GENERAL WASTE & RECYCLING, LLC SW-620 INDUSTRIAL WASTE LANDFILL

Groundwater Monitoring System Certification for CCR Regulation

Prepared For:

GENERAL WASTE & RECYCLING, LLC

Prepared by:

Northeast Technical Services, Inc. 526 Chestnut Street Virginia, Minnesota 55792

(218) 741-4290

October 11, 2017

Project Number: 6385CC

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete." I certify that this groundwater monitoring system installed at the General Waste Industrial Waste Landfill described in this report meets all requirements put forth by 40 CFR §257.91 'Groundwater Monitoring Systems.'

Evan Johnson, P.E.

Geotechnical Engineer

Minnesota License No. 53648

10-13-17

Date



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1.0 Purpose

Per CFR 257.91 Groundwater Monitoring System(the rule), CCR units a groundwater monitoring system must be installed that can accurately represent unaffected 'background' groundwater quality as well as adequately monitor for groundwater contamination that may occur in the uppermost aquifer from leakage of the CCR unit and be certified by a liscensed professional engineer (PE) as meeting CRF 257.91 requirements. The rule specifically identifies minimum requirements for hydrogeological site characterization and monitoring system requirements. This report has been prepared to demonstrate that previously conducted hydrogeological investigation and the installed groundwater monitoring system at the General Waste Industrial Waste Landfill (the landfill) site satisfy the requirements of the rule.

2.0 Site Investigation

While conducting permitting activities of the landfill in 2013, an extensive investigation was completed at the site to refine the hydrologic model of the site in preparation of the installation of a groundwater monitoring system as well as collect geotechnical data of the proposed industrial waste landfill subgrade.

2.1 Geologic Setting

2.1.1 Site Location and History

The landfill is located in the southeast quarter of Section 25, Township 57N, Range 22W, an area where the topography has been highly modified by historical iron mining. The site is bounded on the north by U. S. Highway 169, the west side of the site is bounded by a tailings basin containing hydraulic fill from Mesabi Chief Heavy Media plant which operated from 1928 to 1970 (end date is approximate) and more recently operated by Magnetation, LLC between approximate years 2011-2015. The east side of the site is bounded by Itasca County Road 571 with the south side of the containing a cell phone transmission tower, an automotive salvage yard, and other terrain that review of historical photography indicates to be native landform.

The landfill design intersects a historical mine overburden stockpile, the material for which was obtained from stripping overburden from one of the nearby iron ore open pit mines, likely the Mesabi Chief Mine located approximately 2 miles northeast of the landfill. Stripping operations in the Keewatin vicinity mines is believed to have been started circa 1913. Review of an air photo dated 1939 shows the stockpile was substantially completed by 1939.

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2.1.2 Geologic Units

Three (3) stratigraphic units have been identified for the hydrogeological conceptual model as follows:

- 1. Mine overburden stockpile unit that varies across the landfill footprint in depths ranging from 5 to 80 feet and consists of sand, silty-clayey sand, and sandy silty clay.
- 2. Native soil unit which consists of fine sand and silty sand near the top of the unit and generally grades to a silty medium grained sand with abundant gravel.
- 3. Mine tailings unit which consists of interlayered grey and black silt and fine sand sized taconite tailings. The mine tailings are approximately range from 10 to 26 feet thick and were placed in the tailings basin constructed directly to the west of the mine overburden stockpile.

2.1.3 Hydrologic Setting

An unconfined aquifer exists below the landfill, with the water table near the contact of the mine overburden stockpile unit with the native soil unit, except on the western edge of the permitted landfill boundary where the water table is within the tailings. Groundwater flow is generally to the east and southeast.

2.2 Investigation Scope

The scope of the hydrogeologicinvestigation as it relates to development of the hydrogeological model included the following:

- Refine the depth to native ground surface;
- Refine the soil descriptions of the overburden stockpile including grain size distributions;
- Collect soil descriptions and hydraulic properties of the native soil unit; and,
- Refine the water table elevations and groundwater flow in the vicinity of the new proposed industrial cell.

2.3 Completed Field Work

Twenty four (24) soil borings were advanced at the proposed landfill for the joint purposes of collecting hydrogeological and geotechnical data.

Eleven borings were installed utilizing percussion hammer methods and conducting continuous macrocore sampling. Temporary piezometers to measure groundwater were installed in seven of these borings. Boring locations GP-17 and GP-21 consisted of two nested wells (shallow and deep) to aide in assessing vertical groundwater gradien.

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An additional ten borings were installed utilizing hollow-stem auger (HSA) drill methods. Staggered split spoon sampling was conducted until the boring neared the expected native soil contact, where continuous split spoon sampling was implemented in order to accurately determine the overburden-native soil contact. Temporary piezometers were installed in seven of the HSA borings. Boring location SB-18 also consisted of two nested wells.

All obtained soil samples were visually examined to estimate the distribution of grain sizes, plasticity, organic content, moisture condition, color, presence of lenses or seams, and apparent geologic origin. In addition, laboratory testing was completed on select soil samples that included twenty-three moisture content analyses, eighteen Passing #200 sieve analyses, six grain size analyses, and two Atterberg tests. Soil samples selected for laboratory testing were taken from below the expected landfill liner subgrade elevation. The soil boring logs and laboratory testing results can be found in Appendix A and B, respectively.

Boring location, ground surface elevation, and temporary piezometer casing were surveyed. Static water levels in temporary piezometers were measured and shown to be stable.

Table 1 summarizes the coordinates, elevations, boring depth, depth to native soil, and depth to the water table obtained from the borings. The locations of the borings are presented on Figure 3 and soil boring logs are provided in Appendix B.

3.0 Hydrogeologic Model

3.1 Geologic Unit Verification

The borings completed during this investigation defined the same three lithologic units as the preliminary model with additional detail on the soil descriptions. In general, the majority of the Stockpile soils are very similar to the native soils, which is sensible given the close proximity of the stripping location.

Four (4) soil units were identified within the mine overburden stockpile as follows:

1. Undifferentiated mixture of clayey sands (SC), silty sands (SM) and occasional poorly graded sands (SP). This makes up the majority of the mine overburden stockpile and is characterized by two or more soil types in the same split spoon or macrocore sampler. The undifferentiated soils are probably a result of excavating, loading and dumping a glacial till that originally had some stratification of layering of the original soil types. Review of laboratory testing results indicated fines content ranging from 15-40%.

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- 2. Red sandy clay (CL) with varying amounts of fine sand or gravel. This soil unit was generally encountered near the top of the mine overburden stockpile on the western portion of the stockpile (eg. SB-13, SB-16, SB-19).
- 3. Brown, poorly graded sand (SP) with varying amounts of fines. This soil unit was found in pockets throughout the stockpile.
- 4. Blackish brown silt (ML). This soil unit was only identified in SB-18D near the bottom of the stockpile.

Native soil was discernable by the presence of thin layers of organic silt (OL) or peat (PT) which transitioned to a dense to very dense inter-bedded silty clayey sand with gravel (SC-SM) and poorly graded sand with gravel (SP).

Two (2) soil borings were completed in the tailings basin. The tailings are described as black silty, clayey sand (SC-SM). The bottom of the tailings basin was encountered at a depth of approximately 26 feet.

3.2 Native Ground and Landfill Subgrade

The elevation of native soil appeared to be relatively consistent at elevation 1451 - 1461above mean sea level (MSL). After excavation to proposed landfill base grades, from soil boring information, underlie the majority of the landfill. In addition, based on soil boring information, proposed landfill base grades range from 8 to 20 feet above the native soil.

3.3 Groundwater Flow

The general direction of groundwater flow based on static water levels obtained from the temporary piezometers is easterly with a southerly component. A groundwater equipotential map (contour map) with groundwater flow direction indicated is presented as Figure 4

The three (3) temporary well nests that were installed to obtained to evaluate vertical groundwater flow which indicated an upward vertical component to groundwater flow.

Recharge to the unconfined aquifer is likely provided in part by flow from the adjacent tailings basin and from infiltration through the stockpile. Discharge occurs at the ditch at the eastern property boundary. The groundwater component from the tailing basin to the west and discharge to the ditch to the east creates a stable and predictable groundwater flow direction from which a reliable detection monitoring system has been designed and installed.

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3.3.1 Seasonal Fluctuation

Evaluation of static water levels obtained from the groundwater monitoring system (MW-7, MW-3R, MW-8, and MW-9) (discussed below) have shown minimum variation over time. This is elevations of the western tailings basin and eastern ditch. The maximum change in static water level has been observed in MW-7 (upgradient well) with a variation of approximately three (3) feet. A total elevation change of approximately 35 feet occurring across the site minimizes the effect of this variation on overall groundwater flow direction.

3.4 Aquifer Thickness

Evaluation of soil boring information indicated a minimum aquifer thickness of 20-24 feet, with saturated overburden stockpile material ranging from 2 to 14 feet.

4.0 Groundwater Monitoring System

4.1 Upgradient Well

CFR 257.91 requires a minimum of one (1) upgradient well (when feasible) to monitor background groundwater quality. Monitoring well MW-7 has been installed directly west, upgradient with respect to groundwater flow, from the landfill.

4.2 Downgradient Wells

CFR 257.91 requires a minimum of three (3) downgradient wells to be installed to monitor for leakage from the CCR unit. The rule also requires justification for installing only the minimum required number of wells.

Monitoring wells MW-3R, MW-8, and MW-9 have been installed downgradient of the existing and planned CCR landfill units with the monitoring wells being located east and east-southeast of the landfill footprint. The minimum number of wells is acceptable in this occurrence due to the previously mentioned stable aquifer conditions that allow for a predictable groundwater flow direction. The existing groundwater monitoring system will remain adequate as the landfill is developed to the east, downgradient with respect to the groundwater flow. Monitoring well locations are presented on Figure 5.

Two cross sections through the landfill footprint that show the initial investigative borings, installed monitoring wells, and proposed landfill base grades have been prepared and are presented as Figures 6 and 7.

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4.3 Monitoring Frequency

CCR groundwater monitoring will be conducted semi-annually during the Spring and Fall of each year. Spring and Fall monitoring is typically performed during April and October, respectively. CCR groundwater monitoring will continue through the active life of the CCR Unit and post closure. CCR Unit post closure monitoring will be conducted for 30 years.

4.4 Future Development

As indicated above, the existing groundwater monitoring system will remain adequate as the landfill is developed. However, if future development of the landfill changes or necessitates removing an installed groundwater monitoring well, further investigation and assessment will be conducted to determine need for and locations of additional monitoring wells.

Tables

Table 1: Exploration Borehole Summary

Table 2: Monitoring Well Details

Table 1: Exploration Borehole Summary

							,		Static
Boring	Drilling					Borehole	Depth to	Native Soil	Water level
Identification	method	X	Y	Z (Ground)	(0,	•	Native soils	Elevation	(11/26/12)
	l		Borings and p	Diezometers	•	during 2012			
SB 12-1					Not drilled				
SB 12-2	Geoprobe	1621035.1	17219254.1	1488	na	21	na	na	na
SB 12-3	HSA	1621374.9	17219572.4	1511	na	67	60	1451	na
SB 12-4	HSA	1621780.6	17219468.6	1513	na	72	61	1452	na
SB 12-5	Geoprobe	1622185.8	17219540.6	1481	1482.96	25	na	na	1462.76
SB 12-6	Geoprobe	1621024.9	17219120.8	1493	1495*	29	na	na	1471.50
SB 12-7	HSA	1621209.2	17219295.6	1521	1524.73	62	na	na	1472.04
SB 12-8	HSA	1621650.4	17219280.2	1534	na	82	67	1467	na
SB 12-9	Geoprobe	1622157.4	17219276.7	1485	na	24	na	na	na
SB 12-10					Not drilled				_
SB 12-11	Geoprobe	1621080.7	17218995.9	1495	1497.23	27	na	na	1471.63
SB 12-12	HSA	1621312.5	17219181.3	1521	1523.88	59.5	na	na	1471.45
SB 12-13	HSA	1621804.4	17219141.8	1521	1524.17	66	62	1459	1464.55
SB 12-14	Geoprobe	1622208.1	17219085.3	1483	na	31	na	na	na
SB 12-15	HSA	1621230.7	17218896.7	1529	1532.99	77	76.5	1452.5	1473.77
SB 12-16	HSA	1622024.4	17218862	1521	na	77	65	1456	na
SB 12-17S	Geoprobe	1622413.6	17219760.7	1473	1477.52	20	na	na	1460.82
SB 12-17D	Geoprobe	1622413.6	17219760.7	1473	1477.84	32	17	1456	1460.91
SB 12-18S	HSA	1621731.5	17218778.2	1526	1533.09	na	na	na	1463.68
SB 12-18D	HSA	1621731.5	17218778.2	1526	1533.17	91	65	1461	1465.87
SB 12-19	HSA	1622049	17218675.9	1535	1533.46	94	83	1452	1461.92
SB 12-20	Geoprobe	1622245.9	17218682.3	1495	na	32	na	na	na
SB 12-21S	Geoprobe	1620791.5	17218390.8	1487	1489.32	15	na	na	1474.10
SB 12-21D		1620791.5		1487	1489.45	41	26	1461	1474.93
SB 12-22					Not drilled				
SB 12-23	Geoprobe	1621155.6	17218242.7	1496	na	23	na	na	na
SB 12-24	Geoprobe	1622114.7	17218284.7	1481	na	29	na	na	na
SB 12-25	HSA	1621309	17219146		na	48.5	na	na	na
SB 12-26	HSA	1620984	17219085		na	21.5	na	na	na

X,Y Coordinates in UTM NAD 83 (feet) Elevations in feet above mean sea level (NAVD88) Depths in feet

^{*} estimated rise relevation.

Table 2: Monitoring Well Details

	MW	/-3R	MV	V-7	MV	V-8	MW-9			
MDH Unique Well #	797	239	817	979	817	978	817	980		
Northing (UTM NAD83)	52483	32.87	524844	49.356	52482	71.719	52484	74.904		
Easting (Zone 15 Meters)	49420	67.27	49402	4.588	49445	51.676	49469	5.922		
Installation Date	9-Ju	ıl-15	9/30/	2016	9/29,	/2016	9/30,	/2016		
Ground Elev. (ft)	1530	0.10	1493	3.62	149	1.63	145	2.93		
Riser Top Elev. (ft)	153	2.29	1490	6.13	149	4.41	145	4.72		
Total Depth (ft)	75	5.0	26	5.6	41	l.3	18.9			
Screened Interval (ft)	65-	-75	16.6	26.6	31.3	41.3	8.9	18.9		
Screened Elevation	1465.10	- 1455.10	1477.02 -	1467.02	1460.33	- 1450.33	1444.03	- 1434.03		
Date of Measurement	Static Level	GW Elev.	Static Level	GW Elev.	Static Level	GW Elev.	Static Level	GW Elev.		
Date of Measurement										
17-Apr-17	61.95	1470.34	17.93	1478.2	30.18	1464.23	10.98	1443.74		
8-May-17	61.82	1470.47	16.16	1479.97	29.72	1464.69	10.62	1444.1		
20-Jun-17	61.56	1470.73	17.97	1478.16	29.6	1464.81	11.11	1443.61		
11-Jul-17	61.57	1470.72	18.32	1477.81	29.84	1464.57	11.4	1443.32		
1-Aug-17	61.74	1470.55	18.95	1477.18	30.21	1464.2	11.5	1443.22		
16-Aug-17	61.90	1470.39	19.34	1476.79	30.53	1463.88	11.53	1443.19		
18-Sep-17	61.89	1470.40	18.85	1477.28	30.74	1463.67	10.84	1443.88		

FIGURES

FIGURE 1: PROJECT LOCATION MAP

FIGURE 2: GEOLOGIC UNIT IDENTIFICATION

FIGURE 3: BORING LOCATION MAP

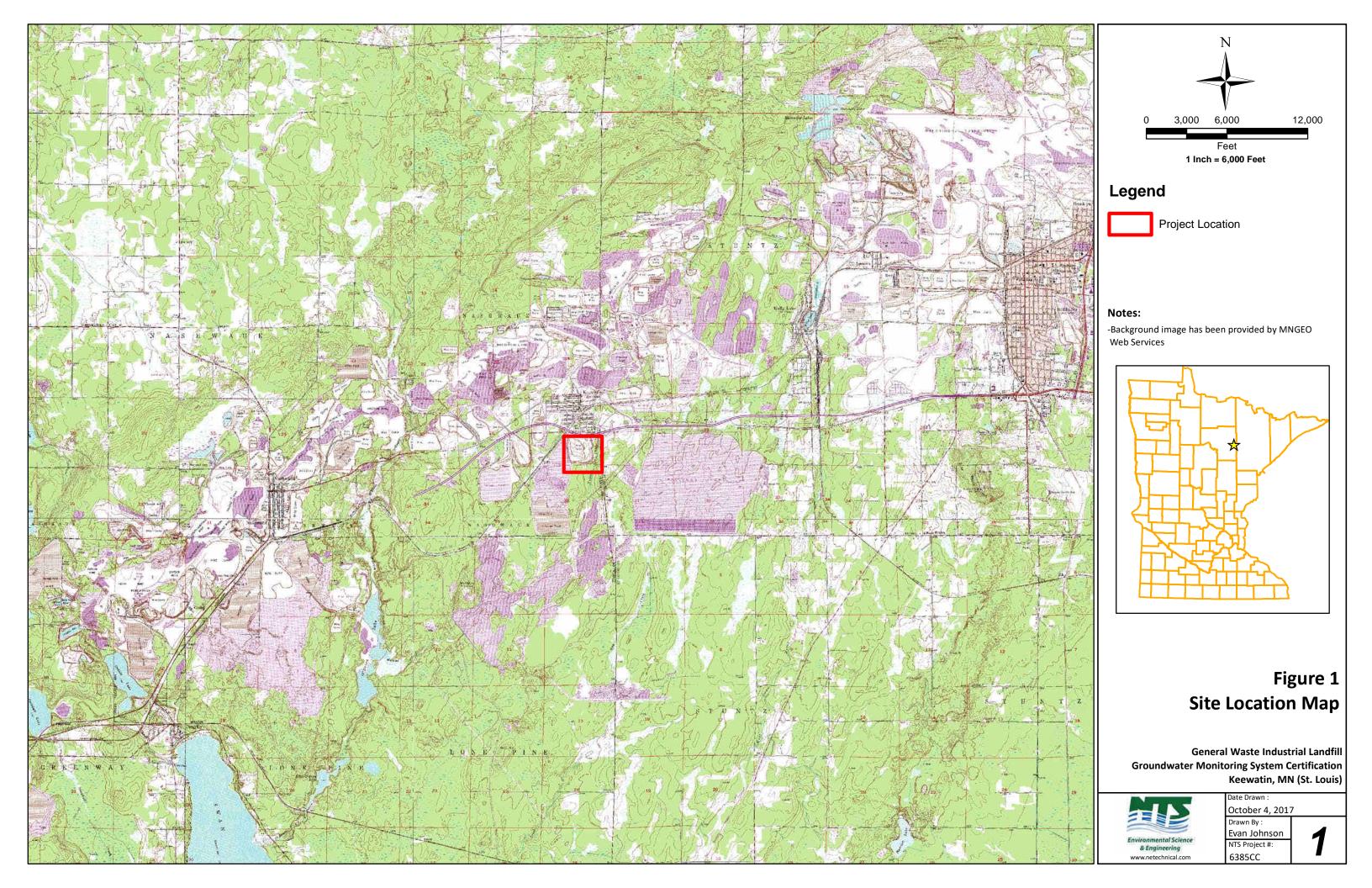
FIGURE 4: GROUNDWATER CONTOUR MAP

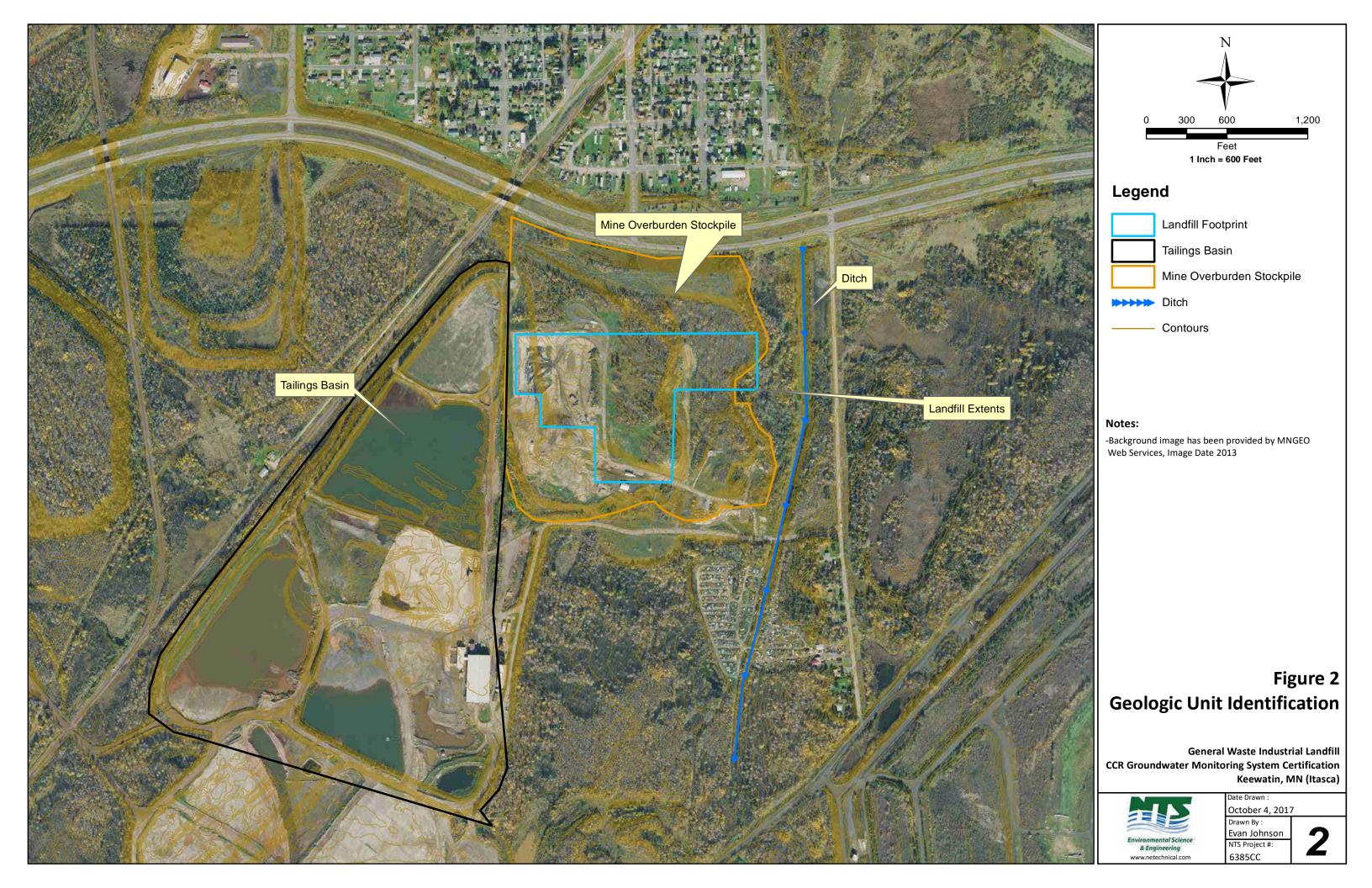
FIGURE 5: GROUNDWATER WELL MONITORING

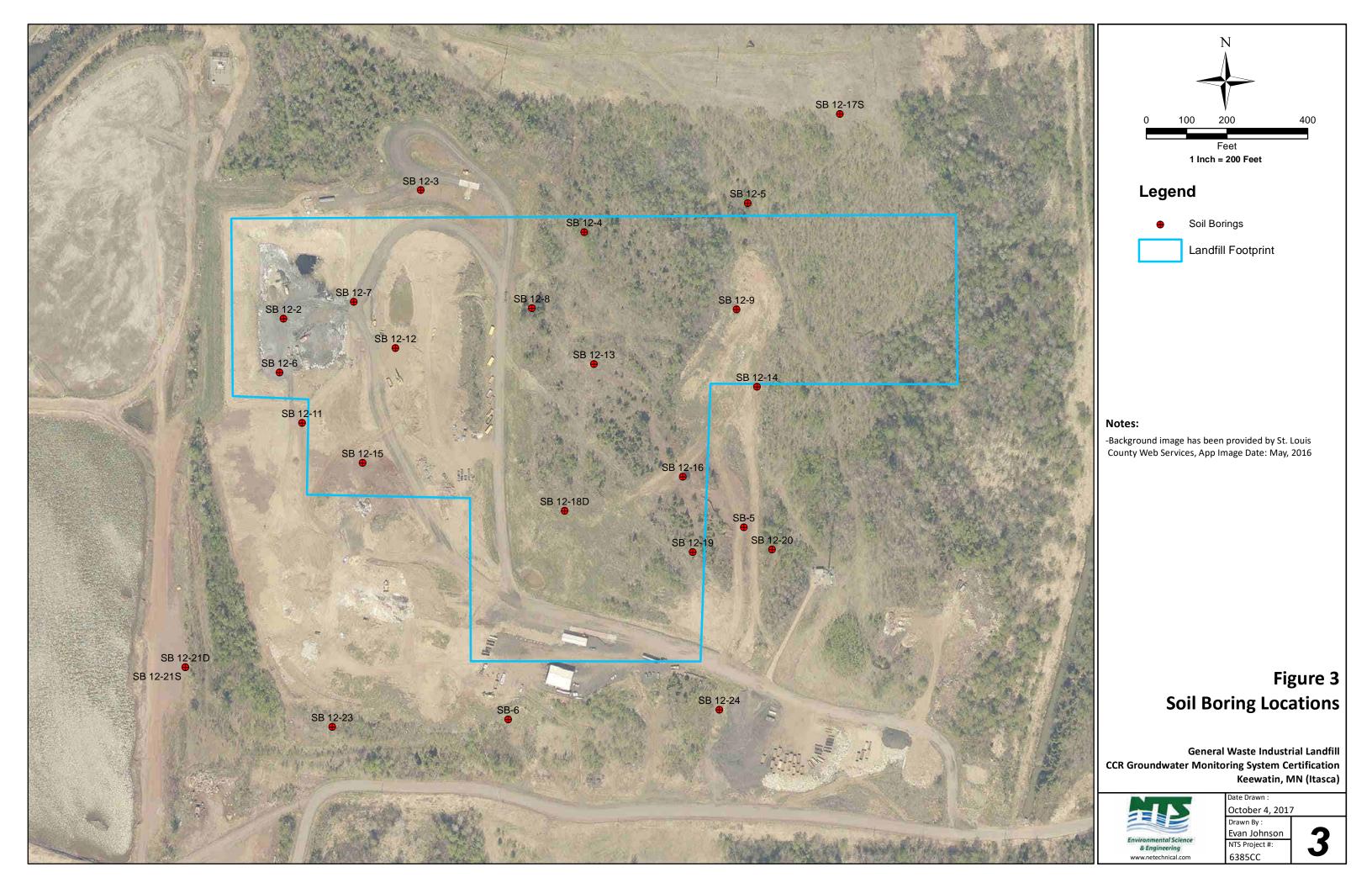
LOCATIONS FIGURE 6: CROSS SECTION LAYOUT

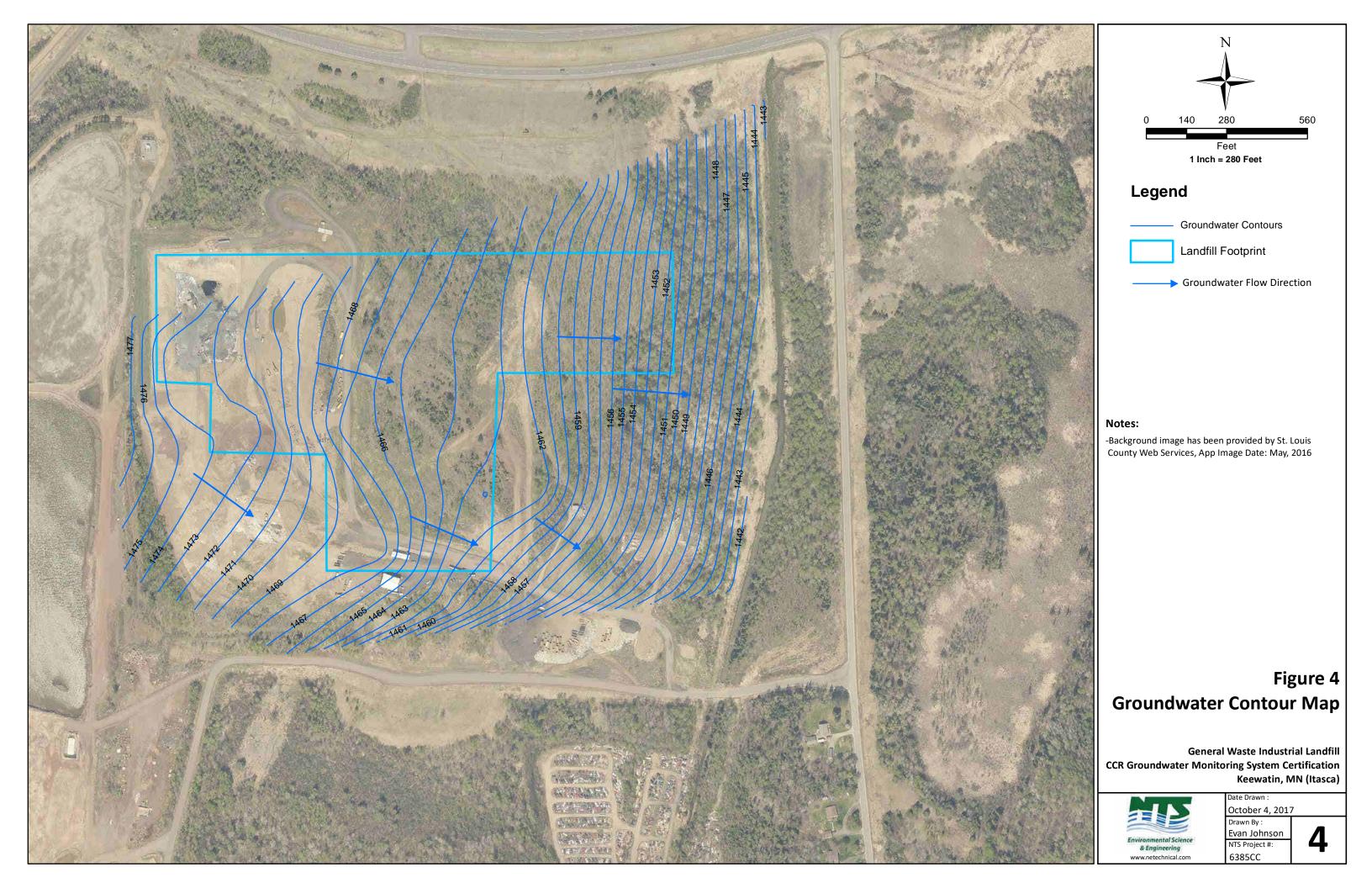
FIGURE 7: CROSS SECTION A-A'

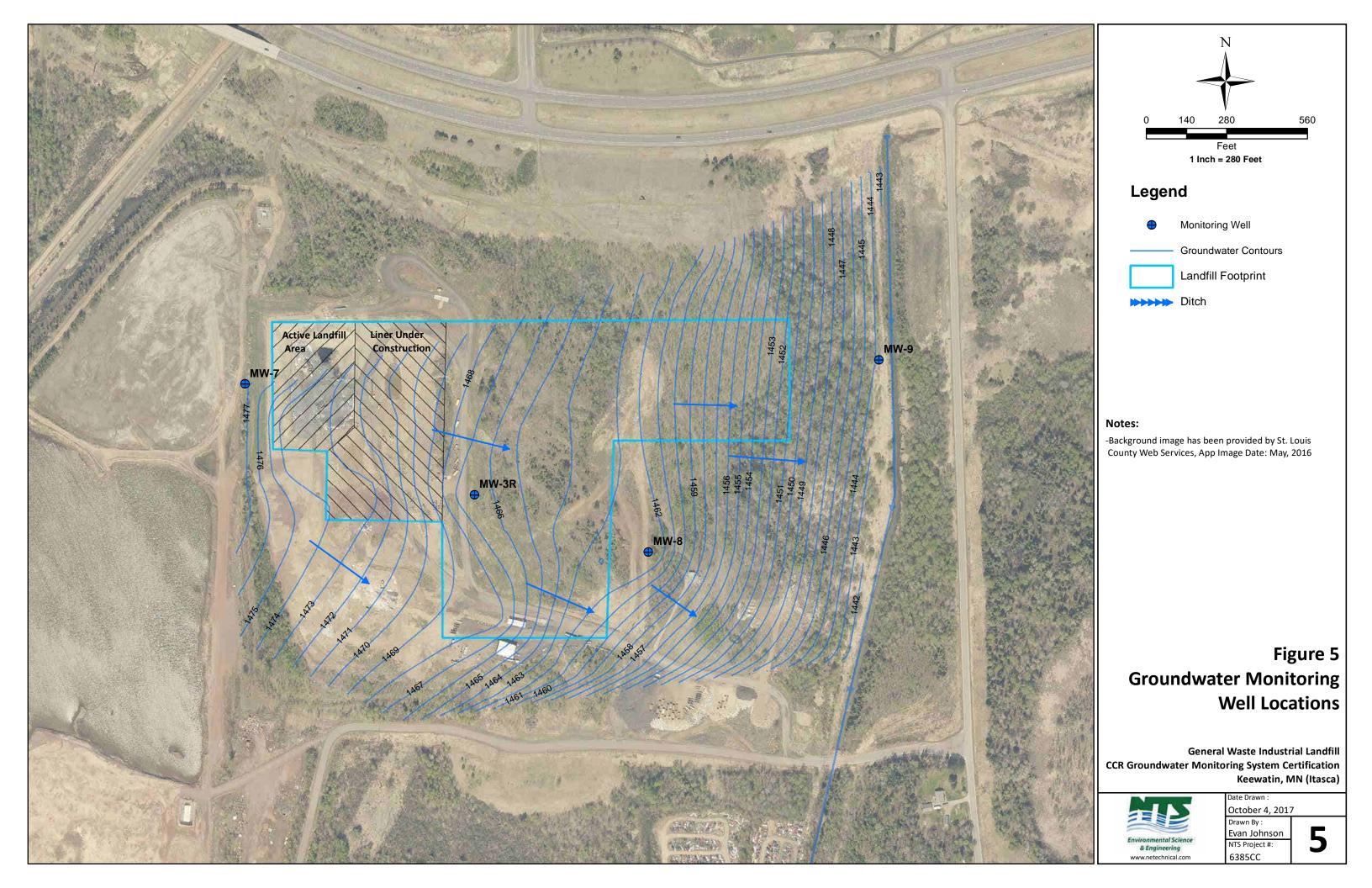
FIGURE 8: CROSS SECTION B-B'

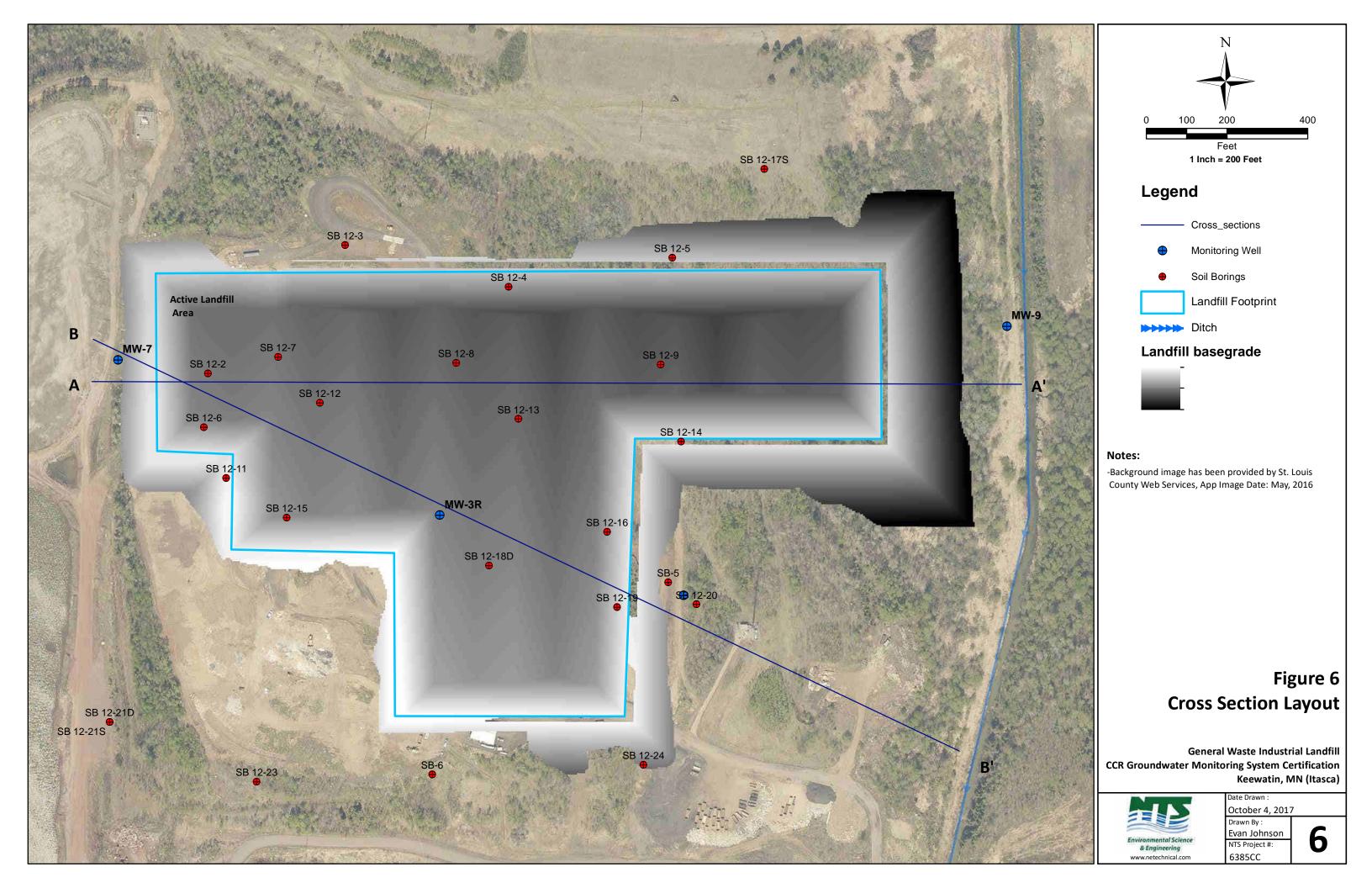












Northeast Technical Services, Inc. 526 Chestnut St. Virginia, MN 55734 (218)-741-4290 ILENT General Waste Disposal & Recovery Services ROJECT NUMBER 6385C	DRO JECT NAME General Wasto	USCS Low Plasticity Silty USCS Silty Sand USCS Clayey Sand USCS Poorly-graded Sand
1,530 1,530 SB12-12 SB12-08 (11) (14) (6) (7) (6) (7) (6) (11) (12) (11) (17) (18) (17) (18) (17) (11) (10) (17) (11) (17) (18) (17) (11) (11) (12) (11) (12) (11) (12) (11) (12) (11) (12) (11) (12) (13)	PROJECT LOCATION Keewatin, Minnesota 400 500 3B12-13 (11) (4) (6) (6) (9) (8) (8) (12) (17) (21) (17) (21) (9) (9)	600 700 800 1,53 1,53 1,55 1,55 1,56 1,46 MW-9
1,440 (33)		1,44
1,430 0 100 200 300	400 500	600 700 800

526 Ches Virginia, N **Engineering** (218)-741	MN 55734 1-4290 ste Disposal & Recovery Services			SUB: CT NAME General Waste CT LOCATION Keewatin, Minr	SURFACE DIAGRAM Cross Section B - B'	USCS Silty Sand USCS Poorly-graded Sand with Clay	USCS Clayey Sand	SCS Low Plasticity Silty clay ISCS Well-graded Sand ISCS Poorly-graded San ISCS Silt
1,540	100	200	300	400	500	600	700	800
1,530	^	SB12-12	MW-3R SB	12-18D	SB12-19			1,530
1,520		(15)		(13) (30) (SB12-1	(11)			1,520
1,510		(6) (7)	2000 000 000 000 000 000 000 000 000 00	(9) (17) (5) (11)	(10)			1,510
(II) 1,500 MW		(27) (11)		(12)	(9) SB12-20 (10) MW-8			1,490
1,480	▼	(13)			(10) (10) (10) (5) (13)			1,480
1,470		(18) (17) (17) (11)		(20) (20) (14) \(\sum_{\sum}\)	(13)			1,470
1,460		(11)		(17) (95) (40) (56) (58)	1) (13) (20) (8) (15) (18) (18)			1,460
1,440				(120)	(18) (18) (32) (37) (86)			1,440
1,430	100	200	300	400	500	600	700	1,430

APPENDIX A BORING LOGS

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290

BORING NUMBER SB12-02

PAGE 1 OF 1

Telephone: 1-218-741-4290
Fax: 1-218-741-4291

CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota

DATE STARTED 10/18/12 COMPLETED 10/18/12 GROUND ELEVATION 1494 ft HOLE SIZE 2 inch

DRILLING CONTRACTOR NTS GROUND WATER LEVELS:

DATE	STARTE	D 10	/18/12	ROUND	ELEV	/ATION _14	94 ft		HOL	E SIZ	E 2 ir	nch
DRIL	LING CON	NTRAC	TOR NTS 0	GROUND	WATI	ER LEVELS	:					
	LING MET				TIME	OF DRILLIN	IG					
LOG	GED BY _	R. Fos	ssell CHECKED BY J. Holmes	AT	END (OF DRILLIN	G					
NOTE	ES 40's F	; rainy		AF"	TER D	RILLING						
DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC TIMIT LIMIT	}	FINES CONTENT (%)	WELL DIAGRAM
	MC		(SC-SM) Silty clayey sand, medium stiff, brown to g		50					Ы	正	
- 10	МС				50		8				37	
10	MC				50							
	MC MC				50 75							
20	MC		Bottom of borehole at 21.0 feet.		100							
EVANS - GIN I US.GDI - 2/773 17:23 - P./GIN I GIN I SEKVEK U3/PKOJEC I S/0389E GENERAL WAS I E.GFU												

EVANS - GINT US.GDT - 2/7/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fax: 1-218-741-4291

BORING NUMBER SB12-03 PAGE 1 OF 1

Fax. 1-210-741-4291							
CLIENT General Waste Disposal & Recovery Services	PROJECT NAME SW-620						
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota						
DATE STARTED _10/17/12 COMPLETED _10/17/12	GROUND ELEVATION 1512 ft HOLE SIZE 4 inch						
DRILLING CONTRACTOR STS	GROUND WATER LEVELS:						
DRILLING METHOD 4 1 4" HSA	\overline{Y} AT TIME OF DRILLING 45.50 ft / Elev 1466.50 ft						
LOGGED BY _J. Holmes CHECKED BY	AT END OF DRILLING						

LOGGED BY J. Holmes CHECKED BY											
NOTE	S <u>39 F;</u>	cloudy	<u></u>	AFTER D	RILLING _						
o DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC FINIT	S 	FINES CONTENT (%)	WELL DIAGRA
1.1.1	× ss		(SM) Silty Sand with gravel, brown, dry, some fines, little gravel, Mine Overburden	75	6-8-8-8 (16)						
10 -	× ss			75	5-4-4-5	13				35	
20 -	X SS		(SP-SC) Sand with silty clay, brown, moist, fine to medium grained sand, Mine Overburden	88	3-4-4-4 (8) 4-5-5-6						
-			(SC-SM) Silty clayey sand, brown, moist, fine to medium	75	(10) 5-5-6-7 (11)						
30 _	⊠ ss		grained sand, some fines, few gravel, Mine Overburden	88	4-5-5-6						
- 40	⊠ ss			100	4-5-5-6 (10)	9				32	
-	X SS X SS		(SP-SM) Sand with silt, brown to 55 feet, gray from 55 to	75	5-6-8 (14) 4-4-5-5	<u> </u>					
50 -	X ss		60 feet, wet, fine to medium grained sand, few fines, few gravel	50	5-5-6 (11)						
- - 60	X ss			63	3-2-1-1						
1 1	X ss	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(OL) Peat, black, wet, Native Ground Surface (SP-SC) Sand with silty clay, grey, wet, few fines, few gravel	88	5-8-9-11 (17)						
_	⊠ ss		Bottom of borehole at 67.0 feet.	100	4-11-23-27 (34)						

BORING NUMBER SB12-04

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Northwest Technical Services	Telephone: 1-218-741-4290 Fax: 1-218-741-4291		
CLIENT Ger	neral Waste Disposal & Recovery Services	PROJECT NAME	SW-620

NOTES 51 F H (#) NOTES 51 F WAMPIE 1APE SS NOTES 51 F NOTES 51 F SS SS SS SS SS SS SS SS SS	F; rainy OHAPHIC FOR THE PROPERTY OF THE PRO	MATERIAL DESCRIPTION (SP-SC) Sand with clay and gravel, red to brow Mine Overburden (SC-SM) 19 % gravel, 50 % sand, 31 % fines S sand with gravel, grey to brown, moist, some fire	SAFTE % AWU No Oo U R No moist, 1 8 8 11	ER DR	F DRILLING	RE	ATT I	PLASTIC INT LIMIT SABB		FINES CONTENT (%)	WELL DIAGRA
O O O O O O O O O O O O O O O O O O O	GRAPHIC LOG	(SP-SC) Sand with clay and gravel, red to brow Mine Overburden (SC-SM) 19 % gravel, 50 % sand, 31 % fines S sand with gravel, grey to brown, moist, some fire	3, moist, 8	13 88 88	MOTOR STATE OF THE PROPERTY OF		L	LIMITS	3	FINES CONTENT (%)	WELL DIAGRA
0 SS SS SS SS SS SS SS	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	(SP-SC) Sand with clay and gravel, red to brow Mine Overburden (SC-SM) 19 % gravel, 50 % sand, 31 % fines S sand with gravel, grey to brown, moist, some fire	n, moist, 1 8 11	13 88 88	4-5-5-5 (10) 2-2-3-4 (5) 2-3-3-3 (6)	MOISTURE CONTENT (%)	L	LIMITS	3	FINES CONTENT (%)	WELL DIAGRA
10 SS SS 20 SS 30 SS 40	S S S S S S S S S S S S S S S S S S S	(SC-SM) 19 % gravel, 50 % sand, 31 % fines S sand with gravel, grey to brown, moist, some fire	8	88	(10) 2-2-3-4 (5) 2-3-3-3 (6) 2-3-3-3						
10 SS SS 20 SS 30 SS 40	S S S S S S S S S S S S S S S S S S S	(SC-SM) 19 % gravel, 50 % sand, 31 % fines S sand with gravel, grey to brown, moist, some fir	8	88	(10) 2-2-3-4 (5) 2-3-3-3 (6) 2-3-3-3						
10 SS SS 20 SS 30 SS 40	S S S S S S S S S S S S S S S S S S S	sand with gravel, grey to brown, moist, some fir	8	88	(10) 2-2-3-4 (5) 2-3-3-3 (6) 2-3-3-3						
SS	5	sand with gravel, grey to brown, moist, some fir	110	88	(5) 2-3-3-3 (6) 2-3-3-3						
20 SS 	8	sand with gravel, grey to brown, moist, some fir	10		2-3-3-3 (6) 2-3-3-3						
20 SS 	8	sand with gravel, grey to brown, moist, some fir	10		2-3-3-3						
SS 	5	sand with gravel, grey to brown, moist, some fir	10	100		1					
30 SS SS 40		sand with gravel, grey to brown, moist, some fir	Ity clavey		(0)						
30 SS - SS 40		sand with gravel, grey to brown, moist, some fir	Ity clavey	100	3-4-6-8						
- SS - SS 40	5		es. little	_	(10)						
40		gravel, Mine Overburden		13	4-6-9 (15)						
40				13	16-8-6						
				13	(14)						
ss	3		6	63	6-8-8 (16)						
50 - SS	5		7	75	9-9-9-9 (18)	10				31	
∑ ss	S (2.4.1)	No Recovery		13	6-8-8 (16)						
- - ss		$\ensuremath{f y}$ (SC-SM) 12 % gravel, 59 % sand, 29 % fines S sand, brown, wet, fine to medium grained sand,	little –	75	3-6-6	13				29	
60	• //	fines, few gravel	/	/5	(12)	13				29	
∑ ss	S (11)	─ (OL) Peat, black, wet, Native Ground Surface	7	75	5-15-15 (30)						
- - X SS	_	(SP-SC) Sand with silty clay, brownish grey, we to coarse grained sand	t, medium	75	20-25-30						
70 35		to coarse grained sand	/	75	(55)						
× ss	S	(SP) Sand, brown, wet, medium grained	10	100	6-7-7-8 (14)						
		Bottom of borehole at 72.0 feet.			,						

BORING NUMBER SB12-05

Telephone: 1-218-741-4290 Fax: 1-218-741-4291 CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota **DATE STARTED** <u>10/17/12</u> **COMPLETED** 10/17/12 GROUND ELEVATION _1479 ft HOLE SIZE _2 inch

	SIARIE								. 1101	LE 312	<u> </u>	IIGH
DRILLI	NG CON	NTRAC	TOR NTS									
DRILLI	NG MET	HOD _	MC	AT	TIME	OF DRILLIN	NG					
LOGGE	ED BY _	R. Fos	sell CHECKED BY J. Holmes	AT	END (OF DRILLIN	G					
NOTES	40s F	; over	cast	₹ AF	TER D	RILLING _	19.70 f	/ Elev	v 1459	.30 ft		
					%		1	AT7	TERBE	ERG	_	
DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY 9 (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WELL DIAGRAN
0			(SP-SC) Sand with silty clay and gravel, brown, r	noist.						₫.	됴	Casing Top Elev: 1482.96 (ft)
- 7	MC		few fines, little gravel	,	75							
10	MC				50							- Grout
- 10	MC				0							Benton
1	МС		(CD CC) Cond with aith along and arrayal branch		75							- Bentor Seal
20	MC		(SP-SC) Sand with silty clay and gravel, brown, v $\underline{\underline{\mathbf{y}}}$ fines, little gravel	vet, iew	50							- Sand Pack
1	МС				50							Fack
	МС		Bottom of borehole at 25.0 feet.		25							
						l			1	1	1	I .

BORING NUMBER SB12-06
PAGE 1 OF 1

virginia, ivii	•
Telephone:	1-218-741-4290
Fax: 1-218-	741-4291

	CLIEN	NT Gene	ral Wa	aste Disposal & Rec	overy Services	PROJEC	T NAN	ME SW-620)						
		ECT NUN			•		T LOC	ATION Ke	ewatin	, Minn	esota				
	DATE	STARTE	D 10	/18/12 C	OMPLETED 10/18/12	GROUNE	ELE\	VATION 14	94 ft		HOL	E SIZ	E 2 iı	nch	
	DRILL	ING CON	ITRAC	TOR NTS		GROUNE	WAT	ER LEVELS	:						
	DRILL	ING MET	HOD	MC		AT	TIME	OF DRILLIN	IG						
	LOGG	SED BY _	R. Fos	ssell C	HECKED BY J. Holmes	_ A T	END	OF DRILLIN	G						
	NOTE	S 40s F	; rainy	<i>'</i>		AF	TER D	RILLING	-						
Ī		Й					%		@		ERBE		L N		
	Ε	SAMPLE TYPE NUMBER	GRAPHIC LOG				RECOVERY (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		()	≥	FINES CONTENT (%)		
	DEPTH (ft)	PLE	Z Z Z Z Z	MA	ATERIAL DESCRIPTION		NS INC.	NAL VAL	TST TEV	LIQUID	PLASTIC LIMIT	PLASTICITY INDEX	88	WELL	DIAGRAM
		NA.	ਹ				- AEC	_os	MAN	르은	PLA LII	LAS	NES	Casing T	on Flev:
-	0	0,	::::12:7	(CD CC) Cand u	ith ailty aloy and grayal brown	to aroviob						П	正	Casing To 1491.95 (ft)
-		MC		brown, moist, fe	vith silty clay and gravel, brown w fines, little gravel, fill material	to greyish	38								
	- - 	МС					38								- Grout
-	10	МС		(SC) Clayey san	nd with gravel, brown to greyishes, little gravel, fill material	brown,	38								
		МС		moist, some ime	es, iittie gravei, iiii materiai		75								-Bentonite
	 - 20	мс					75		11				47		Seal
	_	мс					75								-Sand Pack
		МС		(SC) Clayey sar wet, some fines	nd with gravel, brown to greyish , little gravel, fill material	brown,	100								
ŀ					Refusal at 29.0 feet.										
				Bot	ttom of borehole at 29.0 feet.										
E.															
TE.G															
GENERAL WASTE.GPJ															
ERAL															
3385E															
CTS/(
ROJE															
03/P															
ZVER															
T SEF															
NGIN															
GIN															
23 - P															
3 17:2															
2/7/1															
3DT-															
T US.C															
GIN															
EVANS - GINT US.GDT - 2/7/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E															
回															

Northeas 526 Che Virginia,

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fay: 1-218-741-4291

BORING NUMBER SB12-07

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Fax: 1-218-741-4291			
CLIENT General Waste Disposal &	Recovery Services	PROJECT NAME SW-620	
PROJECT NUMBER 6385E		PROJECT LOCATION Keewatin, Min	nesota
DATE STARTED 10/16/12	COMPLETED 10/16/12	GROUND ELEVATION 1522 ft	HOLE SIZE 4 inch
DRILLING CONTRACTOR STS		GROUND WATER LEVELS:	
DRILLING METHOD 4 1 4" HSA		AT TIME OF DRILLING	
LOGGED BY J. Holmes	CHECKED BY	AT END OF DRILLING	

(SP) Sand with gravel, brown to red, dry, little gravel, trace fines, Mine Overburden 13 7-7-7-7 (14)	
MATERIAL DESCRIPTION (#) O (SP) Sand with gravel, brown to red, dry, little gravel, trace fines, Mine Overburden (SP) Sand with gravel, brown to red, dry, little gravel, trace fines, Mine Overburden 13 7-7-7-7 (14) 13 7-7-7-7 (14)	WELL DIAGRAM (%) WELL DIAGRAM
(SP) Sand with gravel, brown to red, dry, little gravel, trace fines, Mine Overburden 13 7-7-7-7 (14)	WELL DIAGRAM WELL DIAGRAM Casing Top Elev: 1524.73 (ff)
(SP) Sand with gravel, brown to red, dry, little gravel, trace fines, Mine Overburden 13 7-7-7-7 (14)	Casing Top Elev: 1524.73 (ft)
trace fines, Mine Overburden 13 7-7-7-7 (14)	
(14)	
10 SS 63 4-4-4 (8)	
SS 88 3-3-3-4	
20	
SS 88 3-3-3-3 (6)	- Grout
SS (SC) Clayey sand with gravel, brown, dry, some fines, little gravel, Mine Overburden	
30 SS 13 7-7-7-7 (14)	
SS 100 4-5-6-8	
40	
SS (SP) Sand with gravel, brown, moist, little gravel, trace 63 (25-15-7-7 (22))	- Bentonit
(SC) Clayey sand with gravel, brown, moist, some fines, little gravel, Mine Overburden	Seal
50 X SS (15) (15) (15) (15) (15) (15) (15) (15)	- Sand Pack
(SP) Sand with gravel, brown, wet, trace fines, little gravel, Mine Overburden (SP) Sand with gravel, brown, wet, trace fines, little gravel, Mine Overburden 100 3-4-4-5 (8) 100 3-4-4-5 12	36
0 SS	
SS (SP-SC) Sand with silty clay, brown, wet, few fines 100 4-4-5-6 (9)	

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fax: 1-218-741-4291

BORING NUMBER SB12-08 PAGE 1 OF 1

1 ax. 1-210-741-4291	
CLIENT General Waste Disposal & Recovery Services	PROJECT NAME SW-620
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota
DATE STARTED 10/17/12 COMPLETED 10/18/12	GROUND ELEVATION 1522 ft HOLE SIZE 4 inch
DRILLING CONTRACTOR STS	GROUND WATER LEVELS:
DRILLING METHOD 4 1 4" HSA	\overline{Y} AT TIME OF DRILLING 60.00 ft / Elev 1462.00 ft
LOGGED BY J. Holmes CHECKED BY	AT END OF DRILLING
NOTES 46 F; rainy	AFTER DRILLING

	GED BY ₂ ES <u>46 F</u> ;		CHECKED BY		OF DRILLIN						
O DEPTH (ff)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC STIMIT CIMIT	PLASTICITY SA INDEX	FINES CONTENT (%)	WELL DIAGRAM
			(SP-SC) Sand with clay and gravel, red to brown, dry, Mine Overburden								
	ss			75	4-5-6 (11)						
_ 10	× ss			75	10-8-6-6 (14)						
	X ss	-		63	4-4-5-5 (9)						
20	X ss		(CL) Sandy clay, grey, moist, some sand, trace gravel, Mine Overburden	100	2-2-4-4 (6)						
	ss			100	3-3-3-3 (6)						
30	X ss		(SP-SC) Sand with clay, brown to grey, moist, little gravel, few fines, Mine Overburden	88	3-4-6-7 (10)						
- 10	ss			75	4-5-6-7 (11)	-					
40 	× ss			75	4-6-7-8 (13)	1					
VER 03/PROJECTS\63886 GENERAL WASTE.GPJ	× ss			50	5-8-9-11 (17)	1					
05 RA	X ss			100	5-8-10-11 (18)	1					
CTS/6385F	× ss	V	(SP) Sand with gravel, brown to grey, wet, fine to medigrained	um 75	4-4-4-6 (8)						
NPROJEC	X ss		(SC-SM) Silty clayey sand, grey, wet, rock chips, little fines, few gravel	75	4-5-7-7 (12)						
3VER 03	ss		(SC-SM) Silty clayey sand, grey to brown, moist, some	100	4-5-6-7 (11)						
70	X ss		fines, Native Ground Surface encountered at 67 feet	75	7-9-15 (24)	14				47	
P:\GiNT	ss			88	11-15-18-25 (33)	1					
EVANS - GINT US.GDT - 277/13 17:23 - P.(GINT/GINT SER) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	× ss	(A)	(SP) Sand with gravel, brown, wet, fine to medium grained, trace fines, little gravel Bottom of borehole at 82.0 feet.	75	13-16-19-25 (35)						
EVANS - GINT U											

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290

BORING NUMBER SB12-09

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Telephone: 1-218-741-4290
Fax: 1-218-741-4291

CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota

DATE STARTED 10/17/12 COMPLETED 10/17/12 GROUND ELEVATION 1484 ft HOLE SIZE 2 inch

DRILLING CONTRACTOR NTS GROUND WATER LEVELS:

I	DATE	STARTE	ED _10	/17/12		D 10/17/12	GROUNI) ELE	/ATION _14	84 ft		HOI	LE SIZ	E 2 ii	nch
ı	DRILL	ING COI	NTRAC	TOR NTS			GROUNI) WAT	ER LEVELS	i :					
l	DRILL	ING ME	THOD	4 1 4" HSA			$ar{ar{ar{ar{ar{ar{ar{ar{ar{ar{$	TIME	OF DRILLIN	IG <u>23</u>	8.00 ft	/ Elev	1461.	00 ft A	pproximate
ı	LOGG	ED BY	R. Fos	ssell	CHECKED	BY J. Holmes	A1	END (OF DRILLIN	G					
ı	NOTE	S 40s F	; over	cast			AF	TER D	RILLING _						_
T		111						.0			ATT	ERBE	RG	F	
	O DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG		MATERIAL I	DESCRIPTION		RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	_	FINES CONTENT (%)	WELL DIAGRAM
F	1 1	МС		(SC-SM) Si fines, some		d with gravel, brow	n, moist, little	50							
-	10	MC						50							
-	10 _	MC						50							
	-	MC MC						38 75							
-	20 -	MC		∇				0							
	-		1	(SP-SC) Sa fines, some	gravel Refusa	ay and gravel, bro Il at 24.0 feet. Irehole at 24.0 fee									
3PJ															
ECTS/6385E GENERAL WASTE.GPJ															
SENERAL															
%6385E															
ROJECTS															
ER 03/PF															
IT SERV															
GINT\GIR															
7:23 - P:\															
2/7/13 1															
EVANS - GINT US.GDT - 2/7/13 17:23 - P:\GINT\GINT SERVER 03\PROJ															
3-GINT L															
EVANS															

BORING NUMBER SB12-11

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Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fax: 1-218-741-4291

	CLIEN	NT Gene	eral Wa	aste Disposal & Recovery Services	PROJEC	T NAN	ME SW-620)						
				_6385E		T LOC	ATION Ke	ewatin	, Minn	esota				
Ī	DATE	STARTE	D 10	0/18/12 COMPLETED 10/18/12	GROUNE	ELE\	VATION 14	96 ft		HOL	E SIZ	E 2 ir	nch	
	DRILL	ING CON	ITRAC	CTOR NTS	GROUNE	WAT	ER LEVELS	:						
		ING MET				TIME	OF DRILLIN	IG						
	LOGG	SED BY _	R. Fos	ssell CHECKED BY J. Holmes			OF DRILLIN							
	NOTE	S 40's F	; rain	у	AF	TER D	RILLING	-						
t		111				.0				ERBE		F		
	_	SAMPLE TYPE NUMBER	೨			% \ \ \ (ZS (E)	MOISTURE CONTENT (%)		IMITS	} >-	FINES CONTENT (%)		
	DEPTH (ft)	LE I	PH 06	MATERIAL DESCRIPTION		H B	AE P		₽⊢	T	SH	(%)	WELL	DIAGRAM
	8	A S	GRAPHIC LOG			RECOVERY (RQD)	BLOW COUNTS (N VALUE)	Š K	LIQUID	PLASTIC LIMIT	STI NDE	ES (
	0	\S				 		20		Ы	PLASTICITY INDEX	FIN	Casing To 1497.23 (op Elev: ff)
Ī		мс		(SP-SC) Sand with silty clay and gravel, brow few fines, little gravel, fill material	n, moist,	38							W W	•
ŀ		$\overline{}$		iew ililes, illile graver, illi material										
	- - ,	MC				25								- Grout
-	10	MC		(SC) Clayey sand with gravel, brown, moist, s stiff, some fines, little gravel, fill material	stiff to very	63							X	
		мс		Sun, Some intes, fittle graver, illi Material		100								- Donto-:4-
+		$\overline{}$				00	-							-Bentonite Seal
	20	MC				88		11				47		
ŀ		MC		(SC) Clayey and with gravel brown wat as	ma finas	75		11				47		-Sand Pack
		мс		(SC) Clayey sand with gravel, brown, wet, so little gravel, fill material	me imes,	50								
				Bottom of borehole at 27.0 feet.										
2														
TE.GF														
GENERAL WASTE.GPJ														
RAL														
SENE														
385E (
TS/63														
SUEC														
3/PR(
ÆR 0														
SER\														
SINT														
)\TNi														
- P.														
17:23														
7/13														
T - 2/														
IS.GD														
NT														
EVANS - GINT US.GDT - 2/7/13 17:23 - P:\GINT\GINT SERVER 03\PROJECTS\6385E														
EVAN														

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Northeast Technical Services 526 Chestnut Street Virginia, MN

BORING NUMBER SB12-12

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Telephone: 1-218-741-4290	
Fax: 1-218-741-4291	

CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota

DATE STARTED 10/16/12 COMPLETED 10/16/12 GROUND ELEVATION 1523 ft HOLE SIZE 4 inch

DRILLING CONTRACTOR STS GROUND WATER LEVELS:

DRILLING METHOD 4 1 4" HSA AT TIME OF DRILLING --
LOGGED BY J. Holmes CHECKED BY AT END OF DRILLING --
NOTES 66 F: sunny AFTER DRILLING ---

LOGGED BY J. Holi	mes CHECKED BY	AT END	OF DRILLIN	G					
NOTES 66 F; sunny		AFTER D	DRILLING _						
PE		%,	"	(%) (%)		TERBE LIMITS	3	ENT	
SAMPLE TYPE NUMBER GRAPHIC LOG	MATERIAL DESCRIPTION	RECOVERY (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WELL DIAGRAM Casing Top Elev: 1523.88 (ft)
	(SP) Sand with gravel, brown, dry, little gravel, Mine Overburden								1523.88 (π)
- SS		75	5-9-6-7 (15)						
10 SS ////	(SC) Clayey sand with gravel, brown, moist, little fines,	75	5-4-4-5 (8)						
ss ///	little gravel, Mine Overburden	50	3-3-3-4	1					
20 SS		50	(6)	1					
			(7)						- Grout
SS - SS - 30	No Recovery; rock or cobbles (SC) Clayey sand with gravel, brown, moist, little fines, little gravel, Mine Overburden	D Recovery; rock or cobbles C) Clayey sand with gravel, brown, moist, little fines, a gravel Mine Overburden							
ss ///	illie graver, Milite Overburderi	50	4-5-6-8 (11)	}					
ss		75	5-6-6-7 (12)						
40 SS	(SC-SM) 5 % gravel, 70 % sand, 25 % fines Silty sand with gravel, brown, moist, little fines, trace gravel, Mine	100	5-6-7-8 (13)						
SS	Overburden	100	8-9-12-15 (21)						
50 SS	ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ		8-11-7-7 (18) 8-8-9-9						- Bentonite
- SS SS	(SP) Sand, brown, wet, fine to medium grained sand	75 100	8-8-9-9 - (17) 8-8-9-9 - (17)	10				25	- Sand Pack
SS SS	(SP-SC) Sand with silty clay, brown, wet, fine to medium grained sand, little fines Bottom of borehole at 59.5 feet.	100	4-5-6-6 (11) 5-5-6-7]					
	Bottom of potentiale at 59.5 leet.		(11)	1					

PROJECT NUMBER 6385E

BORING NUMBER SB12-13

PAGE 1 OF 1

Northwest Tellmont Services	Virginia, MN Telephone: 1-218-741-4290		
SIND ON TARREST (SHOW)	Fax: 1-218-741-4291		
CLIENT Ge	eneral Waste Disposal & Recovery Services	PROJECT NAME	SW-620

PROJECT LOCATION Keewatin, Minnesota

	DATE	STARTE	D 10	0/18/12 COMPLETED 10/18/12	GROUNE	ELE/	/ATION _15	22 ft		HOI	E SIZ	E 4 i	nch	
	DRILL	ING CON	NTRAC	CTOR STS	GROUNE	WAT	ER LEVELS	:						
	DRILL	ING MET	HOD	4 1 4" HSA	AT	TIME	OF DRILLIN	IG						
	LOGG	ED BY _	J. Holr	mes CHECKED BY	AT	END (OF DRILLIN	G						
	NOTE	S <u>51 F;</u>	rainy		₹ AF	TER D	RILLING _5	9.40 ft	t / Elev	/ 1462	.60 ft			
Ī		Ш				\ 0			ATT	ERBE	RG	F		
	_	Fi	<u>0</u>			۲۲ %)	_ S E E	RE %)	I	IMITS	} -	臣		
	DEPTH (ft)	LE 1	\PH OG	MATERIAL DESCRIPTION		N G	ALL ALL	IST IST IST IST IST IST IST IST IST IST	∟∟	음ㄴ	Ę×.	000	WELL [DIAGRAM
	ä	SAMPLE TYPE NUMBER	GRAPHIC LOG			RECOVERY (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	ST	FINES CONTENT (%)		
	0	S				 		20	_	□	PLASTICITY INDEX	Z Z	Casing To	p Elev: ft)
Ī				(CL) Sandy clay with gravel, brown to red, dry, m grained sand, some sand, little gravel, Mlne ove	nedium									-7
ŀ		1		grained sand, some sand, ittle graver, wine ove	ibuideii		4507							
		⊠ ss				100	4-5-6-7 (11)	ł						
-	10	× ss				100	4-5-6-7							
İ		7 7 55					(11)	1						
-		⊠ ss				100	1-2-2-3 (4)							
Ì	20													
-		⊠ ss				100	2-3-3-4 (6)	ļ						
		× ss				100	4-3-3-4							
-	30	/ 00				100	(6)	1					N N	- Grout
t	30	X ss		(SC-SM) Sand with silt, brown to grey, moist, fin	е	75	3-4-5 (9)							
-				grained, Mine overburden										
t		⊠ ss				88	3-4-4-5 (8)							
_	40	× ss				88	4-5-7-9	_						
E GP		/ 33				00	(12)	1						
WAST		X ss		(SC-SM) 7 % gravel, 65 % sand, 28 % fines Silty	y Clayey	100	4-4-4-4 (8)							
RAL	- 50			sand, brown to grey, moist, fine to medium grain little fines, few gravel, Mine overburden	ied sand,]						
		⊠ ss				63	6-8-9 (17)	11				28		
385E		× ss				50	6-12-9-9							- Bentonite
TS/6	60	/ 33		A		30	(21)	1						Seal
왕	_ 00 _	× ss				50	11-4-5							-Sand
33/PR	- 7	X ss		(OL) Peat, black, wet, Native surface	nodium -	75	(9) 3-3-4-4 (7)							Pack
EVANS - GINT US.GDT - 277/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ		⊠ ss		(SP-SC) Sand with silty clay, grey, wet, fine to m grained	ledium /	50	(7) 15-30-50 (80)							
SER				(SP) Sand, gray, wet, medium grained										
GINT				Refusal at 66.0 feet. Bottom of borehole at 66.0 feet.										
JINT														
F														
17:23														
77/13														
JT - 2														
JS.GE														
3INT L														
NS - G														
EVA														

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290

BORING NUMBER SB12-14

PAGE 1 OF 1

Fax: 1-218-741-4291

CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota

DATE STARTED 10/16/12 COMPLETED 10/16/12 GROUND ELEVATION 1481 ft HOLE SIZE 2 inch

DRILLING CONTRACTOR NTS GROUND WATER LEVELS:

DRILLING METHOD 4 1 4" HSA AT TIME OF DRILLING 24.00 ft / Elev 1457.00 ft Approximate

LOGGED BY R. Fossell CHECKED BY J. Holmes AT END OF DRILLING ---

DRILLING MET	_											
		Sell CHECKED BY J. Holmes	AT END OF DRILLING AFTER DRILLING									
NOTES 60s F	; sunny	/	AFTE	R D	RILLING	-	A T-7					
O DEPTH (ft) SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	RECOVERY %	(RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	l	PLASTIC LIMIT LIMIT	PLASTICITY X	FINES CONTENT (%)	WELL DIAGRA	
- MC		(SP-SC) Sand with silty clay and gravel, brown, m	oist 3	38								
MC			(0								
10 MC			2	25								
MC			2	25								
20 MC			3	38								
- MC		$\frac{\nabla}{\Box}$ (CL) Lean clay with sand, soft to medium stiff, bro		3								
- MC		grey, moist (SC-SM) Silty clayey sand with gravel, brown, wet	/ 6	3								
30 MC		fines, little gravel (SC) Lean clay with sand, soft to medium stiff, brown	<i>∠</i> 5	50								
		Refusal at 31.0 feet. Bottom of borehole at 31.0 feet.										

BORING NUMBER SB12-15 PAGE 1 OF 1

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fax: 1-218-741-4291

	PROJECT NUMBER 6385E			PROJEC	PROJECT NAME SW-620 PROJECT LOCATION Keewatin, Minnesota												
				PROJEC													
Ī				2 GROUN	GROUND ELEVATION 1529 ft HOLE SIZE 4 inch												
	DRILLING CONTRACTOR STS													GROUN			
	DRILLING METHOD 4 1 4" HSA						$\overline{\underline{igsigma}}$ AT TIME OF DRILLING _57.40 ft / Elev 1471.60 ft										
	LOGGED BY J. Holmes CHECKED BY					A [.]	AT END OF DRILLING										
	NOTES _55 F; sunny						TER D	RILLING									
ł										AT	ΓERBE	RG	—				
	DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG		MATERIAL DESCRIPTION	ON	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		LIMITS		FINES CONTENT (%)		_ DIAGRAM		
ļ	0	0)		(CD) Cond	with graval brown to rad d	In come sobbles	 					<u>-</u>	됴	1532.99	Top Elev:		
-	10 20 30			at 22 feet, I	with gravel, brown to red, d		75 13 63 50 25	8-8-6-6 (14) 7-6-7-7 (13) 4-4-4-4 (8) 5-4-4-4 (8) 11-6-3-3 (9)							- Grout		
GENERAL WASTE.GPJ	40	★ SS★ SS★ SS★ SS		gravel, ligh	ravel, 56 % sand, 40 % fine t brown to 40 feet, gray fror e fines, trace gravel, Mine	m 40 to 50 feet,	50 88 63	(23) 6-5-6-6 (11) 4-4-6-8 (10) 4-6-7-12 (13)	8				40				
		X ss		(SP) Sand,	light brown, dry, fine to me	edium grained	63	7-5-7-7 (12)							- Bentonit		
03/PROJECTS/6385E	60	× ss	////		y sand, gray, moist, little fir brown, wet, fine to mediun		100	4-6-6-7 (12) 4-6-8-9 (14)							- Sand Pack		
ÆR	 -	× ss		•			88	5-5-7-7 (12)	1								
T/GINT SER	70	⊠ ss			and with silty clay, brown, w	vet, fine to medium	100	7-8-8-9 (16)									
EVANS - GINT US.GDT - 2/7/13 17:23 - P:\GINT\GINT SERVER 03\PROJECTS\6385E		SS			vith sand, gray, moist, little black, wet, Native Surface Bottom of borehole at 77		- 88	9-11-15-23 (26)									

PROJECT NUMBER 6385E

BORING NUMBER SB12-16

Northwest Technical Service	Telephone: 1-218-741-4290 Fax: 1-218-741-4291		
CLIENT G	eneral Waste Disposal & Recovery Services	PROJECT NAME	SW-620

DATE STARTED 10/18/12 _____ COMPLETED _10/19/12 GROUND ELEVATION 1522 ft HOLE SIZE 4 inch DRILLING CONTRACTOR STS **GROUND WATER LEVELS:** $\sqrt{2}$ AT TIME OF DRILLING <u>58.50 ft / Elev 1463.50 ft</u> DRILLING METHOD 4 1 4" HSA

PROJECT LOCATION Keewatin, Minnesota

LOGGED BY _J. Holmes CHECKED BY										
IOTES 51 F; rai	AFTER DRILLING									
l /s	MATERIAL DESCRIPTION	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	L	PLASTIC HIMIT LIMIT	}	FINES CONTENT (%)	WELL DIAGRAM	
0	(CL) Clay with sand and gravel, red to brown, dr sand, little gravel, Mine Overburden	ry, little						<u> </u>		
- SS		50	3-4-4-5 (8)							
10 SS		100	4-5-6-6 (11)							
- SS	(SC-SM) Silty clayey sand, red to brown, moist, fines, Mine Overburden	little 100	2-2-3-3 (5)	,						
20 SS		100	2-2-3-3 (5)							
- SS		100	2-3-4-4 (7)							
30 SS		100	4-4-4-4 (8)	19				24		
40 SS	(SP-SC) Sand with clay, brown to gray, moist, fi medium grained, Mine Overburden	ne to 75	4-4-5-5 (9)							
SS /	(SC-SM) Silty clayey sand, gray, moist, some fill Overburden	nes, Mine 88	5-5-5-6 (10)	1						
- SS 50		100	5-7-8-10 (15)	13				44		
SS S	(CL) Sandy lean clay with gravel, brown to gray,	, moist,	8-12-12 (24)							
- SS 80	fine to medium grained sand, some sand, little Q	gravel 88	8-10-10-10 (20)	15				53		
SS		75	4-5-6 (11)							
70 - SS	(SP) Sand, brown, wet, fine to medium grained, Ground Surface	Native 75	7-8-8 (16)							
SS	(SC-SM) Silty clayey sand, grey, moist, some fil	nes 50	11-12-13 (25)							
-X SS //	Refusal at 77.0 feet. Bottom of borehole at 77.0 feet.	0	15-50	14				46		
SS /		0	15-50	14				46		

BORING NUMBER SB12-17D

Telephone: 1-218-741-4290 Fax: 1-218-741-4291 CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota DATE STARTED 11/9/12 _____ COMPLETED _11/9/12 GROUND ELEVATION 1475 ft HOLE SIZE 2 inch DRILLING CONTRACTOR NTS **GROUND WATER LEVELS:**

DRILLING METHOD MC LOGGED BY R. Fossell CHECKED BY J. Holmes			✓ AT TIME OF DRILLING _15.00 ft / Elev 1460.00 ft Approximate																	
											NOTES 30s F; overcast									
											O DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		PLASTIC MEST TIMIT
10	MC MC MC										(SC) 25 % gravel, 60 % sand, 15 % fines Silty cl sand with gravel, brown, moist, coarse sand, little some gravel, 6 inch grey clay lenses at 3 feet an	e fines,	75 75 50 25		5				15	- Grout
20	MC		(OL) Peat, black, moist, Native Ground Surface		13															
	MC MC		(SC-SM) Silty clayey sand with gravel, brown, we fines, little gravel, 6 inch gray clay lense at 22 fee	et, some et	50 25							- Benton Seal								
30	MC		(SP-SC) Sand with silty clay and gravel, grey, we coarse grained sand, few fines, little gravel Bottom of borehole at 32.0 feet.	et,	13							Pack								

North 526 C Virgin

Northeast Technical Services 526 Chestnut Street Virginia, MN

BORING NUMBER SB12-18D

PAGE 1 OF 1

Telephone: 1-218-741-4290 Fax: 1-218-741-4291

0 DEPTH	SAMPLE TYPE NUMBER	GRAPHIC LOG		%			ΑT٦	TERBE	RG	—		
0	SAMPLE TY NUMBER	SRAPHIC LOG				<i>\%</i>		LIMITS				
			MATERIAL DESCRIPTION	RECOVERY (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WELL I	DIAGRAM op Elev:
10	l.		(SC) Clayey Sand, brownish red, moist, Mine Overburden									
10	ss			50	6-6-6-6 (12)							
. >	ss			50	5-7-6-6 (13)							
 	ss			50	12-20-10-5 (30)							
20	ss			50	3-4-5-5 (9)							
 	ss			13	6-9-8-6 (17)							
30	ss		(SC-SM) Silty clayey sand with gravel, brownish red, moist, some fines, little gravel, lenses of wet grey sand,	13	9-6-5-5 (11)							
-	ss		Mine Overburden	50	9-7-5-5 (12)	10				33		
40	ss			50	7-7-6-6 (13)							- Grout
-	ss			50	9-9-8-8 (17)							
50	ss			88	7-10-9-9 (19)	9				30		
60	ss		(SC-SM) Silty clayey sand with gravel, brown, moist, some fines, little gravel, similiar to above but darker, Mine	63	7-10-11-15 (21)							
	ss s		Overburden	88 63	5-10-10-10 (20) 10-10-10-12	9				31		
· -\	ss		(ML) Sandy Silt with gravel, blackish brown, moist, slight organic odor, possibly Native ground	75	(20) 7-7-7-9 (14)							
70	ss		(SC) Clayey sand with gravel, grey, wet, little fines, little gravel, cobbles encountered at 67.5 feet, no sample from 67.5-70	100 75	4-6-11-12 (17) 32-45-50	1						
	ss		(SP-SC) Sand with silty clay and gravel, brown, wet, very dense, few fines, little gravel, difficult drilling, likely gravel	75 75 88	(95) 11-18-22-22 (40) 18-28-28-30							
80	SS SS SS		and cobbles	75 50	(56) 18-28-30-50 (58) 35-70							-Bentor Seal
	SS			75 13	20-70-50 (120) 70							-Sand Pack
90	SS		Bottom of borehole at 91.0 feet.	50	40-80-80 (160)							

BORING NUMBER SB12-19

PAGE 1 OF 1

Telephone: 1-218-741-4290 Fax: 1-218-741-4291	
CLIENT General Waste Disposal & Recovery Services	PROJECT NAME SW-620
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota

DATE STARTED 11/7/12 COMPLETED 11/8/12 GROUND ELEVATION 1531 ft HOLE SIZE 4 inch

DRILLING CONTRACTOR STS GROUND WATER LEVELS:

DRILLING METHOD 4 1 4" HSA AT TIME OF DRILLING ---

LOGG	SED BY _	E. John	nson CHECKED BY J. Holmes	AT END OF DRILLING								
NOTE	S 40's F	F; overc	ast	▼ 48h	rs AF	TER DRILL	ING _7	'0.12 f	t / Ele	v 1460).88 ft	
Ħ (: TYPE 3ER	HIC			ERY % D)	W NTS LUE)	URE VT (%)	l	TERBE LIMITS	Ş	NTENT	
DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY 9 (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WELL DIAGRA Casing Top Elev: 1533.47 (ft)
0			(CL) Sandy lean clay with gravel, moist, brown to re some sand, little gravel, Mine Overburden	ed,								1533.47 (π)
	⊠ ss				88	9-9-9-10 (18)						
10	⊠ ss				88	8-5-6-7 (11)	21				52	
	× ss				13	4-4-5-6 (9)						
20	× ss		(SC) Silty clayey sand with gravel, moist, brown to	red,	100	4-5-5-6 (10)	16	38	14	24	43	
	ss_		some fines, little gravel, Mine Overburden		63	5-5-5-6 (10)						
30	× ss				75	5-4-5-5 (9)						- Grout
	ss		(SC) Clayey sand with gravel, moist, grey to brown	, some	100	4-4-5-6						
40	× ss		fines, little gravel, Mine Overburden		100	4-5-5-6 (10)						
N	× ss				100	4-5-5-8 (10)	13	22	12	10	34	
50	× ss				88	5-5-5-6						
2835	× ss				100	5-6-7-8	1					
	× ss				100	5-6-7-8	1					
7	× ss				100	4-5-7-7	1					- Bentor Seal
	× ss		Ā		100	5-6-7-8	1					- Sand Pack
	33 SS SS		(SC) Clayey sand, grey, wet, little fines, few gravel	-	92	(13) 5-11-9-9 (20) 3-3-5-7						
80	SS SS SS			=	100	(8) 4-7-8-11 (15) 15-8-10-15						
7181/13	⊠ ss		(OL) Peat, black, wet, organic odor, Native Ground Surface		100	(18) 5-8-10-18 (18)						
70 70 80 80 80 90 90 90 90 90 90 90 90 90 90 90 90 90	SS SS		(SP-SC) Sand with clay and gravel, gray, wet, few little gravel	fines,	100 88	6-12-20-28 (32) 11-23-14-15 (37) 10-40-46-46						
	SS SS		(SP) Sand with gravel, brown, wet, 3 feet of fine grased from 88 to 91 then 3 feet of coarse grained saffrom 91 to 94, refusal on cobble/boulder	ameu 占	100 50	10-40-46-46 (86) 120						
NANA NANA			Refusal at 94.0 feet. Bottom of borehole at 94.0 feet.									

BORING NUMBER SB12-20 PAGE 1 OF 1

Fax: 1-218-741-4291	
CLIENT _General Waste Disposal & Recovery Services	PROJECT NAME SW-620
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota
DATE STARTED 10/16/12 COMPLETED 10/16/12	GROUND ELEVATION 1491 ft HOLE SIZE 2 inch
DRILLING CONTRACTOR NTS	GROUND WATER LEVELS:
DRILLING METHOD MC	AT TIME OF DRILLING
LOGGED BY R. Fossell CHECKED BY J. Holmes	AT END OF DRILLING
NOTES _50's F; sunny	AFTER DRILLING

	IUR NIS										
DRILLING METHOD	MC	AT TIME OF DRILLING									
LOGGED BY R. Fos	sell CHECKED BY J. Holmes	AT END OF DRILLING									
NOTES 50's F; sunr	ıy	AFTI	ER D	RILLING							
					T	^ -	ΓERBE	-RG	 -		
SAMPLE TYPE NUMBER GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY %	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	}	FINES CONTENT (%)	WELL DIAGRAM	
- MC	(SP-SC) Sand with clay and gravel, moist, brown fines, little gravel	, few	50								
MC MC			50								
- MC			50								
20 MC			25								
MC MC		-	25								
30 MC	¬ (CL) Lean clay with sand, soft to medium stiff, br		25								
	grey, moist, little sand, trace gravel Refusal at 32.0 feet. Bottom of borehole at 32.0 feet.										

BORING NUMBER SB12-21D

Fax: 1-218-741-4291 CLIENT General Waste Disposal & Recovery Services PROJECT NAME SW-620 PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota DATE STARTED 11/13/12 ____ COMPLETED _11/15/12 GROUND ELEVATION 1487 ft HOLE SIZE 2 inch DRILLING CONTRACTOR NTS **GROUND WATER LEVELS:**

DRILLING METHOD _MC						OF DRILLIN						
			sell CHECKED BY J. Holmes	AT TIME OF DRILLING AT END OF DRILLING								
NOTES						RILLING						
		, 010.0		, u					ERBE	-RG	—	
O DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	LIMITS	}	FINES CONTENT (%)	WELL DIAGRA Casing Top Elev: 1489.4 (ft)
<u> </u>	МС		(SC-SM) Silty clayey sand, black to redish black, fine grained sand, some fines, Mine Tailings	moist,	63							
10	МС				63							
	MC MC		(SC-SM) Silty clayey sand, reddish black, wet, fin grained sand, some fines, Mine Tailings	е	50							- Grout
20	МС				38							
<u> </u>	мс				38							- Bento
30	MC MC		(OL) Peat, black, wet, Native Soil contact (SP) Sand, brown, wet, coarse grained, 2 inch pe	at lense	50 50							Seal - Sand
	MC		at 32 feet		100							Pack
40	мс	7777	— (CL) Lean clay, grey, moist, medium stiff — (SP) Sand, brown, wet, coarse grained		38							
			Bottom of borehole at 41.0 feet.									

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BORING NUMBER SB12-21S

1	V	'irginia	estnut Street , MN one: 1-218-741	1.4200										PAGE 1	OF 1
300000	F	ax: 1-	218-741-4291												
	NT <u>Gene</u> IECT NUI			Recovery Service	es			ME SW-620		Minn	esota				
_				COMPLETED	11/13/12	PROJECT LOCATION Keewatin, Minnesota GROUND ELEVATION 1487 ft HOLE SIZE 2 inch									
								ER LEVELS				0		1011	
	LING MET														
LOGO	GED BY _	R. Fos	ssell	_ CHECKED BY	J. Holmes										
NOTE	S 30s F	; over	cast			_ AF	TER D	RILLING							
O DEPTH	O SAN O						RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		PLASTIC HIMIT	PLASTICITY SHINDEX	FINES CONTENT (%)	WELL DIAG Casing Top El 1489.3 (ft)	
 - 10	-		Tailings	sand,black,moist,										- Gr - Be Se	out entonite eal
<u> </u>			Mine Tailin	sand, reddish blac ngs	k, wet, fine graine	ea sana,								Pa	ack
		1010450		Bottom of boreh	ole at 15.0 feet.		-							· ,	
.GPJ															
ASTE															
SAL W															
E NE															
85E G															
15/63															
ONEC															
03/PR															
WER.															
T SEF															
NGI															
P:\GIN															
::23 - 1															
7/13 1.															
EVANS - GINT US.GDT - 277/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ															
JS.GD															
JINT															
NS - C															
EVA															

BORING NUMBER SB12-23 PAGE 1 OF 1

Fax: 1-218-741-4291	
CLIENT General Waste Disposal & Recovery Services	PROJECT NAME SW-620
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota
DATE STARTED 10/18/12 COMPLETED 10/18/12	GROUND ELEVATION 1496 ft HOLE SIZE 2 inch
DRILLING CONTRACTOR NTS	GROUND WATER LEVELS:

DRIL	LING CO	NTRACT	TOR NTS	GROUN	O WAT	ER LEVELS	3 :					
	LING ME											
	3ED BY <u></u>		Sell CHECKED BY J. Holmes			OF DRILLIN DRILLING						
NOTE					%			ΑT٦	TERBE LIMITS	RG	L Z	
O DEPTH	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		PLASTIC	_	FINES CONTENT (%)	WELL DIAGRAM
	МС		(SC) Clayey sand with gravel, brown, moist, li little gravel, Mine Overburden	ttle fines,	50							
	МС				25							
_ 10	МС				63							
- :	MC				50							
20	MC MC				38							
	МС	<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	Refusal at 23.0 feet. Bottom of borehole at 23.0 feet.		0							
EVANS - GINT US.GDT - 27/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ												

Northeast Technical Services 526 Chestnut Street Virginia, MN Telephone: 1-218-741-4290 Fax: 1-218-741-4291

BORING NUMBER SB12-24 PAGE 1 OF 1

FdX. 1-210-741-4291	
CLIENT General Waste Disposal & Recovery Services	PROJECT NAME SW-620
PROJECT NUMBER 6385E	PROJECT LOCATION Keewatin, Minnesota
DATE STARTED 10/17/12 COMPLETED 10/17/12	GROUND ELEVATION 1462 ft HOLE SIZE 2 inch
DRILLING CONTRACTOR NTS	GROUND WATER LEVELS:
DRILLING METHOD MC	AT TIME OF DRILLING
LOGGED BY R. Fossell CHECKED BY J. Holmes	AT END OF DRILLING

	DRILLING CONTRACTOR NTS				GROUND WATER LEVELS:								
DRILLING	METHOD	MC	AT TIME OF DRILLING										
LOGGED E	BY R. Fos	sell CHECKED BY J. Holmes	AT	END (OF DRILLIN	G							
NOTES _5	0s F; over	east	AF1	ΓER D	RILLING								
O DEPTH (ft) SAMPLE TYPE	NUMBER GRAPHIC LOG	MATERIAL DESCRIPTION		RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)		PLASTIC HIMIT LIMIT	3	FINES CONTENT (%)	WELL DIAGRAI		
- H	мс	(SP-SC) Sand with silty clay and gravel, moderate brown, moist, few fines, little gravel, Mine Overburg	ly stiff, den	75									
A	мс			75									
10	мс			75									
H	мс			50									
20	мс			75									
	мс			50									
7.1	MC MC			75 0									
		Refusal at 29.0 feet. Bottom of borehole at 29.0 feet.											

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BORING NUMBER SB12-25
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CLII	CLIENT General Waste Disposal & Recovery Services				PROJECT NAME SW-620									
PRO	DJECT NUI	MBER	6385E	PROJECT LOCATION Keewatin, Minnesota										
DAT	E STARTE	D _1/2	28/12 COMPLETED 2/7/12	GROUND E	ELEV	ATION 15	23 ft		HOL	E SIZ	E 31	/4 inch		
DRI	LLING CO	NTRAC	CTOR American Engineering	GROUND V	VAT	ER LEVELS	:							
DRI	LLING MET	THOD	3 1 4" HSA	AT TIME OF DRILLING										
LOC	GED BY	E. Joh	hnson CHECKED BY J. Holmes											
NOT	TES 20s F	; ove	ercast	AFTE	ER D	RILLING	-							
	111				_			ATT	ERBE	RG	5			
_	SAMPLE TYPE NUMBER	೨		% *X		ZE (E	MOISTURE CONTENT (%)		IMITS	} >	FINES CONTENT (%)			
DEPTH	ELE .	GRAPHIC LOG	MATERIAL DESCRIPTION		(RQD)	BLOW COUNTS (N VALUE)	STL TEN	LIQUID	음느	PLASTICITY INDEX	Ö %	WELL DIAGRAM		
	A M	GR			3 =	® S ≤	MOI	ĕ≅	LAS LM	AST INDI	ES			
0	/S			~	2		_ O	_	Д	PL/				
_	_													
-	+													
	1													
10	-													
	1													
-	+													
20														
-	+													
	1													
30	+													
_ 50	_													
-	+													
	1													
40														
AP -	- SS - SS - SS		(SM) Silty sand, medium stiff, light brown, soi		100 78	3-6-5-5 (11) 4-5-5						Pressure meter - failed		
WAST	SS		trace gravel, medium grained sand, moist			(10) 5-5								
IRA -	SS		Bottom of borehole at 48.5 feet.			(10)						Pressure Meter 1		
SENE														
85E (
TS/63														
DIEC.														
3/PR(
ER 0.														
SERV														
TNI														
TNI														
- P:\G														
17:23														
7/13 /														
T - 2/														
EVANS - GINT US.GDT - 2/7/13 17:23 - P./GINT/GINT SERVER 03/PROJECTS/6385E GENERAL WASTE.GPJ														
N L														
S-G														
EVAN														

Northeast Technical Services 526 Chestnut Street

BORING NUMBER SB12-25A

PAGE 1 OF 1

Virginia, MN
Telephone: 1-218-741-4290
Fax: 1-218-741-4291

	CLIEN	CLIENT General Waste Disposal & Recovery Services				es	PROJECT NAME SW-620								
	PROJI	ECT NUN	IBER	6385E			PROJEC	T LOC	ATION Ke	ewatin	, Minn	esota			
İ	DATE	STARTE	D _1/2	29/12	COMPLETED	1/29/12	GROUNI	ELE\	/ATION _15	23 ft		HOL	E SIZ	E <u>3</u> 1	/4 inch
	DRILL	ING CON	ITRAC	TOR America	n Engineering		GROUND WATER LEVELS:								
	DRILL	ING MET	HOD	3 1 4" HSA			AT	TIME	OF DRILLIN	G					
	LOGG	ED BY _	E. Joh	nson	_ CHECKED BY	J. Holmes									
	NOTE	20s F	; over	cast			AF	TER D	RILLING	-					
	돈_	TYPE	HIC BHC					ERY % D)	W VTS .UE)	URE NT (%)	L	ERBE IMITS	3	NTENT)	
	O (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG		MATERIAL DE	SCRIPTION		RECOVERY 9 (RQD)	BLOW COUNTS (N VALUE)	MOISTURE CONTENT (%)	LIQUID	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WELL DIAGRAM
EVANS - GINT US.GDT - 27/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ	10	SS SS		(SM) Silty s	sand, brown, mois Bottom of boreh	t nole at 33.5 feet.			5-5 (10)						Pressure Meter 2

Northeast Technical Services 526 Chestnut Street Virginia, MN

EVANS - GINT US.GDT - 2/7/13 17:23 - P.\GINT\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ

BORING NUMBER SB12-26

Telephone: 1-218-741-4290 Fax: 1-218-741-4291 **CLIENT** General Waste Disposal & Recovery Services **PROJECT NAME** SW-620

PROJECT NUMBER 6385E PROJECT LOCATION Keewatin, Minnesota GROUND ELEVATION 1494 ft HOLE SIZE 3 1/4 inch DATE STARTED 1/29/12 **COMPLETED** _1/29/12 DRILLING CONTRACTOR American Engineering GROUND WATER LEVELS: **DRILLING METHOD** 3 1 4" HSA AT TIME OF DRILLING ---LOGGED BY E. Johnson CHECKED BY J. Holmes AT END OF DRILLING _---

NOTES 20s F; overcast AFTER DRILLING _---**ATTERBERG** FINES CONTENT (%) RECOVERY % (RQD) MOISTURE CONTENT (%) SAMPLE TYPE NUMBER **LIMITS** GRAPHIC LOG BLOW COUNTS (N VALUE) PLASTICITY INDEX DEPTH (ft) PLASTIC LIMIT LIQUID MATERIAL DESCRIPTION WELL DIAGRAM (SC-SM) Silty clayey sand, brown, moist, some fines, little gravel 5-5 (10) Pressure meter 3 (SM) Silty sand, greyish brown, moist, some fines, trace gravel, fine to medium grained sand Pressure meter 4 (14) Bottom of borehole at 21.5 feet.

BORING NUMBER MW-3R Northeast Technical Services, Inc. 526 Chestnut St. PAGE 1 OF 1 Virginia, MN 55734 (218)-741-4290 CLIENT General Waste Disposal & Recovery Services PROJECT NAME General Waste PROJECT NUMBER 6385C PROJECT LOCATION Keewatin, Minnesota COMPLETED 7/9/15 DATE STARTED 7/9/15 **GROUND ELEVATION** 1530.1 ft HOLE SIZE 8 inch DRILLING CONTRACTOR STS **GROUND WATER LEVELS:** DRILLING METHOD 4 1 4" HSA AT TIME OF DRILLING _---LOGGED BY B.Frydenlund CHECKED BY AT END OF DRILLING _---NOTES 65 F; Coudy AFTER DRILLING _---SAMPLE TYPE NUMBER GRAPHIC LOG BLOW COUNTS (N VALUE) PID (ppm) DEPTH (ft) MATERIAL DESCRIPTION WELL DIAGRAM 0 (GP-GC) Brown sandy gravel Proctective Casing Cement Seal 10 20

(GP-GC) Brown sandy gravel

Bottom of borehole at 75.0 feet.

- Bentonite Grout

← Bentonite Seal 3/8"

-Filiter Pack Sand

2 in Slotted PVC

-Sand Pack Bottom

Chips

1455.1

ENVIRONMENTAL BH - GINT US.GDT - 10/5/17 02:38 - P.\GINT DATA\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ

30

40

50

60

70

BORING NUMBER MW-7

Northeast Technical Services, Inc. 526 Chestnut St. Virginia, MN 55734 (218)-741-4290

PAGE 1 OF 1

	CLIENT General Waste Disposal & Recovery Services						S	PROJECT NAME General Waste					
	PROJECT NUMBER _6385C							PROJECT LOCATION Keewatin, Minnesota					
	DATE	STARTE	D 9/30/16			COMPLETED _	9/30/16	GROUND ELEVATION _1493.67 ft	н	OLE SIZE 6			
	DRILL	ING CON	ITRACTOR	Rang	je Env	ironmental		GROUND WATER LEVELS:					
	DRILL	ING MET	HOD MC					AT TIME OF DRILLING					
	LOGG	ED BY	A. Smrekar	,		CHECKED BY	D. Schubbe	AT END OF DRILLING					
	NOTE	S Cloud	ly 50 deg F	, wind S	SE 6 n	nph		AFTER DRILLING 17.50 ft /	Elev 14	76.17 ft			
		111											
	DEPTH (#)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG		MATER	RIAL DESCRIPTION		WELL DIAGRAM			
ENVIRONMENTAL BH - GINT US, GDT - 10/6/17 02:38 - P:/GINT DATA/GINT SERVER 03/PROJECTS/6386E GENERAL WASTE.GPJ	0 - 10 20 	Ø.				2.0 (CL-ML) 5.5 (SM) Re 5 feet b (CL-ML) consolic (SM) Ta tan clay 14.5 (CL-ML) consolic	ed to brown, fine ogs) Red to brown silldated, damp an to brown silty sizens approximate) Tan to brown siltdated, damp I) Tan to reddish bed	y clay with sand, damp, consolidated grained, silty sand, loose, saturated at ty clay with some sand and gravel, and with gravel, well graded, damp, ely 2" thick at 9 feet bgs ty clay with some silty sand, brown clayey sand with some gravel, of borehole at 25.0 feet.		Cement Seal ■ Bentonite Slurry			

BORING NUMBER MW-8

Northeast Technical Services, Inc. 526 Chestnut St. Virginia, MN 55734 (218)-741-4290

PAGE 1 OF 1

	CLIENT General Waste Disposal & Recovery Services					ecovery Services	PROJECT NAME General Waste				
	PROJ	ECT NUM	IBER <u>638</u>	5C			PROJECT LOCATION Keewatin, Mi	nnesota			
	DATE	STARTE	D _9/29/16			COMPLETED 9/29/16	GROUND ELEVATION 1488.66 ft	HOLE SIZE 6			
	DRILL	ING CON	ITRACTOR	Rang	e Env	rironmental	GROUND WATER LEVELS:				
	DRILL	ING MET	HOD MC				AT TIME OF DRILLING				
	LOGG	ED BY	A. Smrekar			CHECKED BY D. Schubbe	AT END OF DRILLING				
	NOTE	S Cloud	ly 55 deg F	, wind E	NE 3	mph	▼ AFTER DRILLING 33.00 ft / E	lev 1455.66 ft			
	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATE	RIAL DESCRIPTION	WELL DIAGRAM Casing Top Elev: 1491.7 (ft)			
	0					(CL-ML) Red to brown s	ilty clay, consolidated damp	Protective Casing			
ENVIRONMENTAL BH - GINT US,GDT - 10/5/17 02:38 - P:\GINT DATA\GINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ	10 - 10 - 20 - 30 - 40					(CL-ML) Red to brown s slightly consolidated, da 7.0 7.5	ilty clay with some sand and gravel, mp. vel, well graded, loose, damp ilty clay with some sand and gravel, tan imately 2" thick throughout, damp ilty clay with some sand sand, tan silty clay with some sand sand, tan silty 2" thick at 21 feet bgs, loose, damp ilty clayey sand with some gravel, red titely 2" thick at 24 feet bgs ilty clay with some tan silty sand 30 feet bgs silty clayey sand with some gravel,	1481.7 1469.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1468.7 1568 1668 1668 1668 1668 1668 1668 1668			

Northeast Technical Services, Inc. 526 Chestnut St. Virginia, MN 55734 (218)-741-4290

BORING NUMBER MW-9 PAGE 1 OF 1

	CLIENT General Waste Disposal & Recovery Services					ecovery Services	PROJECT NAME General Waste				
	PROJE	ECT NUN	IBER <u>638</u>	5C			PROJECT LOCATION Keewatin, N	/linnesota			
	DATE	STARTE	D 9/30/16			COMPLETED 9/30/16	GROUND ELEVATION 1452.94 ft	HOLE SIZE 6			
	DRILL	ING CON	TRACTOR	Rang	ge Env	vironmental	GROUND WATER LEVELS:				
	DRILL	ING MET	HOD MC				AT TIME OF DRILLING				
	LOGG	ED BY _	A. Smrekar			CHECKED BY D. Schubbe					
	NOTES	S Cloud	y 53 deg F	, wind E	ESE 6	mph	AFTER DRILLING 10.50 ft /	Elev 1442.44 ft			
	O DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG		RIAL DESCRIPTION	WELL DIAGRAM (Casing Top Elev: 1454.6 (ft)			
ENVIRONMENTAL BH - GINT US,GDT - 10/5/17 02:38 - P.\GINT DATAIGINT SERVER 03\PROJECTS\6385E GENERAL WASTE.GPJ	0 20					red to brown clay lens a saturated at 9 feet bgs	sand with little gravel, poorly graded, oproximately 2" thick at 5.5 feet bgs, of borehole at 20.0 feet.	Protective Casing Cement Seal Bentonite Slurry Bentonite Seal Filter Pack Sand PVC 0.1 Slot Screen			

APPENDIX B LABORATORY TESTING RESULTS



PASSING 200/ MOISTURE CONTENT ASTM D 6913 AND D 2216

NORTHEAST TECHNICAL SERVICES, INC. 526 CHESTNUT STREET P.O. BOX 1142 VIRGINIA, MINNESOTA 55792 218-741-4290 FAX 218-741-4291 e-mail: nts@netechnical.com

Project	General Waste	Date Reported	11/30/2012
Project #	6385E	COC#	210788

Sample	COC#	Lab I.D.	% Moisture	% Fines
12-8 (70-72)	210788	M547512	13.7%	46.5%
12-3 (10-12)	210788	M547513	13.3%	34.5%
12-3 (35-37)	210788	M547514	8.8%	32.0%
12-7 (45-47)	210788	M547515	11.9%	36.2%
12-2 (4-8)	210788	M547516	8.4%	37.3%
12-11 (16-20)	210788	M547517	11.4%	46.5%
12-18 (60-62)	210788	M547520	8.5%	31.1%
12-18 (50-52)	210788	M547519	9.3%	30.4%
12-18 (35-37)	210788	M547518	9.7%	33.3%
12-16 (45-47)	210788	M547503	12.8%	44.3%
12-16 (55-57)	210788	M547504	15.0%	53.0%
12-16 (75-77)	210788	M547505	14.3%	45.8%
12-16 (30-32)	210788	M547506	18.9%	23.7%
12-19 (20-22)	210788	M547507	16.3%	43.3%
12-19 (10-12)	210788	M547508	20.5%	52.2%
12-19 (45-47)	210788	M547509	13.3%	33.5%
12-20 (28-32)	210788	M547510	14.6%	32.9%
12-17 (28-32)	210788	M547511	11.4%	30.0%

Comments:			
_			_



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 Project
 General Waste

 Sample ID
 SB 12-15 (35-37)

 Project #
 6385E

 Date Collected
 10/15/2012

 Date Reported
 11/30/2012

 Lab ID#
 M547498

 COC #
 210788



Size	Percentages	Specifications (% passing)	Percent Moisture	LL	PL	PI
			8.2%			
Silt/Clay	40.4%		0.270	Specifications (LL and PI)		
Fine Sand	29.5%					
Medium Sand	21.7%			1	USCS Classific	ation
Coarse Sand	4.5%					
Gravel	3.9%			(SC-SM) SILTY, CLAYEY SAND		

Coefficient of Uniformity (Cu)	N/A
Coefficient of Curvature (Cc)	N/A

Comments:			



6385E

Project #:

GRAIN SIZE DISTRIBUTION REPORT Page 2

210788

COC #:

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Lab ID #: M547498

Project:			General W	aste
Architect/Engine	er:		-	
Project: Architect/Engineer: Contractor: Sieve Size Percent Passing			<u>-</u>	
Sieve Size		Required Specifications	Sample ID:	SB 12-15 (35-37)
			Date Sampled:	10/15/2012
			Date Received:	10/15/2012
			Date Analyzed:	11/28/2012
			Sample Location:	SB 12-15 (35-37)
			Intended Use:	
3\8	98%		_	
#4	96%		Pit/Source:	
#10	92%		Sampled By:	J. Holmes
#40	70%			
#100	49.9%		Lab Technician:	ЕЈ, ЈЕ
#200	40.4%		Reviewed By:	JE
Tested Comments:	in accordance with AST	ГМ D 422		



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 Project
 General Waste

 Sample ID
 SB 12-4 (45-47)

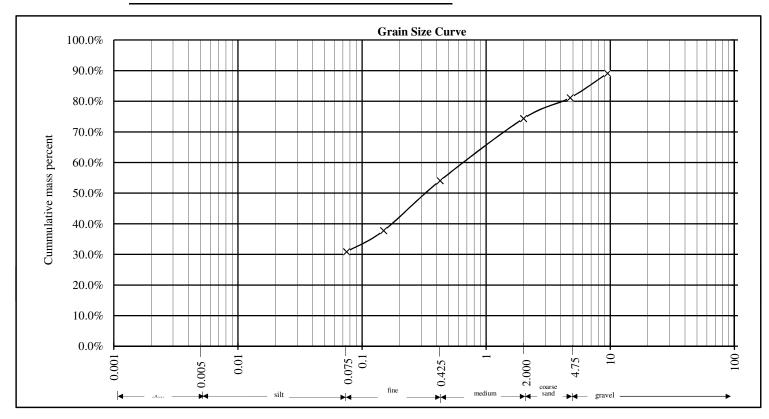
 Project #
 6385E

 Date Collected
 10/17/2012

 Date Reported
 11/30/2012

 Lab ID#
 M547499

 COC #
 210788



Size	Percentages	Specifications (% passing)	Percent Moisture	LL	PL	PI
			9.9%			
Silt/Clay	30.9%		9.9%	Specifications (LL and PI)		
Fine Sand	23.2%					
Medium Sand	20.3%			1	USCS Classific	ation
Coarse Sand	6.8%			(SC-SM) SILTY, CLAYEY SAND WITH GRAVEL		
Gravel	18.9%					

Coefficient of Uniformity (Cu)	N/A
Coefficient of Curvature (Cc)	N/A

Comments:			



6385E

Project #:

GRAIN SIZE DISTRIBUTION REPORT Page 2

210788

COC #:

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Lab ID #: M547499

Project:	General Waste					
Architect/Engine	er:		-			
Contractor:			-			
Sieve Size	Percent Passing	Required Specifications	Sample ID:	SB 12-4 (45-47)		
			Date Sampled:	10/17/2012		
			Date Received:	10/17/2012		
			Date Analyzed:	11/28/2012		
			Sample Location:	SB 12-4 (45-47)		
			Intended Use:			
3\8	89%					
#4	81%		Pit/Source:			
#10	74%		Sampled By:	J. Holmes		
#40	54%					
#100	37.8%		Lab Technician:	EJ, JE		
#200	30.9%		Reviewed By:	JE		
Tested	in accordance with AS	ГМ D 422	·			
Comments:						



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 Project
 General Waste

 Sample ID
 SB 12-4 (55-57)

 Project #
 6385E

 Date Collected
 10/17/2012

 Date Reported
 11/30/2012

 Lab ID#
 M547500

 COC #
 210788



Size	Percentages	Specifications (% passing)	Percent Moisture	LL	PL	PI
			12.6%			
Silt/Clay	29.2%		12.0%	Specifications (LL and PI)		
Fine Sand	30.6%					
Medium Sand	22.9%			USCS Classification		
Coarse Sand	5.5%					
Gravel	11.8%			(SC-SI	M) SILTY, CLA	YEY SAND

Coefficient of Uniformity (Cu)	N/A
Coefficient of Curvature (Cc)	N/A

Comments:	
•	
•	



GRAIN SIZE DISTRIBUTION REPORT Page 2

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Project #:	6385E	COC #:_	210788	Lab ID #: M547500
Project:			General '	Waste
Architect/Engine	er:		-	
Contractor:			-	
Sieve Size	Percent Passing	Required Specifications	Sample ID:	SB 12-4 (55-57)
			Date Sampled:	10/17/2012
			_	10/17/2012
			Date Analyzed:	11/28/2012
			Sample Location:	SB 12-4 (55-57)
			Intended Use: _	
3\8	94%		_	
#4	88%		Pit/Source: _	
#10	83%		Sampled By:	J. Holmes
#40	60%			
#100	39.2%		Lab Technician: _	EJ, JE
#200	29.2%		Reviewed By:	JE
Tested Comments:	in accordance with AS	ГМ D 422		



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 Project
 General Waste
 D

 Sample ID
 SB 12-17 (8-12)

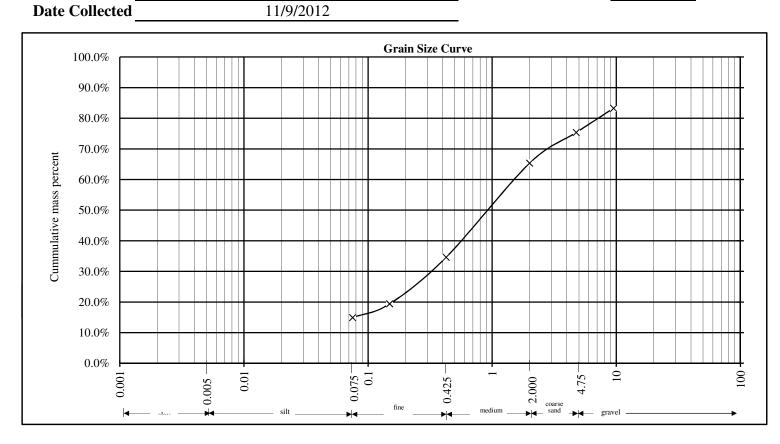
 Project #
 6385E

 Date Collection
 11/9/2012

 Date Reported
 11/30/2012

 Lab ID#
 M547501

 COC #
 210788



Size	Percentages	Specifications (% passing)	Percent Moisture	LL	PL	PI
			4.8%			
Silt/Clay	14.9%		4.6 //	Specifications (LL and PI)		
Fine Sand	19.7%					
Medium Sand	30.7%			USCS Classification		ation
Coarse Sand	10.0%			(SC-SM) SILTY, CLAYEY SAND WITH GRAVEL		YEY SAND
Gravel	24.6%					

Coefficient of Uniformity (Cu)	N/A
Coefficient of Curvature (Cc)	N/A

Comments:	•	



6385E

Project #:

GRAIN SIZE DISTRIBUTION REPORT Page 2

210788

COC #:

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Lab ID #: M547501

General Waste					
:		-			
		-			
Percent Passing	Required Specifications	Sample ID:	SB 12-17 (8-12)		
		Date Sampled:	11/9/2012		
		Date Received:	11/9/2012		
		Date Analyzed:	11/28/2012		
		Sample Location:	SB 12-17 (8-12)		
		Intended Use:			
83%					
75%		Pit/Source:			
65%		Sampled By:	R. Fossel		
35%					
19.4%		Lab Technician:	EJ, JE		
14.9%		Reviewed By:	JE		
accordance with AST	ГМ D 422	· <u></u>			
	•				
	Passing 83% 75% 65% 35% 19.4% 14.9%	Percent Passing Required Specifications 83% 75% 65% 35% 19.4%	Percent Passing Specifications Sample ID: Date Sampled: Date Received: Date Analyzed: Sample Location: Intended Use: 83% Pit/Source: 65% Sampled By: 35% 19.4% Lab Technician: Reviewed By:		



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 Project
 General Waste
 Date

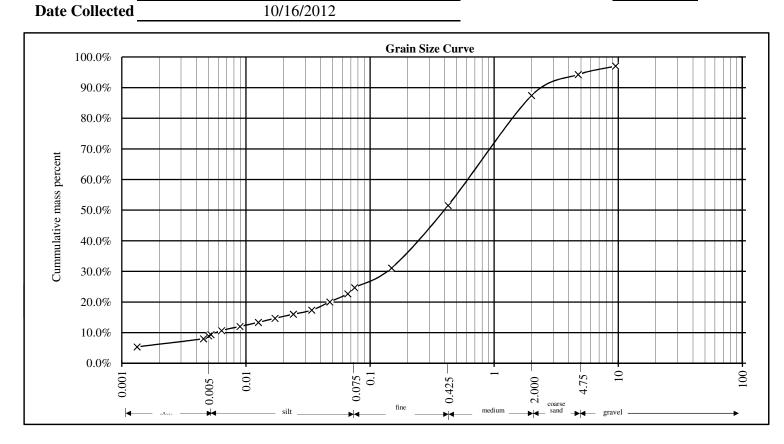
 Sample ID
 SB 12-12 (45-47)

 Project #
 6385E

 Date Reported
 11/30/2012

 Lab ID#
 M547502

 COC #
 210788



		Specifications	Percent			
Size	Percentages	(% passing)	Moisture	LL	PL	PI
Clay	8.9%		9.9%			
Silt	15.8%		9.970	Specifications (LL and PI)		
Fine Sand	26.8%					
Medium Sand	35.9%			USCS Classification		
Coarse Sand	6.8%					
Gravel	5.7%			(SC-SI	M) SILTY, CLA	YEY SAND

Coefficient of Uniformity (Cu)	106.45
Coefficient of Curvature (Cc)	4.97

Comments:		



6385E

Project #:

GRAIN SIZE DISTRIBUTION REPORT Page 2

210788

COC #:

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Lab ID #: M547502

Project:	General Waste					
Architect/Engine	er:		-			
Contractor:			-			
Sieve Size	Percent Passing	Required Specifications	Sample ID:	SB 12-12 (45-47)		
			Date Sampled: _	10/16/2012		
			Date Received:	10/16/2012		
			Date Analyzed:	11/28/2012		
			Sample Location:	SB 12-12 (45-47)		
3\8	97%					
#4	94%		_			
#10	87%		Pit/Source: _			
#40	52%		Sampled By:	J. Holmes		
#100	31%		_			
#200	24.7%		Lab Technician:	EJ, JE		
Clay (<.005mm)	8.9%		Reviewed By:	JE		
Tested in	n accordance with AS	ГМ D 422	·			
Comments:						
-						
-						



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 Project
 General Waste

 Sample ID
 SB 12-13 (50-52)

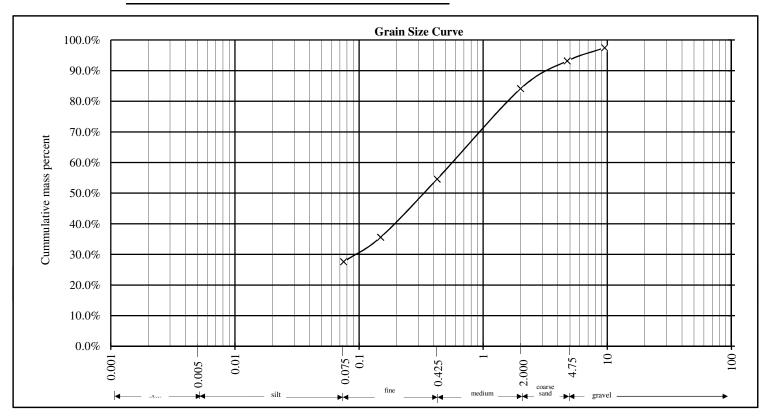
 Project #
 6385E

 Date Collected
 10/18/2012

 Date Reported
 11/30/2012

 Lab ID#
 M547503

 COC #
 210788



Size	Percentages	Specifications (% passing)	Percent Moisture	LL	PL	PI
			10.5%			
Silt/Clay	27.6%		10.5%	Specifications (LL and PI)		
Fine Sand	27.0%					
Medium Sand	29.5%			1	USCS Classific	ation
Coarse Sand	9.1%					
Gravel	6.8%			(SC-SI	M) SILTY, CLA	YEY SAND

Coefficient of Uniformity (Cu)	N/A
Coefficient of Curvature (Cc)	N/A

Comments:	



GRAIN SIZE DISTRIBUTION REPORT Page 2

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Project #:	6385E	COC #: _	210788	Lab ID #: M547503
Project:			General '	Waste
Architect/Engine	er:			
Contractor:				
Sieve Size	Percent Passing	Required Specifications	Sample ID:	SB 12-13 (50-52)
			Date Sampled:	10/18/2012
			_	10/18/2012
			Date Analyzed:	11/28/2012
			Sample Location:	SB 12-13 (50-52)
			Intended Use: _	
3\8	97%		-	
#4	93%		Pit/Source: _	
#10	84%		Sampled By:	J. Holmes
#40	55%			
#100	35.6%		Lab Technician: _	EJ, JE
#200	27.6%		Reviewed By:	JE
Tested Comments:	in accordance with AS	ГМ D 422		

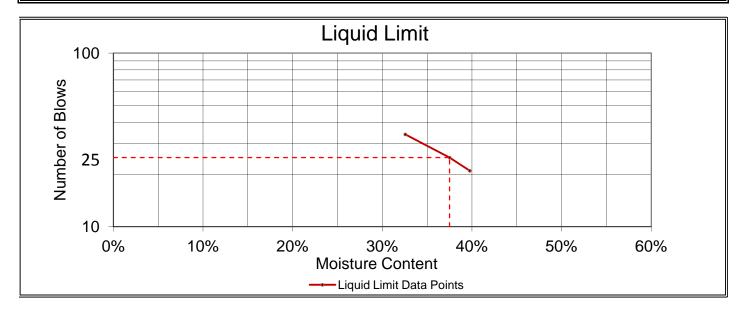


Atterberg Limits Report ASTM D-4318

NORTHEAST TECHNICAL SERVICES, INC. 526 CHESTNUT STREET P.O. BOX 1142 VIRGINIA, MINNESOTA 55792 218-741-4290 FAX 218-741-4291 e-mail: nts@netechnical.com

Project #:	6385E	COC #:	210788	Lab ID #: _	M547507
Project:	General Waste				
Architect/Engine	er: <u>-</u>				
Contractor:	-				

Sample ID:	GP 12-19	(20-22ft)				
	Test	Results:			Specifications:	
Liquid Limit:	38%	Plasticity Index:	24%	Liquid Limit:	Plasticity Index:	
Plastic Limit:	14%	% Moisture:	16.3%	Plastic Limit	% Moisture:	
Passing #200	43%			Passing #200		
Passing #4				Passing #4		



Summary of	f Methods:	Comments:	
Preperation:	Wet Preperation Method		
Liquid Limit:	Method A		
Plastic Limit:	Hand Rolled Method		

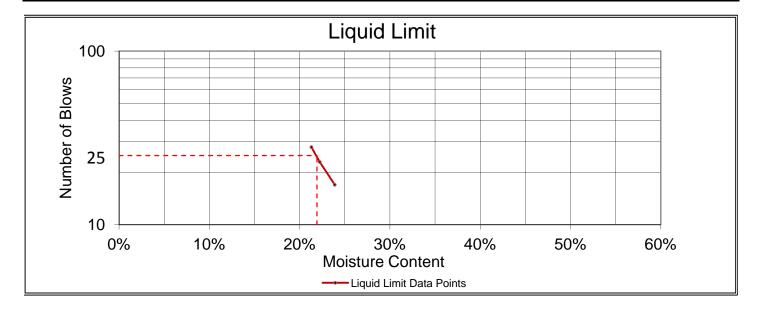


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218-741-4290 FAX 218-741-4291 e-mail: nts@netechnical.com

Project #: 6385	<u>COC #:</u>	210/88 Lab ID	#: M54/509
Project:	General Waste		<u>—</u>
Architect/Engineer:	-		
Contractor:	<u>-</u>		
Sample ID: GP 12-1	9 (45-47ft)		
Te	st Results:	Specifications:	
Liquid Limit: 22%	Plasticity Index:10%	Liquid Limit: Plasticity Ind	ex:
Plastic Limit: 12%	% Moisture:13.3%	Plastic Limit % Moistu	re:
Passing #200 34%	_	Passing #200	
Passing #4	_	Passing #4	



Summary of	f Methods:	Comments:			
Preperation:	Wet Preperation Method	_			
Liquid Limit:	Method A	_			
Plastic Limit:	Hand Rolled Method				