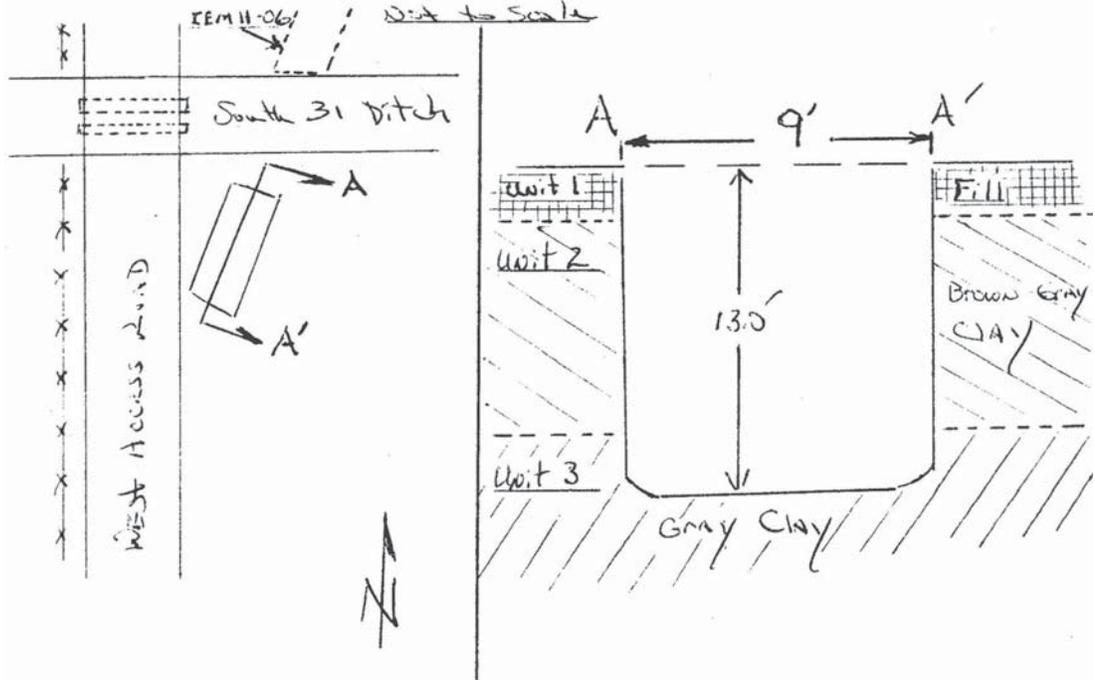


PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IETES-01
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/27/2013	URS GEOLOGIST:	
DATE COMPLETED: 11/27/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	
EQUIPMENT: Komatsu 200 LC excavator		
LOCATION: Adjacent to west access road, south of the South 31 ditch		
PURPOSE: Investigate the presence (or absence) of the concrete encased sanitary sewer		
CORNER COORDINATES: (NW Cor) N-1171060.940, E-1041218.197; (SW Cor) N-1171052.501, E-1041215.483		
(NE Cor) N-1171058.371, E-1041224.042; (SE Cor) N-1171049.842, E-1041221.105		
FINAL EXCAVATION DIMENSIONS: ~6' wide x 9' long x 13' deep		

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	Unit 1 0.0 - 1.5' below ground surface (bgs): Fill : Gravel as crushed stone, fine coarse, angular
	Unit 2 1.5 - 12.0' bgs:
5	Silty Clay (CL): brown - gray, dense, stiff, mottling at approximately 4 - 8' bgs, trace-little fine-coarse sub-rounded gravel, occasional cobbles and boulders, weak plasticity, moist
10	
	Unit 3 12.0 - 13.0' bgs: Clay (CL), gray, soft, moist-wet, strong plasticity Maximum depth 13' bgs.

SKETCH



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IETES-01
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/27/2013	URS GEOLOGIST:	
DATE COMPLETED: 11/27/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	

COMMENTS:

Based on the location and alignment of the sewer identified in excavation IEMH-06 on the north side of South 31 ditch, excavation IETES-01 was advanced along a similar alignment on the south side of the ditch. The concrete encased sewer was not present.

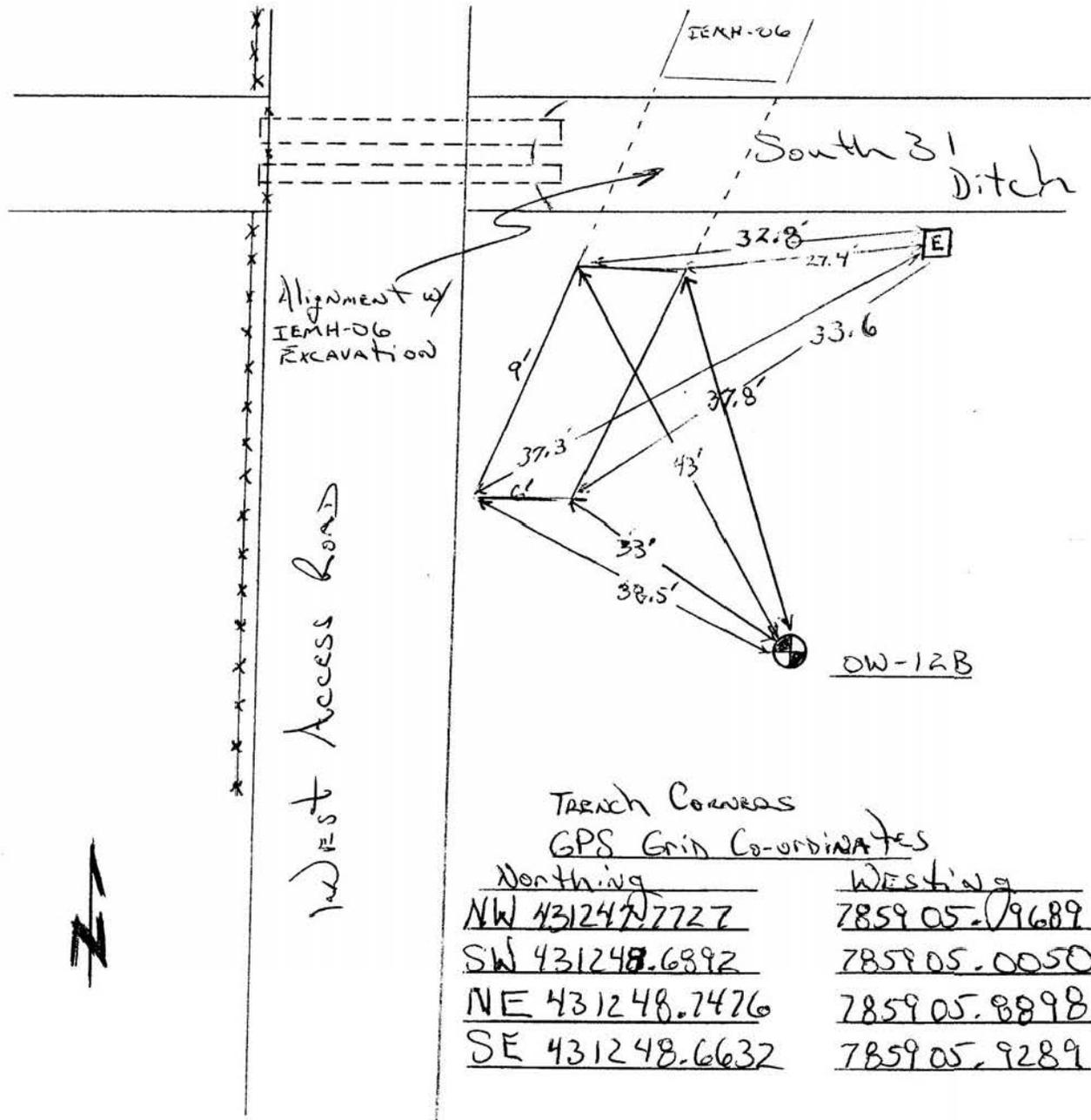
The trench was advanced to a depth sufficient to determine the presence or absence of the NE - SW trending sewer.

Evidence of backfilled soil materials were not identified in the excavation sidewalls

In accordance with the project scope of work, soil and groundwater samples were not collected.

Excavated overburden soil materials were stockpiled on plastic sheeting. The soil materials were backfilled in the reverse order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IETES-01
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/27/2013	URS GEOLOGIST:	
DATE COMPLETED: 11/27/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	



INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IETES-01

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
None			Soil	List 3	None	Samples not collected per work plan
None			Soil	List 3	None	
None			Soil	List 3	None	
None			Soil	List 3	None	
None			Groundwater	List 4	None	

**Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation**

Client: USACE

Excavation Contractor: Russo Development

**Job Number:
11176781.00007**

Photo No.
IETES-1

Date:
11/27/13

Description:

Photo taken looking south. Brown gray silty clay and gray clay strata that characterized soil Units # 2 and #3 respectively are shown.

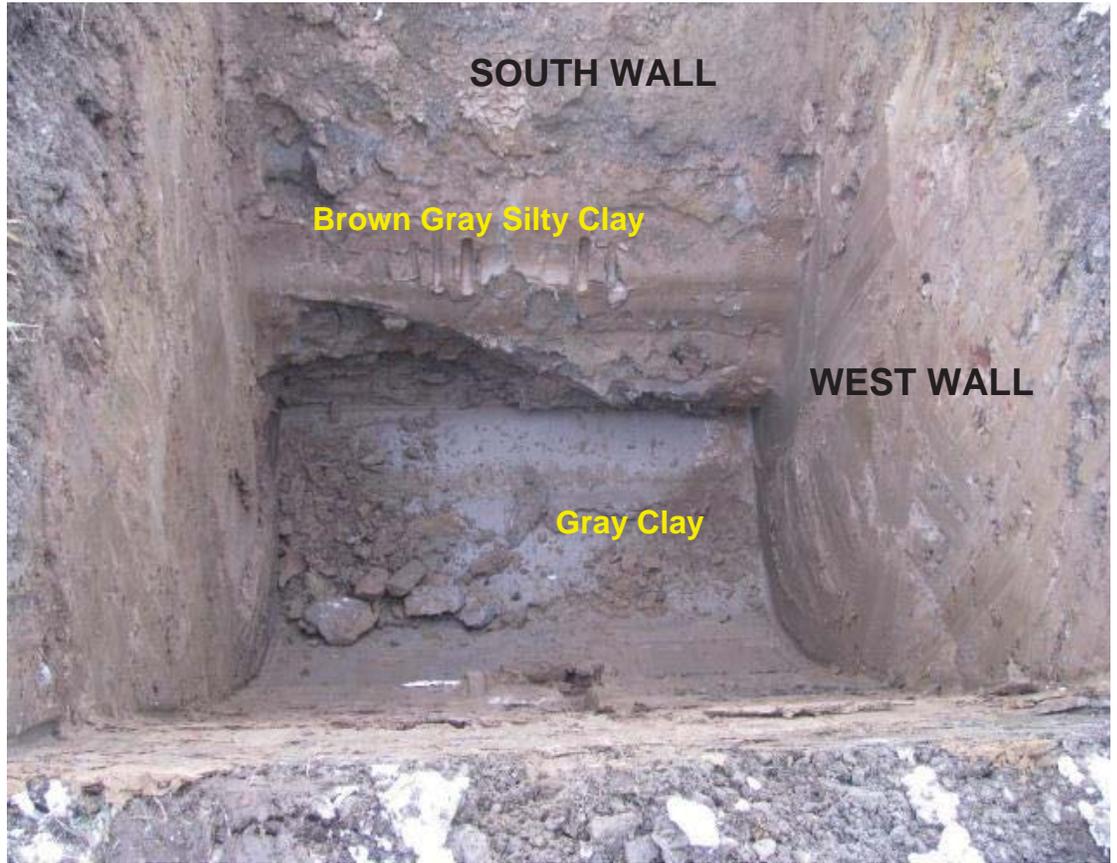


Photo No.
IETES-2

Date:
11/27/2013

Description:

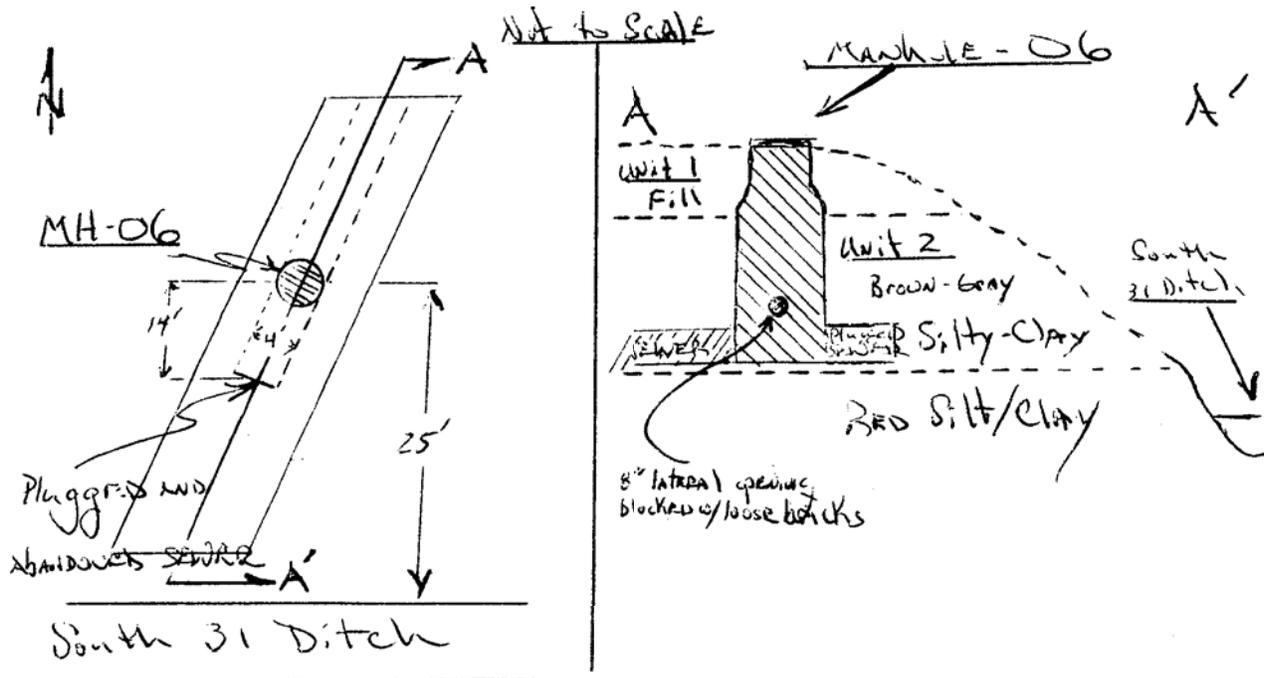
A northward looking view of the soil section along the north and west walls of trench IETES-1. The gravel fill unit and Geotextile material associated with the west access road are depicted in the photo.



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IEMH-06
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	
EQUIPMENT: Komatsu 200 LC excavator, support truck and trailer, aluminum catwalk		
LOCATION: Manhole MH-06 location, approximately 25 - 30' north of South 31 ditch		
PURPOSE: Remove manhole structure and inspect continuity of concrete encased sewer		
CORNER COORDINATES: (NW Cor) N-1171138.062, E-1041242.730; (SW Cor) N-1171110.685, E-1041234.593		
(NE Cor) N-1171132.126, E-1041258.310; (SE Cor) N-1171111.887, E-1041249.890		
FINAL EXCAVATION DIMENSIONS: ~17' wide x 28' long x 13' deep		

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	Unit 1 0.0 - 4.5' below ground surface (bgs) Fill / Reworked soil materials (ML/CL), Silty - Clay: brown-red, trace fine sub-rounded gravel to 1/2" dia., moist - wet, weak plasticity, rootlets throughout
5	Unit 2 4.5 - 9.5' bgs: Silty Clay (CL): brown - gray, dense, stiff, blocky, easily broken along iron stained dessication fractures, mottling at approximately 6 - 8' bgs, trace fine sub-rounded gravel to 1/2" dia., weak plasticity, moist
10	Unit 3 9.5 - 13.0' bgs: Silt and Clay (CH): red- brown, dense, stiff, moist
	Maximum depth 13' bgs

SKETCH



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IEMH-06
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	

COMMENTS:

Trench IEMH-06 was oriented in a Northeast - Southwest direction. A trench box was not used in any excavation during the course of this investigation.

The upgradient and downgradient culverts in the adjacent South 31 ditch were blocked with sandbags and the ditch subsequently dewatered. Prior to a rainfall event that resulted in a flooded condition within the excavation, additional sandbags were placed along the southernmost extent of the trench to prevent water from flowing out of the excavation.

The excavation exposed the manhole structure designated MH-06. Examination of MH-06 determined that it was constructed of red clay brick enclosed in a protective concrete housing that measured approximately 5' in diameter. The structural integrity was intact as no cracks or fractures were observed.

An 8" diameter clay tile opening was identified approximately 3' above the base of the manhole on the west side. The opening was partially filled with loose red brick. There was no sign of a lateral leading from the opening.

A concrete encased sewer measuring approximately 4' wide was exposed on the south side of the manhole at a depth of approximately 6' to 9' bgs. This southernmost terminus of the NE - SW trending sewer had been previously plugged and extended approximately 14' south of MH-06. The sewer was plugged with concrete inside the manhole structure.

A groundwater seep emanated from the thin discontinuous gravel layer identified beneath the manhole structure. The seep was estimated to flow at a rate of less than 0.5 gpm.

The top of the concrete sewer was breached on the north side of the manhole structure during soil removal activities. Soil was placed over the opening to lessen the volume of water entering the excavation.

The manhole access structure was removed in its entirety. The excavation was dewatered and the northern 18" sewer extension plugged with concrete (4,000 psi). The MH-06 excavation was backfilled with concrete to an elevation 2' above the top of the sewer. Approximately 8 yds³ of concrete were poured to effectively seal the sewer.

PID readings on excavated soils were 0.0 ppm; no visual or olfactory signs of contaminant impacts were identified.

Both the excavation and excavated soils were scanned with a 2" NaI detector. Radiation measurements were within expected background values.

Excavated overburden soil materials were stockpiled on plastic sheeting and covered to mitigate the potential for runoff. The soil materials were backfilled in the order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

One surface soil sample was collected within the trench boundaries from the 0.0 - 0.5' bgs interval. Soil samples collected within the excavation were based on the highest radiation measurement recorded along the trench sidewalls and bottom. As required, two sidewall samples and one bottom sample were collected. A groundwater sample was not collected due to contents of a compromised sewer having entered the excavation.

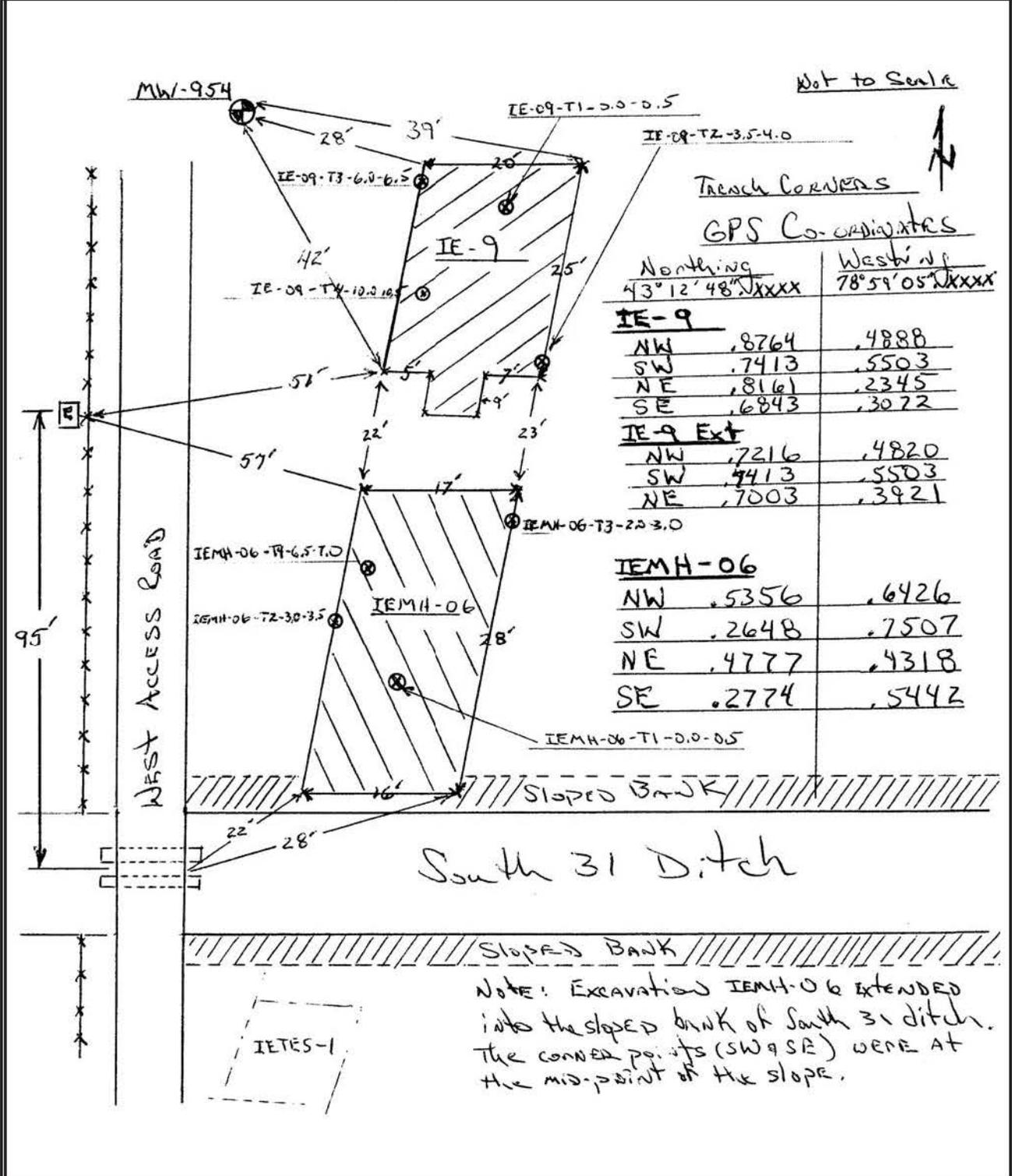
Surface soil sample ID = IEMH 6 T1 0.0-0.5 2000

Sidewall soil sample ID = IE 6 T2 3.0 - 3.5 2006

Sidewall soil sample ID = IE 6 T3 2.0 - 3.0 2007

Bottom soil sample ID = IE 6 T4 6.5 - 7.0 2008

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IEMH-06
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	



INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IEMH-06

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
IEMH-6-T1-0.0-0.5-2000 and IEMH-6-T1-0.0-0.5D-9200	11/22/2013 14:30	0.0 - 0.5	Soil	List 3	Duplicate	Surface soil sample (Fill) as Silt and Clay, dark brown-gray, moist-wet, granular structure, rootlets throughout, trace-little fine gravel. PID = 0.0. No odor.
IEMH-6-T2-3.0-3.5-2006	11/26/2013 14:00	3.0 - 3.5	Soil	List 3	None	Clay/Silt, brown-red, dense, stiff, with weak-moderate plasticity, moist, trace fine gravel. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected at approximate midpoint along west sidewall. PID = 0.0. No odor.
IEMH-6-T3-2.0-3.0-2007	11/26/2013 14:30	2.0 - 3.0	Soil	List 3	None	Clay/Silt, brown-gray, stiff, with weak-moderate plasticity, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in the NE corner of the east sidewall. PID = 0.0. No odor.
IEMH-6-T4-6.5 -7.0 -2008	11/26/2013 14:45	6.5 - 7.0	Soil	List 3	None	Sand/Silt, brown-gray, fine-medium, loose, saturated. Soil sample collected based on highest radiation measurement recorded at the base of the excavation. Bottom soil sample collected between the former manhole structure and the west sidewall. PID = 0.0. No odor.
			Groundwater			Groundwater sample was not collected as water in the excavation was overflow from the flooded South 31 Ditch condition and from breached sewer.

Notes:

- 1.) List 3 Analytical Parameters include: Total Uranium, Iso U / Iso Th and Ra-226 (gamma)

Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IEMH-06-1

Date:
11/21/13

Description:

Photo taken looking north to show the southern terminus of the sanitary sewer.



EAST WALL

Access to concrete encased manhole

Top of concrete encased sewer

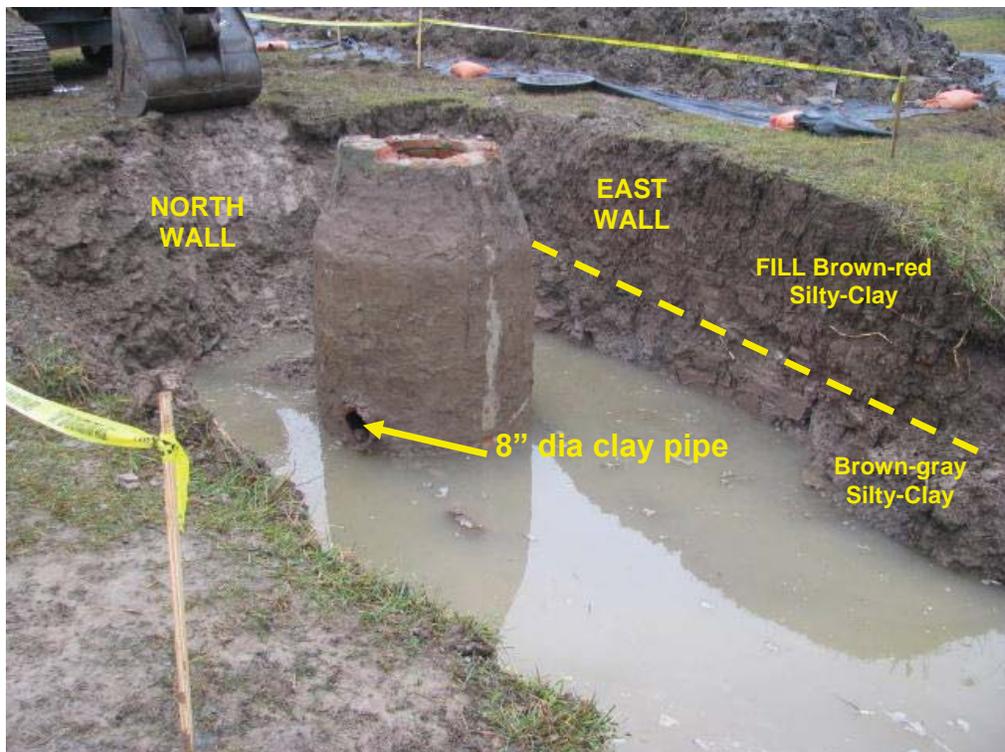
Plugged sewer endpoint

Photo No.
IEMH06-2

Date:
11/22/13

Description:

Photo was taken looking northeast to show the exposed freestanding manhole structure. A truncated 8-inch dia. clay tile pipe was identified on the west side of the manhole.



NORTH WALL

EAST WALL

FILL Brown-red Silty-Clay

8" dia clay pipe

Brown-gray Silty-Clay

Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IEMH06-3

Date:
11/26/13

Description:

A northeast view of IEMH-06 trench location taken during removal of the manhole structure. The aluminum catwalk shown parallel with the east wall was used to perform the requisite RAD survey.

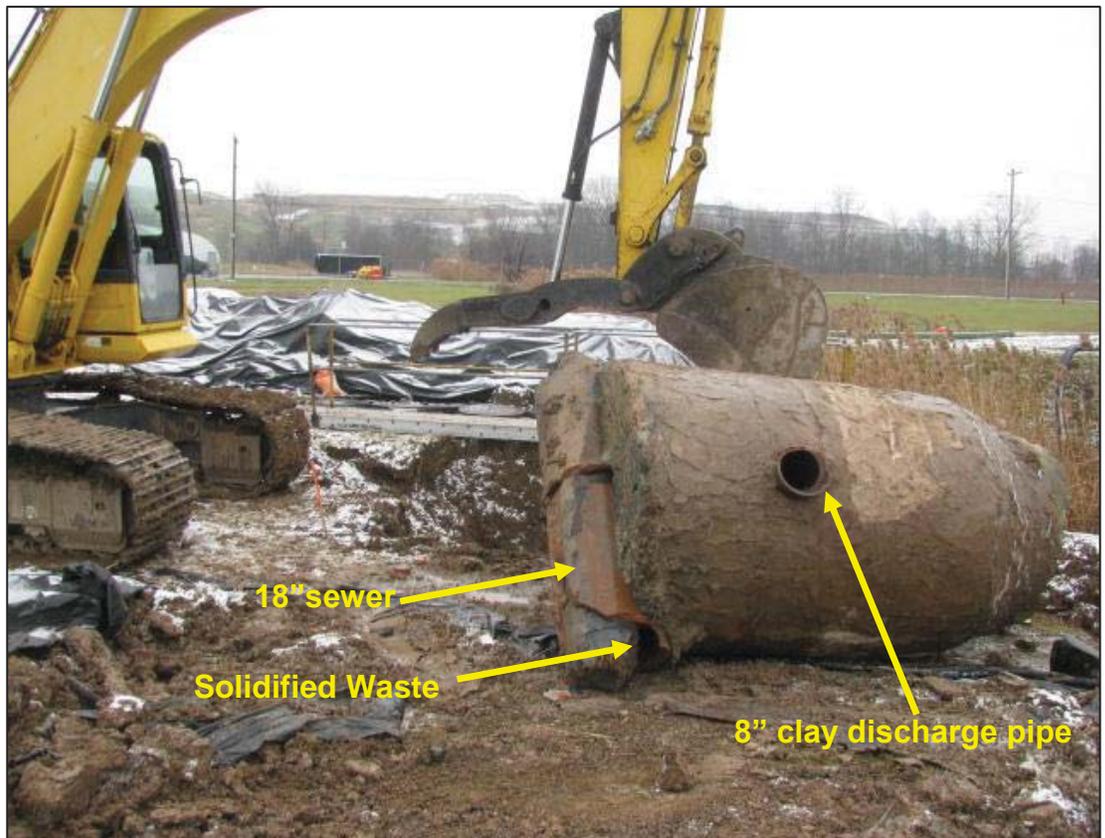


Photo No.
IEMH06-4

Date:
11/26/13

Description:

An east facing view of IEMH-06 trench subsequent to manhole removal. The 18" clay tile sewer was partially filled with solidified waste residue and concrete.



Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IEMH06-5,6

Date:
11/27/13

Description:

Photos taken to document condition of the sewer prior to abandonment. Due to the presence of solidified waste within the sewer, the reduced annular space was drained prior to plugging and encapsulating the sewer with concrete.

Submersible pump

18" dia. sewer



Removing soil and concrete aggregate from sewer to re-attempt plugging.

Photo No.
IEMH06-7,8

Date:
11/27/13

Description:

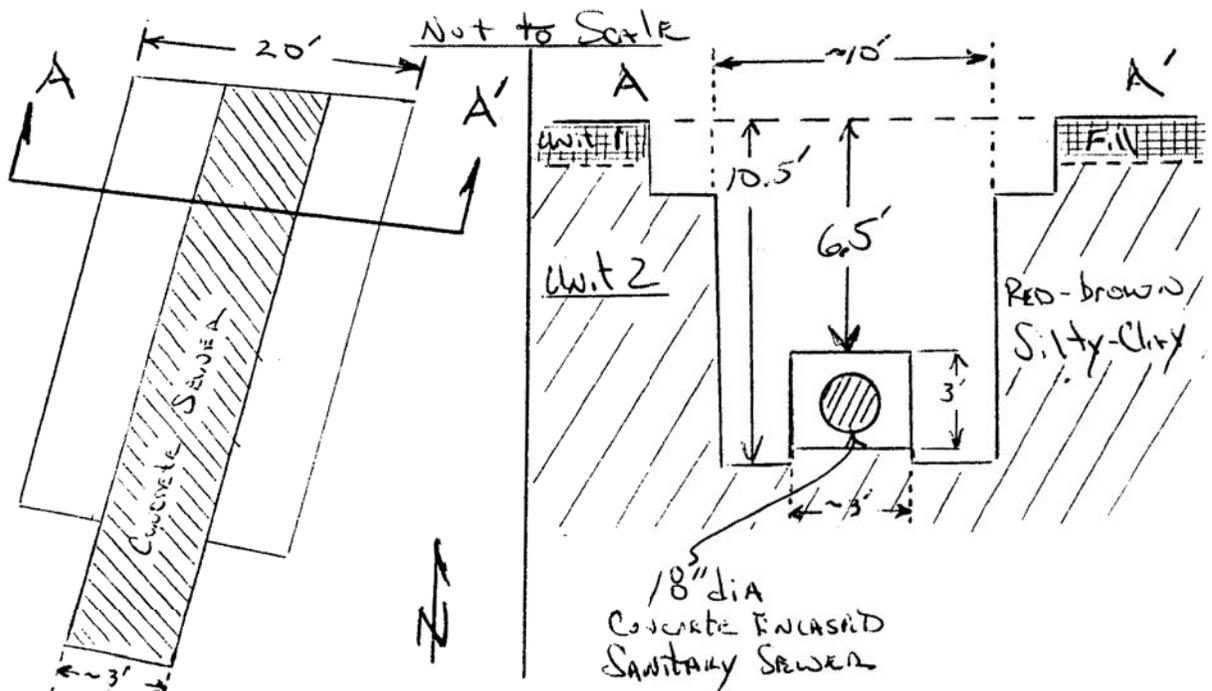
Plugging activity and placement of 8 yd³ of concrete (4,500 psi) within trench IEMH-06.



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-09
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	
EQUIPMENT: Komatsu 200 LC excavator, support truck and trailer, aluminum catwalk		
LOCATION: Approximately 40' northeast of the manhole MH-06 location		
PURPOSE: Expose and inspect structural integrity of the NE - SW trending concrete encased sanitary sewer		
CORNER COORDINATES: (NW Cor) N-1171172.511, E-1041254.284; (SW Cor) N-1171158.855, E-1041249.665		
(NE Cor) N-1171166.316, E-1041273.086; (SE Cor) N-1171152.999, E-1041267.637		
(NW Cor Ext.) N-1171156.837, E-1041254.713; (SW Cor Ext) N-1171158.855, E-1041249.665		
(NE Cor Ext.) N-1171154.647, E-1041261.359		
FINAL EXCAVATION DIMENSIONS: ~20' wide x 25' long x 10.5' deep		

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	Unit 1 0.0 - 1.5' below ground surface (bgs): Fill / Reworked soil materials (ML/CL): Silt and Clay, dark brown clay loam topsoil, with trace fine sub-rounded gravel, moist, weak plasticity, rootlets throughout, granular texture
	Unit 2 1.5 - 10.5' bgs:
5	Silty Clay (CL): red-brown, stiff, firm, moderate plasticity, moist, with interbedded gray silt at 3.2 - 4.0' bgs. Interbedded gray silt layer characterized with trace-little fine sub-rounded gravel to 1/2" dia., cobbles and boulders.
10	
	Maximum depth 10.5' bgs

SKETCH



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-09
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	

COMMENTS:

Trench IE-09 was oriented in a Northeast - Southwest direction, a trench box was not used in any excavation during the course of this investigation.

The excavation exposed the concrete encased sewer at a depth of approximately 6.5' to 9.5' bgs. A groundwater seep was identified along the south wall emanating from a thin bedded, discontinuous gravel layer on top of the sewer. The groundwater seep was estimated to flow at less than 0.5 gpm.

The physical condition of the exposed sewer was found to be sound and intact as characterized by the flat top and sides, rough base and no apparent penetrations.

To facilitate sewer abandonment, a nominal 6-inch diameter core drill was advanced through the top of the concrete encased sewer. And while most of the concrete core was recovered, approximately 4 - 6 inches of the remaining core section dropped into the sewer annulus. A 6-inch diameter PCV standpipe fitted with a rubber gasket was then placed into the corehole to mitigate the flow of gravity fed sewer water into the excavation. Subsequent to placement of the PVC standpipe, attempts to push the unrecovered section of concrete core into the sewer were unsuccessful due to the presence of solidified sediment filling the bottom of the sewer. Approximately 4 yd³ of concrete was initially poured into the sewer via the standpipe in an attempt to plug the 18" dia. sanitary sewer. However, due to the position of the concrete core obstruction within the sewer annulus, it was estimated that less than 1 yd³ of concrete actually made it into the sewer.

An second concrete pour of approximately 2 yd³ was used to successfully encapsulate the sewer in the excavation IE-09. The concrete was poured to an elevation approximately 2' above the top of the sewer.

PID readings measured for excavated soils were 0.0 ppm; no visual or olfactory signs of contaminant impacts were identified.

One surface soil sample was collected within the trench boundaries from the 0.0 - 0.5' bgs interval. Soil samples collected within the excavation were based on the highest radiation measurement recorded along the trench sidewalls and bottom. As required, two sidewall samples and one bottom sample were collected. A groundwater sample was collected from a sump created at the base of the excavation.

Both the excavation and excavated soils were scanned with a 2" NaI detector. Radiation measurements were within expected background values.

Excavated overburden soil materials were stockpiled on plastic sheeting and covered to mitigate the potential for runoff. The soil materials were backfilled in the order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

Surface soil sample ID = IE 9 T1 0.0-0.5 2002

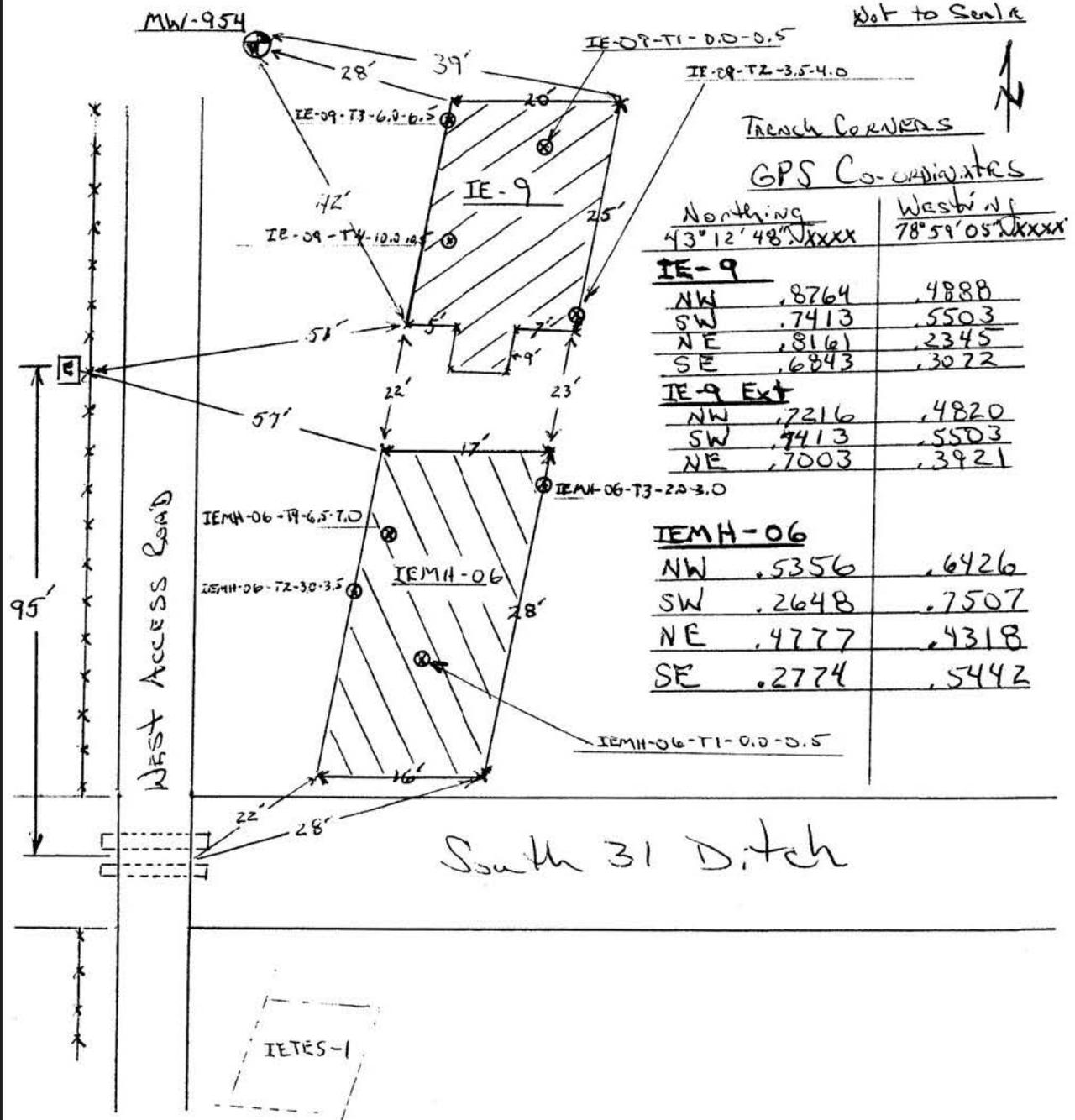
Sidewall soil sample ID = IE 9 T2 3.5 - 4.0 2003

Sidewall soil sample ID = IE 9 T3 6.0 - 6.5 2004

Bottom soil sample ID = IE 9 T4 10.0 - 10.5 2005

Groundwater sample ID = IE 9 GW 6.5 - 7.0 2001

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-09
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 11/20/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/2/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	



INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IE-09

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
IE-9-T1-0.0-0.5-2002	11/25/2013 14:00	0.0 - 0.5	Soil	List 3	None	Surface soil sample (Fill) as Clay and Silt, dark brown-gray, moist, granular structure, rootlets throughout, trace-little fine gravel. PID = 0.0. No odor.
IE-9-T2-3.5 -4.0 -2003	11/25/2013 14:45	3.5 - 4.0	Soil	List 3	None	Clay and Silt, red-brown, stiff, with moderate plasticity, moist, trace fine gravel. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in the SE corner of the east sidewall. PID = 0.0. No odor.
IE-9-T3- 6.0 - 6.5 - 2004	11/25/2013 15:00	6.0 - 6.5	Soil	List 3	None	Clay and Silt, red-brown, stiff, with weak-moderate plasticity, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in the NW corner of the west sidewall. PID = 0.0. No odor.
IE-9-T4-10.0 -10.5 -2005	11/25/2013 15:30	10.0 - 10.5	Soil	List 3	None	Clay and Silt, red-brown, firm, weak-moderate plasticity. Soil sample collected based on highest radiation measurement recorded at the base of the excavation. Bottom soil sample collected between the concrete encased sewer and the west sidewall. PID = 0.0. No odor.
IE-9-GW-6.5 - 7.0 -2001 and IE-9-GW-6.5 - 7.0F -2001	11/25/2013 11:00	6.5 - 7.0	Groundwater	List 4	None	Groundwater sample collected at seep location along top of concrete encased sewer. Unfiltered sample was turbid and brown in color. Filtered sample was clear. No sheen or odor observed.

Notes:

- 1.) List 3 Analytical Parameters include: Total Uranium, Iso U / Iso Th and Ra-226 (gamma)
- 2.) List 4 *Unfiltered* Analytical Parameters include: Anions, Alkalinity and TDS
- 3.) List 4 *Filtered* Analytical Parameters include: Total Uranium, Iso U / IsoTh and Ra-226 (gamma)

Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE9-1

Date:
11/25/13

Description:

Photo taken looking south. Trench was benched to facilitate collection of a requisite groundwater sample and radiation survey.

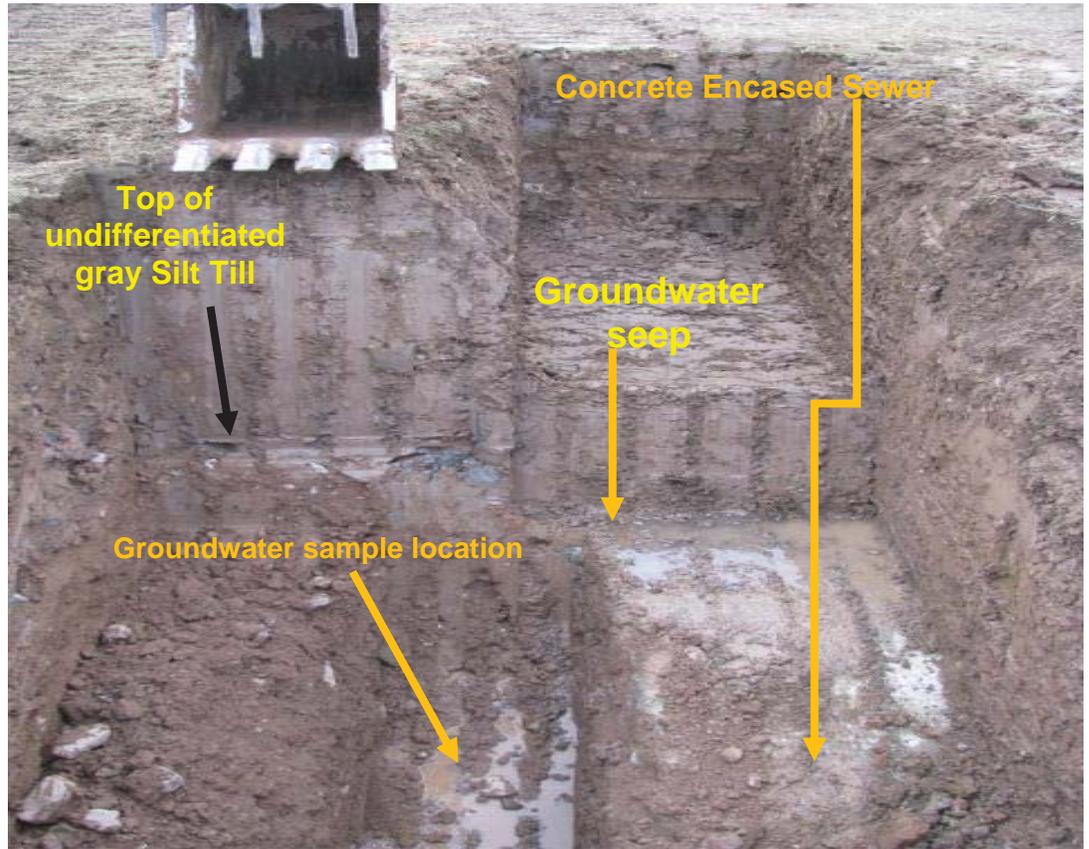
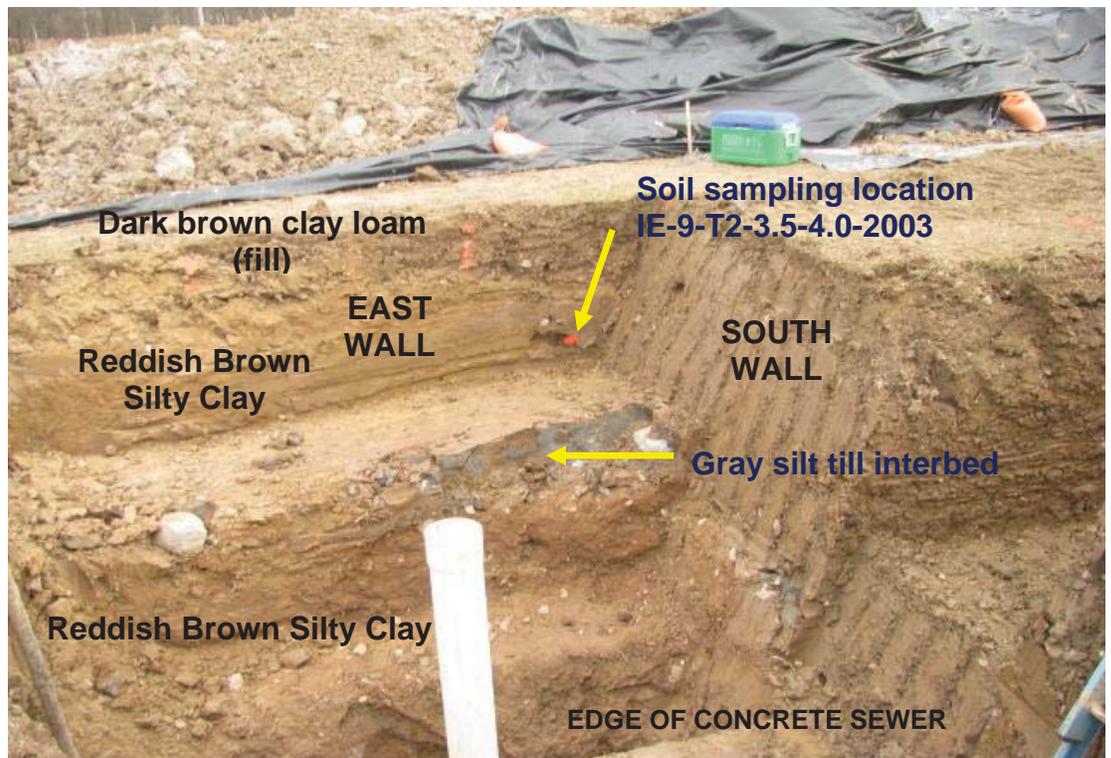


Photo No.
IE9-2

Date:
11/25/2013

Description:

An eastward looking view of the soil section along the east and south walls of trench IE-9. The top of the interbedded (~3.2 – 4.0") gray silt till and east wall soil sampling location are depicted in the photo.



Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE9-3

Date:
11/25/13

Description:

Photo taken looking southward into trench IE-9. Photo documents coring activity required to breach sanitary sewer. Maximum trench depth in photo is ~10.5' bgs.

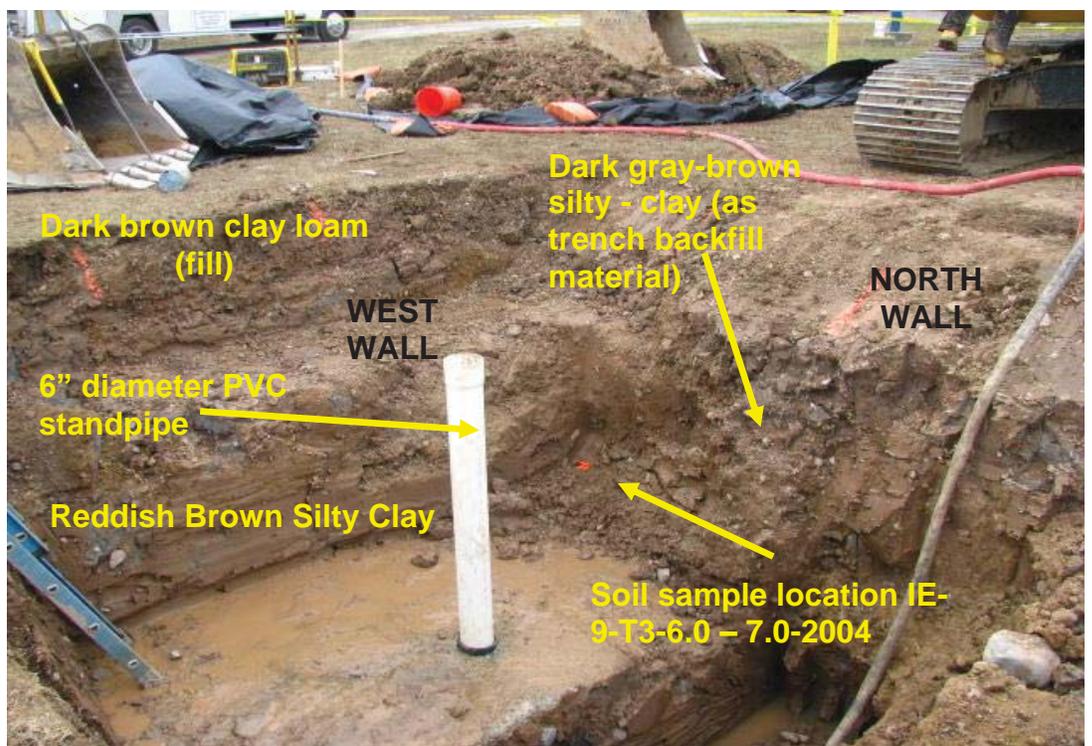


Photo No.
IE9-4

Date:
11/25/2013

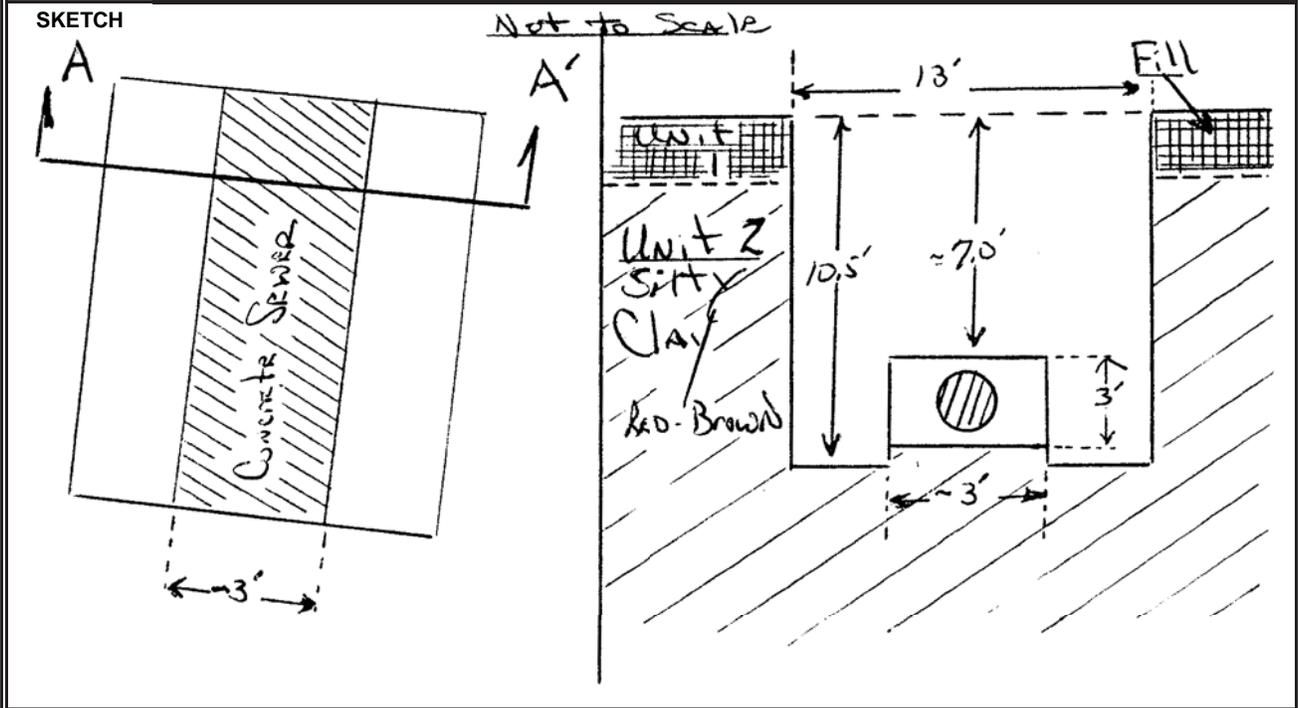
Description:

Photo taken looking northwest into trench. The west wall soil sampling location, backfill placed subsequent to sewer installation and PVC standpipe are shown.



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-10
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/2/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	
EQUIPMENT: Komatsu 200 LC excavator, support truck and trailer, aluminum catwalk		
LOCATION: Approximately 13' due east of monitoring well location MW-954		
PURPOSE: Expose and inspect structural integrity of the NE - SW trending concrete encased sanitary sewer		
CORNER COORDINATES: N-1171189.268, E-1041266.14, Elev.316.74; N-1171175.955, E-1041259.615, Elev.316.52		
N-1171170.735, E-1041271.847, Elev.317.07; N-1171184.605, E-1041277.263, Elev.316.87		
FINAL EXCAVATION DIMENSIONS: ~13' wide x 16' long x 10.5' deep		

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	Unit 1 0.0 - 1.5' below ground surface (bgs): Fill / Reworked soil materials: Silt and Clay with fine - coarse crushed stone as railroad ballast, dark brown clay loam topsoil, moist, weak plasticity, rootlets throughout.
	Unit 2 1.5 - 10.5' bgs:
5	Silty Clay (CL): red-brown, stiff, weak - moderate plasticity, moist, with occasional lenticular, fine-medium grain sand interbed. Interbedded gray silt layer at 3.0 - 4.2' bgs characterized with trace-little fine sub-rounded gravel to 1/2" dia., cobbles and boulders.
10	
	Maximum depth 10.5' bgs



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-10
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/2/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	

COMMENTS:

Trench IE-10 was oriented in a Northeast - Southwest direction, a trench box was not used in any excavation during the course of this investigation.

A buried electrical utility limited the northern extent of the excavation.

The concrete encased sewer was exposed at a depth of approximately 7.0' to 10.5' bgs and a groundwater seep identified emanating from a fractured clay and interbedded sand layer on top of the concrete sewer.

The groundwater seep was estimated to flow at a rate of less than 0.5 gpm.

The physical condition of the exposed sewer was found to be sound and intact as characterized by the flat top and sides, rough base and no apparent penetrations.

PID readings measured on excavated soils were 0.0 ppm. No visual or olfactory signs of contaminant impacts were identified.

Both the excavation and excavated soils were scanned with a 2" NaI detector. Radiation measurements were within expected background values.

Excavated overburden soil materials were stockpiled on plastic sheeting. The soil materials were backfilled in the reverse order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

One surface soil sample was collected within the trench boundaries from the 0.0 - 0.5' bgs interval. Soil samples collected within the excavation were based on the highest radiation measurement recorded along the trench sidewalls and bottom. As required, two sidewall samples and one bottom sample were collected. A groundwater sample was collected from a sump created at the base of the excavation.

Surface soil sample ID = IE 10 T1 0.0-0.5 2010

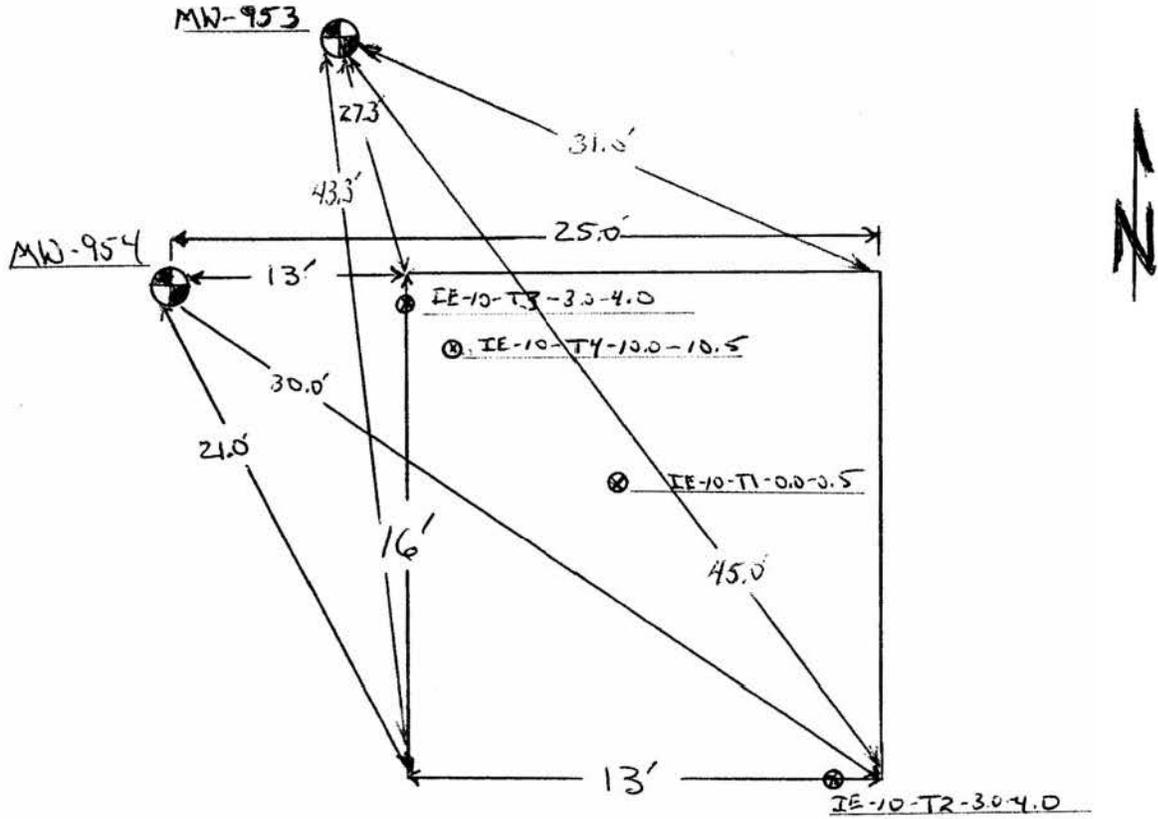
Sidewall soil sample ID = IE 10 T2 3.0 - 4.0 2011

Sidewall soil sample ID = IE 10 T3 3.0 - 4.0 2012

Bottom soil sample ID = IE 10 T4 10.0 - 10.5 2013

Groundwater sample ID = IE 10 GW 7.0 - 8.0 2009

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-10
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/2/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	



Trench Corners

GPS Co-ordinates

	Northings	Westings
	43° 12' 49" .xxxx	78° 59' 09" .xxxx
NW	.0898	.3515
SW	.9420	.4586
NE	.0351	.2103
SE	.8972	.2882

INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IE - 10

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
IE-10-T1-0.0-0.5-2010	12/2/2013 14:45	0.0 - 0.5	Soil	List 3	None	Surface soil sample (Fill) as Clay and Silt, dark brown-gray, trace fine-coarse gravel, moist, rootlets throughout, PID = 0.0. No odor.
IE-10-T2-3.0 - 4.0 -2011	12/2/2013 15:45	3.0 - 4.0	Soil	List 3	None	Clay, brown-red, dense, stiff, with weak-moderate plasticity, gray mottling, moist, little fine-coarse gravel. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected at SE corner of the South sidewall. PID = 0.0. No odor.
IE-10-T3- 3.0 - 4.0 - 2012	12/2/2013 16:05	3.0 - 4.0	Soil	List 3	None	Clay, brown-red, stiff, with moderate-strong plasticity, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in the NW corner of the west sidewall. PID = 0.0. No odor.
IE-10-T4-10.0 -10.5 -2013	12/2/2013 15:55	10.0 - 10.5	Soil	List 3	None	Clay, reddish brown-gray, moderate plasticity, moist. Soil sample collected based on highest radiation measurement recorded at the base of the excavation. Bottom soil sample collected in NW corner along west sidewall. PID = 0.0. No odor.
IE-10-GW-7.0 - 8.0 -2009 and IE-10-GW-7.0 - 8.0F -2009	12/2/2013 12:45 12/2/2013 12:30	7.0 - 8.0	Groundwater	List 4	Duplicate	Groundwater sample collected at seep location along sidewall and top of concrete encased sewer. Unfiltered sample was turbid and brown in color. Filtered sample was clear. No sheen or odor observed.

Notes:

- 1.) List 3 Analytical Parameters include: Total Uranium, Iso U / Iso Th and Ra-226 (gamma)
- 2.) List 4 *Unfiltered* Analytical Parameters include: Anions, Alkalinity and TDS
- 3.) List 4 *Filtered* Analytical Parameters include: Total Uranium, Iso U / IsoTh and Ra-226 (gamma)

**Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation**

**Client: USACE
Excavation Contractor: Russo Development**

**Job Number:
11176781.00007**

Photo No.
IE10-1

Date:
12/2/13

Description:

Photo taken looking north. Groundwater sample collected from a sump positioned in northwest corner of the excavation. Note: gray silt deposits were observed on surfaces of preferentially broken desiccation fractures.

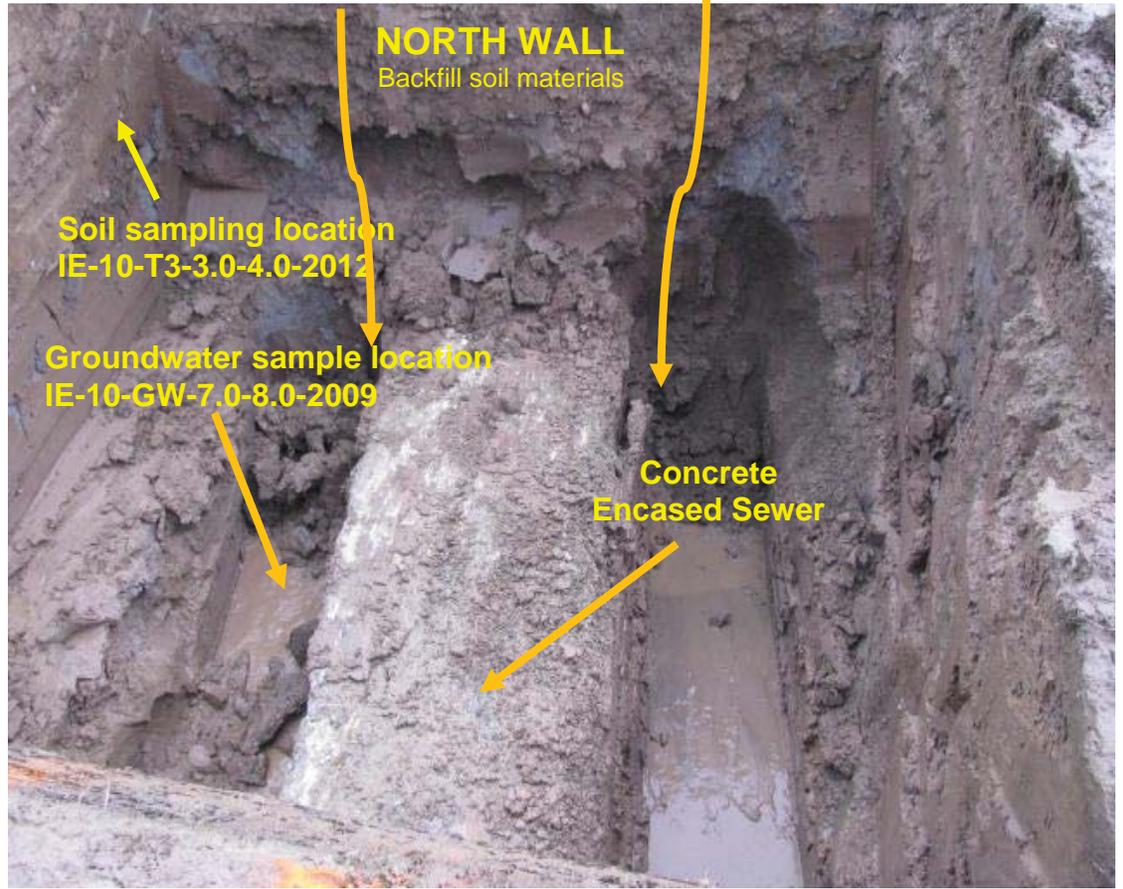
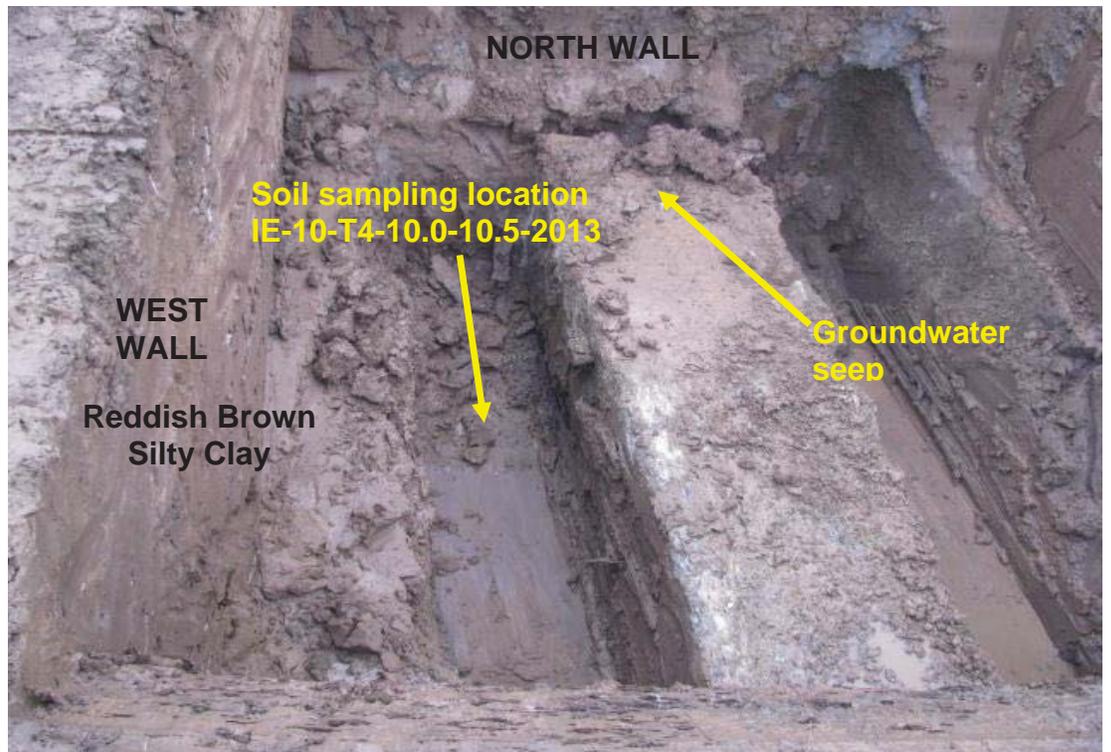


Photo No.
IE10-2

Date:
12/2/2013

Description:

A northward looking view of trench IE-10. The red-brown coloration of the silty clay soil is depicted in the photo. Additionally, the groundwater seep and bottom soil sampling locations are shown.

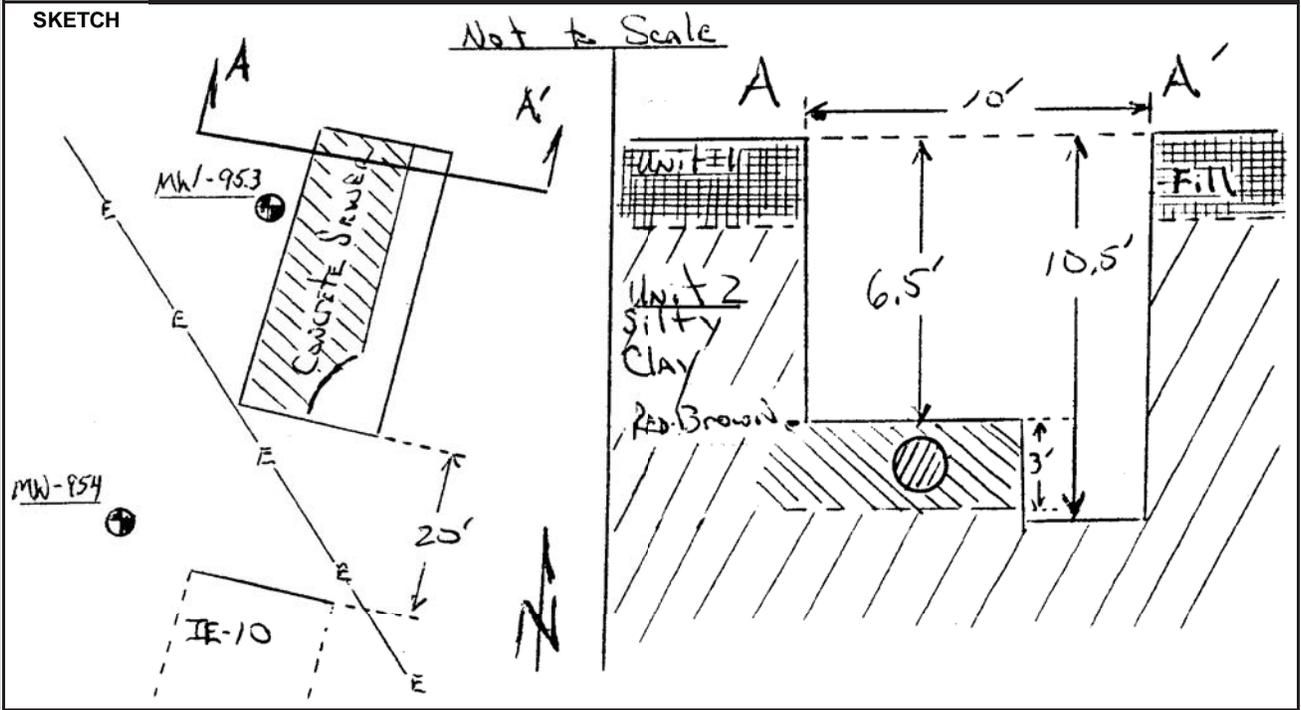


PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-11
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/3/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	
EQUIPMENT: Komatsu 200 LC excavator, support truck and trailer, aluminum catwalk		
LOCATION: Approximately 20' north of excavation IE-10 and 4' due east of monitoring well location MW-953		
PURPOSE: Expose and inspect structural integrity of the NE - SW trending concrete encased sanitary sewer		
CORNER COORDINATES: N-1171219.600, E-1041291.748, Elev.317.29; N-1171222.872, E-1041282.615, Elev.317.10		
N-1171208.588, E-1041277.774, Elev.316.94; N-1171204.917, E-1041285.617, Elev.316.92		

FINAL EXCAVATION DIMENSIONS: ~10' wide x 15' long x 10.5' deep

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	Unit 1 0.0 - 1.1' below ground surface (bgs) Fill / Reworked soil materials: Silt and Clay, dark brown loam topsoil, trace-little fine sub-rounded gravel, moist, weak plasticity, rootlets throughout.
	1.1'- 2.5' bgs Fill: Silt and Clay: red-brown, little fine - coarse sub-rounded gravel, trace sand, moist.
5	Unit 2 2.5' - 10.5' bgs.: Silty Clay (CL): red-brown, firm, stiff, moist, trace- little silt and fine - coarse gravel to 2" dia., trace cobbles and boulders. Trace interbedded lenticular sand, fine-medium grain.
10	

Maximum depth 10.5' bgs



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-11
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/3/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	

COMMENTS:

Trench IE-11 was oriented in a Northeast - Southwest direction, a trench box was not used in any excavation during the course of this investigation.

The proximity of the sewer to monitoring well MW-953 on the west side of the trench limited the width of the excavation. A buried electrical utility limited the southern extent.

The concrete encased sewer was exposed at a depth of approximately 6.5' to 9.5' bgs. The increased width of the sewer from a nominal 3' to 5' was attributed to a slight deviation in the sewer alignment toward the north.

A groundwater seep was identified along the south wall on the top and east side of the concrete sewer. The flow rate of the seep was estimated at less than 0.5 gpm.

The physical condition of the exposed sewer was found to be sound and intact as characterized by the flat top and sides, rough base and no apparent penetrations.

PID readings measured on excavated soils were 0.0 ppm. No visual or olfactory signs of contaminant impacts were identified.

Both the excavation and excavated soils were scanned with a 2" NaI detector. Radiation measurements were within expected background values.

Excavated overburden soil materials were stockpiled on plastic sheeting. The soil materials were backfilled in the reverse order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

One surface soil sample was collected within the trench boundaries from the 0.0 - 0.5' bgs interval. Soil samples collected within the excavation were based on the highest radiation measurement recorded along the trench sidewalls and bottom. As required, two sidewall samples and one bottom sample were collected. A groundwater sample was collected from a sump created at the base of the excavation.

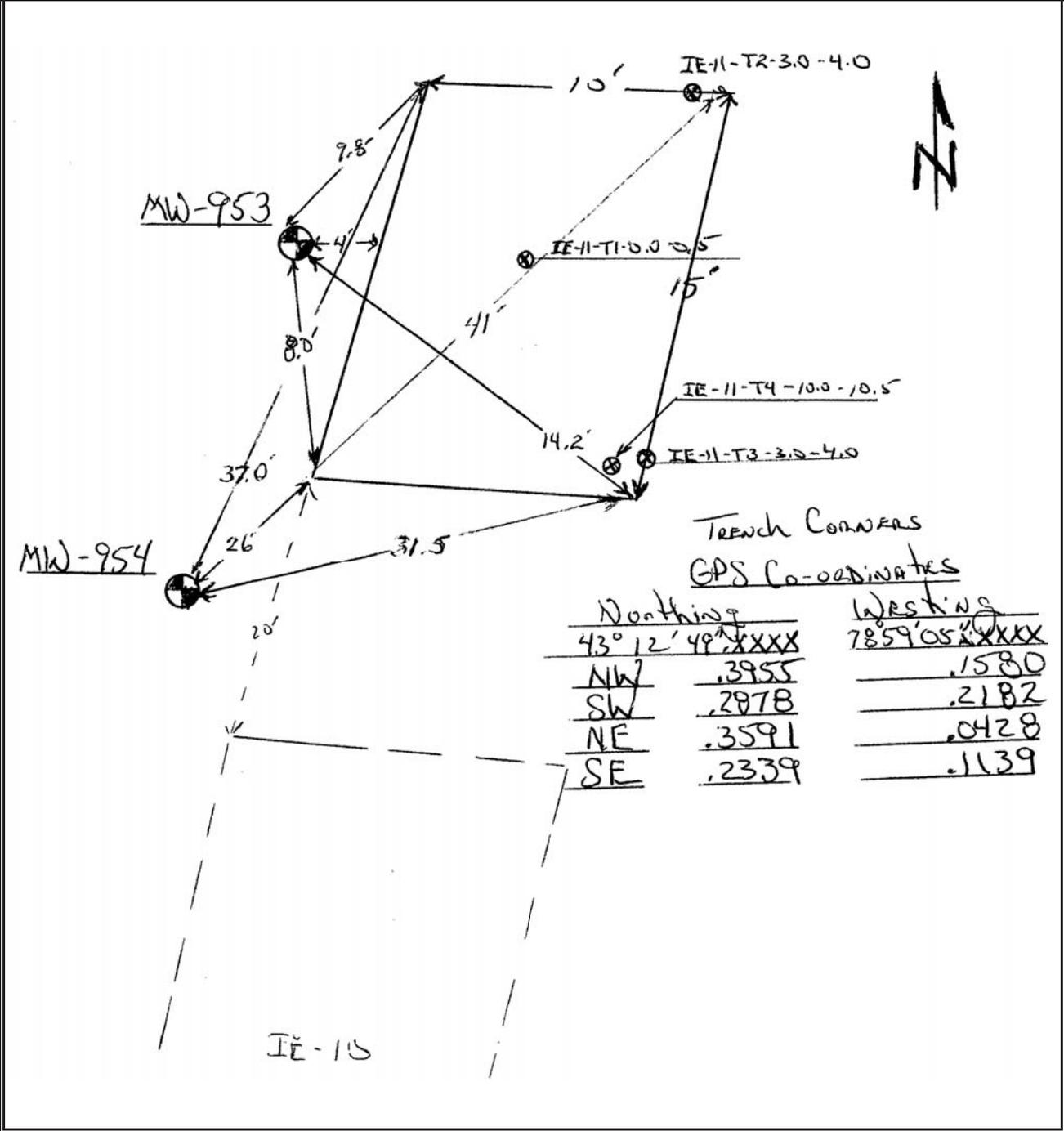
Sidewall soil sample ID = IE 11 T2 3.0 - 4.0 2016

Sidewall soil sample ID = IE 10 T3 1.0 - 2.0 2017

Bottom soil sample ID = IE 11 T4 10.0 - 10.5 2018

Groundwater sample ID = IE 10 GW 6.5 - 7.5 2014

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-11
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/3/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/3/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	



TRENCH CORNERS
GPS CO-ORDINATES

Nothing	WESTINGS
43° 12' 48" XXXX	7859' 05" XXXX
NW .3955	.1580
SW .2878	.2182
NE .3591	.0428
SE .2339	.1139

INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IE-11

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
IE-11-T1-0.0-0.5-2015	12/3/2013 13:15	0.0 - 0.5	Soil	List 3	None	Surface soil sample (Fill) as Clay and Silt, dark brown-gray, firm, moist, trace fine sub-rounded gravel, trace fine sand, rootlets throughout. PID = 0.0. No odor.
IE-11-T2- 3.0 - 4.0 - 2016 IE-11-T2- 3.0 - 4.0MS - 9201 IE-11-T2- 3.0 - 4.0MSD - 9202	12/3/2013 14:40	3.0 - 4.0	Soil	List 3	MS/MSD	Clay and Silt, brown-red, stiff, with lt. gray mottling, weak plasticity, moist, little fine sub-rounded gravel. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in NE corner of the North sidewall. PID = 0.0. No odor.
IE-11-T3- 3.0 - 4.0 - 2017	12/3/2013 14:20	1.0 - 2.0	Soil	List 3	None	Silt, brown-red, trace -little clay, trace fine gravel and sand, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in SE corner of the East sidewall. PID = 0.0. No odor.
IE-11-T4-10.0 -10.5 -2018	12/3/2013 14:10	10.0 - 10.5	Soil	List 3	None	Clay, red - brown, moderate - strong plasticity, little fine sub-rounded gravel, moist. Soil sample collected based on highest radiation measurement recorded at the base of the excavation. Bottom soil sample collected in SE corner along east sidewall. PID = 0.0. No odor.
IE-11-GW-6.5 - 7.5 -2014 and IE-10-GW-6.5 - 7.5F -2014	12/3/2013 11:00 12/3/2013 11:00	6.5 - 7.5	Groundwater	List 4	None	Groundwater sample collected at seep located along sidewall and top of concrete encased sewer (South wall). Unfiltered sample was turbid and lt.brown in color. Filtered sample was clear. No sheen or odor observed.

Notes:

- 1.) List 3 Analytical Parameters include: Total Uranium, Iso U / Iso Th and Ra-226 (gamma)
- 2.) List 4 *Unfiltered* Analytical Parameters include: Anions, Alkalinity and TDS
- 3.) List 4 *Filtered* Analytical Parameters include: Total Uranium, Iso U / IsoTh and Ra-226 (gamma)

**Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation**

**Client: USACE
Excavation Contractor: Russo Development**

**Job Number:
11176781.00007**

Photo No.
IE11-1

Date:
12/3/13

Description:

Photo taken looking westward into trench. Widened top of concrete sewer attributed to slight westward deviation in sewer alignment.

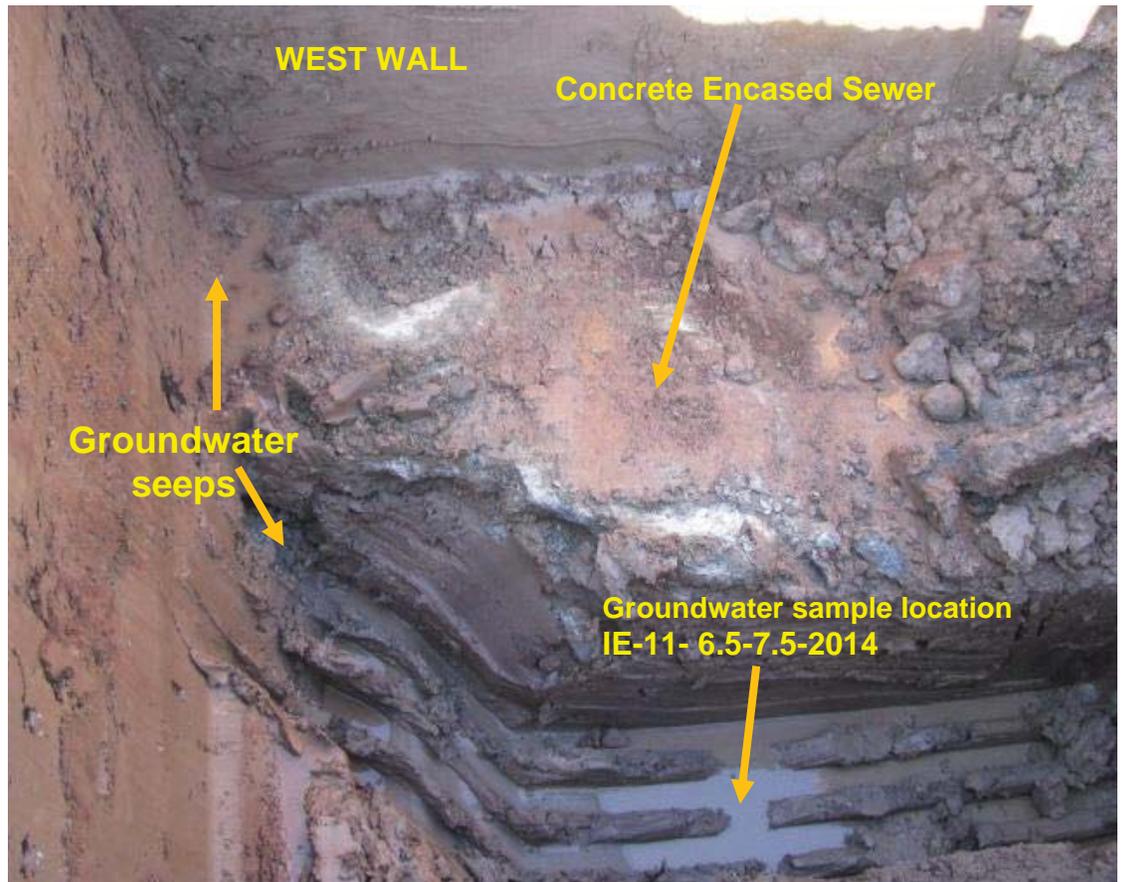
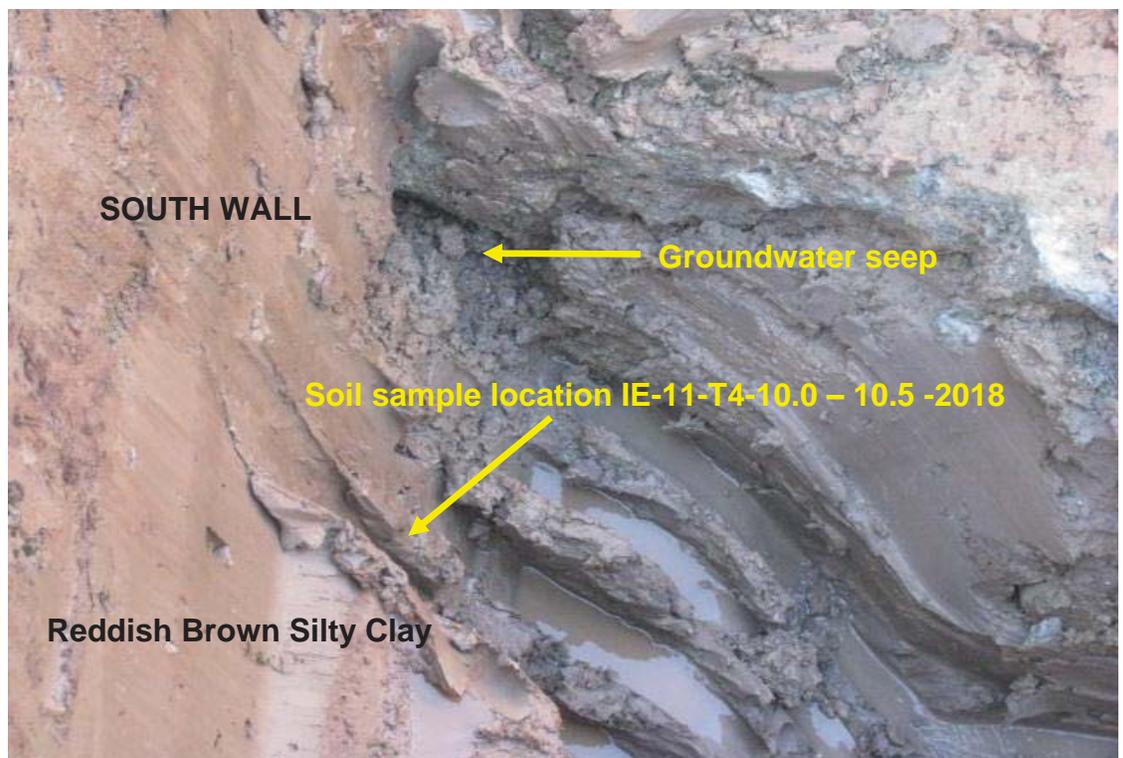


Photo No.
IE11-2

Date:
12/3/13

Description:

Photo depicts the groundwater seep emanating beneath the sewer through loose gravel bedding material, the trench bottom soil sampling location and the dense clayey nature of the overburden soil material.



Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE11-3

Date:
12/3/13

Description:

Photo taken looking north to show sewer proximity and associated potential impacts to adjacent monitoring well MW-953.



Photo No.
IE11-4

Date:
12/3/2013

Description:

Photo taken looking north into trench to indicate the north wall soil sampling location, and to show the top of the sewer extending into the west wall toward monitoring well MW-953. Maximum trench depth in photo is ~10.5' bgs.



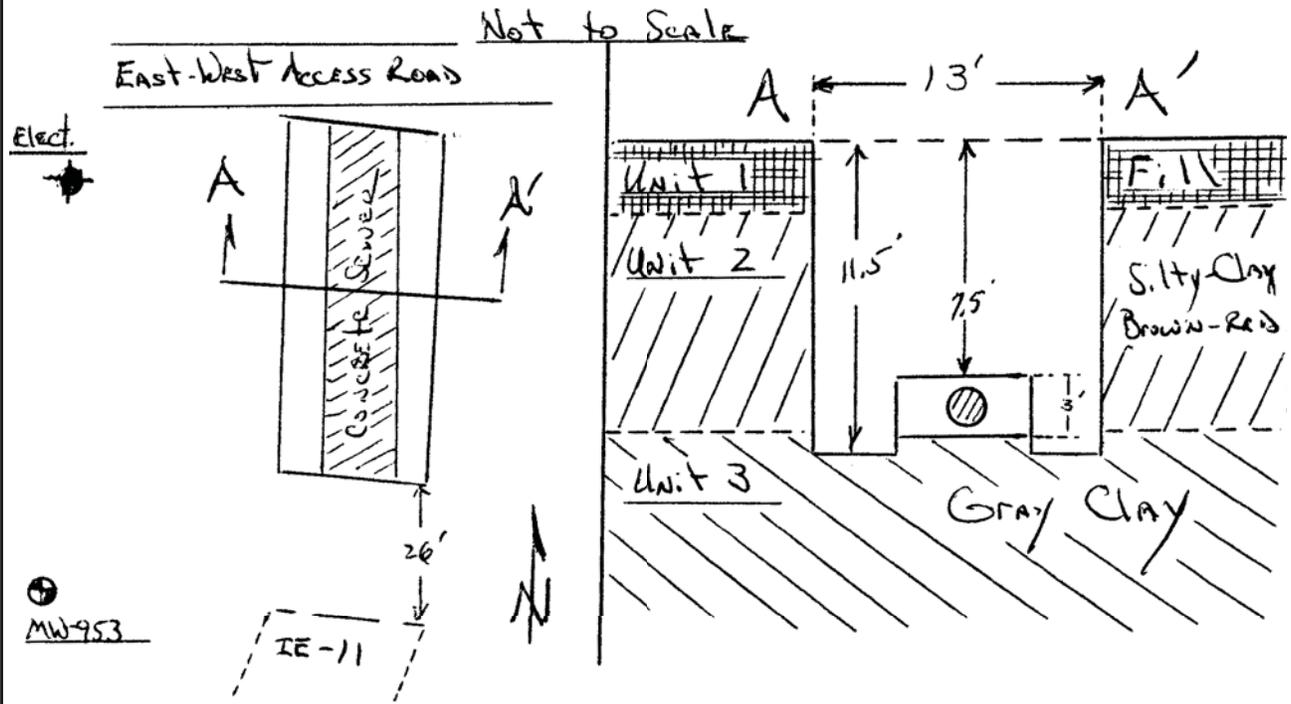
PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-12
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/4/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/4/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	
EQUIPMENT: Komatsu 200 LC excavator, support truck and trailer, aluminum catwalk		
LOCATION: Approximately 25' northeast of excavation IE-11 and south of east-west trending access road.		
PURPOSE: Expose and inspect structural integrity of the NE - SW trending concrete encased sanitary sewer.		
CORNER COORDINATES: N-1171270.215, E-1041303.252, Elev.318.67; N-1171272.647, E-1041291.461, Elev.318.15 N-1171248.712, E-1041285.771, Elev.317.77; N-1171244.737, E-1041297.141, Elev.317.87		

FINAL EXCAVATION DIMENSIONS: ~16' wide x 25' long x 11.5' deep

DEPTH (FT)	VERTICAL PROFILE DESCRIPTION
1	<u>Unit 1</u> 0.0 - 2.5' bgs: Fill / Reworked soil materials: Silt and Clay, dark brown-red, trace-little fine sub-rounded gravel, moist, rootlets throughout.
5	<u>Unit 2</u> 2.5' - 10.5' bgs.: Silty Clay (CL/ML): brown-red, firm, stiff, moist, trace- little fine - coarse sub-rounded gravel, trace cobbles > 3" diameter, trace interbedded sand lens, brown-yellow, fine-medium grain. Blocky structure broken along vertical silt filled dessication fractures.
10	<u>Unit 3</u> 10.5 - 11.5 bgs.: Clay (CL), gray, soft, stong plasticity, moist.

Maximum depth 11.5' bgs.

SKETCH



PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-12
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/4/2013	URS GEOLOGIST: [REDACTED]	
DATE COMPLETED: 12/4/2013	URS HEALTH PHYSICIST: [REDACTED]	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER: [REDACTED]	

COMMENTS:

Trench was oriented in a nominal North - South direction. When compared with the sewer alignment identified in the previous excavations (IE-06, IE-09, IE-10), the alignment of the sewer in excavation IE-12 confirmed the deviation to the north documented in excavation IE-11.

The sewer was exposed at a depth of approximately 7.5' to 10.5' bgs and a groundwater seep identified along the south wall on top and west side of the concrete encased sewer. The flow rate of the seep was estimated to be less than 0.5 gpm.

The physical condition of the exposed sewer was found to be sound and intact as characterized by the flat top and sides, rough base and no apparent penetrations.

Due to the slightly larger dimensions of the excavation and physical properties of the overburden, the competency of the excavation sidewalls was susceptible to sloughing and wall collapse. Preferential sloughing was observed along north south aligned desiccation fractures.

PID readings measured on excavated soils were 0.0 ppm. No visual or olfactory signs of contaminant impacts were identified.

Both the excavation and excavated soils were scanned with a 2" NaI detector. Radiation measurements were within expected background values.

Based on the larger size of the excavation, the number of soil samples collected at IE-12 was doubled to include 2 surface soil samples, 4 sidewall samples and 2 bottom samples. Both surface soil samples were collected within the trench boundaries from the 0.0 - 0.5' bgs interval. Soil samples collected within the excavation were based on the highest radiation measurement recorded along the trench sidewalls and bottom. As required, one sidewall sample was collected from each wall. Two bottom samples and a groundwater sample were collected from the base of the excavation.

Excavated overburden soil materials were stockpiled on plastic sheeting. The soil materials were backfilled in the reverse order in which they were removed. The soil materials were placed in 1-2' lifts and compacted with the excavator bucket.

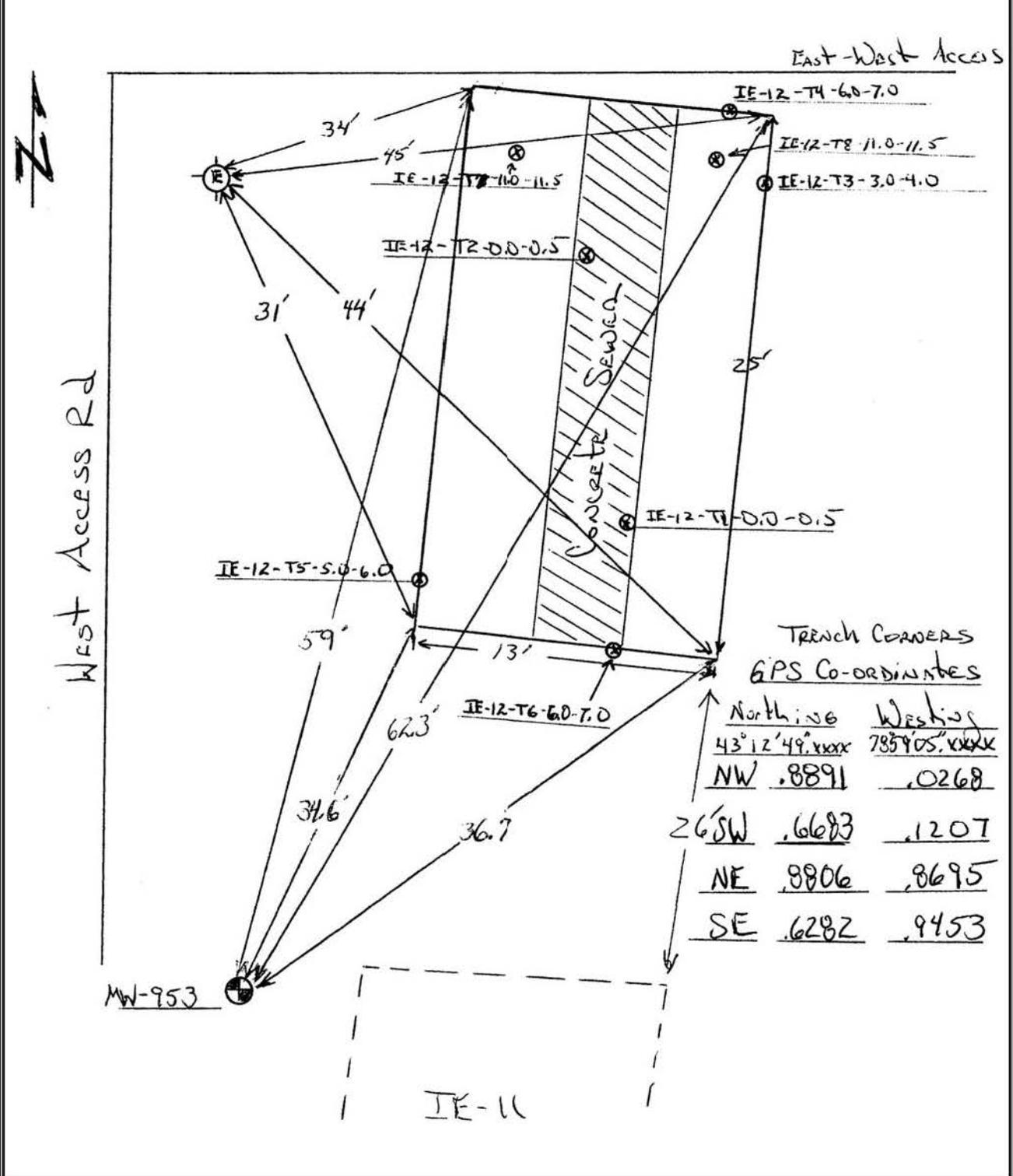
Surface soil samples ID = IE 12 T1 0.0-0.5 2019
IE 12 T2 0.0-0.5 2020

Sidewall soil samples ID = IE 12 T3 3.0 - 4.0 2021
IE 12 T4 6.0 - 7.0 2022
IE 12 T5 5.0 - 6.0 2023
IE 12 T6 6.0 - 7.0 2024

Bottom soil samples ID = IE 12 T7 11.0 - 11.5 2025
IE 12 T8 11.0 - 11.5 2026

Groundwater sample ID = IE 12 GW 7.0 - 7.5 2027

PROJECT: Niagara Falls Storage Site (Lewiston, NY) Delineation Investigation		EXCAVATION ID: IE-12
CLIENT/OWNER: USACE	JOB NUMBER: 11176991.00007	
DATE STARTED: 12/4/2013	URS GEOLOGIST:	
DATE COMPLETED: 12/4/2013	URS HEALTH PHYSICIST:	
CONTRACTOR: Russo Development	RUSSO OPERATOR & LABORER:	



INFORMATION FOR SAMPLES COLLECTED AT EXCAVATION IE-12

SAMPLE ID	COLLECTION DATE / TIME	SAMPLE DEPTH (FEET BGS)	MATRIX	ANALYTICAL PARAMETERS	QA / QC	SAMPLE DESCRIPTION
IE-12-T1-0.0-0.5-2019 and IE-12-T2-0.0-0.5-2020	12/4/2013 9:10 12/4/2013 10:15	0.0 - 0.5	Soil	List 3	None	Surface soil samples (Fill) as Silt and Clay loam, dark brown- red, trace fine-coarse gravel, moist, rootlets throughout, PID = 0.0. No odor.
IE-12-T3-3.0 - 4.0 -2021	12/4/2013 14:45	3.0 - 4.0	Soil	List 3	None	Clay, lt. brown-red, stiff, mottled, little fine sub-rnd gravel, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample was collected at NE corner of the east sidewall. PID = 0.0. No odor.
IE-12-T4-6.0 - 7.0 -2022	12/4/2013 15:15	6.0 - 7.0	Soil	List 3	None	Sand, lt. brown-yellow, fine grain, wet, loose. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected in NE corner of the north sidewall. PID = 0.0. No odor.
IE-12-T5-5.0 - 6.0 -2023	12/4/2013 15:30	5.0 - 6.0	Soil	List 3	None	Clay, brown-red, stiff, firm with little silt, trace-little fine - coarse gravel, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected at SW corner of the west sidewall. PID = 0.0. No odor.
IE-12-T6-6.0 - 7.0 -2024	12/4/2013 15:00	6.0 - 7.0	Soil	List 3	None	Clay, brown-red, stiff, firm with little silt, trace fine gravel, mottled, moist. Sample collected based on highest radiation measurement recorded for this sidewall. Soil sample collected 1 foot above sewer in SE corner of the south sidewall . PID = 0.0. No odor.
IE-12-T7-11.0 - 11.5 -2025	12/4/2013 13:30	11.0 - 11.5	Soil	List 3	None	Clay, gray-brown, strong plasticity, soft, moist. Sample collected based on highest radiation measurement recorded in the bottom of the trench on the west side of the sewer. Sample was collected in NW corner. PID = 0.0. No odor.
IE-12-T8-11.0 - 11.5 -2026	12/4/2013 13:45	11.0 - 11.5	Soil	List 3	None	Clay, red-brown, stiff, trace - little silt and fine sub-rnd gravel. mottled, moist. Sample collected based on highest radiation measurement recorded in the bottom of the trench on the east side of the sewer. Sample was collected in NE corner. PID = 0.0. No odor.
IE-12-GW-7.0 - 7.5 -2027 and IE-10-GW-7.0 - 7.5F -2027	12/4/2013 12:30	7.0 - 7.5	Groundwater	List 4	None	Groundwater sample collected at seep location identified on top of concrete encased sewer along south wall. Unfiltered sample was turbid and brown in color. Filtered sample was clear. No sheen or odor was detected.
IE-12-GW-7.0 - 7.5FMS -9203 and IE-12-GW-7.0 - 7.5FMSD -9204	12/4/2013 12:30	7.0 - 7.5	Groundwater	List 4	MS/MSD	Groundwater sample collected at seep location along sidewall and top of concrete encased sewer. Unfiltered sample was turbid and brown in color. Filtered sample was clear. No sheen or odor observed.

Notes:

- 1.) List 3 Analytical Parameters include: Total Uranium, Iso U / Iso Th and Ra-226 (gamma)
- 2.) List 4 *Unfiltered* Analytical Parameters include: Anions, Alkalinity and TDS
- 3.) List 4 *Filtered* Analytical Parameters include: Total Uranium, Iso U / IsoTh and Ra-226 (gamma)

Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE12-1

Date:
12/4/13

Description:

Photo taken looking south- southwest to show the trench/sewer orientation, monitoring wells MW-953/954 and proposed IE-12 location.

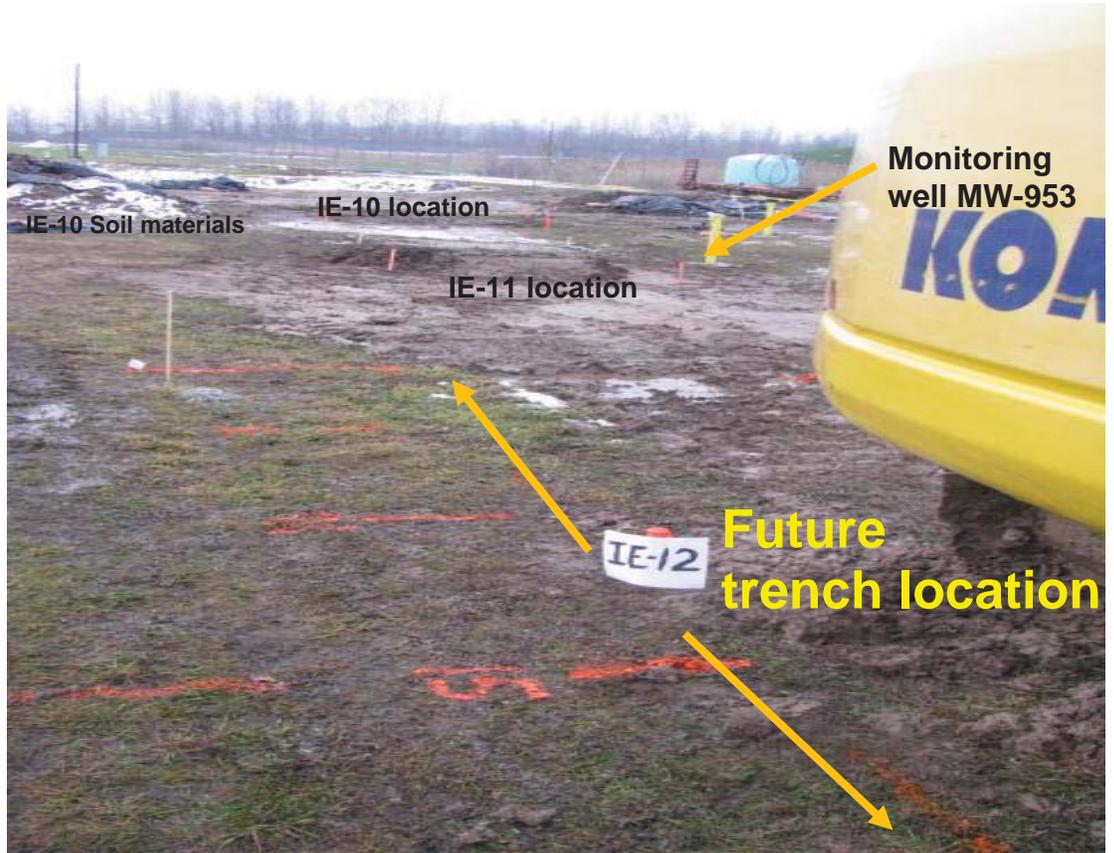
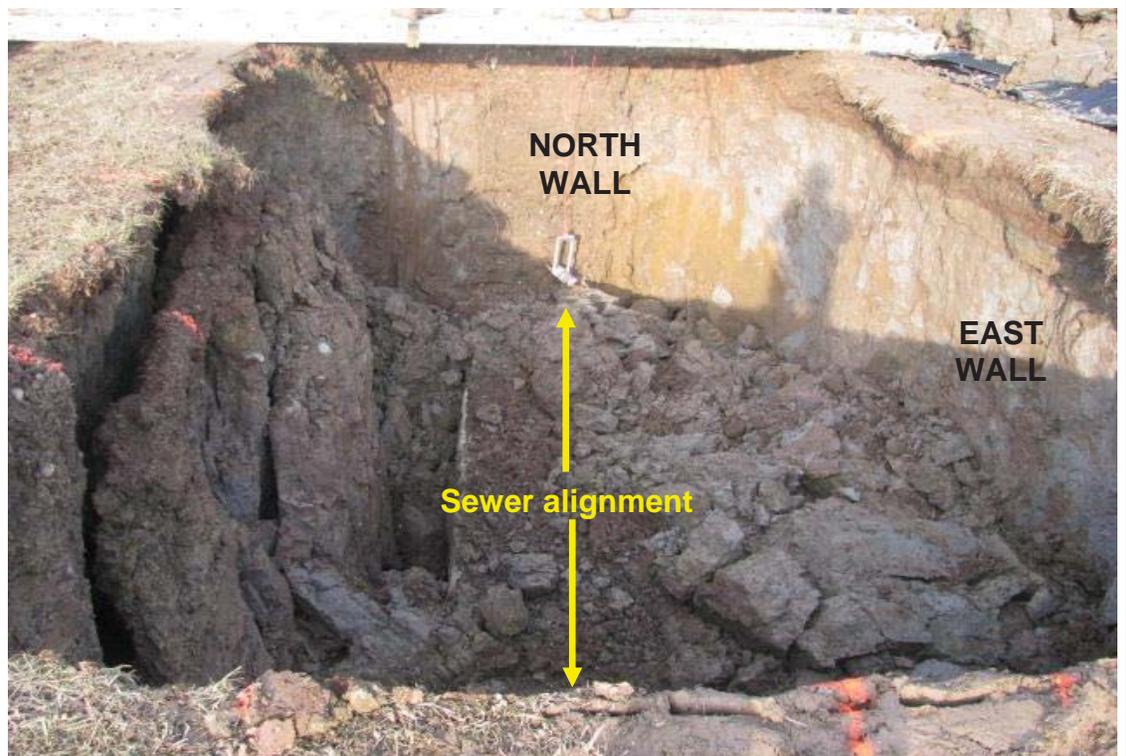


Photo No.
IE12-2

Date:
12/4/2013

Description:

Subsequent to completing IE-12, this photo was taken looking north into the trench. The photo documents the catastrophic slope failure of the overburden soil materials exposed along the excavation sidewalls. The soil materials broke along silt filled desiccation fractures.



Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE12-3

Date:
12/4/2013

Description:

Prior to lengthening the excavation, the photo documents a westward view of IE-12 showing the interior of the excavation and groundwater seeping from the top of the sewer. .

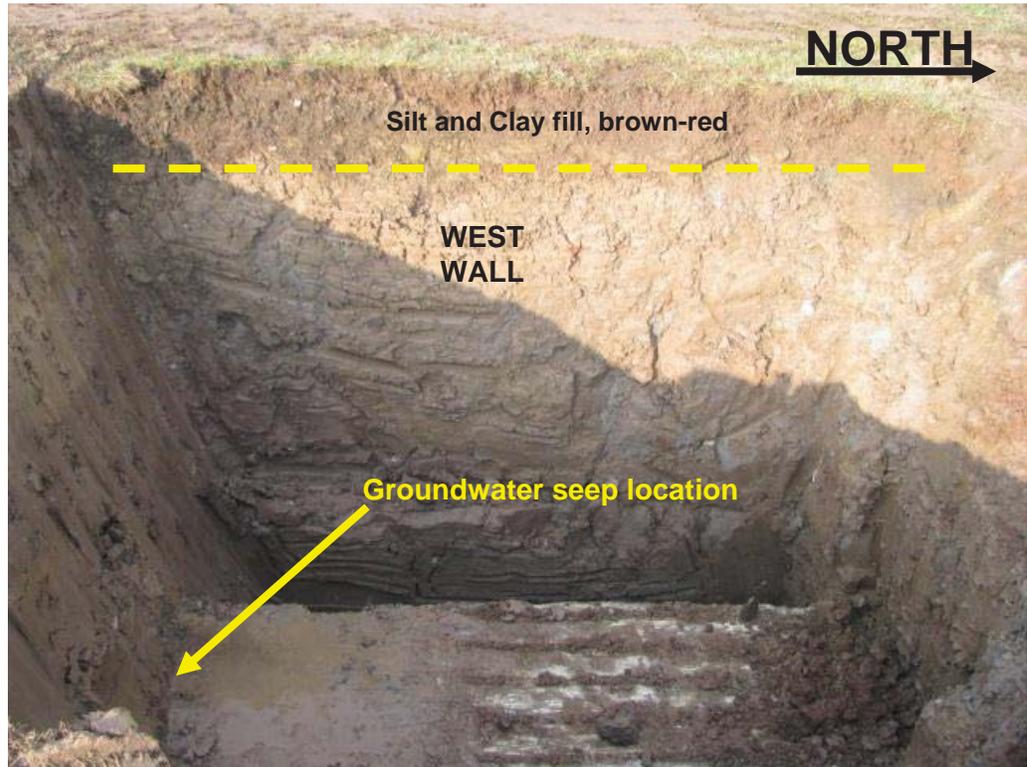
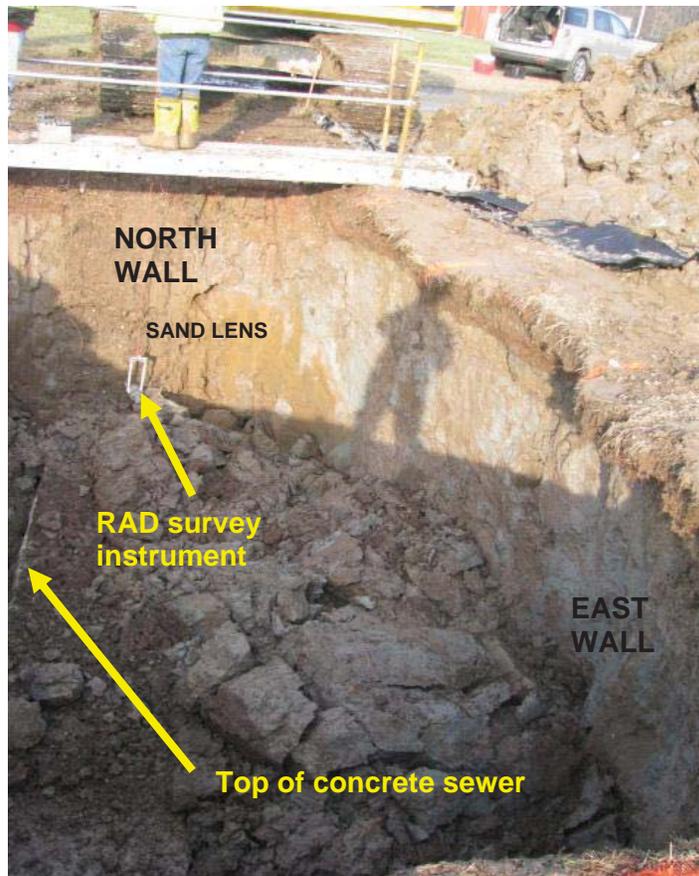


Photo No.
IE12-4

Date:
12/4/2013

Description:

A northward view of the excavation IE-12 subsequent to collapse of the east sidewall. A discontinuous orange-brown sand lens can be seen along the north wall of the excavation where the RAD survey was being performed. A soil sample (IE12-T4-6.0-7.0-2022) was collected from this sand lens.



Project: Niagara Falls Storage Site
(Lewiston, NY) BOP Field Investigation

Client: USACE
Excavation Contractor: Russo Development

Job Number:
11176781.00007

Photo No.
IE12-5

Date:
12/4/2013

Description:

A view looking north into trench location IE-12 prior to the collapse of the east west sidewalls. The photo identifies the backfill material placed subsequent to the sewer installation in addition to the orange-brown sand lens located ~5.5'-7' bgs along the north wall just above the top of the sewer. Maximum depth of the excavation was 11.5' bgs.

