Potential Brown County Borrow Source List

Location	Type of Material	Contact Name	Contact Number	Representing	Estimated Quantity (CY)	Soil Borings Available**
3 Miles SE of Wrightstown on CTH IL	Red Clay	Chad Doverspike	920-621-4393 920-492-4955	Brown County Solid Waste Dept.	500,000 - 600,000	No
City of Green Bay	Reprocessed block and brick	Quasan Shaw	920-448-3396	GB Economic Development	Unknown	No
Fox River on Hurlbut Street	Waste Lime	Steve Moss	920-965-4218	Great Lakes Calcium	15,000	No
Hurlbut Street	Dredged material	Dean Haen	920- 492-4953	Brown County Port	800,000 +	Yes
State Street	Sand from PCB dredging	Michael Estess	803-646-0938	Tetra Tech	25,000 - 100,000	No
W2354 CTH G	N/A	Tom Ostrowski	920-595-0101	Private	1.5-2.0 Million	No
Village Green Golf Course - Stockpile	Silt	Geoff Farr	920-434-4060	Village of Howard	20,000	No
Woodman's - Excavate Pond	Clay	Geoff Farr	920-434-4060	Village of Howard	35,000	Yes
Village Center - Excavate Pond	Silt	Geoff Farr	920-434-4060	Village of Howard	50,000	No
Community Church - Excavate Storm Ponds	Silt	Geoff Farr	920-434-4060	Village of Howard	15,000	No
Duck Creek Golf Center	Waste from Utility Relocations	Dan Thorpe	920-498-2797	Private	50,000	No
CTH J (South of WIS 29)	Clay	Jerry Jarvey	920-494-4171	Private	20,000	No
Misty Meadows Lane, Village of Ashwaubenon	Foundry Sand	Jerry Haen or Roger Miller	920-734-1845, 920-455-8657	Van's Realty & Construction, GEI Consultants, Inc.	10,000 - 20,000 CY	No, but lab data attached
CTH J & Sunset Beach Road	Sand	Bill Thayse	920-655-1823	Developer	50,000 - 75,000 +	No

** See documentation below

CORRESPONDENCE/MEMORANDUM _____State of Wisconsin

DATE: June 16, 2010

TO: Ken Hanzel, P.E.
Northeast Region Soils and Materials Engineer

FROM: Jeffrey D Horsfall, P.E.
Geotechnical Engineer

SUBJECT: **Site Investigation Memorandum**
Project I.D. 1133-03-03
Bayport Dredge Pile
USH 41
Brown County

General

The Northeast Region requested that the Foundation and Pavement Unit evaluate the Bayport dredge pile for use as a borrow source for the USH 41 project. The dredge pile was generated by first dredging material from the Fox River and placing the material into holding ponds, next the material was excavated from the holding ponds and placed on the dredge pile with dump trucks and spread around the pile with the dozer.

The approximate size of the dredge pile is 900 feet long by 700 feet wide by 55 feet high and has side slopes of approximately 6H:1V (9.5 degrees).

Subsurface Investigation

The Foundation and Pavement Unit performed 12 boring on the dredge pile in May 2010. Samples were collected every five feet with a method conforming to AASHTO T-206, Standard Penetration Test. The purpose of the boring was to define subsurface soil conditions at this site and collect samples. Three auger borings were performed to gather samples for standard Proctor tests and remolded unconfined compression tests. In addition, the Region Soils Engineer had collected samples for standard Proctor tests. Soil textures in the boring logs were field identified by the drillers. Attachment 1 presents the driller's boring logs at this site. Attachment 2 presents the results of the laboratory tests.

Typically, the following describes the subsurface conditions in the borings:

> 15.0 feet to 50.0 feet black loose to firm silt, trace clay, some organics, overlying Brown, hard, clay, some silt

Soils Laboratory Results

The soils laboratory test results were separated into index testing (moisture content, loss of ignition, Atterberg Limits and grain size distribution) and physical property testing (standard Proctor test and remolded unconfined compression test). The purpose of the index testing was to determine the uniformity and organic nature of the dredge pile, while

the purpose of the physical property testing was to determine the ability of the material to be incorporated into the roadway.

The SPT samples were combined into larger samples for the index testing. Three auger borings were performed to collect sufficient sample to perform standard Proctor tests and remolded unconfined compression tests. Three additional standard Proctor tests were performed in the Region from surface bag samples. Table 1 presents the results of the laboratory tests.

Generally, the results of the index tests indicated that the dredge pile material was mostly silt and clay particles with high moisture contents and relatively high organic contents. The material had a Unified Soil Classification of OL and OH. One sample (B-3, S5 and S6) had unique tests results with a Unified Soil Classification of 'ML' and was not used in the development of the ranges and averages presented below.

The dredge material was relatively consistent both laterally and with depth. The following describes some of the index properties:

- The moisture content ranged from 50.6% to 81.5% with an average of 69.2 %.

- The percent silt size particles ranged from 56.0% to 77.0% with an average of 69.0%. Figure 1 presents the percent silt versus the sample elevation. The figure indicates a slight trend for higher percent silt with the lower sample elevation.

- The loss of ignition test provide an indication of the organic content of the material with values greater than 5% could be considered to be perishable. The loss of ignition ranged from 7.1% to 11.7% with an average of 9.8%. Figure 2 presents the loss of ignition versus the sample elevation. The figure shows no indication of loss of ignition with sample elevation.

The results of the standard Proctor test indicated a range of maximum dry density of 77.7 pcf to 106.0 pcf and a range of optimum moisture content of 17.6% to 34.2%. Samples were remolded for the unconfined compression tests at a dry density of approximately 95% of the maximum dry density and at the optimum moisture content. The results of the unconfined compression tests ranged from 1,480 psf to 2,272 psf. This indicates a medium to stiff material. The moisture content of a soil has a great influence on the compressive strength. Generally, the higher the moisture contents the lower compressive strengths.

<u>Recommendation</u>
The following presents the recommendation for use of the Bayport dredge pile.

1. The dredge pile material should not be used within the core of the embankment because of the high loss of ignition of the material and the high moisture content. The standard specifications Section 207 Embankment prohibit the use of 'perishable material' within the core of the embankment. Material with an average loss of ignition of 9.8% would be considered organic and perishable. In

Table 1: Results of Soils Laboratry Testing

Sample	Descrip	Elevation	Class	LL	PL	PI	%M	%loss	Sand/Gra	Silt	Clay	DDmax	%Mopt	Qu	DD	%M
1	B-1, S1,S2	600.5	OL	NA	NP	NA	66.4	10.4	10	73	17	NA	NA	NA	NA	NA
2	B-2, S2,S3,S4	593.0	OL	NA	NP	NA	79.2	10.4	18	71	11	NA	NA	NA	NA	NA
3	B-3, S1,S2,S3	607.0	OL	NA	NP	NA	69.9	10.3	16	74	10	NA	NA	NA	NA	NA
4	B-3, S5,S6	589.5	ML	NA	NP	NA	26.0	4.2	38	51	11	NA	NA	NA	NA	NA
5	B-4, S3,S4	609.5	OL	NA	NP	NA	75.7	11.3	17	75	8	NA	NA	NA	NA	NA
6	B-4, S6,S7	594.5	OL	NA	NP	NA	71.7	11.4	21	71	8	NA	NA	NA	NA	NA
7	B-5, S3,S4	616.5	OL	NA	NP	NA	75.5	9.5	20	72	8	NA	NA	NA	NA	NA
8	B-5, S8,S9	591.5	OL	NA	NP	NA	50.6	7.4	18	74	8	NA	NA	NA	NA	NA
9	B-6 S1,S2	616.5	OL	NA	NP	NA	63.6	7.1	30	61	9	NA	NA	NA	NA	NA
10	B-6, S4,S5	601.5	OL	NA	NP	NA	65.6	9.0	17	72	11	NA	NA	NA	NA	NA
11	B-7, S4,S5	597.5	OL	NA	NP	NA	70.2	11.0	14	77	9	NA	NA	NA	NA	NA
12	B-8, S1,S2	625.5	OL	NA	NP	NA	72.2	10.2	32	61	7	NA	NA	NA	NA	NA
13	B-8, S8,S9	590.5	OL	NA	NP	NA	69.0	9.9	13	75	12	NA	NA	NA	NA	NA
14	B-9, S2,S3	598.5	OL	NA	NP	NA	64.1	9.8	15	67	18	NA	NA	NA	NA	NA
15	B-10, S1,S2,S3,S4	597.5	OL	NA	NP	NA	70.4	9.4	16	68	16	NA	NA	NA	NA	NA
16	B-11, S2,S3	605.5	OL	NA	NP	NA	70.9	9.0	25	65	10	NA	NA	NA	NA	NA
17	B-11, S5,S6	590.5	OL	NA	NP	NA	59.2	9.9	22	67	11	NA	NA	NA	NA	NA
18	B-12, S1,S2	595.5	OL	NA	NP	NA	81.5	11.7	14	74	12	NA	NA	NA	NA	NA
19	B-5, Bag 5	632.5	OH	65	36	29	NA	8.5	19	61	20	81.6	31.8	1480	73.4	31.8
20	B-7, Bag7	612.5	OH	55	33	22	NA	9.2	28	56	16	81.3	26.5	2272	73.2	26.5
21	B-9, Bag 9	608.5	OH	70	38	32	NA	11.1	16	65	19	77.7	34.2	2110	69.9	34.2
22	Black Soil	NA	NA	NA	NA	NA	35.1	NA	NA	NA	NA	82.4	31.0	NA	NA	NA
23	Brown Soil	NA	NA	NA	NA	NA	23.8	NA	NA	NA	NA	106	17.6	NA	NA	NA
24	Brown/Black Dredge	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.8	20.0	NA	NA	NA

Note:
Class: Unified Soil Classification
LL,PL,PI: Liquid Limit, Plastic Limit, Plasticity Index (%)
%M: moisture content (%)
%loss: Loss of ignition (%)
Sand/Gra: percent sand and gravel (%)
Silt: percent silt (%)
Clay: percent clay (%)
DDmax: Standard Proctor maximum dry density (pcf)
%Mopt: Standard Proctor optimum moisture content (%)
Qu: Unconfined compression strength (psf)
DD: Qu dry density (pcf)
%M: Qu moisture content (%)
NP: non plastic
NA: Not Applicable

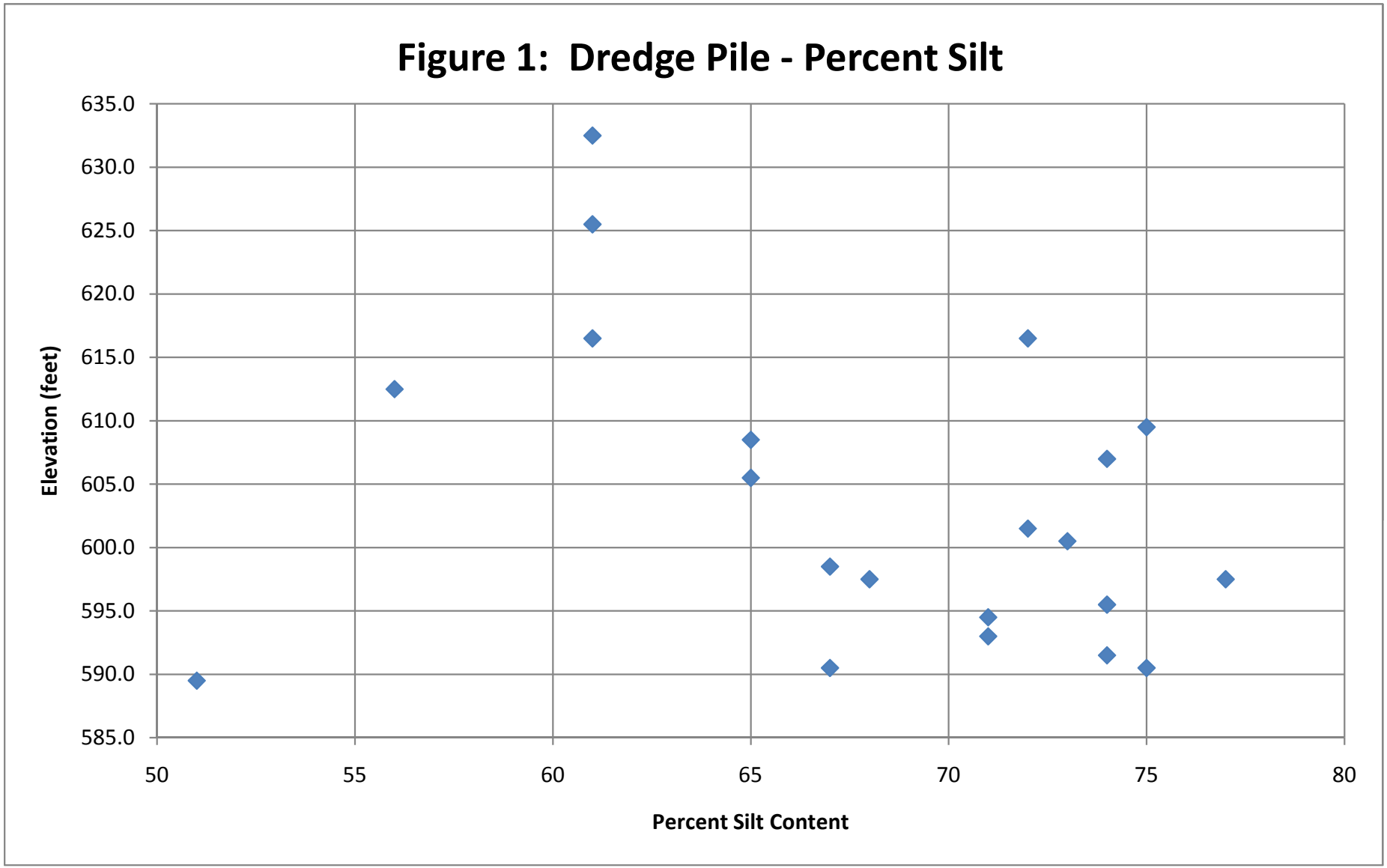


Figure 1: Dredge Pile - Percent Silt
635.0
630.0
625.0
620.0
615.0
610.0
605.0
600.0
595.0
590.0
585.0
Elevation (feet)
50
55
60
65
70
75
80
Percent Silt Content

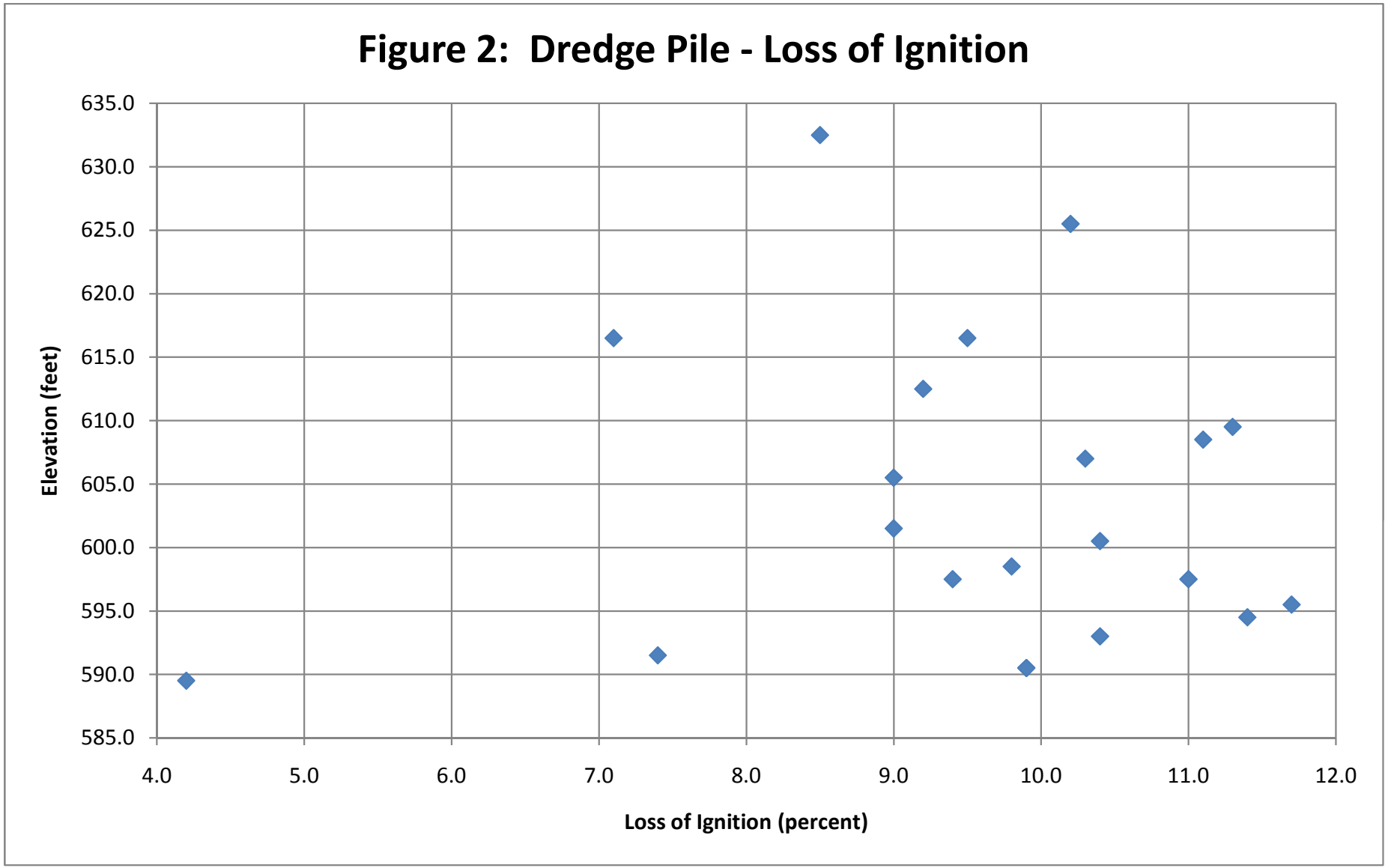


Figure 2: Dredge Pile - Loss of Ignition
635.0
630.0
625.0
620.0
615.0
610.0
605.0
600.0
595.0
590.0
585.0
Elevation (feet)
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
Loss of Ignition (percent)

addition, the range from the existing moisture content to the standard Proctor optimum moisture content is nearly 40 percent, which indicates the contractor would require a significant effort to dry the material.

2. The dredge pile material could be used outside of the 1H:1V up to a height of 10 feet, however, the cost to the contractor to adequately dry the dredge material may preclude its economical benefit.

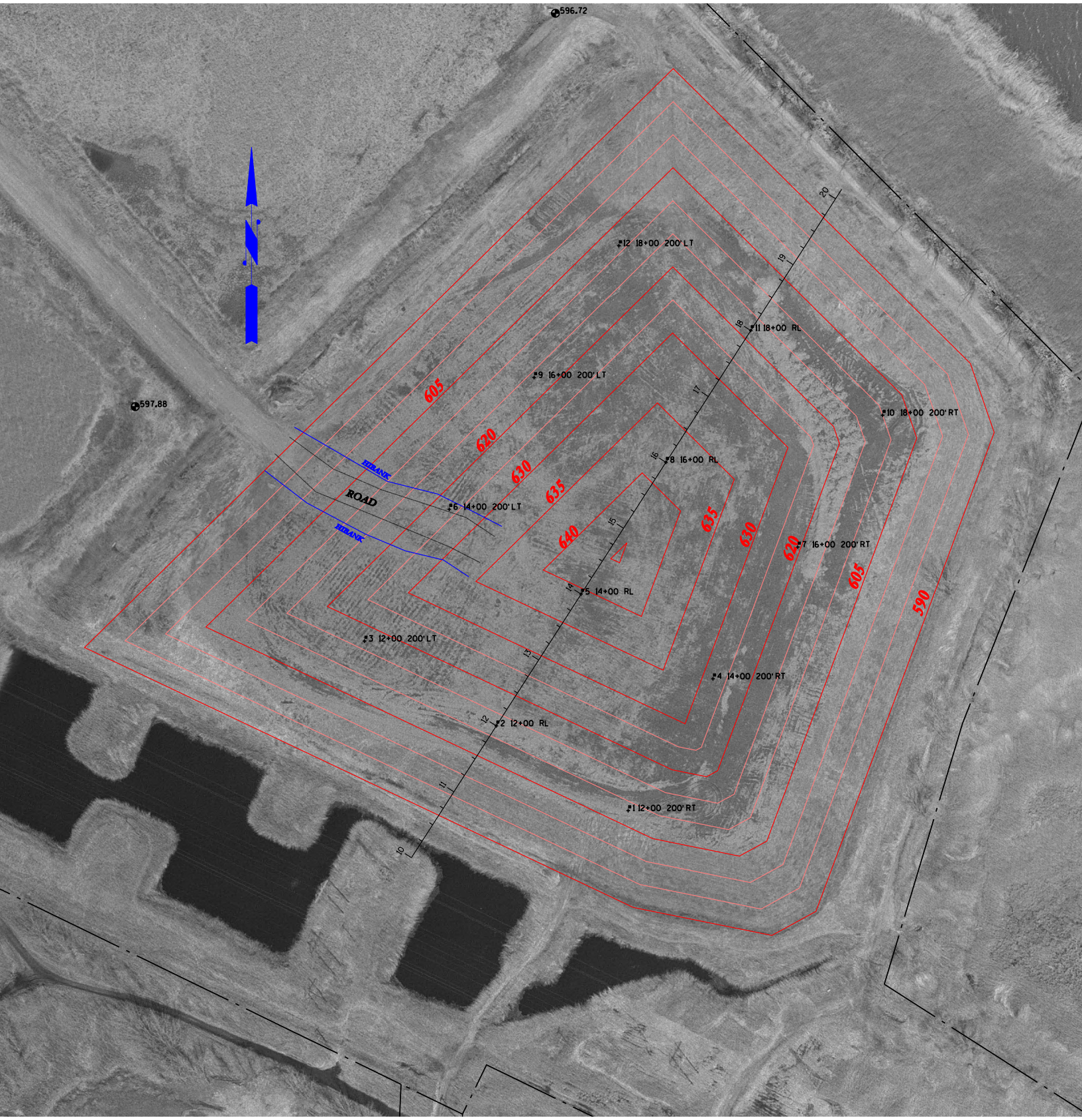
3. A bulking additive could be used to reduce the moisture content and allow for the use of the mixture within the core of the embankment, however, this would require an increase in construction observation to insure the proper mixture of the material.

Please call if you have any questions.

Attachments

cc: Northeast Region (via e-mail)
Central Office Files
Geotechnical File (original)

Attachment 1
Boring Location Figure and
Driller's Soil Boring Logs



596.72
597.88
12 18+00 200' LT
11 18+00 RL
9 16+00 200' LT
10 18+00 200' RT
8 16+00 RL
6 14+00 200' LT
7 16+00 200' RT
5 14+00 RL
3 12+00 200' LT
4 14+00 200' RT
2 12+00 RL
1 12+00 200' RT
HIBANK
ROAD
HIBANK
605
620
630
635
640
635
630
620
605
590
20
19
18
17
16
15
14
13
12
11
10

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 1 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset 200' Rt RL Surface Elevation 608

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM								HS	
						Silt Br				
		1	2			5				5
		2	2		4	Vloose No Recov			SS	
1a	M	1	2			10 Silt Br tr Clay				10
		2	3		4	Vloose	2.5		SS	
2a		1	2			15				15
2b		3	3		5	V loose	NS		SS	
						17' EOB #1				
						20				20
						25				25
						30				30
						35				35
						40				40

Checked by

Final 17'

Boring No. 1

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 2 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset RL Surface Elevation 608

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE

D = Damp
M = Moist
W = Wet

DRILLING METHOD

HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								H.S	
1a		1	2			5	1.0		SS	
		2	3		4	Vloose Silt Br Tr Clay little Wood				
2a	Mh	0	0			10	.5		SS	
		2	2		2	Vloose				
3a		0	0			15	.5		SS	
		2	2		2	Vloose				
4a	M	0	0			20	.5		SS	
4b		2	2		2	Vloose				
5a		9	9			25	4.5		SS	
5b		10	17		19	Firm Silt Gravel small layer Bit				
						27' EOB #2				
						30				
						35				
						40				

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Final 27'

Boring No. 2

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 3 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset 200' Lt RL Surface Elevation 617

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Br tr Clay			HS	
1a		0	0			5				
		1	2			V loose	.5		SS	
2a										
2b	d	0	2			10				
		2	3		4	V loose Tr Wood	1.0		SS	
3a		0	0			15				
		2	2		2		.7		SS	
4a	W	0	1			20				
4b		2	3				.7		SS	
5a		3	4			25				
5b		5	3		9	loose Silt br tr Clay Tr Gravel Small Clay layer	2.5		SS	
	MW									
6a		4	5			30				
6b		7	5		12	(Small sand & gravel layer) 32' EOB #3	2.0		SS	
						35				
						40				

ecked by

Final 32'

Boring No. 3

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 4 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset 200' Rt RL Surface Elevation 627

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W. = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM								HS	
1a		2	3			5 Silt tr Clay Br Tr Organic tr Wood				
		4	4		7	loose	.5		SS	
2a	MW	0	0			10				
		2	2		2	Very loose Silt tr Clay	.7		SS	
3a	M	2	2			15				
3b		3	3		5	Very loose	1.5		SS	
4a	MW	0	0			20				
		2	3		2	Very loose	1.0		SS	
5a	W	0	1			25 Layer Wet Wood				
5b	M	3	2		4	V loose Silt tr Clay Br (Water Filling in hole)	1.0		SS	
6a	M	1	2			30				
6b		2	2		4	very loose	.5		SS	
7a	MW	1	2			35 Silt tr Clay Little Wood				
7b		3	3		5	V loose	.7		SS	
8a	MW	2	3			40				
		4	4		7	loose (small clay layer 25)	1.5		SS	

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Final 42'

Boring No. 4

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 5 Structure Dredge Pile County Brown Sheet 1 of 2

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset RL Surface Elevation 639

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief PL

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM					Silt Br				
		0	0			5				
		0	0			V loose No Recov			SS	
1A	M	0	0			10 Silt Br				
		1	2			V loose	.2		SS	
A		0	0			15 Trace of Wood				
B		0	0		0	V loose Trace of Ice	.5		SS	
A		0	0			20				
B		2	2		2	V loose Silt Little Organics Tr Ice	.5		SS	
W		0	0			25				
3		2	3		2	V loose Silt Little Clay	1.0		SS	
M		1	3			30				
3		4	3		7	loose (Small Red Clay layer) 4"	1.0 2.0		SS	
		0	1			35				
3		2	3		5	V loose Silt Br Tr Clay Tr Organic	1.5		SS	
		1	2			40 loose				
		4	4		6		1.7		SS	

Logged by

Final 52'

Boring No. 5

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 5 Structure Dredge Pile County Brown Sheet 2 of 2

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset RL Surface Elevation 639

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE
D = Damp
M = Moist
W = Wet

DRILLING METHOD
HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
						Silt Some Clay				
						little wood				
3A		1	3			5 45	5			
3B		4	5		7	loose	2.0		SS	
7A		3	4			10 50	10			
7B	W	4	6		8	loose silt ~~tr~~ Sand to Gravel	2.0 / 1.0		SS	
						S2' EOB #5				
						15 55	15			
						20 60	20			
						25 65	25			
						30 70	30			
						35 75	35			
						40 80	40			

cked by

Final 52'

Boring No. 5

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. #6 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset 200' Lt RL Surface Elevation 624.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-3 Unit 3

Finish 5-4-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	D								HS	
	W									
S1A		0	0			5				
		0			0	V loose Silt little Clay Tr Gravel Br	.5		SS	
S2A	M	8	0			10				
		8				V loose Silt tr Clay Br	.7		SS	
S3A	M	4	5			15				
S3B	M	6	5		11	Firm	3.0		SS	
S4A	M	2	2			20				
S4B		3	9		5	V loose Silt tr Sand Clay Gravel Br	1.5 / 2.0		SS	
S5A		2	2		5	25				
S5B		3	4		5	V loose Silt Br	1.5		SS	
						Silt tr Sand & Grav				
S6A	M	1	6			30				
S6B	D	9	60		14	Firm Silt Tr Organic	.70 / .40		SS	
						35 Silt little Clay tr Organic				
S7A	M	2	2							
S7B		3	6		5	V loose Silt tr Organic tr Clay	1.0 / 2.5		SS	
						40 37' EOB #6				

Checked by _____ Final 37' Boring No. B-6

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 7 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset 200' Rt R Surface Elevation 620

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Br Tr Clay Tr Organics			HS	
1a		0	0			5	.5		SS	
		1	3		1	V loose			SS	
2a		0	0			10	.3		SS	
		0	2		0	V loose				
3a	MW	0	0			15	.3		SS	
		2	3		2	V loose				
4a	M	2	2			20	.5		SS	
4b		3	4		5	V loose				
5a	MW	2	4			25	1.0		SS	
5b		3	4		7	loose				
6a	M	2	3			30	.5		SS	
6b		4	5		7	loose				
						32' EOB #7				
						35				
						40				

Checked by _____ Final 32' Boring No. 7

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. B-8 Structure Dredge Pile County Brown Sheet 1 of 2

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset RL Surface Elevation 638

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
		0	0			5				
		0	0		0	V loose			SS	
1A		0	0			10				
		0	3		0	V loose Silt Br Seashell	.2		SS	
2A	MW	0	0			15				
2B		0	2		0	V loose Silt Br tr Clay Tr Gravel	.5		SS	
3A		5	3			20				
3B		1	1		4	V loose tr Ice	4.5 1.0		SS	
4A		1	1			25				
4B		1	1		2	V loose Silt Br Some Ice little wood	1.6		SS	
5A		0	0			30				
5B		0	2		6	V loose ~~Silt Br~~ Silt Dark Br Some Organic	1.0 .2		SS	
6A		0	0			35				
6B		1	2		1	V loose Silt Br ~~Drilled to SS needed~~	1.2		SS	
7A	M	1	2			40				
7B		3	4		5	loose Silt Br ~~[illegible]~~ tr Wood	3.0		SS	

Checked by

Final 52

Boring No. B8

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. B-8 Structure Dredge Pile County Brown Sheet 2 of 2

Project 1133-02-03 Road Dredge Pile

Station 16+00 Offset RL Surface Elevation

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE

D = Damp
M = Moist
W = Wet

DRILLING METHOD

HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-4 Unit 3

Finish 5-5-20 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
						5 45 Silt Br				
3A	M	0	3				80		SS	
3B		3	5		6	Loose				
						10 50				
7A		0	2				18		SS	
7B		3	3		5	V loose				
						52' EOB				
						15 55				
						20 60				
						25 65				
						30 70				
						35 75				
						40 80				

Checked by

Final 52

Boring No. 8

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 9 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset 200' Lt Rt Surface Elevation 616.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Br ~~[illegible]~~ Tr Gravel			HS	
						5				
		0	0							
		3	3		3	V loose No Recov			SS	
						10				
A		1	2				1.2		SS	
B		2	3		4	V loose Silt Br some Wood			SS	
						15				
A	MW	0	0			Silt Br Tr Clay Tr Organics	.2		SS	
B		0	0		0	V loose Small layer Br Clay in tip	.5			
						20				
A	M	5	4				2.8		SS	
B		6	6		10	loose Silt tr Clay			SS	
						25				
A		1	2			Silt tr Clay tr Gravel	2.0		SS	
B		4	3		6	loose			SS	
						27' EOB # 9				
						30				
						35				
						40				

Checked by

Final 27'

Boring No. 9

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 10 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 18+00 Offset 200' Rt RL Surface Elevation 610.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____ Depth to Water _____

Top of Well Elev. _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief PZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
1A		1 2				5 Silt Br Tr Clay				
		2 3			4	Very loose	1.5		SS	
2A		1 2				10 small cly layer Red				
		2 3			4	Very loose	12		SS	
3A		0 1				15				
		1 2			2	Vloose Tr Organic	.7		SS	
		1 3				20				
4A		3 3			6	Loose	1.5			
						22' EOB #10				
						25				
						30				
						35				
						40				

Checked by

Final 22'

Boring No. 10

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 11 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 18+00 Offset RL Surface Elevation 618

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash

E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief DZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
						Silt Br				
		0	0							
1A		0	2		0	5				
B						Vloose Tr Wood	1.0		SS	
2A		0	0			10				
B		0	2		0	Vloose Silt Br to Clay	.7		SS	
A		0	1			15				
B		3	3		4	Vloose Tr Organic	1.0		SS	
4A		1	2			20				
B		3	3		5	loose	2.5		SS	
A		3	3			25				
		3	5		6	loose	2.5		SS	
						30				
B		4	3				1			
		4	5		7	loose	1.0		SS	
							1.5			
						32' EOB # 11				
						35				
						40				

Checked by

Final 32'

Boring No. 11

DOT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 12 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 18+00 Offset 200' LT RL Surface Elevation 608.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM					Silt Br			HS	
		0	0			5 V loose No Recovery			SS	
		2	2		2					
A	M	0	0			10 Silt Tr Clay				
B		1	2		1	V loose	.6		SS	
A	DM	3	4			15				
B		5	5		9	Loose	2.2		SS	
						17' EOB #12				
A	M	3	4			20 Silt Some Clay little Wood				
B		4	4		8	Loos	2.5		SS	
							1.5			
						22' EOB #12				
						25				
						30				
						35				
						40				

Checked by _____ Final 22' Boring No. 12

Attachment 2
Results of Laboratory Testing

REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	1	2	3	3	4	4
SAMPLE NUMBER	1a2a2b	2a3a4a4b	1a2a2b3a	5a5b6a6b	3a3b4a	6a6b7a7b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	1	2	2	5	1	1
Coarse Sand (Pass #10 - Ret. #40)	1	1	1	10	3	2
Fine Sand (Pass #40 - Ret. #200)	8	15	13	23	13	18
Silt (Pass #200 - Ret. 0.002mm)	73	71	74	51	75	71
Clay (Pass 0.002mm)	17	11	10	11	8	8
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	ML	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-4 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	10.4	10.4	10.3	4.22	11.3	11.4
MOISTURE, % (AASHTO T-265)	66.4	79.2	69.9	26.0	75.7	71.7
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

DISTRIBUTION: Geotechnical Unit
District

By RSD

REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	5	5	6	6	7	8
SAMPLE NUMBER	3a3b4a4b	8a8b9a9b	1a2a	4a4b5a5b	4a4b5a5b	1a2a2b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	3		5	1	1	2
Coarse Sand (Pass #10 - Ret. #40)	2	3	2	2	1	1
Fine Sand (Pass #40 - Ret. #200)	15	15	23	14	12	29
Silt (Pass #200 - Ret. 0.002mm)	72	74	61	72	77	61
Clay (Pass 0.002mm)	8	8	9	11	9	7
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	OL	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	9.5	7.4	7.1	9.0	11.1	10.2
MOISTURE, % (AASHTO T-265)	75.5	50.6	63.6	65.6	70.2	72.2
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

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REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	8	9	10	11	11	12
SAMPLE NUMBER	8a8b9a9b	2a2b3a3b	1a2a3a4a	2a2b3a3b	5a6a6b	1a1b2a2b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	2	1	1	2	2	1
Coarse Sand (Pass #10 - Ret. #40)	1	1	1	1	2	1
Fine Sand (Pass #40 - Ret. #200)	10	13	14	22	18	12
Silt (Pass #200 - Ret. 0.002mm)	75	67	68	65	67	74
Clay (Pass 0.002mm)	12	18	16	10	11	12
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	OL	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	9.9	9.8	9.4	9.0	9.9	11.7
MOISTURE, % (AASHTO T-265)	69.0	64.1	70.4	70.9	59.2	81.5
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

DISTRIBUTION: Geotechnical Unit
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By RSD

REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County Brown	Project Name
Contractor	
Material Soil	
Source Dredge pile USH 41	
Tests Requested By Geotechnical	
Submitted by: Jeff Horsfall	Date 6/2/10

BORING NUMBER	Bag 5		Bag 7		Bag 9	
SAMPLE NUMBER						
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)						
Coarse Sand (Pass #10 - Ret. #40)	2		2		1	
Fine Sand (Pass #40 - Ret. #200)	17		26		15	
Silt (Pass #200 - Ret. 0.002mm)	61		56		65	
Clay (Pass 0.002mm)	20		16		19	
LIQUID LIMIT (AASHTO T-89)	65		55		70	
PLASTICITY INDEX (AASHTO T-90)	29		22		32	
UNIFIED CLASSIFICATION (ASTM D 2487)	OH		OH		OH	
AASHTO CLASSIFICATION (AASHTO M-145)	A-7-5 (27)		A-7-5 (17)		A-7-5 (32)	
LOSS ON IGNITION, % (AASHTO T-267)	8.5		9.2		11.1	
MOISTURE, % (AASHTO T-265)						
COMPACTION TEST						
AASHTO T-99, METHOD	A		A		A	
OPTIMUM MOISTURE, %	31.8		26.5		34.2	
MAXIMUM DENSITY, PCF	81.6		81.3		77.7	
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %	31.8		26.5		34.2	
UNIT WEIGHT, PCF	96.8		92.6		93.8	
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, PSF	1480		2272		2110	
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

Unconfined Compression samples were re-molded at 90% density of T-99.

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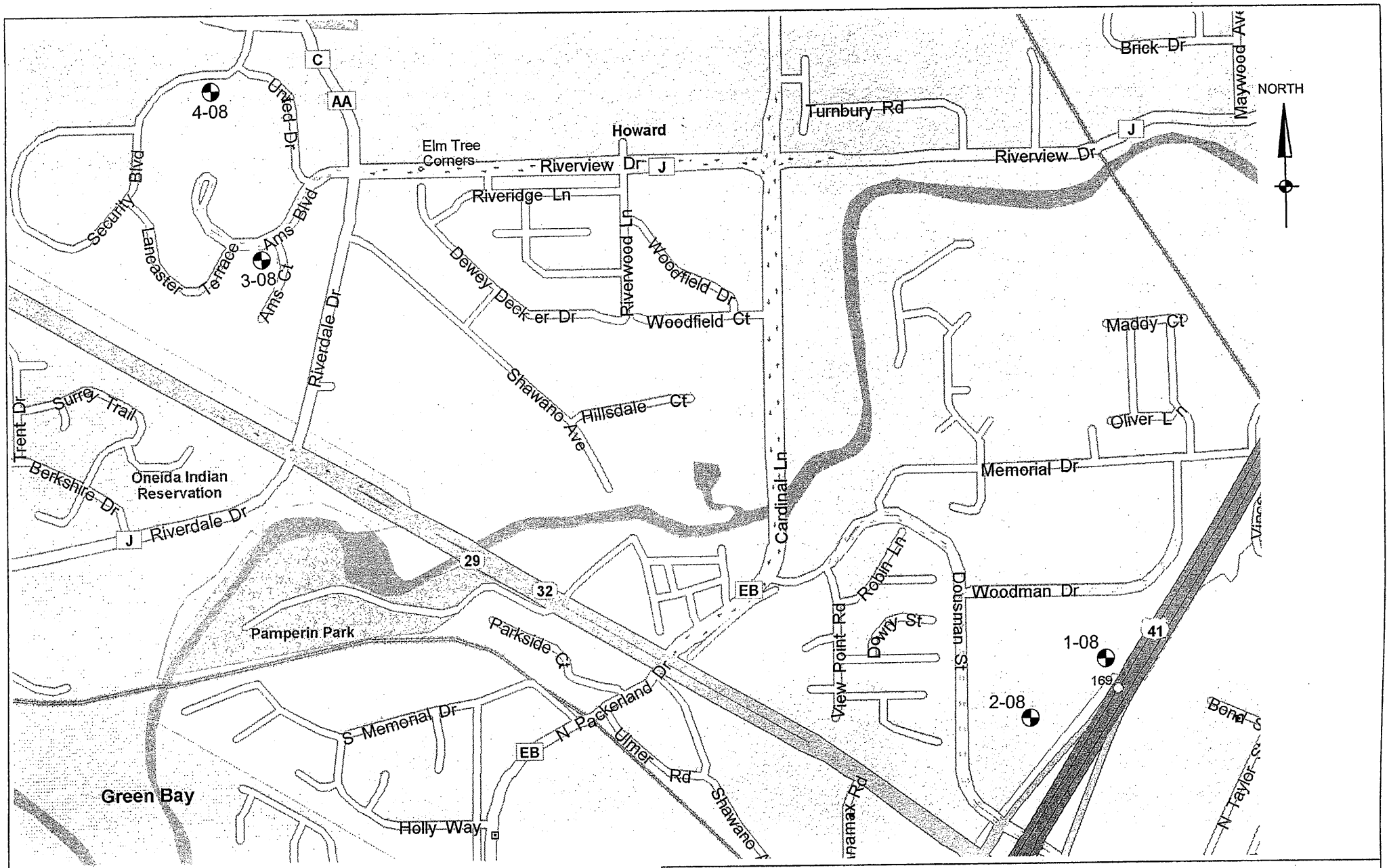
District

By RSD



LEGEND

SOIL BORING LOCATION

0 mi 0.2 0.4 0.6

BORING LOCATION SKETCH

PROJECT: 2008 STREET AND UTILITY PROJECTS
STORM WATER MANAGEMENT
VILLAGE OF HOWARD, WISCONSIN

FILE NO: G07-354.4	DATE: 2/7/2008	BY: M. KING

RVT

Appleton
Green Bay
Madison
Wisconsin

Geotechnical, Environmental, and Construction Consulting

TEST BORING LOG

Project:	2008 STREET & UTILITY PROJECTS		
Location:	VILLAGE OF HOWARD, WISCONSIN		
RVT File No:	G07-354.4	**Page:**	1 of 1
Surface Elev: Not Det'n	**Scale:** 1" = 7'	**Boring No:**	1-08

GENERAL NOTES

Drilling Method:
HSA = Hollow Stem Auger
FA = Flight Auger
DM = Drilling Mud
_X = AX, BX, or NX Coring

Sampling Method:
SS = Split Spoon
3T = 3" Shelby Tube
F = Flight Auger Sample
B = Bag Sample
P = Test Pit Sample
CR = Core Recovery
NSR = No Sample Recovery
MH = Manual SPT Hammer
AH = Auto SPT Hammer

Water Level Symbol:
WLD = Water Level During Drilling
WLA = Water Level After Drilling
WL = Water Level At 24 Hours
WL__ = Water Level At __ Hours

Laboratory Test Symbols:
LL/PL = Liquid Limit/Plastic Limit
P200 = Percent Passing #200 Sieve
MA* = Mechanical Analysis
Qu = Unconfined Compressive Str
Pq = Hand Penetrometer Reading
DD = Dry Density
W = Moisture Content (by Weight)
RQD = Rock Quality Designation
* = See attached graph

DRILLING NOTES

Started: 1/16/08 Completed: 1/16/08 Driller: LJ/GB Method: 3 1/4" HSA 0' to 18 1/2' (AH)

Depth (ft)	Blow Counts 0/6	6/12	Total (N)	Field Classification and Remarks Note: [ ] Indicates Possible Geologic Origin	Water Level Information	Sample No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other
2"				TOPSOIL	No WLA							
	1	2				1A	SS					
	4	5	6			1B	SS				Pq (tsf) = 3.25	
	2	3		LEAN CLAY, reddish brown, moist, medium to soft (CL)		2A	SS					
	3	4	6			2B	SS				Pq (tsf) = 1.75	
	1	2				3A	SS					
	2	2	4			3B	SS					
				[LACUSTRINE]	WLD	4	3T					
		1										
	1	2	3			5	SS				Pq (tsf) = 0.75	
	1	1										
	2		3			6	SS					
		1										
	0	1	1			7	SS					
	0	0										
	1		1			8	SS					
		1										
	0	1	1			9	SS					
20				End of Boring at 20'								

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Appleton
Green Bay
Madison
Wisconsin

Geotechnical, Environmental, and Construction Consulting

TEST BORING LOG

Project:	2008 STREET & UTILITY PROJECTS		
Location:	VILLAGE OF HOWARD, WISCONSIN		
RVT File No:	G07-354.4	**Page:**	1 of 1
Surface Elev:	Not Det'n	**Scale:** 1" = 7'	**Boring No:** 2-08

GENERAL NOTES

Drilling Method:
HSA = Hollow Stem Auger
FA = Flight Auger
DM = Drilling Mud
_X = AX, BX, or NX Coring

Sampling Method:
SS = Split Spoon
3T = 3" Shelby Tube
F = Flight Auger Sample
B = Bag Sample
P = Test Pit Sample
CR = Core Recovery
NSR = No Sample Recovery
MH = Manual SPT Hammer
AH = Auto SPT Hammer

Water Level Symbol:
WLD = Water Level During Drilling
WLA = Water Level After Drilling
WL = Water Level At 24 Hours
WL__ = Water Level At __ Hours

Laboratory Test Symbols:
LL/PL = Liquid Limit/Plastic Limit
P200 = Percent Passing #200 Sieve
MA* = Mechanical Analysis
Qu = Unconfined Compressive Str
Pq = Hand Penetrometer Reading
DD = Dry Density
W = Moisture Content (by Weight)
RQD = Rock Quality Designation
* = See attached graph

DRILLING NOTES

Started: 1/16/08 Completed: 1/16/08 Driller: LJ/GB Method: 3 1/4" HSA 0' to 16' (AH)

Depth (ft)	Blow Counts 0/6	6/12	Total (N)	Field Classification and Remarks Note: [ ] Indicates Possible Geologic Origin	Water Level Information	Sample No.	Type	Laboratory Tests W (%)	DD (pcf)	LL PL	Qu (psf)	Other
6"	1	3		TOPSOIL	No WLA	1A	SS					
	6	8	9			1B	SS				Pq (tsf) = 4.0	
	2	5		LEAN CLAY, reddish brown, moist, rather stiff to soft (CL)		2A	SS					
	7	9	12			2B	SS				Pq (tsf) = 3.25	
	2	4				3A	SS					
	6	7	10			3B	SS					
	3	4		[LACUSTRINE]								
	6		10			4	SS					
		1										
	4	3	7			5	SS					
	1	2			WLD							
	2		4			6	SS					
		1										
	1	2	3			7	SS				Pq (tsf) = 0.50	
	1	1										
17½	2		3			8	SS					
				End of Boring at 17.5'								

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WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Ronald W. Kazmierczak, Regional Director

Northeast Region Headquarters
2984 Shawano Ave.
Green Bay, Wisconsin 54313-6727
Telephone 920-662-5100
FAX 920-662-5413
TTY Access via relay - 711

November 29, 2010

FILE REF: FID #445180670
Outagamie CO
SW
EXEMPT

Mr. Jerry Haen
Spring Meadows LLC
2525 S Oneida St
Appleton, WI 54915-6226

Subject: Conditional Grant of Exemption for the Reuse of Stockpiled Foundry Sand in the Misty Meadows Subdivision, Ashwaubenon, Brown County, Wisconsin

Dear Mr. Haen:

The Department has reviewed your request for a low-hazard grant of exemption to reuse the stockpiled foundry sand located in the Misty Meadows Subdivision. This grant of exemption allows the foundry sand to be reused as fill material in the berms along the Scheuring Road reconstruction project.

Based on our review we have determined that the proposed activity is not likely to cause environmental contamination or endanger human health and welfare, provided that the project is done in accordance with the conditions of the attached exemption.

If you have questions regarding this letter, please contact Leland Archiquette at (608) 267-0542.

Sincerely,

James Zellmer, P.E.
Waste & Materials Management Program Supervisor
Northeast Region

CC: Bruce Urben - NER
Leland Archiquette/File – WA/5

CONCLUSIONS OF LAW

1. The Department has the authority under s. 289.43(8)(b)3., Stats., and s. NR 500.08(5), Wis. Adm. Code to issue a grant of exemption if the exemption does not create a hazard to public health or the environment.

2. The Department has the authority under s. 289.43(8)(c), Stats., to impose conditions on a grant of exemption for the beneficial use of a low-hazard waste.

3. In accordance with the foregoing, the Department has the authority under s. 289.43(8), Stats., and s. NR 500.08(5), Wis. Adm. Code to issue the following conditional grant of exemption.

CONDITIONAL LOW HAZARD GRANT OF EXEMPTION

The Department of Natural Resources hereby grants an exemption to Spring Meadows, LLC, to reuse approximately 10,000 cubic yards of foundry sand that is currently stockpiled in the Misty Meadows Subdivision, Second Addition, subject to the following conditions:

1. The stockpiled foundry sand may only be used in the Wis. DOT projects that have been identified in the November 4, 2010 submittal. Prior approval from the Department must be obtained if a different reuse is proposed.

2. Spring Meadows, LLC shall prevent the airborne release of the dust during removal, hauling, and placement to the extent possible.

3. The soil underlying the current stockpile shall be removed to 6-inches below the existing grade.

4. All foundry sand shall be covered with 2 feet of soil, including topsoil, and seeded.

The Department reserves the right to require the submittal of additional information and to modify this approval at any time, if in the Department's opinion, modifications are necessary. Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes and case law establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.

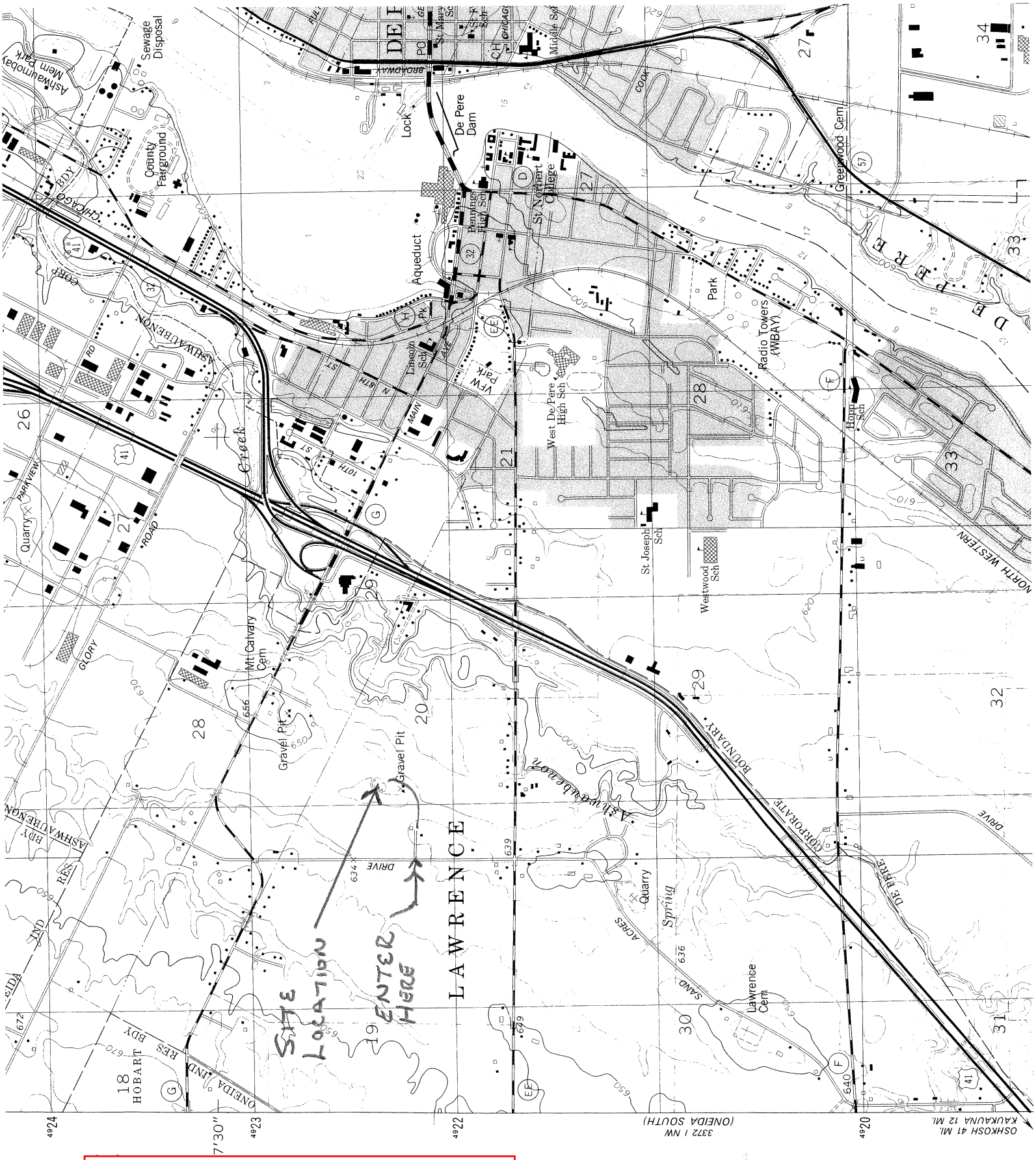

FIGURE 1
Site Location Diagram
Former Gravel Pit

PORTION OF USGS 7.5 MINUTE QUAD MAP DEPERE WI

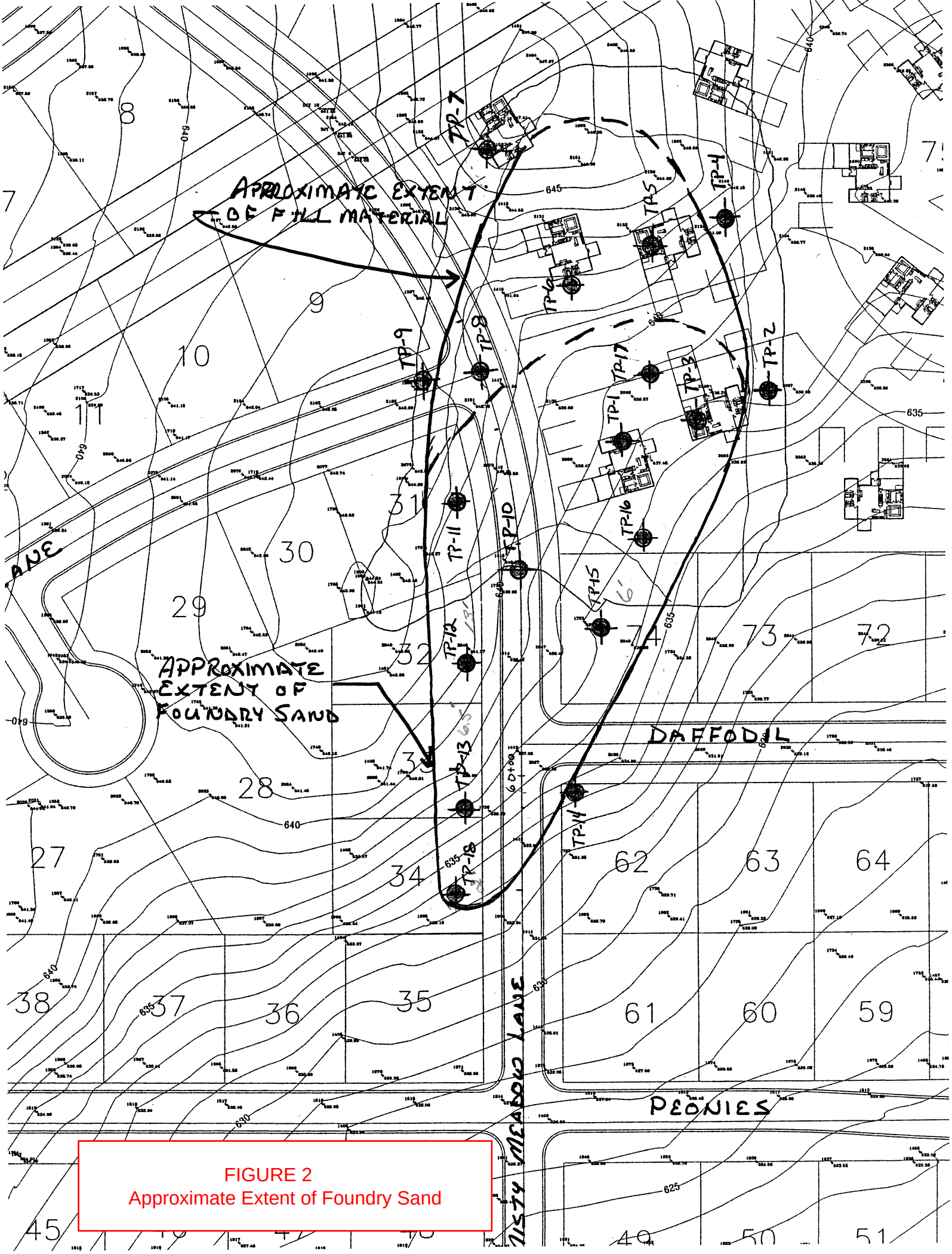

FIGURE 2
Approximate Extent of Foundry Sand

SALES MAP

2ND ADDITION TO SPRING MEADOWS

LOCATED IN THE VILLAGE OF ASHWAUBENON, BROWN COUNTY, WISCONSIN.

FIGURE 3 -- Current Lots Containing Foundry Sand Pile, Misty Meadows Subdivision, Village of Ashwaubenon, WI

McMAHON ASSOCIATES, INC.
ENGINEERS
ARCHITECTS
PROJ. MGRS.
SURVEYORS
1445 McMahon Drive Neenah, WI 54956
Mailing Address:

Summary of Foundry Sand Analytical Results
Spring Meadows
Aswaubenon, Wisconsin

Sample Location	Foundry Sand Thickness	Alum. (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Selenium (mg/L)	Fluoride (mg/L)	Phenolics (mg/L)
TP-11 (7.5')	13'	0.052	0.002	0.004	0.0015	0.00013	<0.00017	0.00081	0.029	0.0013	0.00093	<0.000026	<0.00047	<0.078	0.0073
TP-12 (6')	13.5'	0.072	**0.019 ***	0.002	0.0081	0.00019	0.00036	0.00098	0.140	**0.030**	0.014	<0.000026	0.00075	0.220	0.0084
TP-13 (4')	6.5'	0.028	0.0015	0.0004	0.0004	<0.000081	<0.00017	0.00025	0.030	0.00045	0.0021	<0.000026	<0.00047	0.180	0.0048
TP-15 (4')	6'	0.150	0.0025	0.00097	0.0009	<0.000081	<0.00017	0.00059	0.092	0.0008	0.0067	<0.000026	<0.00047	0.190	0.0045
TP-16 (10')	12'	0.042	0.0066	0.00048	0.0098	<0.000081	<0.00017	0.00048	0.037	0.0022	0.0086	<0.000026	<0.00047	0.170	0.0053
TP-17 (5' - 10')	12.5'	0.270	**0.012***	0.0013	0.0084	<0.000081	<0.00017	0.00074	0.180	**0.016 #**	0.0092	<0.000026	<0.000047	0.270	0.0055
TP-18 (1.5')	2'	0.100	0.011	0.0018	0.067	<0.000081	<0.00017	0.00094	0.055	0.0063	0.0036	<0.000026	<0.00047	<0.83	0.0076
Cat. 1		1.500	0.001	0.005	0.400	0.0004	0.001	0.010	0.150	0.0015	0.025	0.0002	0.010	0.800	1.200
Cat. 2 & 3		15.000	0.012	0.050	4.000	0.004	0.005	0.100	1.500	0.015	0.250	0.002	0.100	8.000	12.000
Cat. 4		---	0.030	0.250	10.000	0.020	0.025	0.500	3.000	0.075	0.500	0.010	0.250	20.000	30.000

Test Pits were conducted on August 4, 2005.
Cat. 1 = Industrial Byproduct Standard for Category 1, 2, 3 and 4 ASTM Water Leach Test
Bold = Category 2 & 3 exceedance
* = Antimony (Sb) was detected in the ASTM blank at a concentration of 0.0048 mg/l.
# = Lead (Pb) was detected in the ASTM blank at a concentration of 0.0014 mg/l.

Pace Analytical®

1241 Bellevue Street, Suite 9
Green Bay, WI 54302
920-469-2436, Fax: 920-469-8827

Analytical Report Number: 862284

Client: STS CONSULTANTS - GB

Lab Contact: Eric Bullock

Project Name:

Project Number: 29443

Lab Sample Number	Field ID	Matrix	Collection Date
862284-001	TP-11 7.5'	SOIL	08/04/05
862284-002	TP-12 6'	SOIL	08/04/05
862284-003	TP-13 4'	SOIL	08/04/05
862284-004	TP-15 4'	SOIL	08/04/05
862284-005	TP-16 10'	SOIL	08/04/05
862284-006	TP-17 5'-10'	SOIL	08/04/05
862284-007	TP-18 1.5'	SOIL	08/04/05

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc. The sample results relate only to the analytes of interest tested.

Approval Signature

8/15/05
Date

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-11 7.5'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-001

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		52	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		2.0	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		4.0	0.30	1.0		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		1.5	0.16	0.52		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach		0.13	0.081	0.27		1	ug/L	Q	08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.81	0.21	0.69		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		29	18	60		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		1.3	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		0.93	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach	<	0.078	0.078	0.26		1	mg/L		08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0073	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-12 6'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-002

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		72	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		19	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		2.0	0.30	1.0		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		8.1	0.16	0.52		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach		0.19	0.081	0.27		1	ug/L	Q	08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach		0.36	0.17	0.56		1	ug/L	Q	08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.98	0.21	0.69		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		140	18	60		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		30	0.067	0.22		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		14	0.16	0.54		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach		0.75	0.47	1.6		1	ug/L	Q	08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach		0.22	0.078	0.26		1	mg/L	Q	08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0084	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-13 4'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-003

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		28	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		1.5	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		0.40	0.30	1.0		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		0.42	0.16	0.52		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach	<	0.081	0.081	0.27		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.25	0.21	0.69		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		30	18	60		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		0.45	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		2.1	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach		0.18	0.078	0.26		1	mg/L	Q	08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0048	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-15 4'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-004

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		150	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		2.5	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		0.97	0.30	1.0		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		0.90	0.16	0.52		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach	<	0.081	0.081	0.27		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.59	0.21	0.69		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		92	18	60		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		0.80	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		6.7	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach		0.19	0.078	0.26		1	mg/L	Q	08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0045	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-16 10'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-005

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		42	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		6.6	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		0.48	0.30	1.0		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		9.8	0.16	0.52		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach	<	0.081	0.081	0.27		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.48	0.21	0.69		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		37	18	60		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		2.2	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		8.6	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach		0.17	0.078	0.26		1	mg/L	Q	08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0053	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-17 5'-10'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-006

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		270	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		12	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		1.3	0.30	1.0		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		8.4	0.16	0.52		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach	<	0.081	0.081	0.27		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.74	0.21	0.69		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		180	18	60		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		16	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		9.2	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach		0.27	0.078	0.26		1	mg/L		08/09/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0055	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 862284

Client : STS CONSULTANTS - GB
Project Name :
Project Number : 29443
Field ID : TP-18 1.5'

Matrix Type : SOIL
Collection Date : 08/04/05
Report Date : 08/15/05
Lab Sample Number : 862284-007

INORGANICS

Test		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Leach Date		Done				1			08/08/05	ASTM D3987	
Aluminum - ASTM Leach		100	2.7	8.9		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Antimony - ASTM Leach		11	0.072	0.24		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Arsenic - ASTM Leach		1.8	0.30	1.0		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Barium - ASTM Leach		67	0.16	0.52		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Beryllium - ASTM Leach	<	0.081	0.081	0.27		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Cadmium - ASTM Leach	<	0.17	0.17	0.56		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Chromium - ASTM Leach		0.94	0.21	0.69		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Iron - ASTM Leach		55	18	60		1	ug/L	QA	08/11/05	SW846 3020A	SW846 6020
Lead - ASTM Leach		6.3	0.067	0.22		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Manganese - ASTM Leach		3.6	0.16	0.54		1	ug/L	A	08/11/05	SW846 3020A	SW846 6020
Mercury - ASTM Leach	<	0.026	0.026	0.087		1	ug/L		08/11/05	SW846 7470A	SW846 7470A
Selenium - ASTM Leach	<	0.47	0.47	1.6		1	ug/L		08/11/05	SW846 3020A	SW846 6020
Fluoride - ASTM Leach	<	0.83	0.83	2.8		1	mg/L	N	08/10/05	EPA 300.0	EPA 300.0
Phenolics, Total Recoverable-A		0.0076	0.0032	0.011		1	mg/L	QA	08/15/05	EPA 420.2	EPA 420.2

All soil results are reported on a dry weight basis unless otherwise noted.

Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
Fax: 920-469-8827

Lab Number	TestGroupID	Field ID	Comment
862284	W-PHNL-A	All Samples	A - Analyte is detected in theASTM blank at a concentration of 0.0033 mg/L.
862284	W-PHNL-A	All Samples	A - Analyte is detected in the method blank at a concentration of 0.0048 mg/L for samples 001-007.
862284-	M-AL-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 28 ug/L.
862284-	M-AS-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 0.61 ug/L.
862284-	M-BA-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 1.2 ug/L.
862284-	M-CR-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 0.21 ug/L.
862284-	M-FE-A	All Samples	A - Analyte is detected in the method blank at a concentration of 26 ug/L.
862284-	M-MN-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 0.49 ug/L.
862284-	M-PB-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 1.4 ug/L.
862284-	M-SB-A	All Samples	A - Analyte is detected in the ASTM blank at a concentration of 4.8 ug/L.

Qualifier Codes

Flag	Applies To	Explanation
A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis the serial dilution failed to meet the established control limits of 0-10%. The sample concentration is greater than 50 times the IDL for analysis done on the ICP or 100 times the IDL for analysis done on the ICP-MS. The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
G	All	The result is estimated because the concentration is less than the lowest calibration standard concentration utilized in the initial calibration. The method detection limit is less than the reporting limit specified for this project.
H	All	Preservation, extraction or analysis performed past holding time.
HF	Inorganic	This test is considered a field parameter, and the recommended holding time is 15 minutes from collection. The analysis was performed in the laboratory beyond the recommended holding time.
J	All	Concentration detected equal to or greater than the method detection limit but less than the reporting limit.
K	Inorganic	Sample received unpreserved. Sample was either preserved at the time of receipt or at the time of sample preparation.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
M	Organic	Sample pH was greater than 2
N	All	Spiked sample recovery not within control limits.
O	Organic	Sample received overweight.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
Z	Organics	This compound was separated but it did not meet the resolution criteria as set forth in SW846.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.

Pace Analytical Services, Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

Test Group Name	862284-001	862284-002	862284-003	862284-004	862284-005	862284-006	862284-007
ALUMINUM - ASTM LEACH	B	B	B	B	B	B	B
ANTIMONY - ASTM LEACH	B	B	B	B	B	B	B
ARSENIC - ASTM LEACH	B	B	B	B	B	B	B
ASTM LEACH - ORGANIC & INORGAN							
BARIUM - ASTM LEACH	B	B	B	B	B	B	B
BERYLLIUM - ASTM LEACH	B	B	B	B	B	B	B
CADMIUM - ASTM LEACH	B	B	B	B	B	B	B
CHROMIUM - ASTM LEACH	B	B	B	B	B	B	B
FLUORIDE - ASTM	B	B	B	B	B	B	B
IRON - ASTM LEACH	B	B	B	B	B	B	B
LEAD - ASTM LEACH	B	B	B	B	B	B	B
MANGANESE - ASTM LEACH	B	B	B	B	B	B	B
MERCURY - ASTM LEACH	B	B	B	B	B	B	B
PHENOLICS, TOTAL RECOVER - AST	B	B	B	B	B	B	B
SELENIUM - ASTM LEACH	B	B	B	B	B	B	B

Code	Facility	Address	WI Certification
B	Green Bay Lab (Bellevue St)	1241 Bellevue Street, Suite 9 Green Bay, WI 54302	405132750 / DATCP: 105-444

Sample Condition Upon Receipt

Pace Analytical

Client Name: STS Project # 862284

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used NA **Type of Ice:** ~~Wet~~ Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature R01 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: 8-4-05 SFalk. JAB

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. No prj name. SF
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	~~☑Yes~~ ☑No ☐N/A	12. 002-Depth on COC says 6', label says 5'. 8-4-05 SFalk
-Includes date/time/ID/Analysis Matrix: S		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CB 8/7/05 **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

CHAIN OF CUSTODY RECORD

№ 36977

Contact Person: MARK MAGEE
Phone No.: Office: G.B.
Project No.: 29443 PO No.:
Project Name:

Special Handling Request
- ☐ Rush
- ☐ Verbal
- ☐ Other

RECORD NUMBER _____ THROUGH _____

Laboratory: PACE ANALYTICAL
Contact Person: ERIC BULLOCK
Phone No.:
Results Due:

Sample I.D.	Date	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Preservation Y	Preservation N	Field Data: PID/FID Ambient	Field Data: PID/FID Sample	Field Data: PH	Field Data: Special Cond.	Analysis Request	Comments on Sample (Include Major Contaminants)
	05													862284
TP-11 7.5'	8/4		x		1	SOIL 001		x					WR 528.22 CAT. 3 ASTM WATER LEACH TEST	1-802mL
TP-12 6'						002							Al, Sb, As, Ba, Be, Cd, Cr, F, Fe, Pb, Mn, Hg, Phenol, Se	
TP-13 4'						003								
TP-15 4'						004								
TP-16 10'						005								
TP-17 5-10'						006								
TP-18 1.5'	8/4		x		1	SOIL 007		x						
													HOLD TOTALS, DEPENDING ON WATER LEACH TEST RESULTS	

Collected by: Mark Magee	Date 8/4/05	Time	Delivery by: Mark Magee	Date 8/4/05	Time 4:30
Received by: Ashley Bunary	Date 8/4/05	Time 1030	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received for lab by:	Date	Time	Relinquished by:	Date	Time

Laboratory Comments Only: Seals Intact Upon Receipt? ☐ Yes ☐ No ☐ N/A

Final Disposition:

Comments (Weather Conditions, Precautions, Hazards):

R01

Distribution: Original and Green - Laboratory Yellow - As needed Pink - Transporter Goldenrod - STS Project File
Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

6/99cp10k

STS Consultants Ltd.
Consulting Engineers