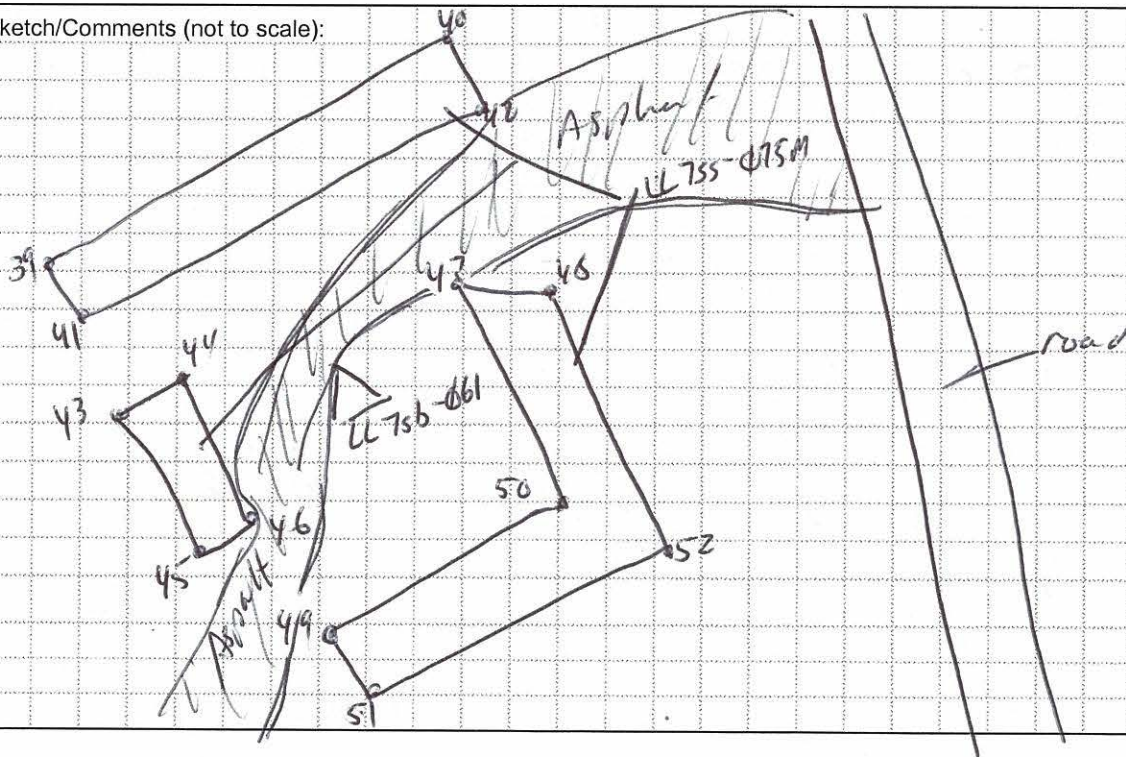
NA

10. Activities in the Area:

None

11. Soil Description and Field Notes: SILT (mL), little clay, trace gravel, trace sand, greyish brown 10 YR 5/2, damp, med-stiff, low plasticity, mottled yellowish brown, 50 YR 5/8, trace organics (roots)

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

(Signature and Date) 3/15/10

QC Checked By:

(Signature and Date) 03/31/2010



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: MIKE DENELLO
EMILY CUNNINGHAM

2. Location ID:

LL7SS-076M

3. Revised Coordinates Recorded:

— NA

4. Sample ID:

LL7SS-076M-5467-80

5. Sample Date and Time:

03-11-2010: 1240

6. Dupe ID:

— NA

7. Split ID:

— NA

8. MI Equipment Used:

HAND PUSH PROBE + SS BOWL

9. MS/MSD Collected: NO

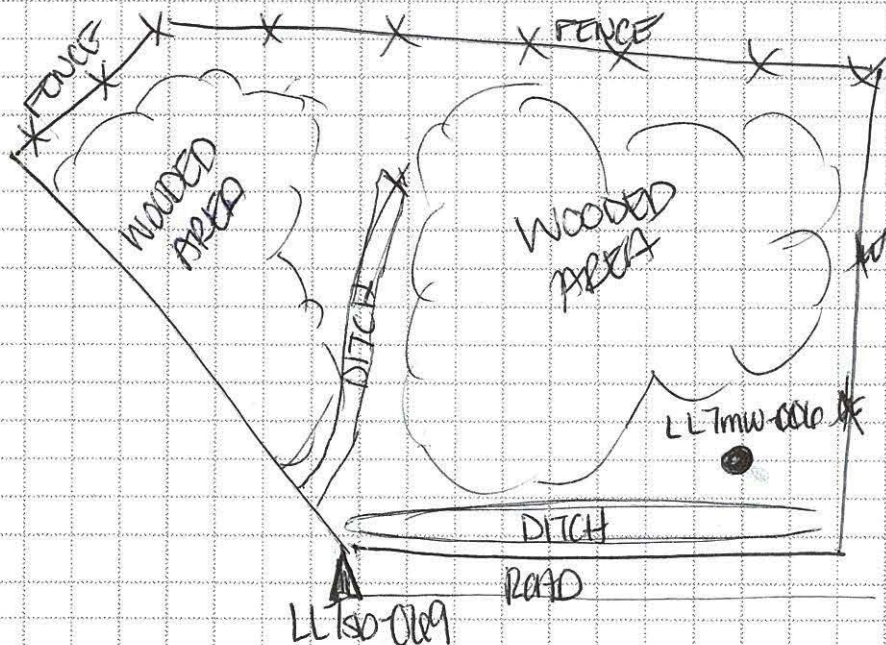
10. Activities in the Area: NONE

11. Soil Description and Field Notes:

clay (EL) - sandy-silt (SM) (25%), trace organics, 10YR 3/4,
moist, medium plasticity

* DITCHES FILLED WITH WATER.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Mike Denello 03/11/10
(Signature and Date)

QC Checked By:

Emily Cunningham 03/11/2010
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: EMILY CUNNINGHAM
MIKE DERRALLO

2. Location ID:

LL7ss-077M

3. Revised Coordinates Recorded:

— NA

4. Sample ID:

LL7SS-077M-5000-SO

5. Sample Date and Time:

03-10-2010, 1225

6. Dupe ID:

— NA

7. Split ID:

— NA

8. MI Equipment Used:

HAND PUSH PROBE +
SS Bowl

9. MS/MSD Collected:

— NA

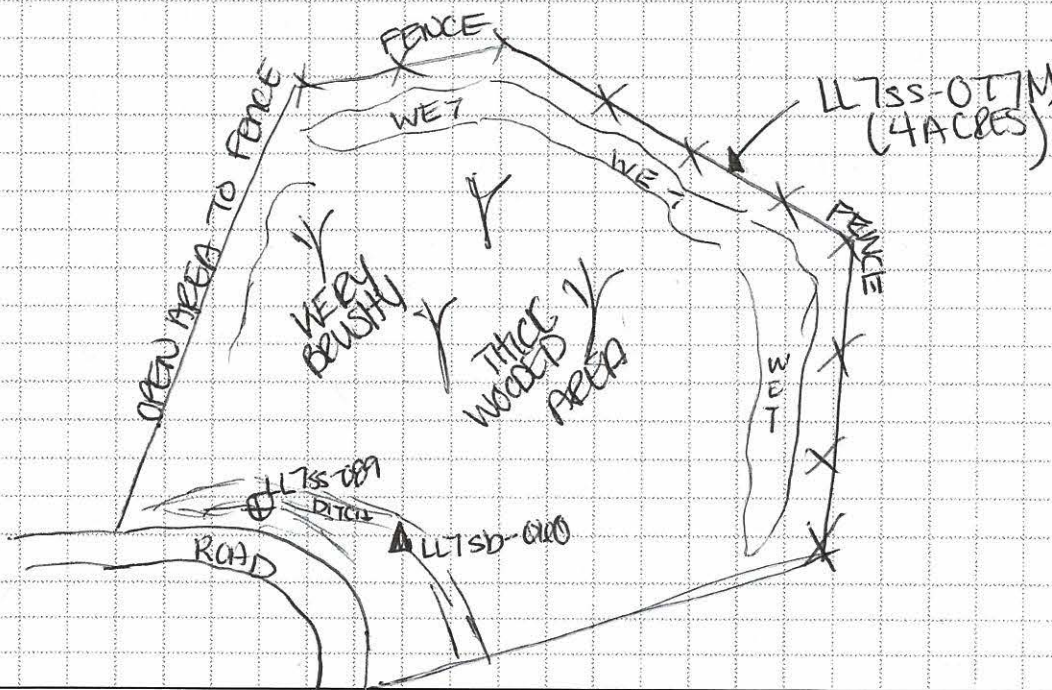
10. Activities in the Area:

NONE

11. Soil Description and Field Notes: CLAY (CL) - some Silt, trace Sand; trace Gravel, gray (10YR 5/1) and yellowish brown (10YR 5/6) with dark yellowish brown mottling (10YR 4/6). Soft to medium stiff; moist; low plasticity; some organics (roots, leaves, vegetation).

HAND PUSH PROBE USED TO PUSH DOWN 0-1' BGS AT 30 pin flagged locations WITHIN THE SAMPLE AREA. LL7SS-077M had lots of Low lying Drainage PATHWAY - LOTS OF STANDING WATER AND THICK BRUSH.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER _____
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham 3/11/10
(Signature and Date)

QC Checked By:

Mike D. No 03/11/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team:

Mike Denello

2. Location ID:

LL7SS - 078M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL7SS-078M-5469

5. Sample Date and Time:

3/15/10 30

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

None

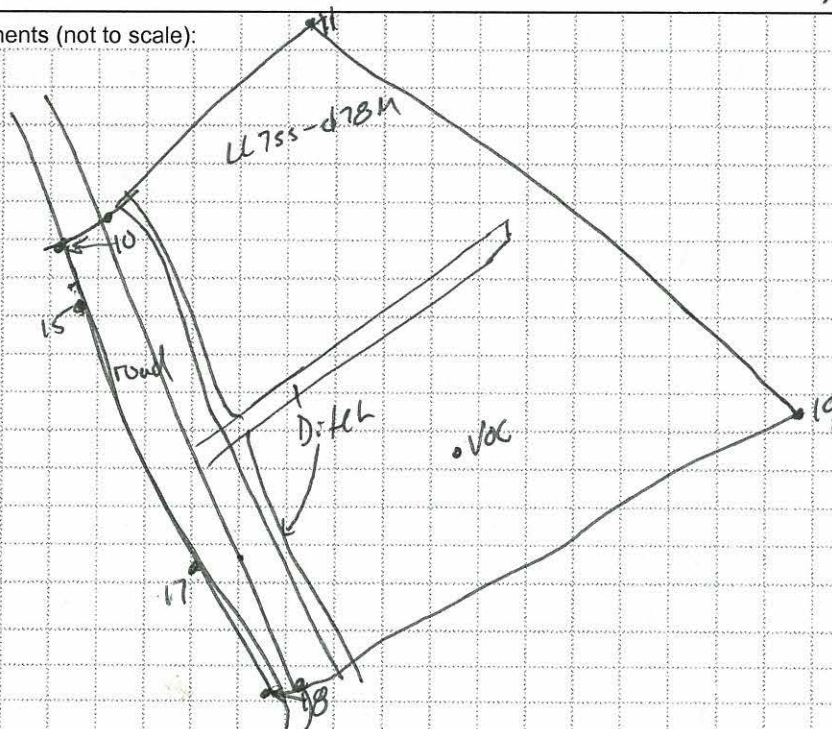
11. Soil Description and Field Notes: SILT (ML), Trace Little Fine Sand, Trace Gravel, angular Very Dk Greyish Brown 2.5Y 3/2, very soft, damp, Low Plasticity, Trace organics, trace Iron staining 10YR 5/8 Yellowish Brown, associated w/ a brown 10YR 5/3 Sandy silt.

95% wooded mainly 6-8' Sampling

5% open field / brush

March 4 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☐ EXPLOSIVES☐ TAL METALS☐ SVOCs☐ PAHs☐ OTHER☒ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

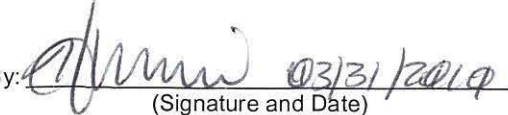
3/15/10

(Signature and Date)

QC Checked By:

03/15/2010

(Signature and Date)





RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Steve Visocky

2. Location ID:

LL7-ΦΦM

3. Revised Coordinates Recorded:

none

4. Sample ID:

LL755-Φ8ΦM-5Φ71-50

5. Sample Date and Time:

3/15/10 Φ955

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Push Probe + Bowl

9. MS/MSD Collected:

NA

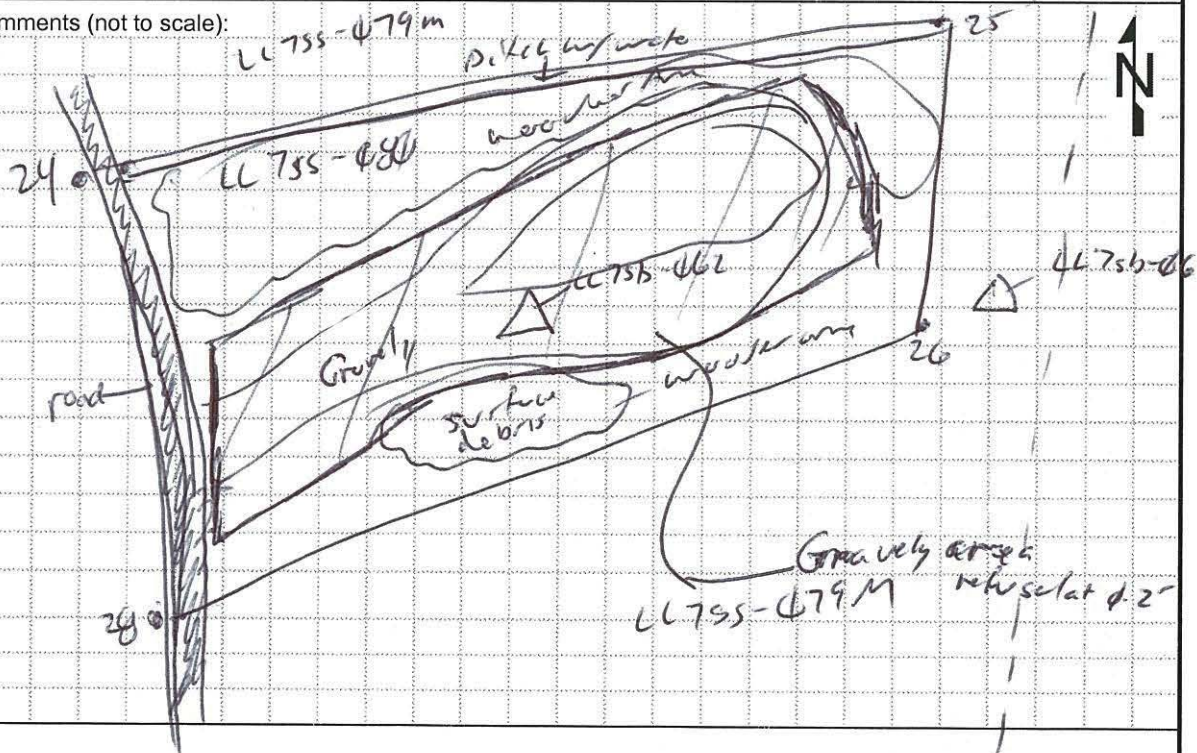
10. Activities in the Area:

none

11. Soil Description and Field Notes: SILT (ML), Little Sand, Trace Gravel, fine sand, fine gravel, angular, soft, Dark Grayish Brown 10YR 4/2, low plasticity, Slight, Poor

50% open field35% Brush15% wooded

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Steve Visocky 3/15/10
(Signature and Date)

QC Checked By:

[Signature] 03/31/2010
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Ryan Lannick

2. Location ID:

LL755-081M

3. Revised Coordinates Recorded:

NONE

4. Sample ID:

LL755-081M

5. Sample Date and Time:

3/15/10 1105

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

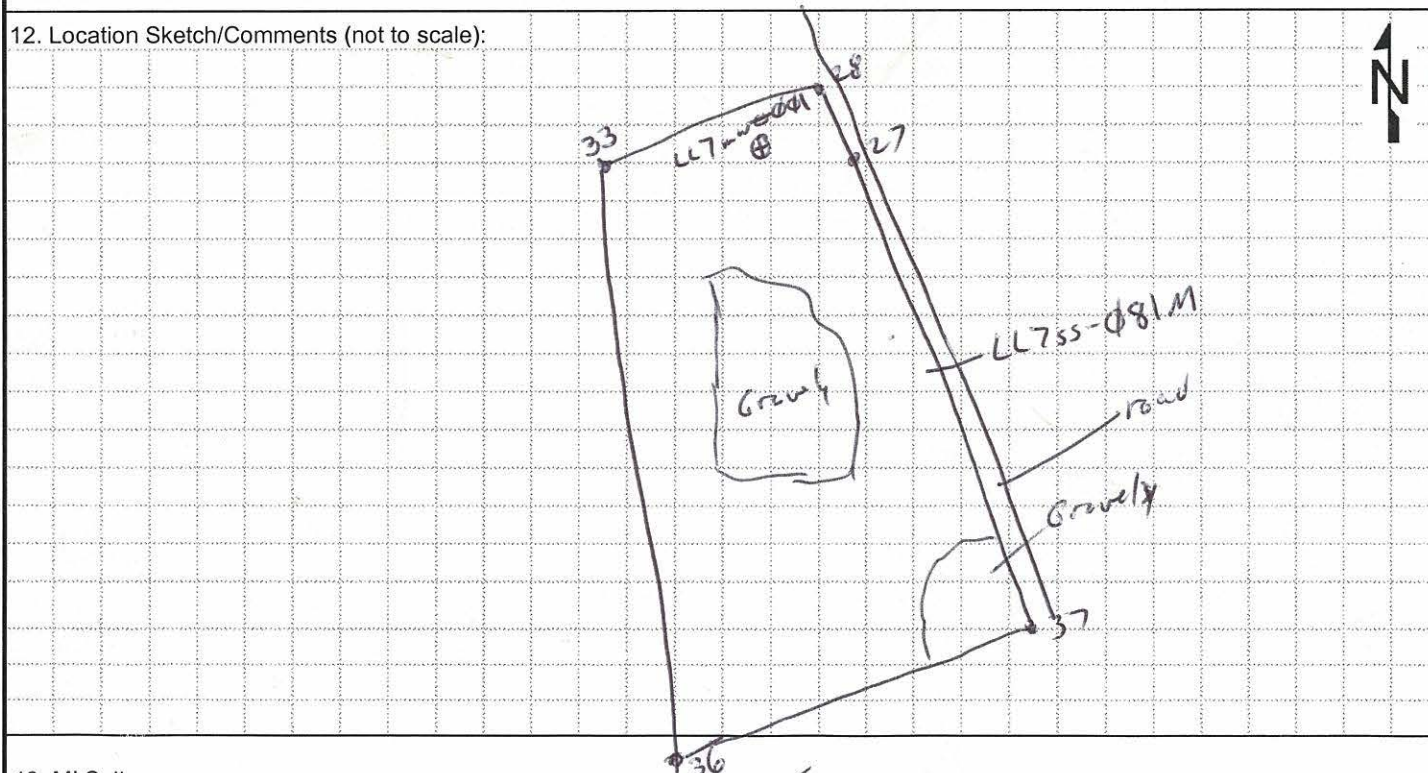
NONE

10. Activities in the Area:

NONE

11. Soil Description and Field Notes: SILT (MC) LITTLE Sand, LITTLE Clay, Trace Fine Gravel, angular
DK Grayish Brown 2-5Y 4/2, soft ~~and~~ sv, Damp, low plasticity, Slaty Asphalt
mottled DK Yellowish Brown 10YR 4/6.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature] 3/15/10
(Signature and Date)

QC Checked By:

[Signature] 03/31/2010
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team:

RVAAP PBA 2008 RI

Ravenna, OH 44266

Emily Cunningham, Mike Denallo

2. Location ID:

LL7SS-082M

3. Revised Coordinates Recorded:

NA

4. Sample ID:

LL7SS-082M-5073-SO

5. Sample Date and Time:

03/11/10 1535

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

Hand Push probe + ss bowl

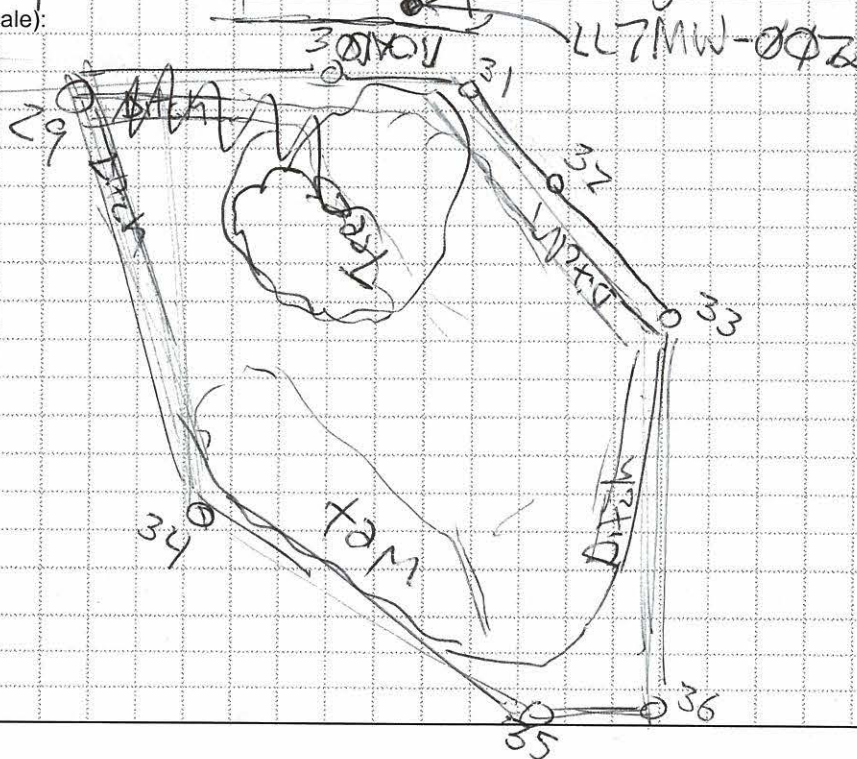
9. MS/MSD Collected: LL7SS-082M-5073-SO/MSD

10. Activities in the Area: none

11. Soil Description and Field Notes:

silty CLAY (MH), some sand, trace gravel/larger, 10YR 6/3 w/ mottling; 10YR 6/6, soft, damp, medium plasticity, trace organics & roots. Some spots yield refusal @ 3-4" in NE corner of MI area; disturbance, tire marks, previous sampling & grubbing occurred in area; snow melt runoff present in area; 30 aliquots collected with hand push probe @ previously staked pin & flags.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Mike Denallo 03/11/10
(Signature and Date)

QC Checked By:

Emily Cunningham 03/11/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: MIKE DEARBOLD
EMILY CUMMINGHAM

2. Location ID:

LL7SS-083M

3. Revised Coordinates Recorded:

MA

4. Sample ID:

LL7SS-083M-5074-SO

5. Sample Date and Time:

03/11/2010, 1440

6. Dupe ID:

LL7SS-083M-6057M^{SO}-FD

7. Split ID:

LL7SS-083M-6056-QA

8. MI Equipment Used:

HAND PUSH PROBE + SS Bowl

9. MS/MSD Collected:

NO

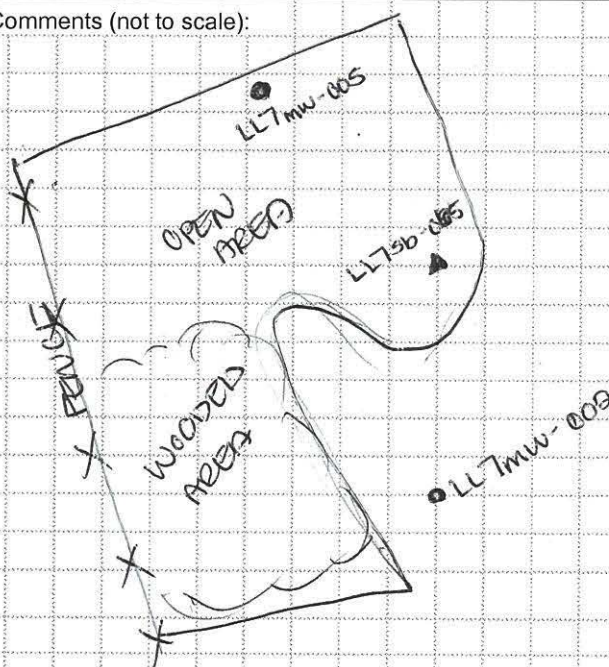
10. Activities in the Area:

NONE

11. Soil Description and Field Notes: Silty CLAY (ML); little Sand, dark yellowish brown (10YR 4/6), trace Gravel; medium stiff; damp; slight plasticity; trace organics (roots).

Some spots in LL7SS-083M hit refusal at ~2" bgs, possible rock or large root. Samples collected using a hand push probe, collecting from 0-1' bgs at 30 pin. Flags set at random points throughout the MI.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER _____
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cunningham 03/11/10
(Signature and Date)

QC Checked By:

Mike Dearbold 03/11/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: EMILY CUMMINGS
MIKE DENALDO

2. Location ID:

LL7SS-084M

3. Revised Coordinates Recorded:

NA

4. Sample ID:

LL7SS-084M-5075-SO

5. Sample Date and Time:

08.11.2010; 1410

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

HAND PUSH PROBE + SS Bowl

9. MS/MSD Collected:

NO

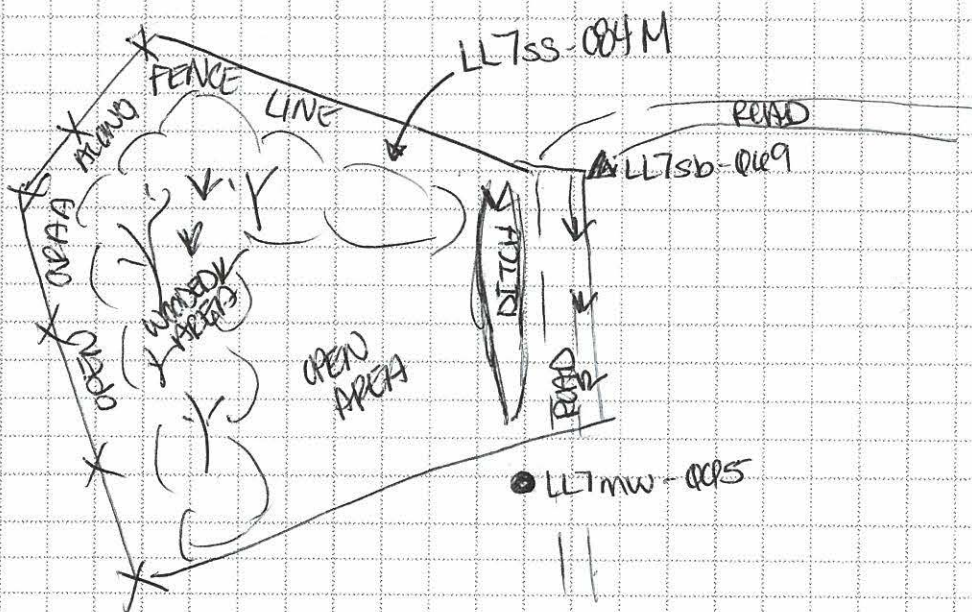
10. Activities in the Area:

NONE

11. Soil Description and Field Notes: Silty CLAY (MH). some Silt some Sand. trace amount of rounded Gravel. dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6). soft to medium stiff; damp; medium plasticity; trace organics (~~tree roots~~ ^{leaves}).

* MOSTLY NATIVE SOIL, LOTS OF LOW AREAS THAT ARE FILLED WITH WATER (MELTED SNOW). SAMPLE COLLECTED USING A HAND PUSH PROBE. COLLECTING 0-1' BAS AT 30 PIN FLAGGED LOCATIONS

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER _____
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

Emily Cummings
(Signature and Date)

QC Checked By:

Mike Denaldo 03/11/10
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville
RVAAP PBA 2008 RIRVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: Eyer Lavinia

2. Location ID:

LL 755-085 M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL755-085 M - 5076-50

5. Sample Date and Time:

3/15/10 1400

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push probe

9. MS/MSD Collected:

NA

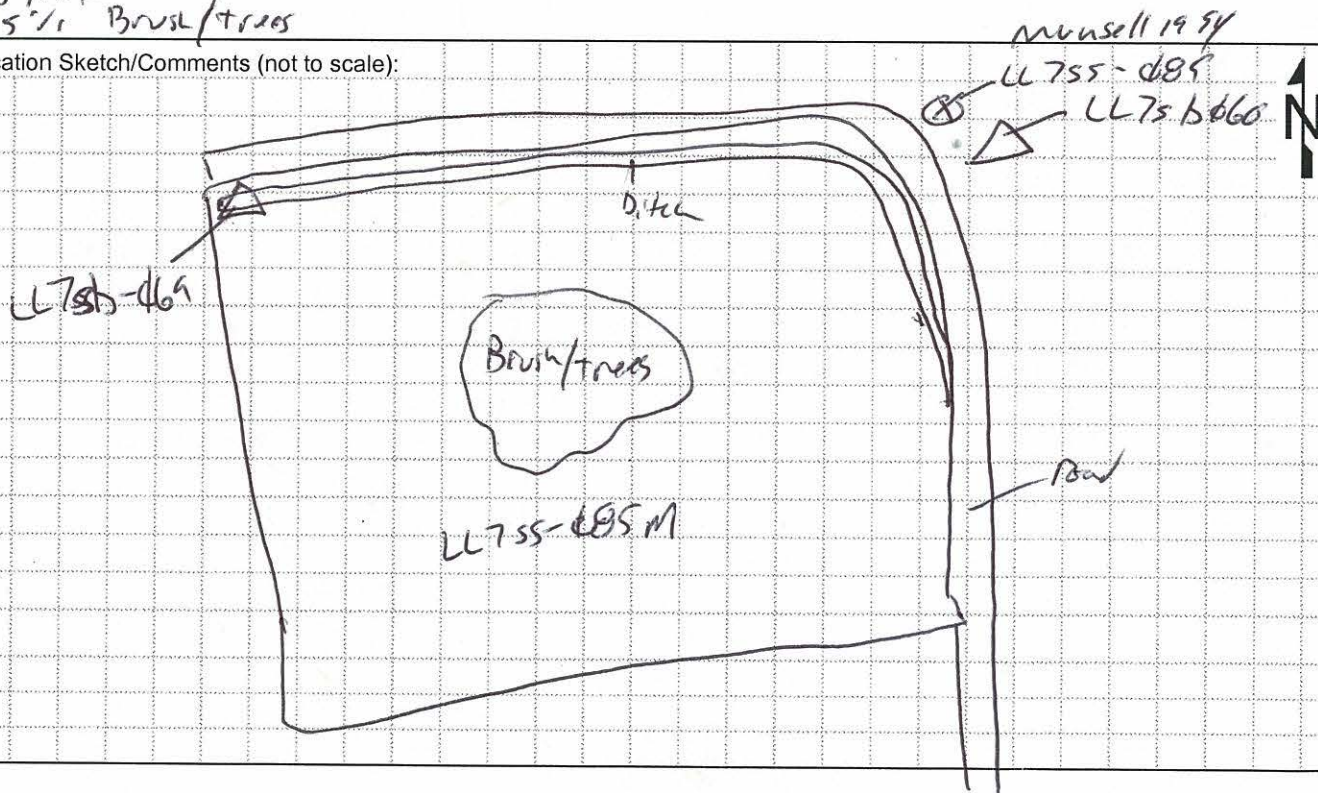
10. Activities in the Area:

None

11. Soil Description and Field Notes: SILT (ML), Little Sand, Trace Gravel, trace clay
fine angular sand, 2.5Y 3/2 very dark grayish Brown, soft, clump.
low plasticity, mottled yellowish Brown 10YR 5/6 w/ln clayey areas
(light grayish Brown 10YR 6/2), Trace organic roots.

85% open field
15% Brush/trees

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER _____
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By: [Signature]

(Signature and Date)

3/15/10QC Checked By: [Signature]

(Signature and Date)

03/31/2010



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team: Rich Sprinzl

RVAAP PBA 2008 RI

Ravenna, OH 44266

2. Location ID:

LL 7ss - Ø86M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL 7ss - Ø86M - SØ77-SS

5. Sample Date and Time:

3/15/10 1420

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

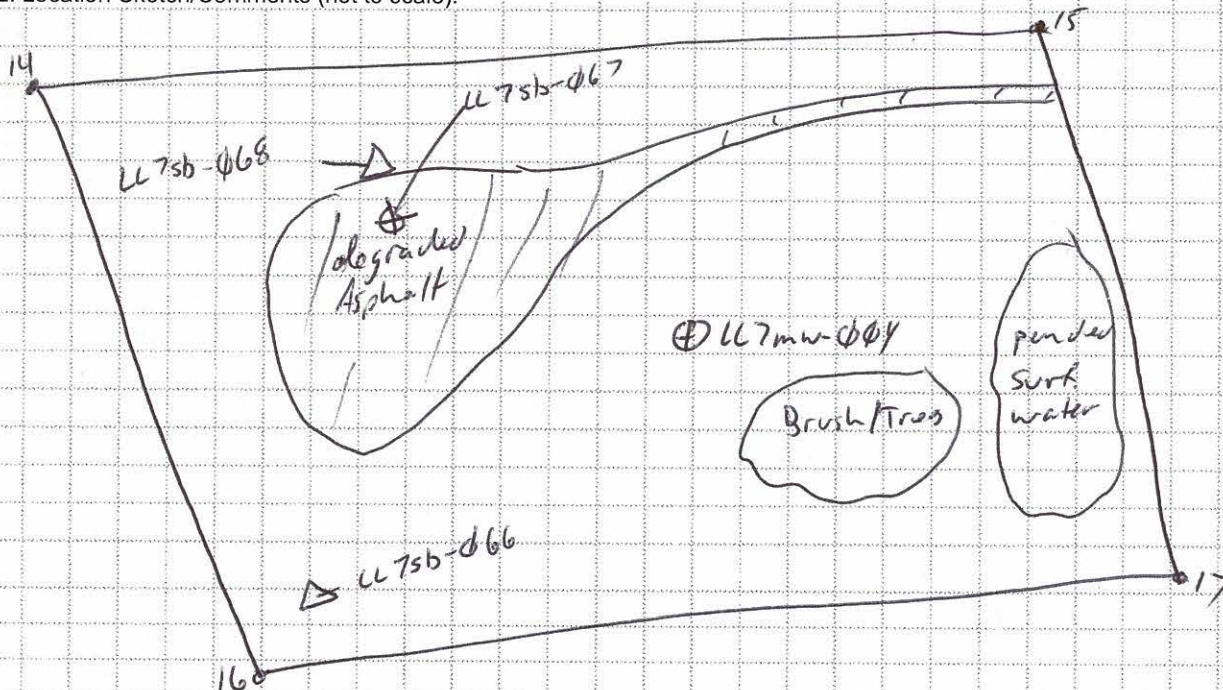
None

11. Soil Description and Field Notes: CLAY (CL), Little sand, Trace silt, fine sand, light brownish grey 10% 6/2, soft, clump, low plasticity, Trace organics (roots)
20% of open field is Asphalt (degraded)

85% open field 15% Brush/Trees

Munsell 1984

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER
☒ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature] 3/15/10
(Signature and Date)

QC Checked By:

[Signature] 03/31/2010
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: *Rich Sprinkel*

2. Location ID:

LL 7-087M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL 7-087M-5678-SU

5. Sample Date and Time:

*3/15/10**1220*

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

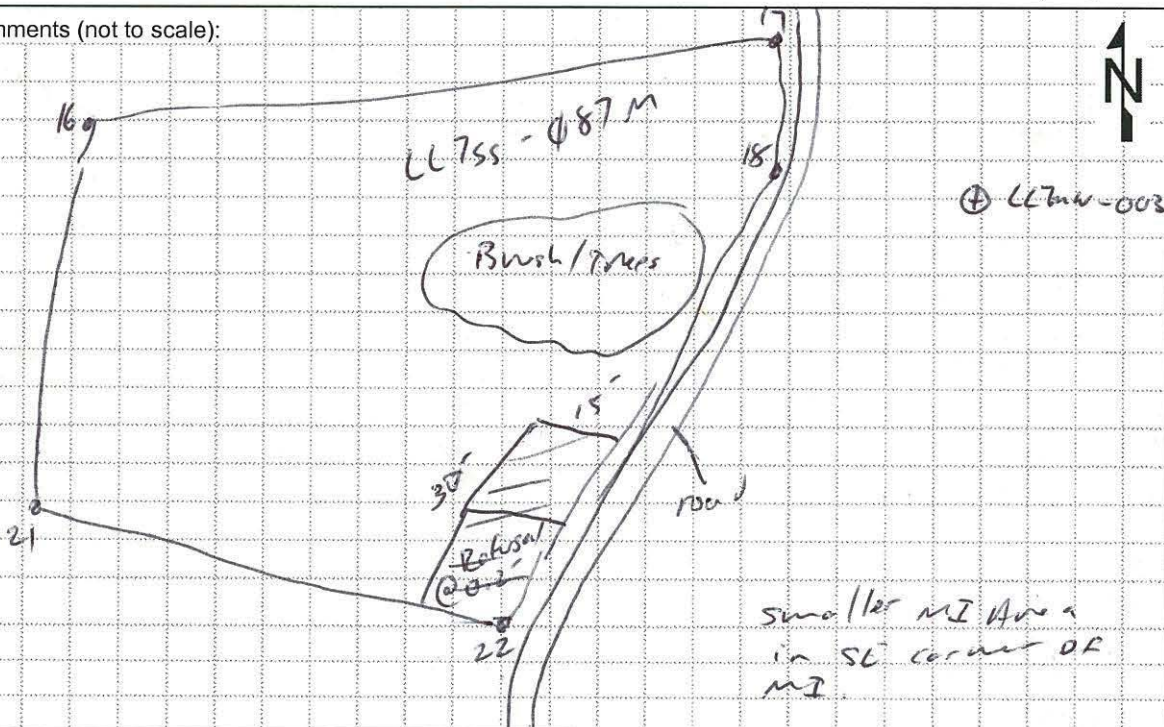
None

11. Soil Description and Field Notes:

*CLAY (CL), little silt, + trace sand, Trace Gravel, soft, light grayish brown 10YR 6/2
very dark grayish brown 10YR 3/2 silty sands, mottled yellowish brown 10YR 5/8.
slay*

*8.5% gravel**March 11 1998*

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☒ EXPLOSIVES ☒ TAL METALS ☐ SVOCs ☒ PAHs ☐ OTHER _____
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

St. Win 3/15/10
(Signature and Date)

QC Checked By:

[Signature] 03/31/2010
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team:

Ryan Larrick

RVAAP PBA 2008 RI

2. Location ID:

LL753-φ88M

3. Revised Coordinates Recorded:

None

4. Sample ID:

LL753-φ88M-5079-S

5. Sample Date and Time:

3/15/10

1230

6. Dupe ID:

NR

7. Split ID:

NA

8. MI Equipment Used:

SS Bowl + Push Probe

9. MS/MSD Collected:

NA

10. Activities in the Area:

None

11. Soil Description and Field Notes:

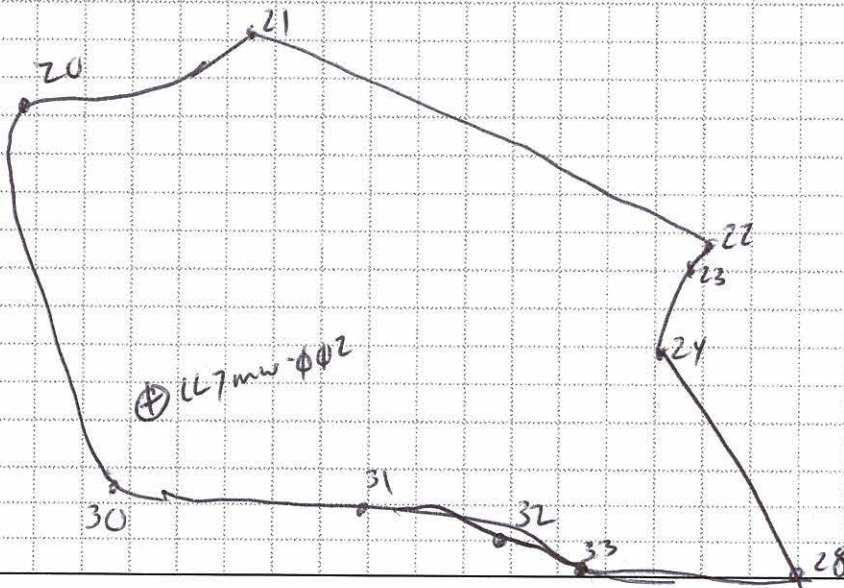
SAND (SM), little silt, Trace Gravel, fine - med sand
angular, Grayish Brown 10YR 5/2, Loose, moist, low plasticity, silty, hydrophobic.

Majority of area rebar at < φ.5'

95% open field 5% Brush/Trees

MW-Sell 1994

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:



EXPLOSIVES



TAL METALS



SVOCs



PAHs



OTHER



FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

3/15/10

(Signature and Date)

QC Checked By:

03/31/2010

(Signature and Date)

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APRIL 2011 SAMPLING

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RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team: MIKE BELLANTI S

RVAAP PBA 2008 RI

Ravenna, OH 44266

HEATHER MILBURN

2. Location ID:

LL7SS-096M

3. Revised Coordinates Recorded:

COLLECTED W/ GPS 5' LINE FROM EDGE OF ASPHALT

4. Sample ID:

LL7SS-096M-5829-SO

5. Sample Date and Time:

04/22/2011 1120

6. Dupe ID:

N/A

7. Split ID:

N/A

8. MI Equipment Used:

SS PUSH PROBE & BOWL

9. MS/MSD Collected:

N/A

10. Activities in the Area:

NONE, LT. RAIN and WIND.

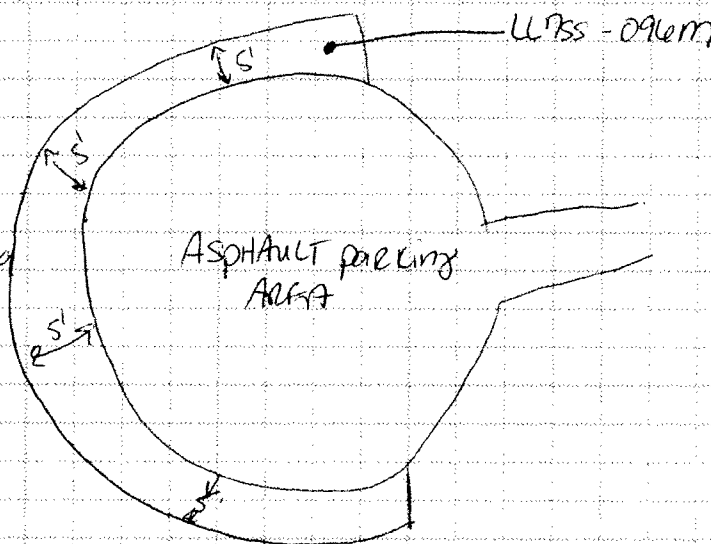
11. Soil Description and Field Notes:

NOTES: PUSH PROBE HAD REFUSAL AT ~3'-6" THROUGHOUT DUE TO DEMOLITION and BUILDING DEBRIS STILL PRESENT AT THE SITE. DEBRIS CONSISTED OF CONCRETE AND BRICK FRAGMENTS, CHUNKS OF ASPHALT, WOOD GRAVEL AND BLACK TAC PAPER.

SOIL: BROWN SILTY SAND WITH TRACE CLAY, FEW ORGANICS and SOME SMALL GRAVEL.

12. Location Sketch/Comments (not to scale):

0790-0791 PHOTOS:
101-0797 & 0798 PARKING AREA
0794-0795 BLACK TAC PAPER
0792-DEBRIS in sample area
FLAT AREA w/ SHORT GRASS



13. MI Soil

Analyses:



EXPLOSIVES



TAL METALS



SVOCs



PAHs



OTHER

ONLY 4 PAHs



BENZ(a)ANTHRAENE and



FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

ANTHRAENE

Recorded By:

04/22/2011

(Signature and Date)

QC Checked By:

05/19/11

(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team: MIKE BELLANTIS

RVAAP PBA 2008 RI

Ravenna, OH 44266

NEATHAL MILLER

2. Location ID:

LDSS-101M

3. Revised Coordinates Recorded:

COLLECTED FROM GPS LINE 20' FROM EDGE OF ASPHALT PARKING LOT.

4. Sample ID:

LDSS-101M-5834-SO

5. Sample Date and Time:

04/22/2011 1200

6. Dupe ID:

LDSS-101M-0237-FD

7. Split ID:

LDSS-101M-0240-QA

8. MI Equipment Used:

SS PUSH PROBE AND BOWL

9. MS/MSD Collected:

N/A

10. Activities in the Area:

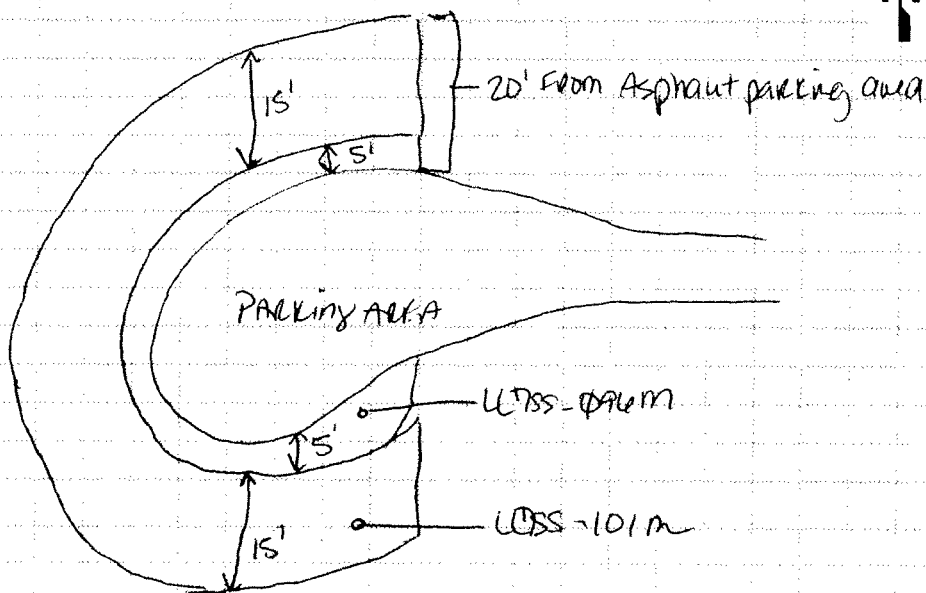
NONE, LT RAIN AND WIND

11. Soil Description and Field Notes:

NOTES: SAMPLE COLLECTED FROM 15' DELINEATION RING AROUND ASPHALT PARKING AREA. INCONSISTENT RECOVERY TO 1.0 DGS. AREA HAS SOME DEMOLITION DEBRIS, BUT NOT AS MUCH AS LOCATION. LDSS-OAUM.

SOIL: BROWN SANDY CLAY WITH ABUNDANT ROOTS AND ORGANIC MATERIAL. TRACE SMALL GRASS.

12. Location Sketch/Comments (not to scale):

FLAT AREA W/
SHORT GRASS.

13. MI Soil

Analyses:

☐ EXPLOSIVES ☐ TAL METALS ☐ SVOCs ☐ PAHs ☒ OTHER ONLY 4 TARGET PAHs

☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

(Signature and Date)

04/22/2011

QC Checked By:

(Signature and Date)

05/19/11



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 442661. Sample Team: RIGHT SPRINZL
NEATHER MILLER

2. Location ID:

LL7SS-097M

3. Revised Coordinates Recorded:

COLLECTED WITH GPS 77, 78, 84 & 85

4. Sample ID:

LL7SS-097M-5B30-SEP

5. Sample Date and Time:

04/22/2011 1210

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

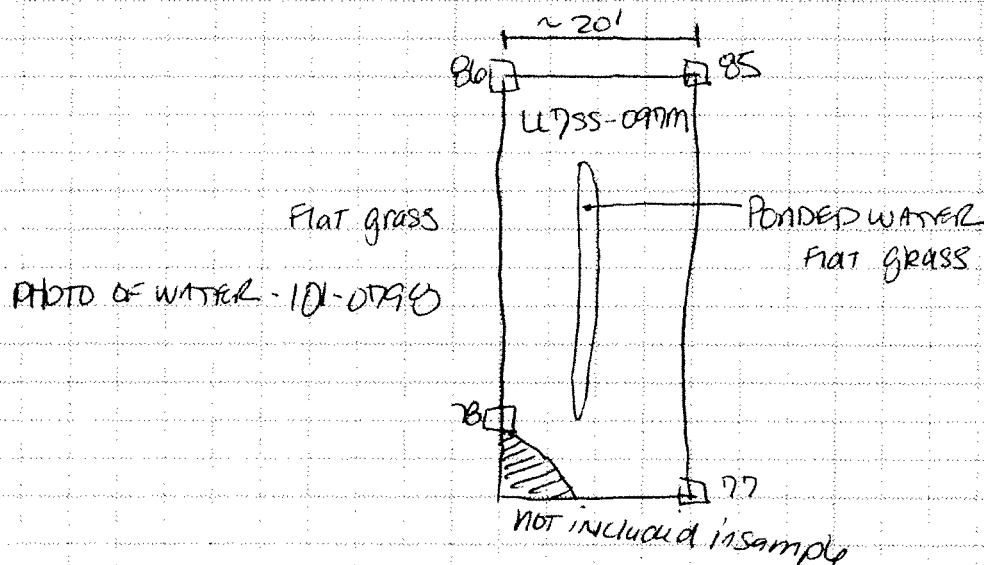
SS PUSH PROBE & BOWL9. MS/MSD Collected: YES NA10. Activities in the Area: NONE, LT RAIN

11. Soil Description and Field Notes:

NOTES: SPORADIC RECOVERY THROUGHOUT AREA. BETTER RECOVERY IN THE CENTER OF ISM AREA NEAR WATER.

SOIL: Lgt. BROWN SANDY CLAY WITH FRAGMENTS OF BLUE SANDSTONE and OTHER SMALL GRAVELS POSSIBLE FILL MATERIAL.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☐ EXPLOSIVES ☐ TAL METALS ☐ SVOCs ☐ PAHs ☒ OTHER 4 TARGET PAHs
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature] 04/22/2011
(Signature and Date)

QC Checked By:

[Signature] 05/19/11
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP PBA 2008 RI

RVAAP 8451 State Rt. 5

Ravenna, OH 44266

1. Sample Team: MIKE BELLANTIS

NEATHER MIZNER

2. Location ID:

LL7SS-098M

3. Revised Coordinates Recorded:

COLLECTED w/ GPS 78, 77, 79, 85 & 90

4. Sample ID:

LL7SS-098M-5831-50

5. Sample Date and Time:

04/22/2011 1225

6. Dupe ID:

N/A

7. Split ID:

N/A

8. MI Equipment Used:

SS DUST PROBE AND BOWL

9. MS/MSD Collected: N/A

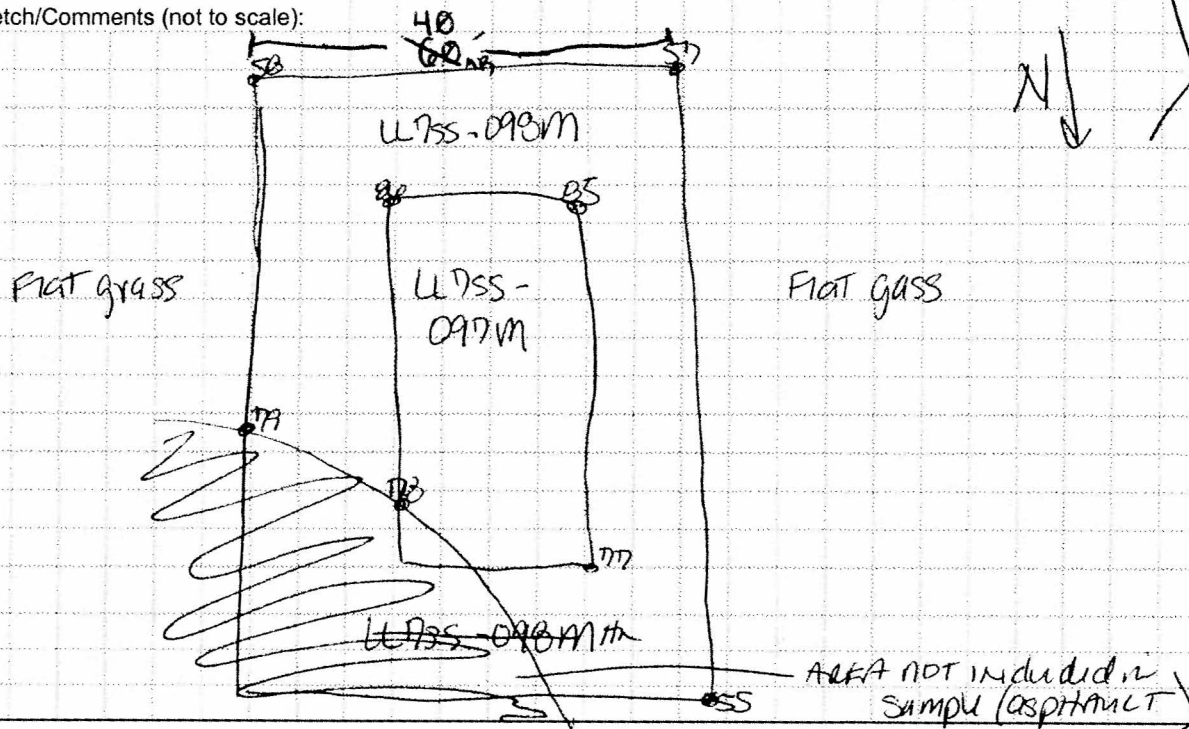
10. Activities in the Area: NONE, LITRAIL AND WIND.

11. Soil Description and Field Notes:

NOTES: SOUTHWEST CORNER HAD THE BEST RECOVERY AND ALL OTHER AREAS HAD REFUSAL AT ~ 6-8" bgs.

SOIL: BROWN AND GREY CLAY w/ SAND AND TRACE GRAVEL. SOME ROOTS AND ORGANIC MATERIAL

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:



EXPLOSIVES



TAL METALS



SVOCs



PAHs

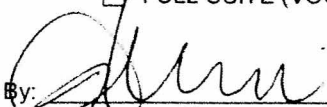


OTHER 4 TARGET PPTS

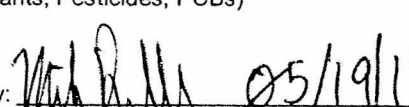


FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

 4/22/2011
(Signature and Date)

QC Checked By:

 05/19/11
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET

1

OF

1

USACE - Louisville

RVAAP 8451 State Rt. 5

1. Sample Team: RICH SPRINZ

RVAAP PBA 2008 RI

Ravenna, OH 44266

HEATHER MILLER

2. Location ID:

LL7SS-099M-SB32-80th

3. Revised Coordinates Recorded:

Collected w/ GPS 69, 59, 53, 80, 79, 58, 57, 55

4. Sample ID:

LL7SS-099M-SB32-SO

5. Sample Date and Time:

04/22/2011 1240

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS PUSH PROBE & BOWL

9. MS/MSD Collected:

NA

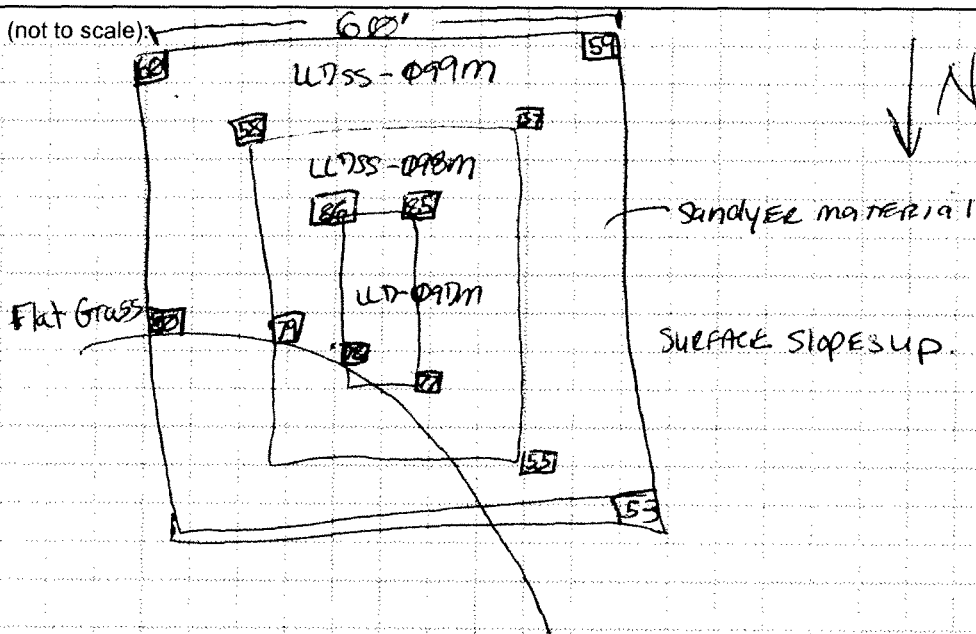
10. Activities in the Area:

None, LT Rain & Wind.

11. Soil Description and Field Notes:

NOTES: REPEAT sample for LL7SS-099M COLLECTED in MARCH 2010.SOIL: Brown clay with some sand and a few gravel grains.

12. Location Sketch/Comments (not to scale):



13. MI Soil

Analyses:

☐ EXPLOSIVES☐ TAL METALS☐ SVOCs☐ PAHs☒ OTHER4 TARGET PAHs☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

[Signature] 04/22/2011
(Signature and Date)

QC Checked By:

[Signature] 05/19/11
(Signature and Date)



RVAAP - Multi-Incremental (MI) Field Form

SHEET 1 OF 1

USACE - Louisville

RVAAP 8451 State Rt. 5
Ravenna, OH 44266

1. Sample Team: MIKE BELANTIS

HEATHER MILLER

2. Location ID:

LL7SS-100m

3. Revised Coordinates Recorded:

80,60,59,53
Collected w/ GPS 87,84,83,82,81

4. Sample ID:

LL7SS-100m-S033-S0

5. Sample Date and Time:

04/22/2011 1245

6. Dupe ID:

NA

7. Split ID:

NA

8. MI Equipment Used:

SS Push Probe and Bowl

9. MS/MSD Collected:

NA

10. Activities in the Area:

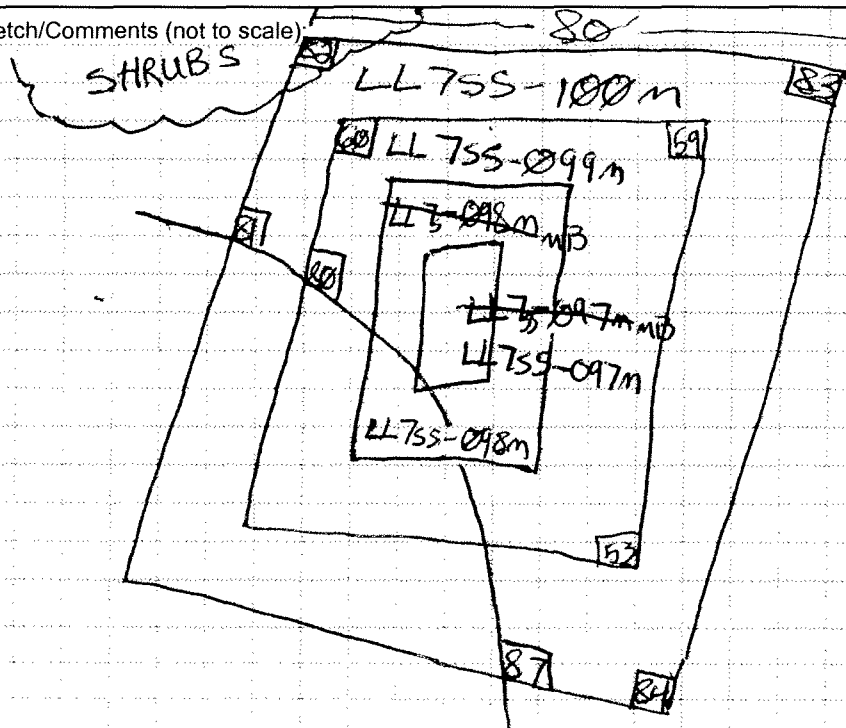
NONE, LT Latia.

11. Soil Description and Field Notes:

NOTES: BETTER RECOVER in the SOUTHEAST SECTION and SANDY/GR MOSTLY good
DEVELOPED TO 0-1' DGS.

SOIL: DARK BROWN SILTY SOIL in TOP 10" and BROWN clay below with TRACE sand.

12. Location Sketch/Comments (not to scale)



13. MI Soil

Analyses:

☐ EXPLOSIVES ☐ TAL METALS ☐ SVOCs ☐ PAHs ☒ OTHER 4 Target PAHs
☐ FULL SUITE (VOCs, SVOCs, Metals, Explosives, Propellants, Pesticides, PCBs)

Recorded By:

(Signature and Date) 04/22/2011

QC Checked By:

(Signature and Date) 05/19/11

SOIL BORING SAMPLES

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HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL75b-060	
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2	
3. PROJECT RVAAP PBA 08 RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266			
5. NAME OF DRILLER Jeremy Leckrone		6. MAKE/MODEL OF DRILL Geoprobe 6020 DT			
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 3" HAND AUGER 1.5" x 4' ACETATE LINER 2" x 4' DUAL TUBE		8. BOREHOLE LOCATION N555993.0272 E2352076.1031			
		9. SURFACE ELEVATION/DATUM NAD 83			
		10. DRILL DATE/TIME 03/09/10 STARTED: 1620 COMPLETED: 1720			
		15. DEPTH GROUNDWATER ENCOUNTERED NA			
12. OVERBURDEN THICKNESS 13+ FT		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA			
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA			
14. TOTAL DEPTH OF BOREHOLE 13 FT					
18. GEOTECHNICAL SAMPLES UNDISTURBED: NA DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA			
20. CHEMICAL SAMPLES CHEM: EX/1/10/10/10 RAD: NA OTHER:		21. TOTAL CORE RECOVERY % NA			
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 03/09/10 1620		DATE COMPLETED/ABANDONED: 03/09/10 1720			
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL					
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable					
LOCATION SKETCH/COMMENTS				SCALE: None	
GEOLOGIST SIGNATURE/DATE Amanda Trenton 03/09/10		QA/QC SIGNATURE/DATE K. G. 3/17/10		BOREHOLE NUMBER LL75b-060	



**US Army Corps
of Engineers®**
Louisville District



RVAAP-40
Load Line 7
LL7sb-060

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Amanda Trenton
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/09/10; 1620
End Date : 03/09/10; 1720
Northing Coord. : 555993.6272
Easting Coord. : 2352076.1031
Total Depth of Boring : 13.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments			
0	CL		(0.0' - 3.5') CLAY (CL); some Silt; trace Gravel & Slag; 7.5YR5/8 strong brown, 10YR5/3 brown, and 10YR7/1 light gray; medium stiff; dry; medium plasticity; little roots. Some roadside gravel in triangulated explosives boring.	LL7sb-060-5177-SO, LL7sb-060-6085-FD, & LL7sb-060-6089-QA collected from 0.0' - 1.0' on 03/09/10 at 1630 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg. LL7sb-060-5178-SO collected from 1.0' - 4.0' on 03/09/10 at 1700 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg. LL7sb-060-5179-SO collected from 4.0' - 7.0' on 03/09/10 at 1705 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.			
1			(1.5' - 3.5') Color is exclusively 7.5YR5/8 strong brown and 10YR7/1 light gray.							
2			(2.25' - 2.75') Soft.							
3	CL		(3.5' - 6.8') CLAY (CL); some 1/4" - 1/2" Gravel; 7.5YR5/8 strong brown, 10YR7/1 light gray, and 10YR4/6 dark yellowish brown; stiff; dry.		2.85'/3.0'		VOCs collected only from first core.			
4			(5.8') Silt content increases with depth; introduction of 10YR7/2 light gray mottling; trace iron accumulations; stiff.							
5	SM		(6.8' - 8.5') Fine to medium grained SAND (SM); some Silt; little subrounded Gravel; 10YR5/4 yellowish brown; loose; damp to moist.	2.8'/3.0'						
6			(8.5' - 13.0') Very fine grained SAND (SM); some Silt; trace fine Gravel; 2.5Y5/3 brown; soft; damp.							
7	SM		(11.5') Introduction of 10YR5/2 grayish brown.		4.0'/3.0'					
8										
9	SM									
10										
11	SM									
12										
13			Boring terminated at 13.0 ft bgs.							Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses, except VOCs.
Twin boreholes were drilled to obtain volume required for analyses.

LL7sb-060

HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7SD-001
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA 08 RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER JEREMY LEKRONE		6. MAKE/MODEL OF DRILL Geoprobe 6620DT		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT HAND AUGER 3" 1.5" x 4' ACETATE LINER 2" x 4' DUAL TUBE		8. BOREHOLE LOCATION 555722.3843 E235212.3373		
		9. SURFACE ELEVATION/DATUM NAD 83		
		10. DRILL DATE/TIME 03/09/10 STARTED: 1515 COMPLETED: 1615		
		15. DEPTH GROUNDWATER ENCOUNTERED NA		
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA		
12. OVERBURDEN THICKNESS 10.5'		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA		
13. DEPTH DRILLED INTO BEDROCK NA				
14. TOTAL DEPTH OF BOREHOLE 10.5'				
18. GEOTECHNICAL SAMPLES UNDISTURBED: NA DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: DR/MON/PA/H RAD: NA OTHER: —		21. TOTAL CORE RECOVERY % NA		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 03/09/10, 1515 DATE COMPLETED/ABANDONED: 03/09/10, 1615				
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS				SCALE: None
GEOLOGIST SIGNATURE/DATE Amanda Trenton 03/09/10		QA/QC SIGNATURE/DATE [Signature] 3/23/10		BOREHOLE NUMBER LL7SD-001



**US Army Corps
of Engineers®**
Louisville District



RVAAP-40
Load Line 7
LL7sb-061

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Amanda Trenton
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/09/10; 1515
End Date : 03/09/10; 1615
Northing Coord. : 555722.3843
Easting Coord. : 2352102.3373
Total Depth of Boring : 10.5'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments	
0			(0.0' - 3.0') Medium grained SAND (SM); some Silt; little Clay; trace Gravel; 10YR4/3 brown; loose; wet to moist; debris including brick, wood, and trace slag.	LL7sb-061-5181-SO and MS/MSD collected from 0.0' - 1.0' on 03/09/10 at 1523 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 2000 Rev. Ed.	
1	SM							
2			(3.0' - 4.5') SILT (ML); little fine grained Sand, little Clay; trace Gravel; 10YR5/6 yellowish brown, 2.5Y6/1 gray, and trace black; medium stiff; damp; medium plasticity. Increase in Sand content with depth.	LL7sb-061-5182-SO collected from 1.0' - 4.0' on 03/09/10 at 1540 for TAL Metals + Hg, PAHs, and Explosives.	1.4'/3.0'			
3	ML							
4			(4.5' - 8.5') Fine and very fine grained SAND and SILT (SM); trace Clay, trace fine Gravel; 10YR4/3 brown and 10YR5/6 yellowish brown; soft; damp; medium plasticity.	LL7sb-061-5183-SO, LL7sb-061-6084-FD, & LL7sb-061-6088-QA collected from 4.0' - 7.0' on 03/09/10 at 1555 for TAL Metals + Hg, PAHs, and Explosives.	2.9'/3.0'			
5								
6	SM		(8.5' - 10.0') Fine grained SAND and 0.5" - 1.5" subangular Sandstone GRAVEL (GW); 10YR4/4 dark yellowish brown; damp.	LL7sb-061-5184-SO collected from 7.0' - 10.5' on 03/09/10 at 1610 for TAL Metals + Hg, PAHs, and Explosives.	3.0'/3.0'			
7								
8			(10.0' - 10.5') Weathered SANDSTONE (SS); micaceous; 10YR4/4 dark yellowish brown; dry.		0.5'/0.5'			
9	GW							
10	SS		Boring terminated at 10.5 ft bgs. Sandstone bedrock refusal.					
11								
12								
13							Coordinate System: NAD 83	
Boring backfilled with sodium bentonite chips and hydrated. 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP. Samples were composited and homogenized for all analyses.					LL7sb-061			

* ALSO SEE BY LOCATION LL7sb-090

HTRW DRILLING LOG		DISTRICT	BOREHOLE NUMBER
1. COMPANY NAME SAIC		USACE - Louisville	LL7sb-062
2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2	
3. PROJECT RVAAP PBA08-21		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Ethan Frost + Jimmy Lockhart		6. MAKE/MODEL OF DRILL Geoprobe 6020	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT Hand Auger 3"x1" Dual Tube 2"x4" Acetate LINER 1.5"x4"		8. BOREHOLE LOCATION RVAAP-47 NAD 83	
		9. SURFACE ELEVATION/DATUM N555099.28' E2352365.84	
		10. DRILL DATE/TIME STARTED: 3/11/10 COMPLETED: 3/11/10	
		15. DEPTH GROUNDWATER ENCOUNTERED 9.0'	
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA	
12. OVERBURDEN THICKNESS Min 13'		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA	
13. DEPTH DRILLED INTO BEDROCK NA			
14. TOTAL DEPTH OF BOREHOLE 13'			
18. GEOTECHNICAL SAMPLES UNDISTURBED: DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA	
20. CHEMICAL SAMPLES CHEM: TAP 100% RAD: NA OTHER: EXPOSURE		21. TOTAL CORE RECOVERY % NA	
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/11/10; 1000		DATE COMPLETED/ABANDONED: 3/11/10; 1050	
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL			
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable			
LOCATION SKETCH/COMMENTS		SCALE: None	
GEOLOGIST SIGNATURE/DATE [Signature] 3/11/10		QA/QC SIGNATURE/DATE [Signature] 03/21/10	
		BOREHOLE NUMBER LL7sb-062	



**US Army Corps
of Engineers®**
Louisville District



RVAAP-40
Load Line 7
LL7sb-062

Drilling Company : Frontz Drilling
Driller : Jim Bucksar
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/11/10; 1000
End Date : 03/11/10; 1050
Northing Coord. : 555099.28
Easting Coord. : 2352365.84
Total Depth of Boring : 13.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0			(0.0' - 2.5') CLAY (CL); little Silt; trace fine Sand; trace Gravel, angular; 10YR4/2 dark grayish brown mottled 10YR5/8 yellowish brown; medium stiff; damp; medium plasticity; organic material (roots).	LL7sb-062-5185-SO collected from 0.0' - 1.0' on 03/11/10 at 1010 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1	CL						
2							
3	ML		(2.5' - 3.8') SILT (ML); little Sand; trace Gravel, angular; 10YR5/2 grayish brown mottled 10YR5/6 yellowish brown; soft; moist; nonplastic.	LL7sb-062-5186-SO and MS/MSD collected from 1.0' - 4.0' on 03/11/10 at 1030 for TAL Metals + Hg, PAHs, and Explosives.	A 1.8'/3.0' B 1.6'/4.0'		
4	SM		(3.8' - 4.5') Fine grained SAND (SM); little Silt; trace Gravel, angular; 10YR5/3 brown; loose; moist; nonplastic.				
5			(4.5' - 7.25') CLAY (CL); trace Silt; trace fine grained Sand; trace Gravel, angular; 10YR5/3 brown mottled 10YR5/8 yellowish brown; stiff; damp; low plasticity. (5.2' - 6.0') Increase to little Silt.	LL7sb-062-5187-SO collected from 4.0' - 7.0' on 03/11/10 at 1040 for TAL Metals + Hg, PAHs, and Explosives.	2.7'/3.0'		
6	CL		(6.0' - 7.25') Trace Silt; 10YR5/2 grayish brown.				Coordinate System: NAD 83
7							
8	CL		(7.25' - 9.0') CLAY (CL); little Silt; trace Gravel; 10YR4/2 dark grayish brown; hard; damp; nonplastic.			3.1'/3.0'	
9							
10	SM		(9.0' - 10.0') Medium grained SAND (SM); trace Silt; trace Gravel; 10YR5/2 grayish brown; loose until 9.5' then medium dense; wet; nonplastic.	LL7sb-062-5188-SO collected from 7.0' - 13.0' on 03/11/10 at 1050 for TAL Metals + Hg, PAHs, and Explosives.	4.1'/3.0'		
11			(10.0' - 13.0') Fine grained SAND (SM); trace Silt; 10YR5/2 grayish brown with 7.5YR5/8 strong brown iron accumulations; medium dense to loose; moist. (11.0' - 13.0) Increase to little Silt.				
12	SM						
13			Boring terminated at 13.0 ft bgs.				

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.
Twin boreholes were drilled to obtain volume required for analyses.

LL7sb-062



RVAAP-40
Load Line 7
LL7sb-090

Drilling Company : Frontz Drilling
Driller : Jim Bucksar
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 8"
Sampling Equipment : 4.25" ID Hollow Stem Augers
: 28" x 3" Shelby Tube

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/11/10; 1515
End Date : 03/11/10; 1615
Northing Coord. : 555093.301
Easting Coord. : 2352371.00
Total Depth of Boring : 13.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0			(0.0' - 2.5') CLAY (CL); little Silt; trace fine Sand; trace Gravel, angular; 10YR4/2 dark grayish brown mottled 10YR5/8 yellowish brown; medium stiff; damp; medium plasticity; organic material (roots).	Shelby Tube LL7sb-090-5206-SO collected on 03/11/10 at 1645 from 5.5' - 6.5' for Porosity, Bulk Density, Moisture Content, Total Organic Carbon, Permeability, and Grain Size Fraction Analysis.	1.0'/2.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1	CL						
2							
3	ML		(2.5' - 3.8') SILT (ML); little Sand; trace Gravel, angular; 10YR5/2 grayish brown mottled 10YR5/6 yellowish brown; soft; moist; nonplastic.				
4	SM		(3.8' - 4.5') Fine grained SAND (SM); little Silt; trace Gravel, angular; 10YR5/3 brown; loose; moist; nonplastic.				
5			(4.5' - 7.25') CLAY (CL); trace Silt; trace fine grained Sand; trace Gravel, angular; 10YR5/3 brown mottled 10YR5/8 yellowish brown; stiff; damp; low plasticity.				
6	CL		(5.2' - 6.0') Increase to little Silt. (6.0' -7.25') Trace Silt; 10YR5/2 grayish brown.				
7							
8	CL		(7.25' - 9.0') CLAY (CL); little Silt; trace Gravel; 10YR4/2 dark grayish brown; hard; damp; nonplastic.				
9							
10	SM		(9.0' - 10.0') Medium grained SAND (SM); trace Silt; trace Gravel; 10YR5/2 grayish brown; loose until 9.5' then medium dense; wet; nonplastic.				
11			(10.0' - 13.0') Fine grained SAND (SM); trace Silt; 10YR5/2 grayish brown with 7.5YR5/8 strong brown iron accumulations; medium dense to loose; moist. (11.0' - 13.0) Increase to little Silt.				
12	SM						
13			Boring terminated at 13.0 ft bgs.				Coordinate System: NAD 83
Boring backfilled with sodium bentonite chips and hydrated. Shelby tube was sealed with wax and capped.					LL7sb-090		

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HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7sb-063
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA 08 - RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER Jim Buck Sur + Ethan Frontz		6. MAKE/MODEL OF DRILL Geoprobe 0620DT		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT Hand Auger - 3" x 1" Duct Tube - 2" x 4" Accept Liner - 1 1/2" x 4"		8. BOREHOLE LOCATION RVAAP-LL7 MAD 83		
		9. SURFACE ELEVATION/DATUM N-555690.00' E-2352472.00'		
		10. DRILL DATE/TIME STARTED: 3/11/10 1120 COMPLETED: 3/11/10 1220		
		15. DEPTH GROUNDWATER ENCOUNTERED 6.8'		
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA		
12. OVERBURDEN THICKNESS Min. 13'		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA		
13. DEPTH DRILLED INTO BEDROCK NA				
14. TOTAL DEPTH OF BOREHOLE 13'				
18. GEOTECHNICAL SAMPLES UNDISTURBED: DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: PAHs RAD: NA OTHER: Explosives		21. TOTAL CORE RECOVERY % NA		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/11/10 DATE COMPLETED/ABANDONED: 3/11/10				
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS			SCALE: None	
GEOLOGIST SIGNATURE/DATE [Signature] 3/11/10		QA/QC SIGNATURE/DATE [Signature] 03/21/10		BOREHOLE NUMBER LL7sb-063



RVAAP-40
Load Line 7
LL7sb-063

Drilling Company : Frontz Drilling
 Driller : Jim Bucksar
 Designation of Drill : Geoprobe 6620DT
 Type of Drill Rig : Direct Push Technology
 Geologist : Steve Visocky
 Oversight Company : SAIC
 Borehole Diameter : 2"
 Sampling Equipment : 1.5" x 4' Long Acetate Liner
 : 2" x 4' Dual Tube
 : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
 Ravenna Army Ammunition Plant
 8451 State Route 5
 Ravenna, Ohio 44266
 Portage County

Start Date : 03/11/10; 1120
 End Date : 03/11/10; 1220
 Northing Coord. : 555090.00
 Easting Coord. : 2352472.00
 Total Depth of Boring : 13.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	ML		(0.0' - 1.0') SILT (ML); trace Clay; trace fine grained Sand; trace Gravel, angular; 10YR6/2 light grayish brown mottled 10YR5/6 yellowish brown; soft; damp; nonplastic; organic material (roots).	LL7sb-063-5189-SO collected from 0.0' - 1.0' on 03/11/10 at 1125 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1	CL		(1.0' - 3.5') CLAY (CL); little Silt; trace fine grained Sand; trace Gravel; 10YR4/4 dark yellowish brown and filled root casts 10YR7/1 light gray; stiff; damp; low plasticity; trace organic material (roots).	LL7sb-063-5190-SO, LL7sb-063-6087-FD, & LL7sb-063-6091-QA collected from 1.0' - 4.0' on 03/11/10 at 1200 for TAL Metals + Hg, PAHs, and Explosives.	2.6'/3.0'		
2	CL						
3	SM		(3.5' - 4.0') Fine grained SAND (SM); some Silt; 10YR4/4 dark yellowish brown; moist to wet; low plasticity.	LL7sb-063-5191-SO collected from 4.0' - 7.0' on 03/11/10 at 1210 for TAL Metals + Hg, PAHs, and Explosives.	2.6'/3.0'		
4	CL		(4.0' - 5.2') CLAY (CL); little Silt; trace Gravel; 10YR4/4 dark yellowish brown; stiff; damp; low plasticity.				
5	CL						Coordinate System: NAD 83
6	ML		(5.2' - 6.8') Silt (ML); trace Clay; trace Sand; 10YR5/4 yellowish brown; medium stiff; damp; low plasticity.		2.6'/3.0'		
7	ML						
8	ML		(6.8' - 13.0') Medium grained SAND (SM); trace Gravel, angular; trace Silt; loose; nonplastic. (7.3' - 13.0') Fine grained SAND; Gravel.				
9	ML		(8.5') Moist.		3.2'/3.0'		
10	SM		(10.0') 5Yr5/8 yellowish red iron accumulations.	LL7sb-063-5192-SO collected from 7.0' - 13.0' on 03/11/10 at 1220 for TAL Metals + Hg, PAHs, and Explosives.	4.0'/3.0'		
11	SM						
12	SM						
13	SM		Boring terminated at 13.0 ft bgs.				

Boring backfilled with sodium bentonite chips and hydrated.
 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
 Samples were composited and homogenized for all analyses.

LL7sb-063

HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7sb-464
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA #8 -RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER Ethan Frontz + Jim Buckser		6. MAKE/MODEL OF DRILL Geoprobe 6020DT		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT SS Bowl / Hand Auger 3"x1' SS Dual Tube Rods 2"x4' Acetate liner - 1 1/2"x4'		8. BOREHOLE LOCATION RVAAP - LL7 NAD 83		
		9. SURFACE ELEVATION/DATUM N555201.64' E 2352124.74'		
		10. DRILL DATE/TIME STARTED: 3/11/10 0800 COMPLETED: 3/11/10 0915		
		15. DEPTH GROUNDWATER ENCOUNTERED 3.2'		
12. OVERBURDEN THICKNESS 13'		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA		
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA		
14. TOTAL DEPTH OF BOREHOLE 13'				
18. GEOTECHNICAL SAMPLES UNDISTURBED: NA DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: Full 50% RAD: NA OTHER:		21. TOTAL CORE RECOVERY % NA		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/11/10 DATE COMPLETED/ABANDONED: 3/11/10				
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: $\leq$ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ∇ : First Water Encountered $\blacktriangledown$: Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS			SCALE: None	
GEOLOGIST SIGNATURE/DATE Steve King 3/11/10		QA/QC SIGNATURE/DATE Amanda J. Ventra 03/11/10		BOREHOLE NUMBER LL7sb-464



RVAAP-40
Load Line 7
LL7sb-064

Drilling Company : Frontz Drilling
 Driller : Jim Bucksar
 Designation of Drill : Geoprobe 6620DT
 Type of Drill Rig : Direct Push Technology
 Geologist : Steve Visocky
 Oversight Company : SAIC
 Borehole Diameter : 2"
 Sampling Equipment : 1.5" x 4' Long Acetate Liner
 : 2" x 4' Dual Tube
 : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
 Ravenna Army Ammunition Plant
 8451 State Route 5
 Ravenna, Ohio 44266
 Portage County

Start Date : 03/11/10; 0800
 End Date : 03/11/10; 0915
 Northing Coord. : 555201.64
 Easting Coord. : 2352124.79
 Total Depth of Boring : 13.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	SM		(0.0' - 1.3') Medium grained SAND (SM); trace Silt; trace Gravel, angular; 10YR6/4 light yellowish brown; loose; nonplastic; organic material (roots).	LL7sb-064-5193-SO collected from 0.0' - 1.0' on 03/11/10 at 0805 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1							
2	ML		(1.3' - 3.0') SILT (ML); little fine grained Sand; trace Gravel, angular; 10YR3/2 very dark grayish brown mottled 10YR5/8 yellowish brown; soft; damp.	LL7sb-064-5194-SO collected from 1.0' - 4.0' on 03/11/10 at 0832 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	A 2.1'/3.0' B 1.4'/3.0'		
3							
4	ML		(3.0' - 4.5') SILT (ML); little fine to medium grained Sand; trace Gravel, angular; 10YR6/2 light grayish brown mottled 10YR5/8 yellowish brown; soft; damp; low plasticity. (3.5') Moist to wet.				
5							
6	SM		(4.5' - 8.5') Medium grained SAND (SM); little Silt; trace Gravel, angular; trace Clay; 10YR6/2 light grayish brown from 4.5' - 5.0' then 10YR4/4 dark yellowish brown; 10YR5/8 yellowish brown iron accumulations; loose; moist; nonplastic.	LL7sb-064-5195-SO collected from 4.0' - 7.0' on 03/11/10 at 0848 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	4.0'/3.0'		
7							
8							
9							
10	CL		(8.5' - 13.0') CLAY (CL); little Silt; trace fine grained Sand; trace Gravel; 10YR3/1 very dark gray; hard; damp; nonplastic.	LL7sb-064-5196-SO collected from 7.0' - 13.0' on 03/11/10 at 0900 for VOCs, SVOCs, PCBs, Pesticides, Explosives, Propellants, and TAL Metals + Hg.	3.4'/3.0'		
11							
12			(12.0' - 13.0') Sand content increases to little.		4.2'/3.0'		
13			Boring terminated at 13.0 ft bgs.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
 Samples were composited and homogenized for all analyses, except VOCs.
 Twin boreholes were drilled to obtain volume required for analyses.

LL7sb-064

HTRW DRILLING LOG		DISTRICT	BOREHOLE NUMBER
1. COMPANY NAME SAIC		USACE - Louisville	LL7sb-465
2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2	
3. PROJECT RVAAP PBA08-RT		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Jeremy Lockridge & Ethan Frontz		6. MAKE/MODEL OF DRILL Geoprobe 10020 DT	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT Hand Auger - 3" x 1' Dual Tube - 2" x 4' Acetate Liner - 1 1/2" x 4'		8. BOREHOLE LOCATION RVAAP - LL7 NAD 83	
		9. SURFACE ELEVATION/DATUM N 555 337.08 E 235 1913.00	
		10. DRILL DATE/TIME STARTED: 3/10/10 COMPLETED: 3/10/10 1315	
		15. DEPTH GROUNDWATER ENCOUNTERED 3'	
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA	
12. OVERBURDEN THICKNESS 3.5'		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA	
13. DEPTH DRILLED INTO BEDROCK NA			
14. TOTAL DEPTH OF BOREHOLE 3.5'			
18. GEOTECHNICAL SAMPLES UNDISTURBED: DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA	
20. CHEMICAL SAMPLES CHEM: PAHS, TAL RAD: NA OTHER: Explosives		21. TOTAL CORE RECOVERY % NA	
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/10/10 DATE COMPLETED/ABANDONED: 3/10/10			
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL			
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable			
LOCATION SKETCH/COMMENTS		SCALE: None	
GEOLOGIST SIGNATURE/DATE St. Vrain 3/14/10		QA/QC SIGNATURE/DATE Amranda J. Jentz 03/21/10	
		BOREHOLE NUMBER LL7sb-465	



**US Army Corps
of Engineers®**
Louisville District



RVAAP-40
Load Line 7
LL7sb-065

Drilling Company : Frontz Drilling
Driller : Jim Bucksar
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/10/10; 1250
End Date : 03/10/10; 1315
Northing Coord. : 555337.00
Easting Coord. : 2351913.00
Total Depth of Boring : 3.5'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	ML		(0.0' - 0.75') SILT (ML); trace Sand; 2.5Y4/4 olive brown; soft; damp; low plasticity; organic material (roots) from 0.0' - 0.4'.	LL7sb-065-5197-SO collected from 0.0' - 1.0' on 03/10/10 at 1255 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1	ML		(1.0' - 3.0') SILT (ML); little Sand; 10YR6/2 light grayish brown, 10YR5/8 yellowish brown iron staining; soft; damp; low plasticity.				
2	ML		(2.5' - 3.0') Some fine grained Sand.	LL7sb-065-5198-SO collected from 1.0' - 4.0' on 03/10/10 at 1315 for TAL Metals + Hg, PAHs, and Explosives.	2.0'/2.5'		
3	SP		(3.0' - 3.5') SAND (SP); trace Silt; 10YR5/2 grayish brown, 10YR5/8 yellowish brown iron staining; loose; moist; nonplastic.				
4			Boring terminated at 3.5 ft bgs. Refusal.				
5							
6							
7							
8							

Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.

LL7sb-065

HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7sb-466
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA 08-RT		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER Geocorey Leckowitz + Ethan Frontz		6. MAKE/MODEL OF DRILL Geoprobe		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT SS Hand Auger 3"x1" Dual Tube 2"x4" Acetate Liner 1 1/2"x4"		8. BOREHOLE LOCATION RVAAP -U7 MAD 83		
		9. SURFACE ELEVATION/DATUM E2351918.24' N555472.83'		
		10. DRILL DATE/TIME STARTED: 3/10/10 COMPLETED: 3/10/10		
		15. DEPTH GROUNDWATER ENCOUNTERED 3'		
12. OVERBURDEN THICKNESS 8'		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA		
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCL. DATE/TIME) NA		
14. TOTAL DEPTH OF BOREHOLE 8'				
18. GEOTECHNICAL SAMPLES NA UNDISTURBED: DISTURBED:		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: PAHs, Ex. RAD: NA OTHER: NA		21. TOTAL CORE RECOVERY % NA		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/10/10		DATE COMPLETED/ABANDONED: 3/10/10		
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS			SCALE: None	
GEOLOGIST SIGNATURE/DATE St. Vail 3/10/10		QA/QC SIGNATURE/DATE Amanda Frontz 03/21/10		BOREHOLE NUMBER LL7sb-466



RVAAP-40
Load Line 7
LL7sb-066

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/10/10; 1030
End Date : 03/10/10; 1605
Northing Coord. : 555472.83
Easting Coord. : 2351918.24
Total Depth of Boring : 8.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0			(0.0' - 3.2') SILT (ML); trace Sand; 10YR3/2 very dark grayish brown; soft; damp; medium plasticity; organic material (roots) from 0.0' - 0.4'. (0.5' - 3.2') 10YR6/2 light grayish brown mottled 10YR5/6 yellowish brown; low plasticity.	LL7sb-066-5201-SO collected from 0.0' - 1.0' on 03/10/10 at 1045 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1							
2	ML		(2.5' - 3.2') Some Sand.	LL7sb-066-5202-SO collected from 1.0' - 4.0' on 03/10/10 at 1110 for TAL Metals + Hg, PAHs, and Explosives.	2.9'/3.0'		
3							
4	SM		(3.2' - 4.5') Fine to medium grained SAND (SM), trace Silt; trace Gravel, angular; 10YR6/2 light grayish brown, 5YR5/8 yellowish red iron accumulations; moist; nonplastic.				
5			(4.5' - 8.0') Medium grained SAND (SP); trace Silt; trace Gravel, angular; 10YR6/2 light grayish brown; loose; moist; nonplastic.	LL7sb-066-5203-SO collected from 4.0' - 7.0' on 03/10/10 at 1115 for TAL Metals + Hg, PAHs, and Explosives.	3.4'/3.0'		
6							
7	SP		(6.2') 10YR5/8 yellowish brown iron staining.	LL7sb-066-5204-SO collected from 7.0' - 8.0' on 03/10/10 at 1605 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		
8			Boring terminated at 8.0 ft bgs. Bedrock refusal.				Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.

LL7sb-066

HTRW DRILLING LOG		DISTRICT USACE - Louisville	BOREHOLE NUMBER LL75b-067
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling	
3. PROJECT RVAAP PBA08-RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266	
5. NAME OF DRILLER Jim Buckner Sr. Jeremy Buckner + Eric Frontz		6. MAKE/MODEL OF DRILL Geoprobe	
7. SIZES AND TYPES OF SAMPLING EQUIPMENT 2" Dual Tube 2"x4' SS Hand Auger 3"x1' Shelby Tube 3"x2'		8. BOREHOLE LOCATION RVAAP-LL7 NAD 83	
		9. SURFACE ELEVATION/DATUM E 235194.63 N 555588.52	
		10. DRILL DATE/TIME STARTED: 3/10/10 0820 COMPLETED: 0930 - 3/10/10	
		15. DEPTH GROUNDWATER ENCOUNTERED NA	
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA	
12. OVERBURDEN THICKNESS 6-5'		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) NA	
13. DEPTH DRILLED INTO BEDROCK NA			
14. TOTAL DEPTH OF BOREHOLE 6.5'			
18. GEOTECHNICAL SAMPLES UNDISTURBED: 2-4' DISTURBED: 2-4.3'		19. TOTAL NUMBER OF CORE BOXES NA NA	
20. CHEMICAL SAMPLES CHEM: NA RAD: NA OTHER: Geotech		21. TOTAL CORE RECOVERY %	
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/10/10 DATE COMPLETED/ABANDONED: 3/10/10			
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL			
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable			
LOCATION SKETCH/COMMENTS			SCALE: None
GEOLOGIST SIGNATURE/DATE JE Vail 3/10/10		QA/QC SIGNATURE/DATE Amanda Jentz 03/21/10	
		BOREHOLE NUMBER LL75b-067	

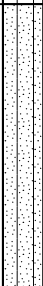
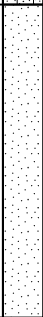


RVAAP-40
Load Line 7
LL7sb-067

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 8"
Sampling Equipment : 4.25" ID Hollow Stem Augers
: 28" x 3" Shelby Tube

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/10/10; 0820
End Date : 03/10/10; 0930
Northing Coord. : 555883.967
Easting Coord. : 2351738.84
Total Depth of Boring : 6.5'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	FB		(0.0' - 0.4') Asphalt.	Shelby Tube LL7sb-067-5025-SO collected on 03/10/10 at 0855 from 2.0' - 4.0' for Porosity, Bulk Density, Moisture Content, Total Organic Carbon; Permeability; and Grain Size Fraction Analysis.			Soil Color Chart Munsell 1992 Rev. Ed.
1	ML		(0.4' - 2.3') SILT (ML); trace Clay; trace fine grained Sand; 2.5Y3/1 very dark gray mottled 2.5R4/8 dark red; 10YR5/6 yellowish brown iron accumulations from 0.4' - 1.2'; damp; low plasticity.				
2							
3	SM		(2.3' - 4.3') SILT (SM); little fine grained Sand; trace Gravel, angular; 10YR5/2 grayish brown; 10YR5/8 yellowish brown iron accumulations; medium stiff; damp; low plasticity.				
4			(3.7' - 4.3') Increase in Sand content to some.				
5	SW		(4.3' - 6.5') Fine to medium grained SAND (SW); trace Silt; trace Gravel, angular; 10YR6/2 light brownish gray; 10YR6/6 brownish yellow iron staining; loose; damp to dry; nonplastic; weathered Sandstone.	Shelby Tube Refusal at 4.0 ft bgs. No 4.0' - 6.0' Shelby Tube collected.			
6							
7			Boring terminated at 6.5 ft bgs. Sandstone bedrock refusal.				
8							

Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
Shelby tube sealed with wax and capped.

LL7sb-067

HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7sb-d68
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA03-2F		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER Jeremy Leckman, + Ethan Prutz		6. MAKE/MODEL OF DRILL Geoprobe 60120DT		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT Hand Auger 3"x1' Dual Tube 2"x4' Acetate Liner 1 1/2"x4'		8. BOREHOLE LOCATION RVAAP-47 NAD 83		
		9. SURFACE ELEVATION/DATUM E 2351.942.67 N 555614.44		
		10. DRILL DATE/TIME STARTED: 3/10/10 0930 COMPLETED: 3/10/10 1030		
		15. DEPTH GROUNDWATER ENCOUNTERED NA		
12. OVERBURDEN THICKNESS 7.0'		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION NA		
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCLUE DATE/TIME) NA		
14. TOTAL DEPTH OF BOREHOLE 7'				
18. GEOTECHNICAL SAMPLES UNDISTURBED: NA DISTURBED: NA		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: TAL Metals RAD: NA OTHER: Explosives		21. TOTAL CORE RECOVERY % NA		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/10/10 DATE COMPLETED/ABANDONED: 3/10/10				
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS				SCALE: None
GEOLOGIST SIGNATURE/DATE [Signature] 3/10/10		QA/QC SIGNATURE/DATE Amanda Jentz 03/21/10		BOREHOLE NUMBER LL7sb-d68



RVAAP-40
Load Line 7
LL7sb-068

Drilling Company : Frontz Drilling
 Driller : Jeremy Leckrone
 Designation of Drill : Geoprobe 6620DT
 Type of Drill Rig : Direct Push Technology
 Geologist : Steve Visocky
 Oversight Company : SAIC
 Borehole Diameter : 2"
 Sampling Equipment : 1.5" x 4' Long Acetate Liner
 : 2" x 4' Dual Tube
 : 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
 Ravenna Army Ammunition Plant
 8451 State Route 5
 Ravenna, Ohio 44266
 Portage County

Start Date : 03/10/10; 0930
 End Date : 03/10/10; 1030
 Northing Coord. : 555614.44
 Easting Coord. : 2351902.67
 Total Depth of Boring : 7.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	ML		(0.0' - 1.0') SILT (ML); trace fine grained Sand; trace Gravel, angular; 10YR5/2 grayish brown; damp; low plasticity; sandstone fragments; metal debris.	LL7sb-068-5207-SO collected from 0.0' - 1.0' on 03/10/10 at 0950 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1			(1.0' - 3.0') SILT (ML); trace Clay; trace fine grained Sand; trace Gravel, angular; 10YR6/2 light grayish brown mottled 10YR5/8 yellowish brown; medium stiff; damp; medium plasticity.				
2	ML					2.2'/3.0'	
3			(3.0' - 7.0') Medium grained SAND (SC); trace Silt; trace Gravel; 10YR4/4 dark yellowish brown, 10YR5/6 yellowish brown iron accumulations; medium dense; damp; nonplastic; weathered Sandstone.	LL7sb-068-5208-SO collected from 1.0' - 4.0' on 03/10/10 at 1025 for TAL Metals + Hg, PAHs, and Explosives.	3.4'/3.0'		
4							
5	SC			LL7sb-068-5209-SO collected from 4.0' - 7.0' on 03/10/10 at 1030 for TAL Metals + Hg, PAHs, and Explosives.			
6			(6.0' -7.0') Iron accumulation are 10YR3/6 dark yellowish brown.				
7			Boring terminated at 7.0 ft bgs. Sandstone bedrock refusal.				
8							Coordinate System: NAD 83

Boring backfilled with sodium bentonite chips and hydrated.
 0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
 Samples were composited and homogenized for all analyses.

LL7sb-068

HTRW DRILLING LOG		DISTRICT USACE - Louisville		BOREHOLE NUMBER LL7sb-069
1. COMPANY NAME SAIC		2. DRILLING SUBCONTRACTOR Frontz Drilling		SHEET 1 OF 2
3. PROJECT RVAAP PBA08 RI		4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266		
5. NAME OF DRILLER Jeremy Leckman + Ethan Frontz		6. MAKE/MODEL OF DRILL Geoprobe U620DT		
7. SIZES AND TYPES OF SAMPLING EQUIPMENT SS Hand Auger, Dual Tube Reels 3" x 1' 2" x 4' Acetate Liner 1 1/2" x 3'		8. BOREHOLE LOCATION LL7sb-065 MAD 83		
		9. SURFACE ELEVATION/DATUM E 235' 17.51, 67' N 55° 58' 44"		
		10. DRILL DATE/TIME STARTED: 3/10/10 1340 COMPLETED: 3/10/10 1415		
		15. DEPTH GROUNDWATER ENCOUNTERED 7'		
		16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION N/A		
12. OVERBURDEN THICKNESS 12'				
13. DEPTH DRILLED INTO BEDROCK NA		17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME) N/A		
14. TOTAL DEPTH OF BOREHOLE 12'				
18. GEOTECHNICAL SAMPLES UNDISTURBED: DISTURBED: N/A		19. TOTAL NUMBER OF CORE BOXES NA		
20. CHEMICAL SAMPLES CHEM: EPA 1/PAHs RAD: NA OTHER: metals		21. TOTAL CORE RECOVERY % N/A		
22. DISPOSITION OF BOREHOLE DATE STARTED/INSTALLED: 3/10/10 DATE COMPLETED/ABANDONED: 3/10/10				
BACKFILL TYPE: ☐ GROUT ☒ BENTONITE ☐ TEMPORARY WELL POINT ☐ MONITORING WELL				
23. NOTES BKG: ≤ Background BGS: Below Ground Surface CPM: Counts per Minute PPM: Parts per Million ▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable				
LOCATION SKETCH/COMMENTS				SCALE: None
GEOLOGIST SIGNATURE/DATE <i>St. Vincent</i> 3/10/10		QA/QC SIGNATURE/DATE <i>Emily Cunningham</i> 03-10-10		BOREHOLE NUMBER LL7sb-069



**US Army Corps
of Engineers®**
Louisville District



RVAAP-40
Load Line 7
LL7sb-069

Drilling Company : Frontz Drilling
Driller : Jeremy Leckrone
Designation of Drill : Geoprobe 6620DT
Type of Drill Rig : Direct Push Technology
Geologist : Steve Visocky
Oversight Company : SAIC
Borehole Diameter : 2"
Sampling Equipment : 1.5" x 4' Long Acetate Liner
: 2" x 4' Dual Tube
: 3" Hand Auger

RVAAP PBA 2008 Remedial Investigation
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Portage County

Start Date : 03/10/10; 1340
End Date : 03/10/10; 1415
Northing Coord. : 555890.44
Easting Coord. : 2351751.67
Total Depth of Boring : 12.0'

Depth in feet	USCS Symbol	USCS Graphic	Description	Analyses	Recovery	Collection Interval	Comments
0	ML		(0.0' - 1.0') SILT (ML); trace fine grained Sand; trace Gravel, angular; 10YR4/2 dark grayish brown; soft; moist; nonplastic; organic material throughout; asphalt and vitrified clay pipe.	LL7sb-069-5211-SO collected from 0.0' - 1.0' on 03/10/10 at 1340 for TAL Metals + Hg, PAHs, and Explosives.	1.0'/1.0'		Soil Color Chart Munsell 1992 Rev. Ed.
1			(1.0' - 6.0') Medium grained SAND (SM); little Silt; trace Gravel, angular; 2.5Y4/2 dark grayish brown, iron staining, 10YR6/8 brownish yellow; loose; moist; nonplastic.	LL7sb-069-5212-SO collected from 1.0' - 4.0' on 03/10/10 at 1400 for TAL Metals + Hg, PAHs, and Explosives.	A 0.9'/3.0' B 1.6'/3.0'		
2							
3	SM						
4							
5			(5.5' - 6.0') 2.5YR2.5/2 very dark red iron staining.	LL7sb-069-5209-SO collected from 4.0' - 7.0' on 03/10/10 at 1405 for TAL Metals + Hg, PAHs, and Explosives.	2.0'/3.0'		Coordinate System: NAD 83
6			(6.0' - 11.0') Medium to coarse grained SAND (SP); trace Silt; 10YR5/2 grayish brown with 10YR5/8 yellowish brown iron staining; loose; moist; nonplastic.				
7			(7.0') Wet.				
8	SP						
9							
10			(10.5' - 11.0') Increased Silt content from trace to little.	LL7sb-069-5213-SO, LL7sb-069-6086-FD, & LL7sb-069-6090-QA collected from 7.0' - 12.0' on 03/10/10 at 1410 for TAL Metals + Hg, PAHs, and Explosives.	2.2'/3.0'		
11			(11.0' - 12.0') Medium grained SAND (SM); trace Silt; 10YR5/1 gray.		3.4'/3.0'		
12	SM		Boring terminated at 12.0 ft bgs. Refusal.				
13							

Boring backfilled with sodium bentonite chips and hydrated.
0.0' - 1.0' sampled using a 3" hand auger and triangular subsample procedure for explosives as presented in Section 4.5.2.1.1 of the Facility-wide SAP.
Samples were composited and homogenized for all analyses.
Twin boreholes were drilled to obtain volume required for analyses.

LL7sb-069