EPA Region 5 Records Ctr.
330628

APPENDIX A

BORING LOGS

PROJECT TRI COUNTY LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, 7300 College Avenue, Palos Heights, Illinois

BORING 4A DATE STARTED 11-18-76 DATE COMPLETED 11-19-76 JOB L-14,058

ELEVATIONS

GROUND SURFACE 734.8

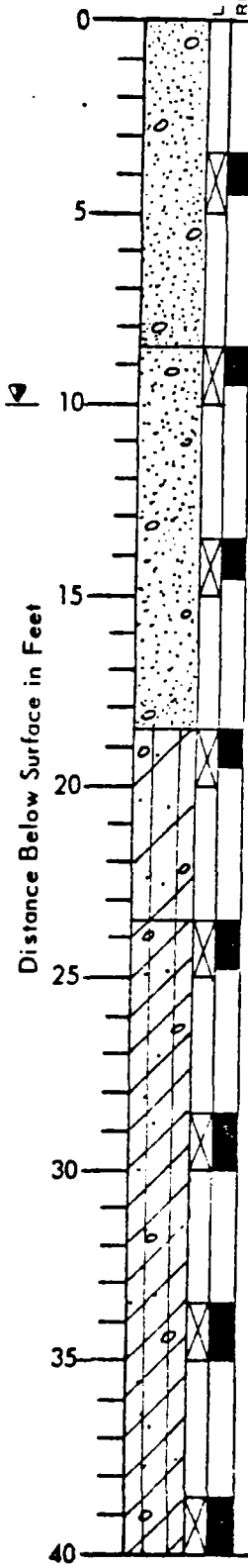
END OF BORING 609.8

WATER TABLE

AT END OF BORING

24 HOURS

While Drilling -10.0'



LENGTH	RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
		1	SS	28						Firm brown fine to coarse SAND with gravel, damp SW
								8.5	726.3	
		2	SS	26						Firm brown fine to coarse SAND and small to medium GRAVEL, wet to saturated SW
		3	SS	17						
								18.5	716.3	
		4	SS	29	13.7					Firm gray clayey SILT, little sand and small gravel, moist ML
						3.57		23.5	711.3	
		5	SS	24	11.9	3.5*				Very tough to hard brownish-gray silty CLAY, trace sand and gravel, moist CL
		6	SS	27	15.6	3.25*				
						2.38				
		7	SS	23	14.4	2.5*				
		8	SS	23	13.1	4.5*				

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT TRI COUNTY LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, 7300 College Avenue, Palos Heights, Illinois

BORING 4A DATE STARTED 11-18-76 DATE COMPLETED 11-19-76 JOB L-14,058

ELEVATIONS

GROUND SURFACE 734.8

END OF BORING 609.8

WATER TABLE

AT END OF BORING

24 HOURS

While Drilling -10.0'

Distance Below Surface in Feet

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	9	SS	19	13.8	2.27 2.5*				Very tough to hard brownish-gray silty CLAY, trace sand and gravel, moist CL
	10	SS	18	13.9	2.14 2.0*				
	11	SS	24	10.1	4.0*				
							58.5	676.3	
	12	SS	59						Very dense brownish-gray silty fine SAND, moist SM
							63.5	671.3	
	13	SS	32	12.8	4.71 4.5*				Hard brownish-gray silty CLAY, trace sand and gravel, moist CL
							68.5	666.3	
	14	SS	43						Dense gray silty fine SAND, trace clay, moist SM
							73.5	661.3	
	15	SS	35	13.2	3.5*				Very tough to hard brownish-gray silty CLAY, little sand and gravel, inter bedded sand layers from 84-93.5' and cobble at 88.5', moist CL
	16	SS	36	13.2	2.14 2.5*				

40 45 50 55 60 65 70 75 80

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT TRI COUNTY LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, 7300 College Avenue, Palos Heights, Illinois

BORING 4A DATE STARTED 11-18-76 DATE COMPLETED 11-19-76 JOB L-14,058

ELEVATIONS

GROUND SURFACE 734.8

END OF BORING 609.8

WATER TABLE

AT END OF BORING

24 HOURS

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
80										
85		17	SS	89	13.4	3.5*				Very tough to hard brownish-gray silty CLAY, little sand and gravel, moist CL (Inter bedded sand layers from 84-93.5' and cobble at 88.5')
90		18	SS	100/1"						
95		19	SS	51	11.9	5.77 4.5+*				
								98.5	636.3	
100		20	SS	66/6"						Very dense gray small to large GRAVEL with fine to coarse sand, occasional cobble, saturated GW
105		21	SS	50/2"						
110		22	SS	72						
115		23	SS	100/5"						
120		24	SS	97						

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT TRI COUNTY LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, 7300 College Avenue, Palos Heights, Illinois

BORING 4A DATE STARTED 11-18-76 DATE COMPLETED 11-19-76 JOB L-14,058

ELEVATIONS		WATER TABLE	
GROUND SURFACE	734.8	AT END OF BORING	
END OF BORING	609.8	24 HOURS	

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
120										Very dense gray small to large GRAVEL with fine to coarse SAND, occasional cobbles, saturated GW
125		25	SS	100/4"						
				End of Boring at 125.0 feet						*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer
130										
135										
140										
145										
150										
155										
160										

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illino

BORING 10 DATE STARTED 12-30-75 DATE COMPLETED 12-30-75 JOB L-13,14

ELEVATIONS

GROUND SURFACE 731.4

END OF BORING 651.4

WATER TABLE

AT END OF BORING -2.0'

24 HOURS -1.5'

Water encountered @ -5.0' while drilling

SHEET 1 o

Depth	Length Recovery	Sample No.	Type	N	WC	Q_u	γ DRY	Depth	Elev.	Soil Descriptions
0								3.0	728.4	Black clayey TOPSOIL, moist
5		1	SS	12				8.0	723.4	Firm gray-brown fine to coarse SAND, little gravel, wet to saturated (SW)
10		2	SS	11						Firm gray and brown fine to coarse SAND and small to medium GRAVEL, saturated (SW)
15		3	SS	13						
20		4	SS	13	16.9			19.5	711.9	
25		5	SS	12	11.1	2.0*				
30		6	SS	15	15.2	2.27 2.0*				Very tough brown and gray silty CLAY, trace sand and gravel, moist (CL)
35		7	SS	30	13.3	5.18 4.5+*		33.0	698.4	Tough to hard reddish-brown silty CLAY, trace sand & gravel, occasional sand seam, moist (CL)
40		8	SS	32	13.4	5.95 4.5+*				

Distance Below Surface in Fee

*- Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

CONTINUED ON SHEET 2

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illinc

BORING 10-Cont'd. DATE STARTED 12-30-75 DATE COMPLETED 12-30-75 JOB L-13,14

ELEVATIONS		WATER TABLE	
GROUND SURFACE	731.4	AT END OF BORING	-2.0'
END OF BORING	651.4	24 HOURS	-1.5'
		Water encountered @ -5.0' while drilling	

SHEET 2 of

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	16	13.6	3.92 3.5*				
50		10	SS	54	14.3	2.25*				Tough to hard reddish-brown silty CLAY, trace sand and gravel, occasional sand seam, moist (CL)
55		11	SS	60	14.6	1.5*				
60		12	SS	41	14.7	1.5*				
								63.5	667.9	
65		13	SS	44						Dense reddish-brown sandy SILT, very moist (ML)
								68.5	662.9	
70		14	SS	46	12.3	5.12 4.5+*				Very tough to hard reddish-brown silty CLAY, trace sand and gravel, moist (CL)
75		15	SS	47	12.6	6.86 4.5+*				
80		16	SS	40	13.4	2.75*				

*- Approximate unconfined compressior strength based on measurements wi' a calibrated pocket penetrometer

End of Boring at 80.0 feet

TESTING SERVICE CORPORATION

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illinoi

BORING 11 DATE STARTED 12-31-75 DATE COMPLETED 12-31-75 JOB L-13,14

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 653.1

WATER TABLE

AT END OF BORING - 9.0'

24 HOURS - 3.5'

Water encountered @ -18.0' while drilling

SHEET 1 o

SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
								FILL - Brown sandy GRAVEL, mois (GW)
1	SS	15	12.0	3.5*		4.0	729.1	
2	SS	11	12.2					Very tough to hard gray silty CLAY, some sand and gravel, occasional clayey silt layer, moist (CL)
3	SS	18	21.6	3.98 4.0*				
4 a	SS	40	13.6	4.0*		19.0	714.1	
b			12.4	6.86 4.5+*				
5	SS	34	14.2	2.5*				Tough to hard reddish-brown silt CLAY, little sand and gravel, alternating with gray silty clay layers from 19' to 30', moist (CL)
6	SS	22	13.6	2.03 2.25*				
7	SS	41	15.2	2.0*				
8	SS	64	15.1	1.19 1.5*				

Distance Below Surface in Ft

0, 5, 10, 15, 20, 25, 30, 35, 40

*- Approximate unconfined compressior strength based on measurements wit a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

DRILL RIG NO.

CONTINUED ON SHEET 2

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illinois

BORING 11-Cont'd. DATE STARTED 12-31-75 DATE COMPLETED 12-31-75 JOB L-13,14P

ELEVATIONS

GROUND SURFACE 733.1

END OF BORING 653.1

WATER TABLE

AT END OF BORING - 9.0'

24 HOURS - 3.5'

Water encountered @ -18.0' while drilling

SHEET 2 of

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	35	14.4	3.46 3.75*				
50		10	SS	30	13.5	5.24 4.5+*				Tough to hard reddish-brown silty CLAY, little sand and gravel, alternating with gray silty clay layers from 19' to 30', moist (CL)
55		11	SS	31	14.7	3.15 3.5*				
60		12 a b	SS	21	14.6	2.75*		59.0	674.1	
65		13	SS	23						Firm reddish-brown silty fine SAND, very moist (SM)
70		14	SS	46	13.6	5.24 4.5*		68.0	665.1	Very tough to hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
75		15	SS	25	13.9	3.25*				
80		16	SS	30	14.2	4.41 4.5+*				

End of Boring at 80.0 feet

TESTING SERVICE CORPORATION

*- Approximate unconfined compression strength based on measurements wit a calibrated pocket penetrometer

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illinoi

BORING 12 DATE STARTED 1-2-76 DATE COMPLETED 1-2-76 JOB L-13,

ELEVATIONS

GROUND SURFACE 722.8

END OF BORING 642.8

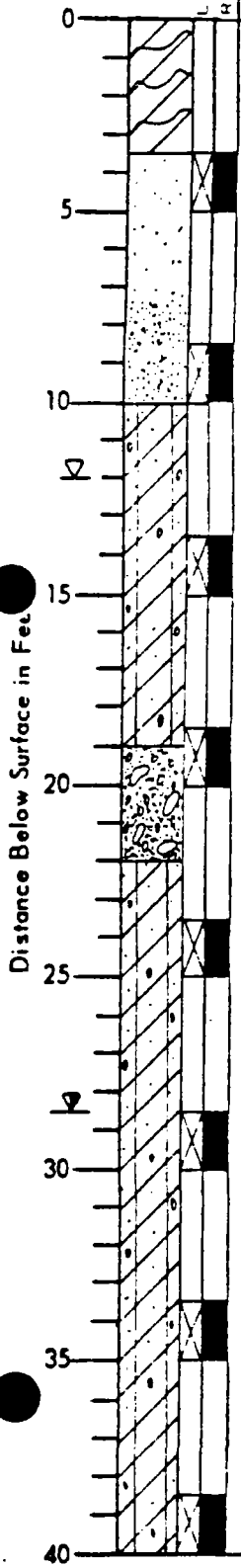
WATER TABLE

AT END OF BORING -12.0'

24 HOURS - 2.25'

Water encountered @ -28.5' while drilling

SHEET 1 o



SAMPLE NO.	TYPE	LENGTH	RECOVERY	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
										Black clayey TOPSOIL, moist
								3.5	719.3	
1	SS			6						Loose to firm brown fine to medium SAND, very moist (SP)
2	SS			16	21.6			10.0	712.8	
3	SS			11	13.5	4.5+*				Hard gray silty CLAY, little sand and gravel, moist (CL)
4 a	SS			31	15.6	4.5+*		19.0	703.8	
4 b										Dense gray medium to large GRAV & medium to coarse SAND, moist (GW)
								22.0	700.8	
5 a	SS			12	14.1	2.25*				
5 b					13.5	1.49 1.75*				
6	SS			15	15.2	2.0*				Tough to very tough reddish-brown silty CLAY, trace to little sand and gravel, moist (CL)
7	SS			15	14.9	2.27 2.25*				
8	SS			16	14.1	2.98 2.5*				

*- Approximate unconfined compressior strength based on measurements wi a calibrated pocket penetrometer

TESTING SERVICE CORPORATION

PROJECT TRI COUNTY LANDFILL, KANE COUNTY, ILLINOIS

CLIENT WASTE MANAGEMENT OF ILLINOIS, INC., P.O. Box 563, Palos Heights, Illinois

BORING 12-Cont'd. DATE STARTED 1-2-76 DATE COMPLETED 1-2-76 JOB-13,148

ELEVATIONS

GROUND SURFACE 722.8

END OF BORING 642.8

WATER TABLE

AT END OF BORING -12.0'

24 HOURS - 2.25'

Water encountered @ -28.5' while drilling

SHEET 2 c

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	21	14.1	3.09 3.25*				
50		10	SS	28	14.0	3.46 3.5*				
55		11	SS	22	13.3	3.04 2.5*				Tough to very tough reddish-brown silty CLAY, trace to little sand and gravel, moist (CL)
60		12	SS	34	15.3					
65		13	SS	20	14.3	2.80 2.5*				
70		14	SS	39	13.3	3.5*				
75		15	SS	18	13.2	3.25*				
80		16	SS	22	14.0	3.25*				

*- Approximate unconfined compression strength based on measurements wit a calibrated pocket penetrometer

End of Boring at 80.0 feet

TESTING SERVICE CORPORATION

OUTLINE OF PROCEDURE

For Laboratory Permeability Tests in Triaxial Apparatus

1. The sample was reconsolidated to the in situ effective stress. Consolidation was considered complete when the flow of air and water out of the sample ceased.

2. A backpressure saturation procedure was employed to bring the sample to the theoretical maximum degree of saturation by applying a pressure gradient across the sample in order to fill air voids with deaired water and dissolve entrapped air into the water.

3. With a differential head applied across the specimen, the measure of permeability was taken over a time interval of at least twelve hours.

4. The following is a brief summary for each test performed:

	BP-29 3T-2	BP-28 3T-1	BP-28 3T-4
Sample Description	Gray Silty Clay	Gray Silty Clay	Red Silty Clay
Diameter of Sample (in.)	2.8	2.8	2.8
Length of Sample (in.)	1.8	1.4	2.22
Backpressure (psi)	27	16	54
Cell Pressure (psi)	87	90	92
Differential Head (psi)	5	5	14

SUBSURFACE EXPLORATION LOG

MW

PROJECT Woodland Landfill Expansion

BORING NO. BP-30

DRILLER D & G START 5/25/82 COMPLETE 5/25/82

PAGE 1 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 731.7 W.L.: 6/8/82: - 14.1' (717.6)

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	0.0						From 0' to 5': Solid stem auger drilling.
	0.5	Brown gravelly silty sand. SM					
		Brown sand and gravel, loose, saturated SP	SS-1 1.0-2.5	3 3 4			
	3.5	Brown clayey silt, loose, med. plasticity, saturated ML	SS-2 3.5-5.0	8 4 3		16.9	
							9' of 5" Ø steel casing. Rotary drilling using Revert.
	7.0	Gray silty clay, trace sand, occ. gravel, med. dense, low plasticity, moist CL	SS-3 8.5-10.0	7 8 8		14.8	LL = 20, PI = 8
	14.5	Gray silty clay to clayey silt, little sand, low plasticity, stiff, moist CL- ML	SS-4 13.5-15.0	5 6 19		10.7	LL = 17, PI = 5 q_u* = 2.0 tsf
	18.0	Gray fine to med. sand, loose, wet to saturated SP	SS-5 18.5-20.0	10 5 4			
	20.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/25/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-30

DRILLER D & G START 5/25/82 COMPLETE 5/25/82

PAGE 2 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 731.7 W.L.: 6/8/82: ~ 14.1' (717.6)

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	20.0						
		Gray fine to med. sand, loose, saturated, SP					
			SS-6 23.5-25.0	7 7 13			
	24.5	Gray silty clay, trace sand, occ. gravel, low plasticity, very stiff, moist CL					
	28.0	Red-brown silty clay, little sand, trace gravel, low plasticity, hard, moist CL	SS-7A SS-7B 28.5-30.0	20 33 45		10.4	q_u* > 4.5 tsf
			3T-1 33.5-34.3			14.5	6"/9" Recovery Tube penetration refusal after 9". Bottom 5" of tube crushed due to gravel piece.
			SS-8 38.5-40.0	16 23 30		11.7	q_u* > 4.5 tsf
	40.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/25/82 JOB NO 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-30

DRILLER D & G START 5/25/82 COMPLETE 5/25/82

PAGE 3 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 731.7 W.L.: 6/8/82: - 14.1' (717.6)
& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	40.0	Red-brown silty clay, little sand, trace gravel, low plasticity, hard, moist CL					
		From 43.0' to 43.5' drilled through boulder or gravel.	SS-9 43.5-45.0	16 23 35		12.2	q_u* > 4.5 tsf
			SS-10 48.5-50.0	20 30 38		12.6	q_u* > 4.5 tsf
		BF w/pea gravel	SS-11 53.5-55.0	23 27 55		11.8	q_u* > 4.5 tsf
	58.0	Dark gray silty clay, low plasticity, hard, moist USDA: Silty clay loam CL	3T-2 58.5-60.5			17.1	% passing #200 = 84.6 LL = 38, PI = 21 20"/22" Recovery Penetration refusal after 22". q_u* > 4.5 tsf
	60.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/25/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

MW

PROJECT Woodland Landfill Expansion

BORING NO. BP-30

DRILLER D & G START 5/25/82 COMPLETE 5/25/82

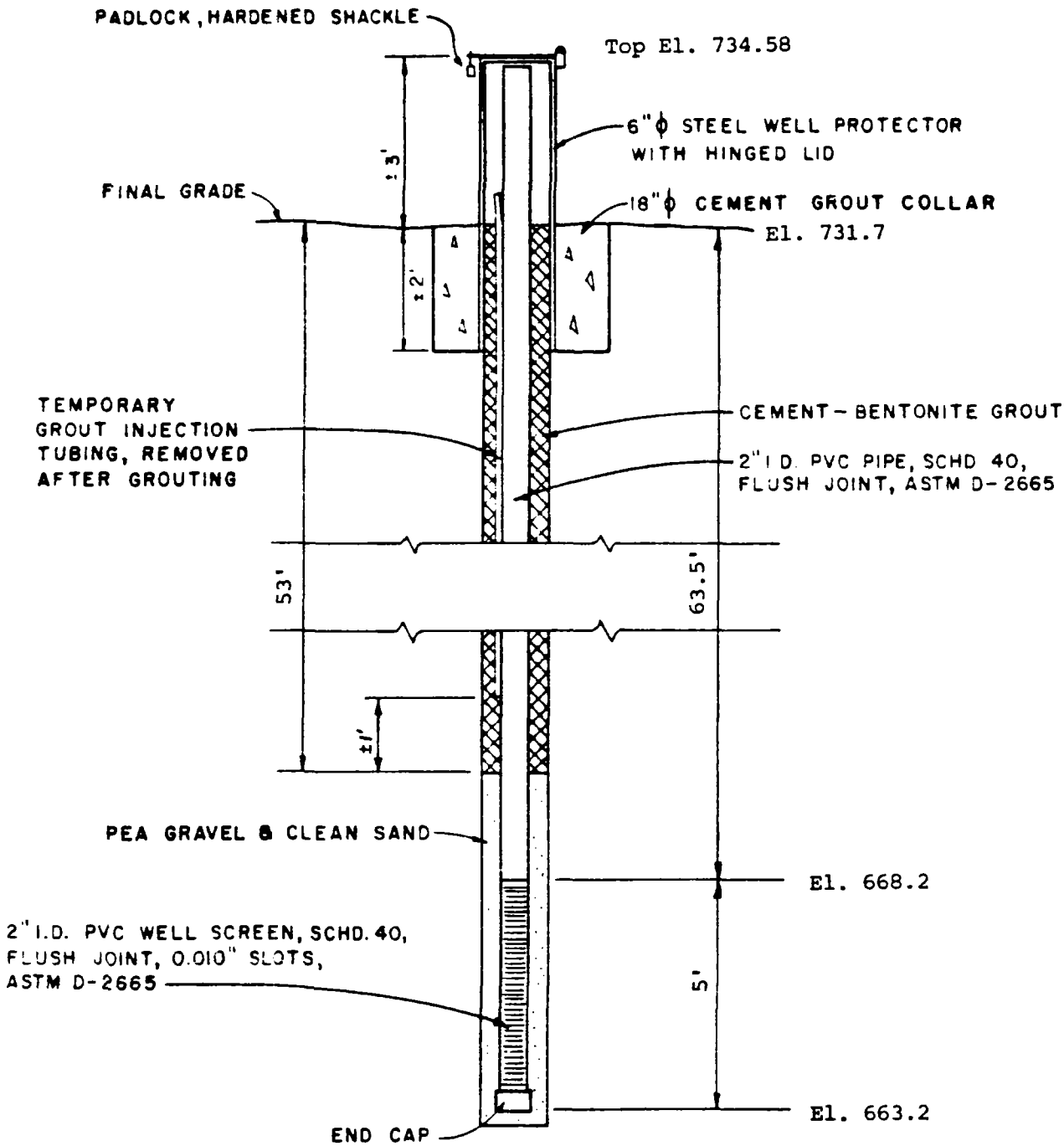
PAGE 4 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 731.7 W.L.: 6/8/82: - 14.1' (717.6)
& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	60.0	Green silty clay, little sand, occ. gravel, low plasticity, hard, moist CL					
	63.0 63.5	Green sandy silt, some gravel, very dense, saturated ML	SS-12 63.5-65.0	18 25 50		14.0	
	67.5	Gravel or boulders GP	SS-13 67.5-68.5				Cutting samples from drilling fluid.
	68.5	End of boring at 68.5' on dolomite bedrock or boulders.					Installed monitoring well, 2" Ø PVC pipe, flush joint. Bottom of screen = 68.5' Top of screen = 63.5' Backfilled with sand over pea gravel to 53'. Grouted to surface using 3 bags cement and ½ bag bentonite. Installed steel well protector and padlock. Flushed fines from well on 5/26/82. Water level was dropping upon completion.

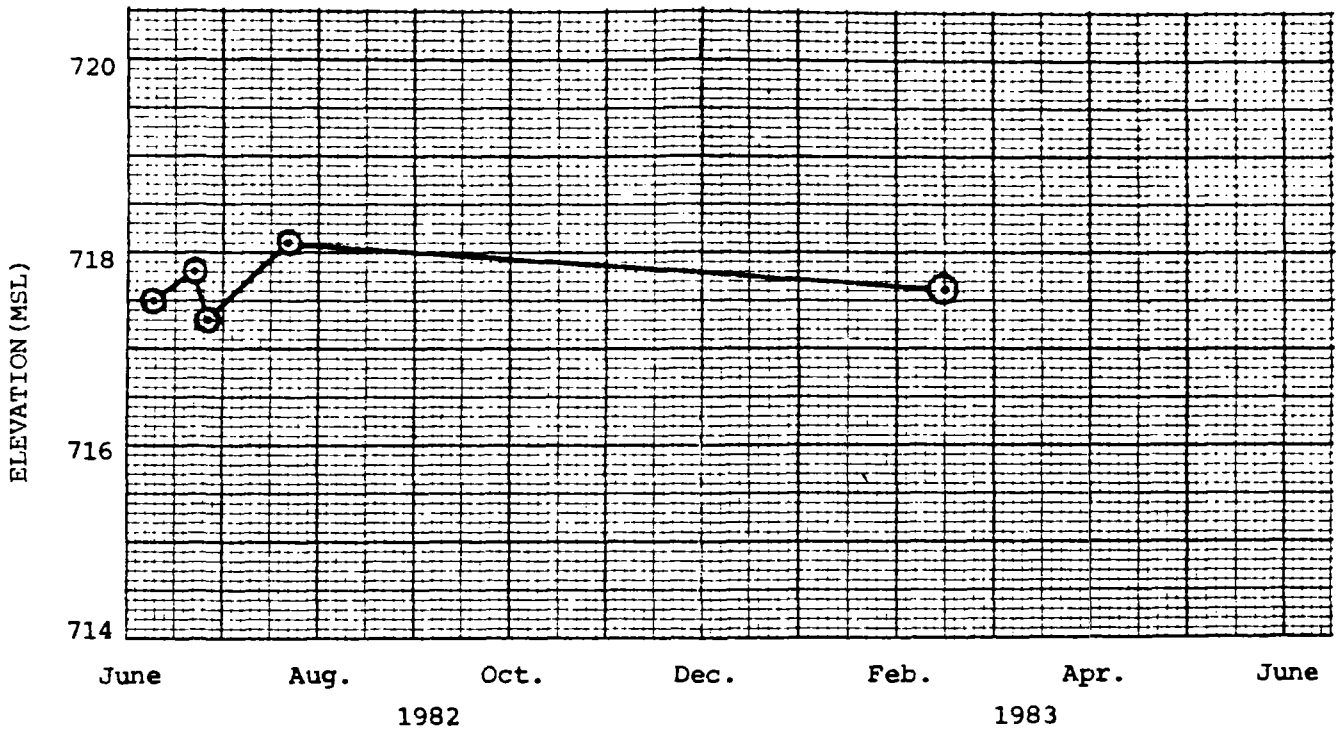
PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/25/82 JOB NO. 110



MONITORING WELL DETAIL

PATRICK ENGINEERING INC.

WATER LEVEL vs. TIME



BP-30

MONITORING WELL RECORD
AT
WOODLAND LANDFILL II
KANE COUNTY, ILLINOIS
FOR
WASTE MANAGEMENT, INC.

SUBSURFACE EXPLORATION LOG

MW

PROJECT Woodland Landfill Expansion

BORING NO. BP-31

DRILLER D & G START 5/26/82 COMPLETE 5/26/82

PAGE 1 OF 3

RIG B-56 LOC. See Location Map

GROUND EL. 751.5 W.L.: 6/8/82: - 28.8' (722.7)
& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	0.0	No samples taken above 38.5'.					Rotary drilling using Revert. 9' of 5" Ø steel casing.
	20.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/26/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-31

DRILLER D & G START 5/26/82 COMPLETE 5/26/82

PAGE 2 OF 3

RIG B-56 LOC. See Location Map

GROUND EL. 751.5 W.L.: 6/8/82: - 28.8' (722.7)

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	20.0	No samples taken above 38.5'.					
		Gray fine to med. sand, occ. silty sand, med. dense, saturated SP & SM	SS-1 38.5-40.0	10 9 10			
	40.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/26/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

MW

PROJECT Woodland Landfill Expansion

BORING NO. BP-31

DRILLER D & G START 5/26/82 COMPLETE 5/26/82

PAGE 3 OF 3

RIG B-56 LOC. See Location Map

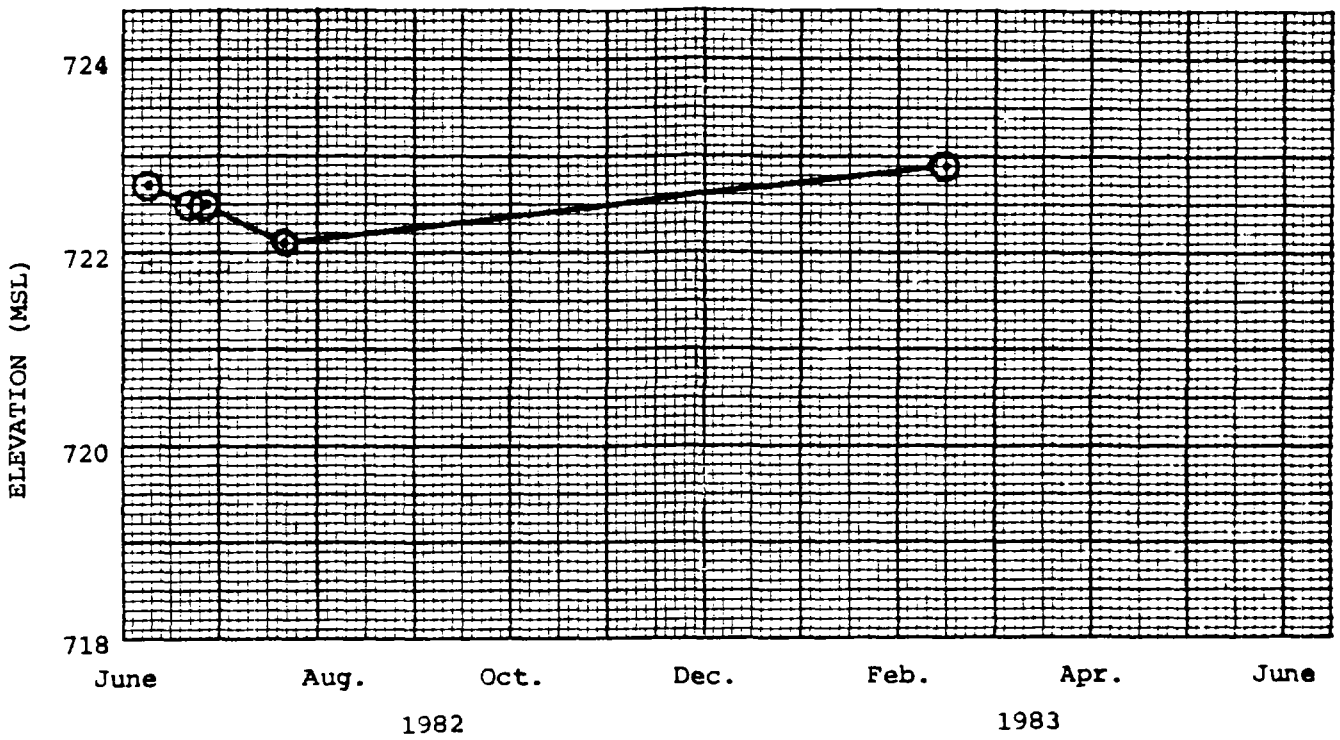
GROUND EL. 751.5 W.L.: 6/8/82: - 28.8' (722.7)
& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	40.0	Gray fine to med. sand, occ. silty sand, med. dense, saturated SP & SM					Installed monitoring well, 2" Ø PVC pipe, flush joint. Bottom of screen = 55.0' Top of screen = 50.0' Backfilled with pea gravel to 40'. Grouted to surface using 3 bags cement and ½ bag bentonite. Installed steel well protector and padlock. Flushed fines from well. Water level was dropping after completion.
			SS-2 43.5-45.0	12 23 35			
	44.0	Gray fine to med. sand, trace coarse sand, trace fine gravel, very dense, saturated SP					
			SS-3 48.5-50.0	26 27 38			
	50.0						
	54.0	Gray fine to coarse sand, occ. gravel, extremely dense, saturated SP	SS-4 53.5-55.0	36 50 56			
	55.0	End of boring at 55.0' in gray sand.					

BFW Pea gravel

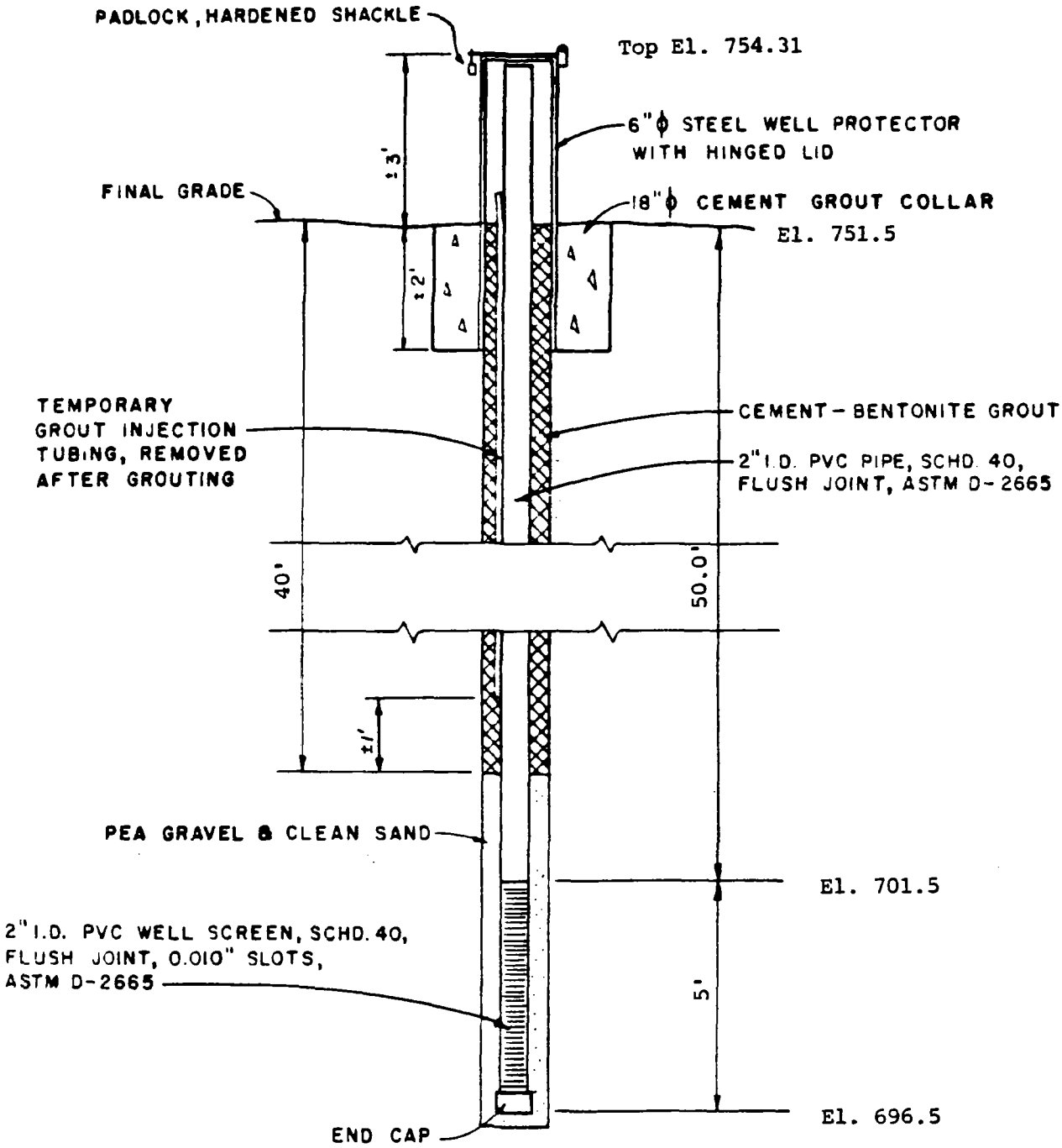
PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/26/82 JOB NO. 110

WATER LEVEL vs. TIME



BP-31

MONITORING WELL RECORD
AT
WOODLAND LANDFILL II
KANE COUNTY, ILLINOIS
FOR
WASTE MANAGEMENT, INC.



MONITORING WELL DETAIL

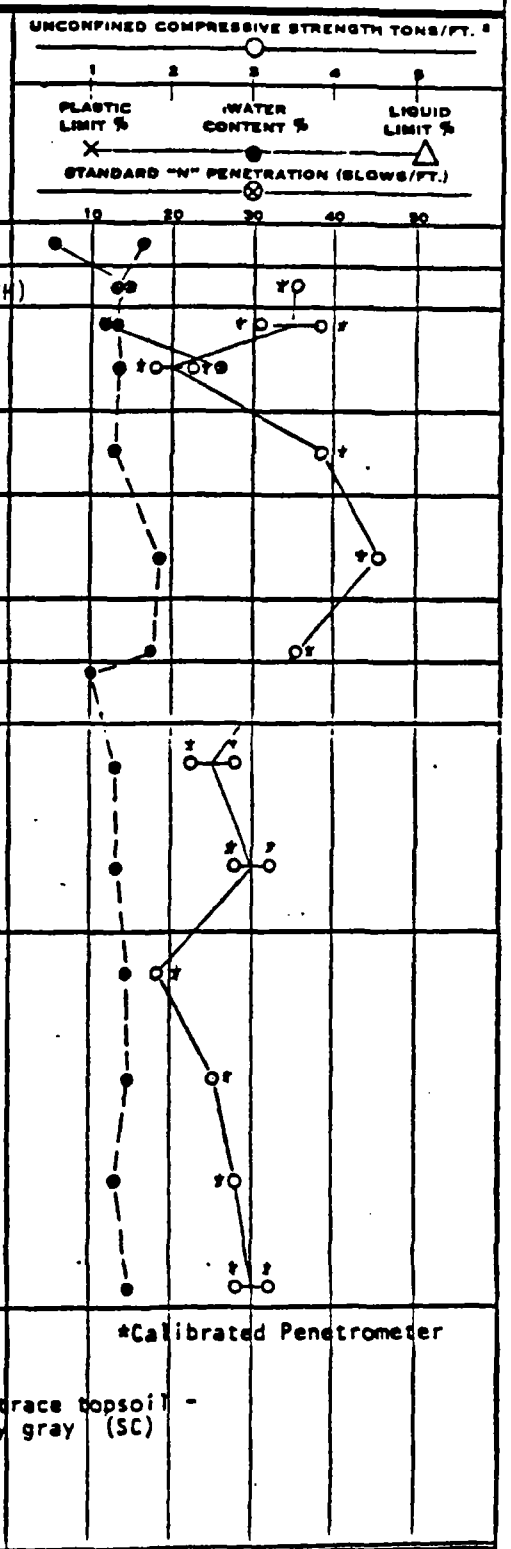
PATRICK ENGINEERING INC.

LOG OF BORING NO. B-4

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION +733.7'

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			"A"	
	2	SS			Silty clay, trace sand & gravel - brown to dk.gray-very tough (CL-CH)	
	3	SS			Silty clay, trace to some gravel and sand - brown and gray - very tough (CL)	
	4	SS				
10.0	5	ST			Silty clay, trace to some sand, trace gravel - gray-brown - very tough (CL)	
	6	ST			Silty clay, trace sand and gravel - gray - hard (CL)	
20.0	7	ST			Silty clay, trace sand & gravel reddish brown to gray - very tough (CL)	
	7A	ST			Fine to coarse gravel, trace silt & clay & clay lumps-moist to wet - gray-brown (SW)	
	8	ST			Silty clay, trace to some sand, trace gravel - reddish brown - very tough (CL)	
30.0	9	ST				
	10	ST			Silty clay, trace sand and gravel - reddish brown - very tough (CL)	
40.0	11	ST				
	12	ST				
50.0	13	ST				
52.0					End of Boring	



*Calibrated Penetrometer

"A": Clayey and silty fine sand, trace topsoil - medium dark gray and slightly gray (SC)

14.5' NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	8'	W.S. OR W.D.
W.L.	D.C.R.	4' A.C.R.
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

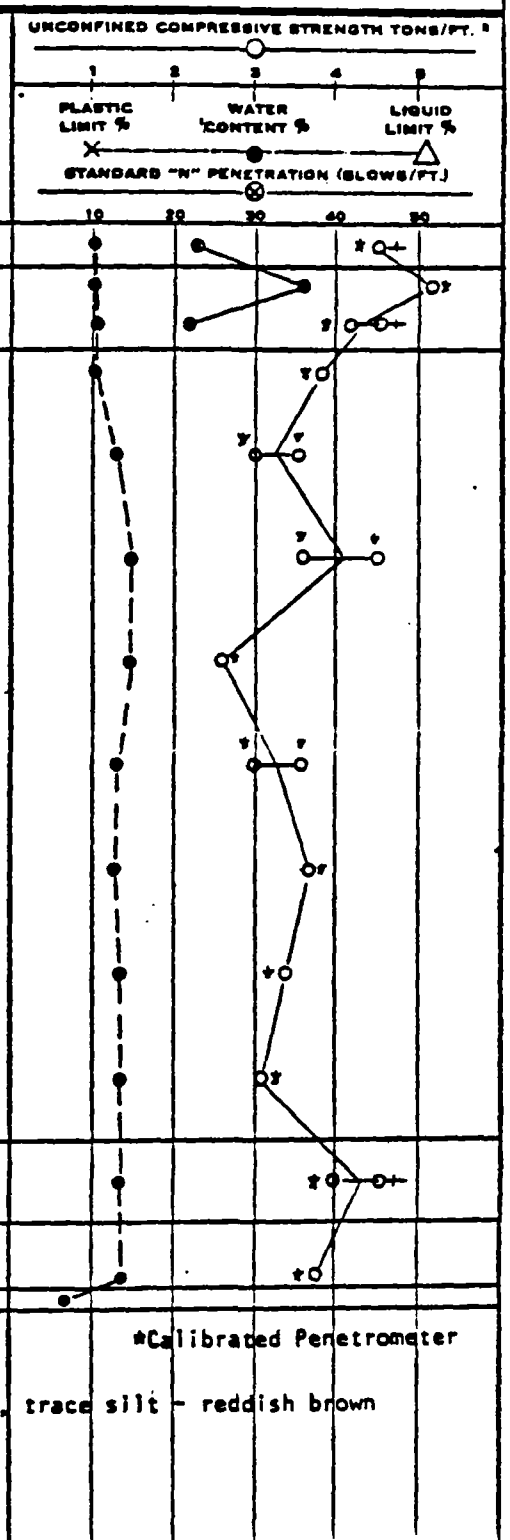
BORING STARTED	10-6-70		
BORING COMPLETED	10-6-70		
RIG		FOREMAN	GK
DRAWN	MP	APPROVED	KS
JOB #	14141	SHEET	1 of 1

LOG OF BORING NO. B-5

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION → +723.9'

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Silty clay, trace to some sand & gravel-brown-hard (CL)	
	2	SS			Silty and sandy clay, trace gravel - gray-brown - very tough (CL)	
	3	SS				
	4	ST			Silty clay, trace to some sand, trace gravel - reddish brown - very tough (CL)	
10.0	5	ST				
	6	ST				
20.0	7	ST				
	8	ST				
30.0	9	ST				
	10	ST				
40.0	11	ST				
	12	ST			Silty clay, trace to some sand, trace gravel - reddish brown - hard (CL)	
50.0	13	ST			Silty clay, trace to some sand, trace gravel - reddish brown - very tough (CL)	
52.0	13a	ST			"A"	



End of Boring

*Calibrated Penetrometer

"A": Gravelly fine to coarse sand, trace silt - reddish brown to gray - moist (SW-GP)

5' NX Casing used.

WATER LEVEL OBSERVATIONS	
W.L.	W.S OR W.D
W.L.	3' B.C.R. / 2' A.C.R.
W.L.	

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

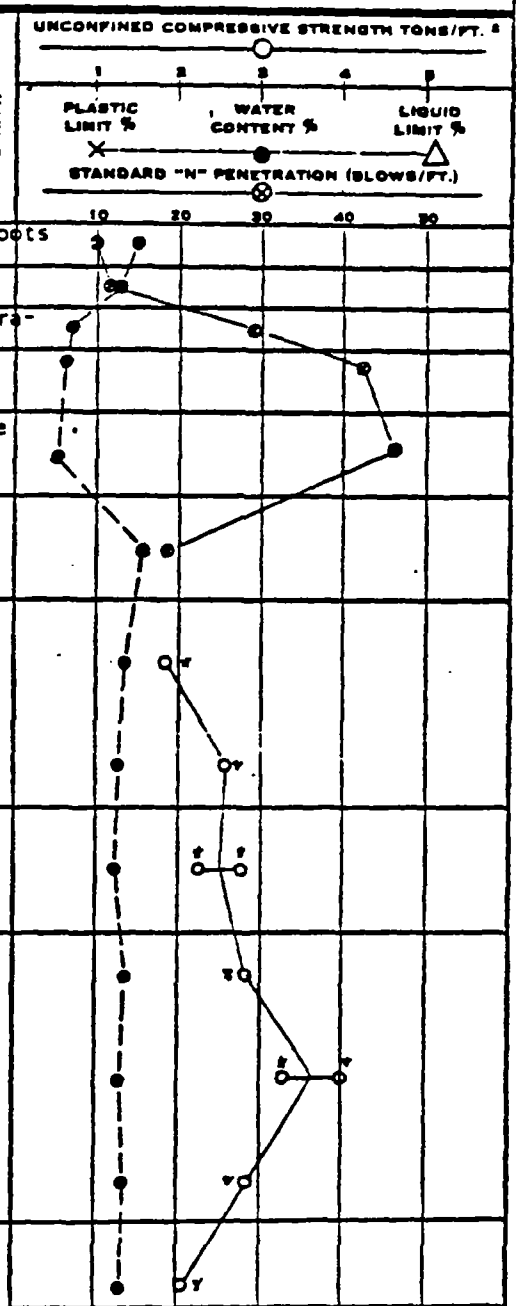
BORING STARTED	10-6-70		
BORING COMPLETED	10-6-70		
PIC		FOREMAN	GK
DRAWN	MP	APPROVED	KS
JOB #	14141	SHEET 1 OF 1	

LOG OF BORING NO. B-6

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION +728.0'

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Clayey & silty fine sand, trace roots (Top 1" black topsoil) brown (SC)	
		2	SS			"A"	
		3	SS			Fine to med. sand, trace to some gravel-brown-moist-dense (SP)	
		4	SS			Fine to med. limestone gravel & fine to coarse sand-lt.gray & lt.brown-moist-dense (GP-SW)	
10.0		5	SS			Fine to medium sand, trace to some gravel, trace silt - brown - moist - dense (SP)	
		6	SS			Fine to coarse sand, trace to gravel, trace silt - brown - wet - medium dense (SW)	
20.0		7	ST			Silty clay, trace to some sand and gravel - gray - very tough (CL)	
		8	ST				
30.0		9	ST			Silty clay, trace sand and gravel - gray - very tough (CL)	
		10	ST			Silty clay, trace to some sand, trace gravel - reddish brown - very tough (CL)	
40.0		11	ST				
		12	ST				
50.0						Silty clay, trace sand and gravel - reddish brown - very tough (CL)	
52.0		13	ST				



End of Boring

*Calibrated Penetrometer

"A": Clayey and silty fine sand, trace to some gravel - brown and slightly yellow-brown - moist - medium dense (SC)

20' NX Casing used.

WATER LEVEL OBSERVATIONS	
W.L.	W.S. OR W.D.
W.L.	13' B.C.R. / A.C.R.
W.L.	
	Cave-in @ 13' A.B.

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	10-7-70
BORING COMPLETED	10-7-70
RIG	FOREMAN GR
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

LOG OF BORING NO. B-7

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

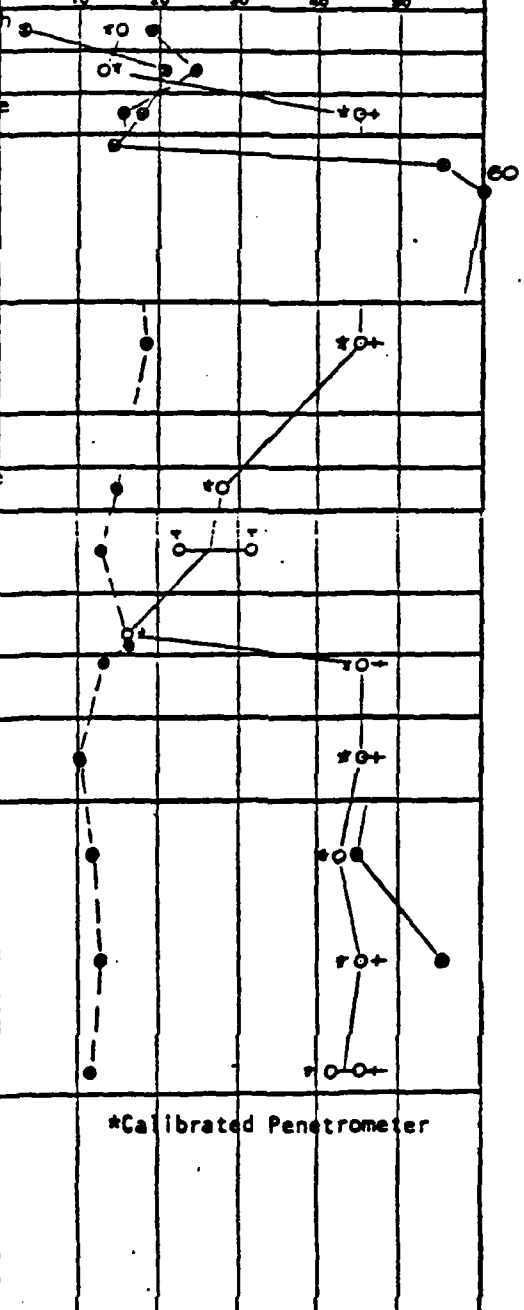
SURFACE ELEVATION +739.7'

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Silty clay, trace sand & gravel with silt seams-brown&gray-tough (CL)	
		2	SS			Silty clay, trace sand-lt. brown & slightly gray-tough (CL)	
		3	SS			Silty clay, trace to some sand, trace gravel-gray-brown - hard (CL)	
		4	SS			Fine to medium limestone gravel,	
10.0		5	SS			some sand, trace silt - light brown & light gray - wet - dense (GP-SW)	
		6	ST			Silty clay, trace sand and gravel - brown & gray - hard (CL)	
20.0						Boulders	
		7	ST			Silty clay, trace to some sand, trace gravel - gray - very tough (CL)	
		8	ST			Silty clay, trace sand & gravel - gray - very tough (CL)	
30.0		9	ST			Silty clay, trace to some sand, trace gravel - gray - tough (CL)	
		9A	ST			Silty clay, trace to some sand & gravel - reddish brown & lt. gray - hard (CL)	
		10	ST			Silty clay, trace to some sand, trace gravel with sand seams - reddish brown - hard (CL)	
40.0		11	SS			Silty clay, trace to some sand, trace gravel - reddish brown to gray - hard (CL)	
		12	SS				
50.0		13	ST				
52.0						End of Boring 25' NX Casing used.	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	9' BCW	3' ACR
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

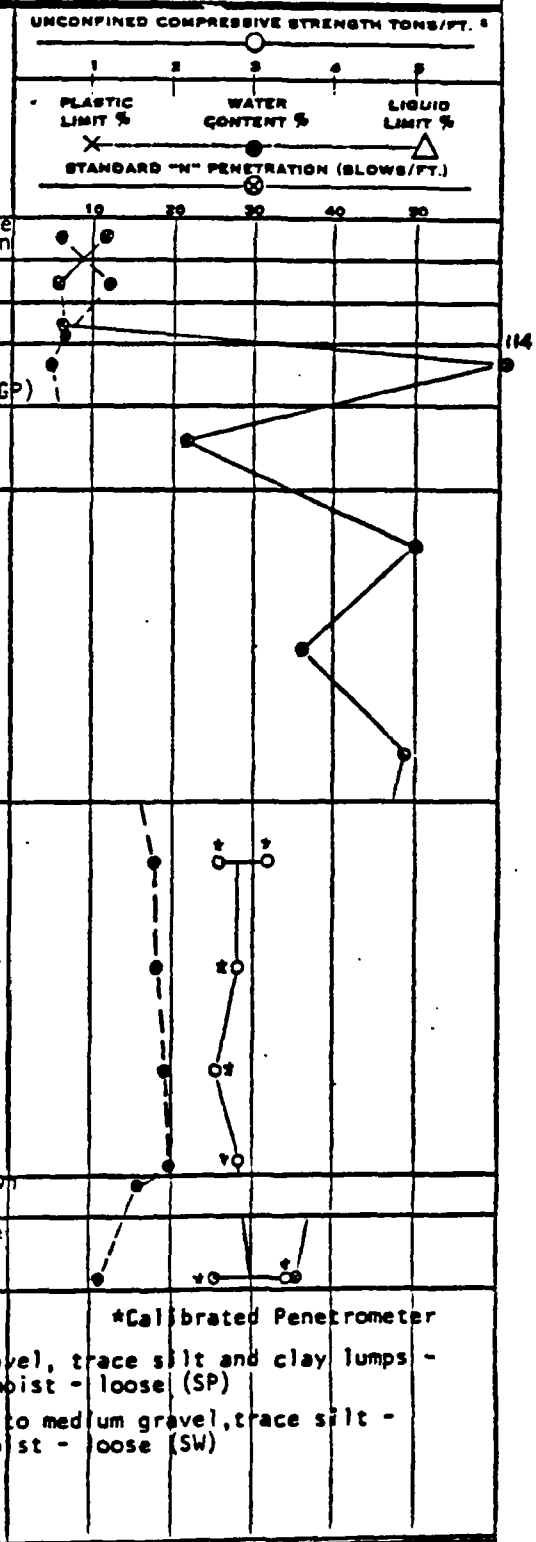
BORING STARTED	10-21-70
BORING COMPLETED	10-21-70
RIG	FOREMAN GK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

LOG OF BORING NO. B-8

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION +747.8'

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Fine to med.sand,some gravel,trace silt&topsoil-brown to med.dk.brown medium dense - moist (SP)	
	2	SS			"A"	
	3	SS			"B"	
	4	SS			Fine to coarse sand,& fine to med.gravel,trace silt - lt.brown to lt.gray-moist-very dense (SW-GP)	
10.0	5	SS			Fine to coarse sand,some gravel, trace silt - lt.brown & lt.gray - wet - medium dense (SW)	
20.0	6	SS			Fine to coarse sand and fine to medium gravel - light brown to light gray - dense - wet (SW-GP)	
	7	SS				
	8	SS				
30.0	9	ST			Silty clay, trace sand and gravel with silt seams - gray - very tough (CL)	
	10	ST				
40.0	11	ST				
	12	ST				
	12A	ST			Clayey & silty fine sand-gray-brown moist to wet - dense (SC)	
50.0					Clayey silt & very fine sand,trace gravel - gray - dense - moist to wet (ML-SM)	
51.5	13	SS				



End of Boring

*Calibrated Penetrometer

"A": Fine to medium sand, some gravel, trace silt and clay lumps - brown to medium dark gray - moist - loose (SP)

"B": Fine to coarse sand and fine to medium gravel,trace silt - light brown to dark gray - moist - loose (SW)

30' of 4" casing used.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	6' B.C.R.	4.5' A.C.R.
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

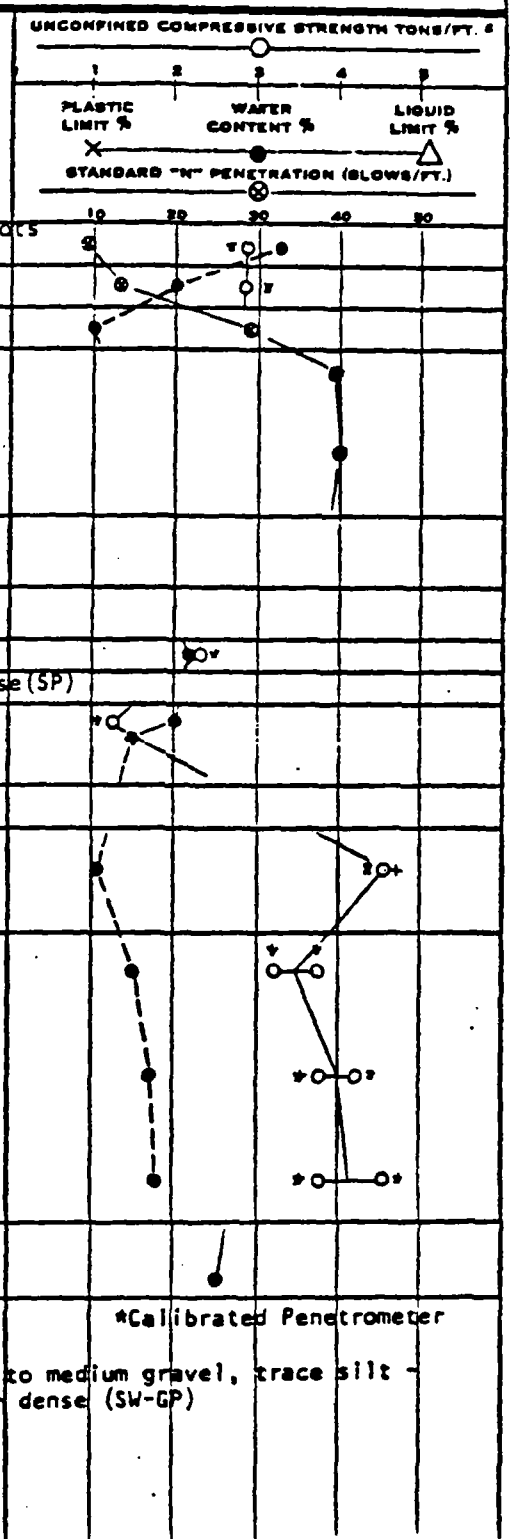
BORING STARTED	10-21-70
BORING COMPLETED	10-22-70
RIG	FOREMAN GK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

LOG OF BORING NO. B-9

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION +741.1'

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Clayey & silty fine sand, trace roots rust brown to dk.gray (SC)	
		2	SS			Silty & sandy clay, trace gravel - rust brown - very tough (CL-SC)	
		3	SS			"A"	
		4	SS			Fine to medium gravel and fine to coarse sand, trace silt - brown & slightly gray - wet - dense (GP-SW)	
10.0		5	SS				
		6	WS			Boulders	
20.0						Silty clay, trace sand & gravel - gray - very tough (CL)	
		7	ST			Clayey silt-gray-wet - medium dense (ML)	
						Fine to med.sand-gray-wet-med.dense (SP)	
		8	ST			Silty clay, trace sand and gravel - gray (CL)	
						Fine to med.sand & gravel-gray (SP-GW)	
30.0		9	ST			Silty clay, trace to some sand and gravel - gray - hard (CL)	
		10	ST			Silty clay, trace sand and gravel - gray - very tough (CL)	
40.0		11	ST				
		12	ST				
50.0						Fine to coarse sand, some fine to med.gravel with clay lumps - med.dense - gray - wet (SW)	
51.5		13	SS				



End of Boring

*Calibrated Penetrometer

"A": Fine to coarse sand and fine to medium gravel, trace silt - brown to light gray - moist - dense (SW-GP)

14' NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	7'	W.S OR W.D
W.L.	12' B.C.R.	12' A.C.R.
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

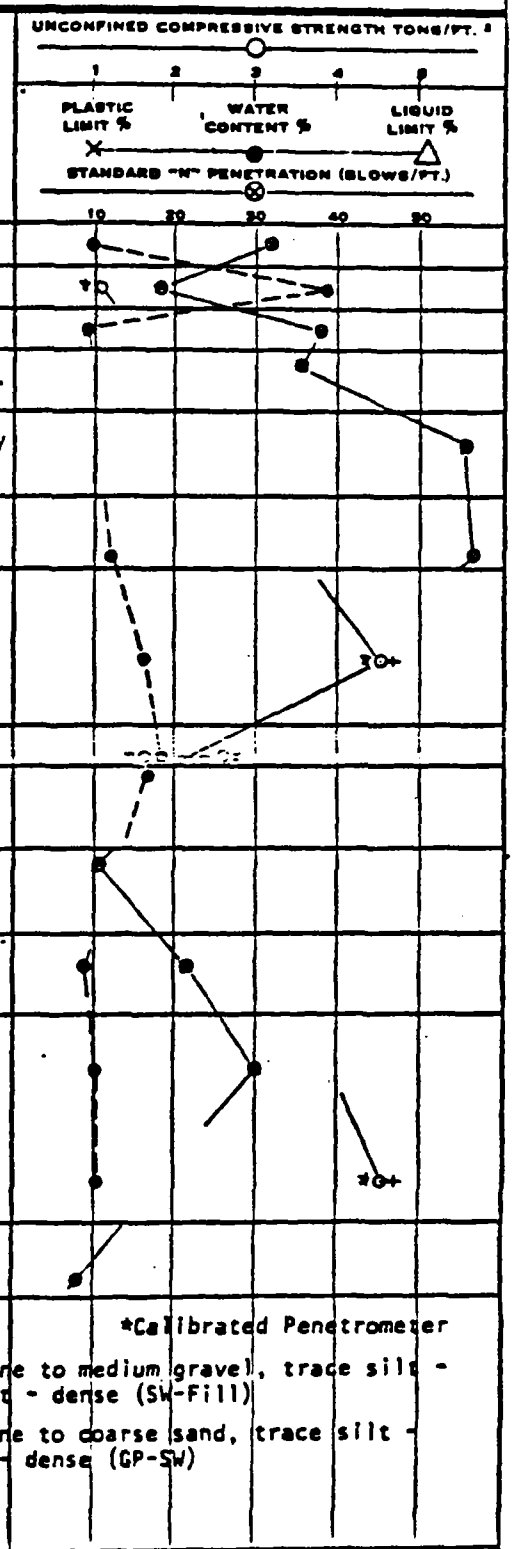
BORING STARTED	10-22-70
BORING COMPLETED	10-22-70
RIG	FOREMAN GK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

LOG OF BORING NO. B-10

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER:
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

SURFACE ELEVATION +737.0'

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			"A"	
		2	SS			Topsoil, trace roots - dark gray - tough (OL-OH)	
		3	SS			"B"	
		4	SS			Fine to coarse sand, some fine to med.gravel, trace silt & clay - lt. brown&sl.lt.gray-wet-dense (SW)	
10.0		5	SS			Fine to med.sand, fine to med. gravel, trace silt-brown & slightly gray - moist - dense (SP)	
		6	SS			Clayey & silty fine to med.sand, some gravel - brown & gray (SC)	
20.0		7	ST			Silty clay, trace sand and gravel - gray - hard (CL)	
		8	ST			Silty clay, trace sand & gravel gray - very tough (CL)	
30.0		9	SS			Fine sand, trace silt & gravel - brown - wet - dense (SP)	
		10	SS			Fine to med.gravel, some sand, trace silt - gray to light brown - wet - medium dense (GP)	
40.0		11	SS			Silty fine sand, some gravel, trace clay - gray-brown - moist to wet - med.dense (SM)	
		12	ST			Silty very fine sand, trace gravel - gray - moist to wet - dense to very dense (SM)	
50.0		13	SS			Fine to coarse sand, trace to some gravel, trace silt - gray-brown - wet - loose (SW)	
51.5						End of Boring	



*Calibrated Penetrometer

"A": Fine to coarse sand, some fine to medium gravel, trace silt - brown & slightly gray - moist - dense (SW-Fill)

"B": Fine to medium gravel and fine to coarse sand, trace silt - lt.gray to lt.brown - moist - dense (GP-SW)

40' NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	8' after	2.5' after
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	10-23-70		
BORING COMPLETED	10-23-70		
RIG		FOREMAN	GK
DRAWN	MP	APPROVED	KS
JOB #	14141	SHEET	1 of 1

LOG OF BORING NO. B-11

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER:
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

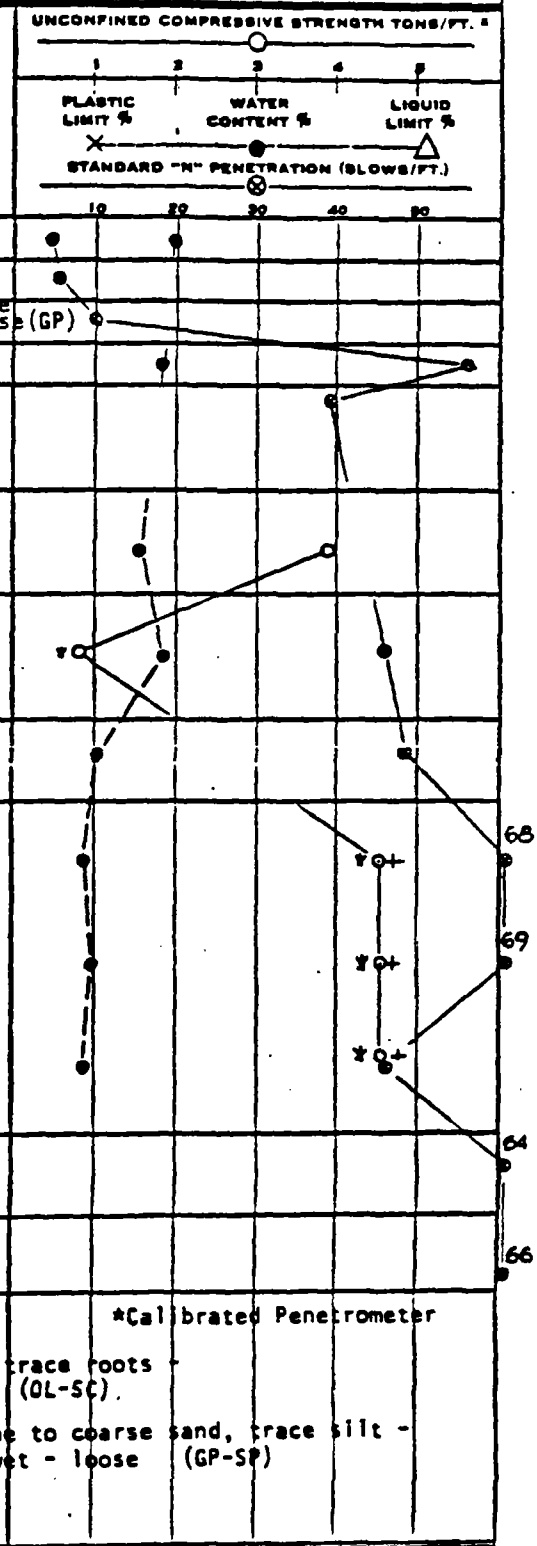
SURFACE ELEVATION: +760.1'

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			"A"	
	2	SS			"B"	
	3	SS			Fine to med.gravel,some sand,trace silt-lt.brown&lt.gray-wet-med.dense (GP)	
	4	SS			Sandy & silty clay,trace gravel-brown&gray(poor recovery) (CL-SC)	
10.0	5	SS			Fine to medium gravel, some sand, trace silt & clay lumps - lt.brown, gray & slightly dk.gray - wet - dense (GP)	
	6	ST			Silty clay, some sand, trace gravel - gray - very tough (CL)	119
20.0	7	SS			Silty clay, trace sand, gravel with sand seams - stiff - gray (CL-ML)	
	8	SS			Silty very fine sand,trace clay & gravel - gray - moist dense (SM)	
30.0	9	SS			Silty and clayey fine sand, trace gravel - gray-brown (cemented) - very dense (SM-SC)	
	10	SS				
40.0	11	SS				
	12	SS			Fine to coarse sand,trace to some gravel - gray-brown - moist - very dense (SW)	
50.0	13	SS			Fine sand,trace silt - gray-brown - wet - very dense (SP)	
51.5					End of Boring	

"A": Topsoil, some sand & gravel, trace roots - dark brown to black - moist (OL-SC).

"B": Fine to medium gravel and fine to coarse sand, trace silt - light brown to light gray - wet - loose (GP-SP)

45' NX Casing used.



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L	W.S OR W.D.	
W.L	5' B.C.R.	1' A.C.R.
W.L		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	10-27-70
BORING COMPLETED	10-27-70
RIG	FOREMAN GK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

LOG OF BORING NO. B-12

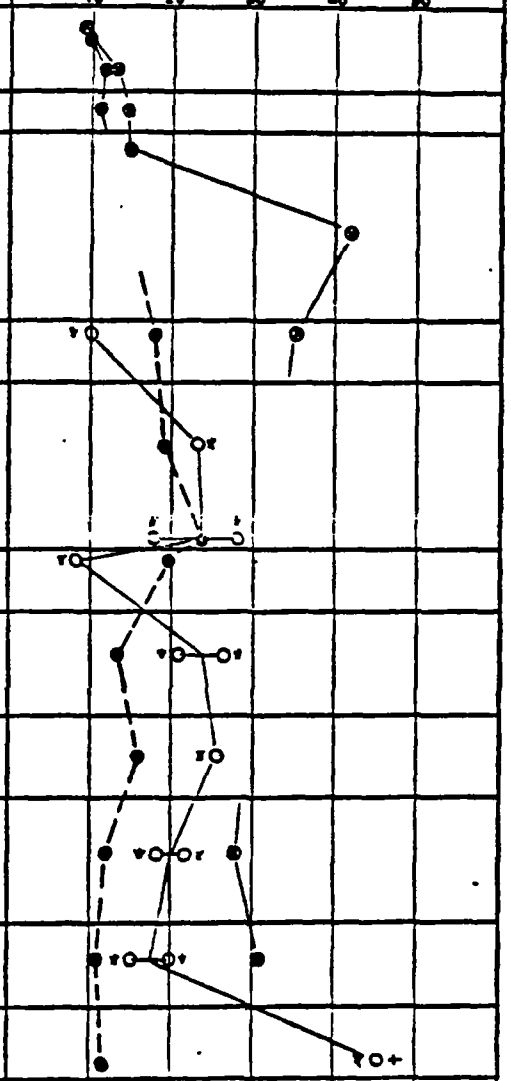
OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER:
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST. RECOVERY	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 7)	UNIT DRY WT. LBS./FT.³
	1	SS		Fine to coarse sand, some fine to medium gravel, trace clay lumps and silt - brown & slightly gray moist - med.dense (SW)	
	2	SS			
	3	SS		"A"	
	4	SS		Fine to medium sand, trace to some gravel, trace silt - gray-brown - wet - dense (SP)	
10.0	5	SS			
	6	SS		Silty clay, trace sand & gravel - gray - tough (CL)	
20.0	7	ST		Silty clay, trace sand and gravel - gray - very tough (CL)	
	8A	ST		Silt, trace clay and sand - gray to dk.gray - wet (ML)	
30.0	9	ST		Silty clay, trace to some sand, trace gravel with silt seams - gray - very tough (CL)	
	10	ST		Silty clay, trace sand and gravel - gray - very tough (CL)	
40.0	11	SS		Silty clay, some gravel, trace to some sand - gray-brown - very tough (CL)	
	12	SS		Silty & sandy clay, trace gravel - gray-brown - tough (CL)	
50.0	13	ST		Silty sandy clay, trace gravel - gray-brown - hard (CL)	
51.5				End of Boring	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)



*Calibrated Penetrometer

"A": Fine to coarse sand and fine to medium gravel, trace silt and clay - brown and slightly yellow brown - moist to wet - medium dense (SW)

15' of NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	13' W.C.R.	A.C.R.
W.L.		
Cave-in @ 9' A.B.		

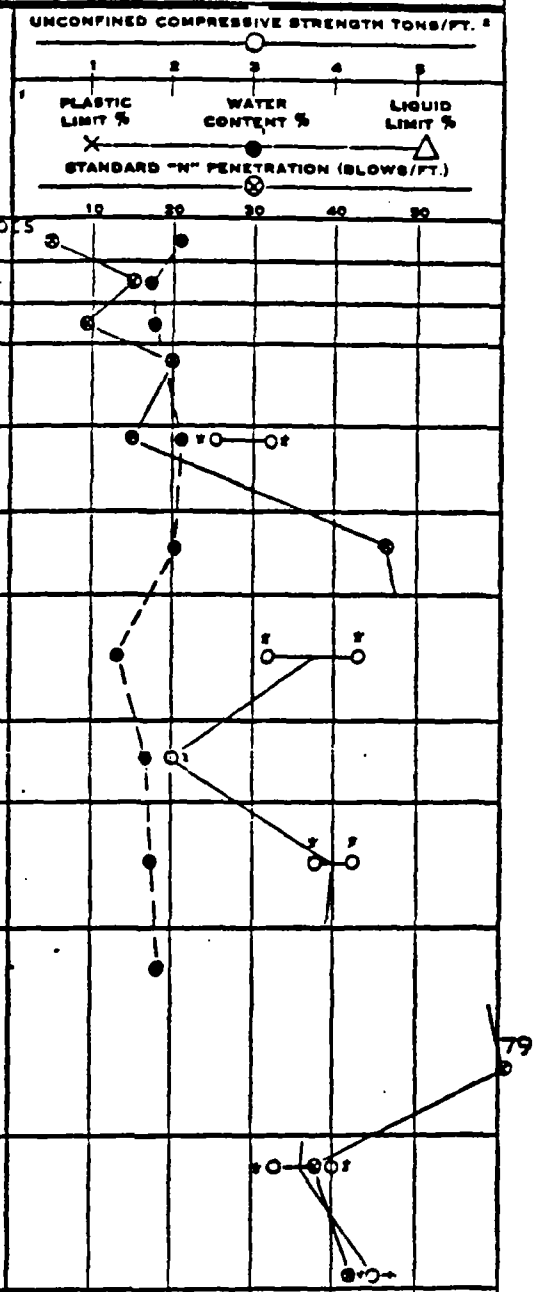
SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	11-19-70
BORING COMPLETED	11-19-70
RIG	FOREMAN CK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 OF 1

LOG OF BORING NO. B-13

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Land Fill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST. RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
				SURFACE ELEVATION 7[illegible]	
	1	SS		Silty clay, trace sand, gravel & roots brown - tough (CL-Fill)	
	2	SS		"A"	
	3	SS		"B"	
10.0	4	SS		Fine to medium gravel & fine to coarse sand, trace silt - lt. brown & gray - wet - med. dense (GP-SW)	
	5	SS		Silty clay, trace sand - gray-brown - very tough (CL-CH)	
	6	SS		Silty very fine sand - gray - wet - dense (SM)	
20.0	7	ST		Silty clay, some sand and gravel - gray - very tough (CL)	
	8	ST		Silty clay, trace sand and gravel - gray - very tough (CL)	
30.0	9	ST		Silty clay, trace sand and gravel - gray-brown - very tough (CL)	
40.0	10	ST		Fine to medium sand, trace silt - brown-gray - wet - dense (SP)	
	11	SS			
50.0	12	SS		Silty & sandy clay, trace gravel with silt seams - reddish brown - very tough to hard (CL)	
51.5	13	SS			



End of Boring

*Calibrated Penetrometer

"A": 2" topsoil and fine to coarse sand, some fine to medium gravel, trace silt - brown to light brown - moist - medium dense (SW)

"B": Fine to coarse sand, trace gravel and silt - brown and slightly gray - wet - loose (SP)

15' NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L. 21'	B.C.R.	A.C.R.
W.L.		
Cave-in @ 7' A.B.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

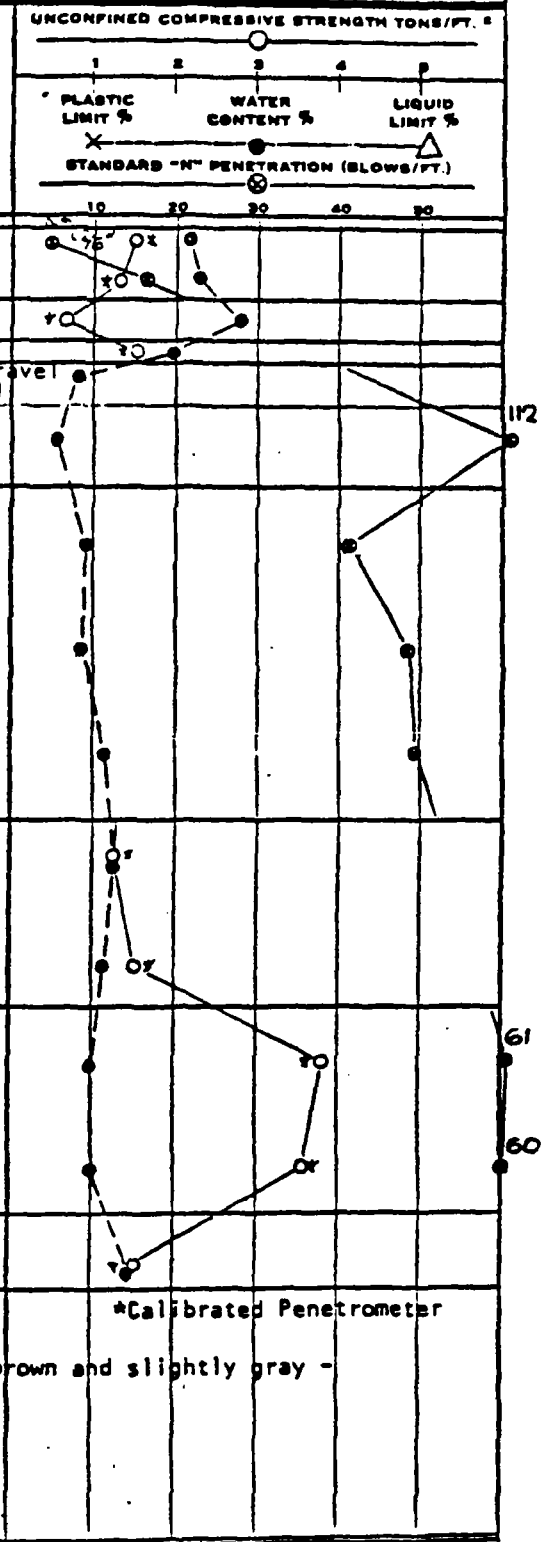
BORING STARTED	11-19-70
BORING COMPLETED	11-19-70
RIG	FOREMAN GK
DRAWN MP	APPROVED KS
JOB # 14141	SHEET 1 of 1

V 727

LOG OF BORING NO. B-14

OWNER	ARCHITECT-ENGINEER
Wayne Disposal Company	
SITE Route 25, Elgin, Illinois	**PROJECT NAME** Proposed Land Fill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST. RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS		Silty clay, trace sand & gravel - black (CL-CH)	
	1A	SS		Silty clay, trace sand & gravel brown & slightly gray - tough (CL-CH)	
	2	SS			
	3	ST		Clayey & silty fine to med. sand - brown - wet - loose (SC)	
	4	ST		"A"	
	4A	ST		Fine to coarse sand & fine to med. gravel trace silt & clay - brown - moist (SW-GP)	
10.0				Fine to coarse sand, trace gravel & silt - brown - very dense - moist (SW)	
	5	SS			
	6	SS		Fine to coarse sand, trace silt - light brown and slightly light gray - moist - dense (SW)	
20.0	7	SS			
	8	SS			
30.0	9	ST		Silty sandy clay, trace gravel - gray-brown - tough (CL)	
	10	ST			
40.0	11	SS		Silty clay, some sand, trace gravel - reddish brown - very tough (CL)	
	12	SS			
50.0	13	ST		Silty clay, some sand, trace gravel - reddish brown - tough (CL)	
51.5				End of Boring	



*Calibrated Penetrometer

"A": Silt, trace sand and clay - brown and slightly gray - medium dense (ML)

30' NX Casing used.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	10' ACB	18' ACB
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

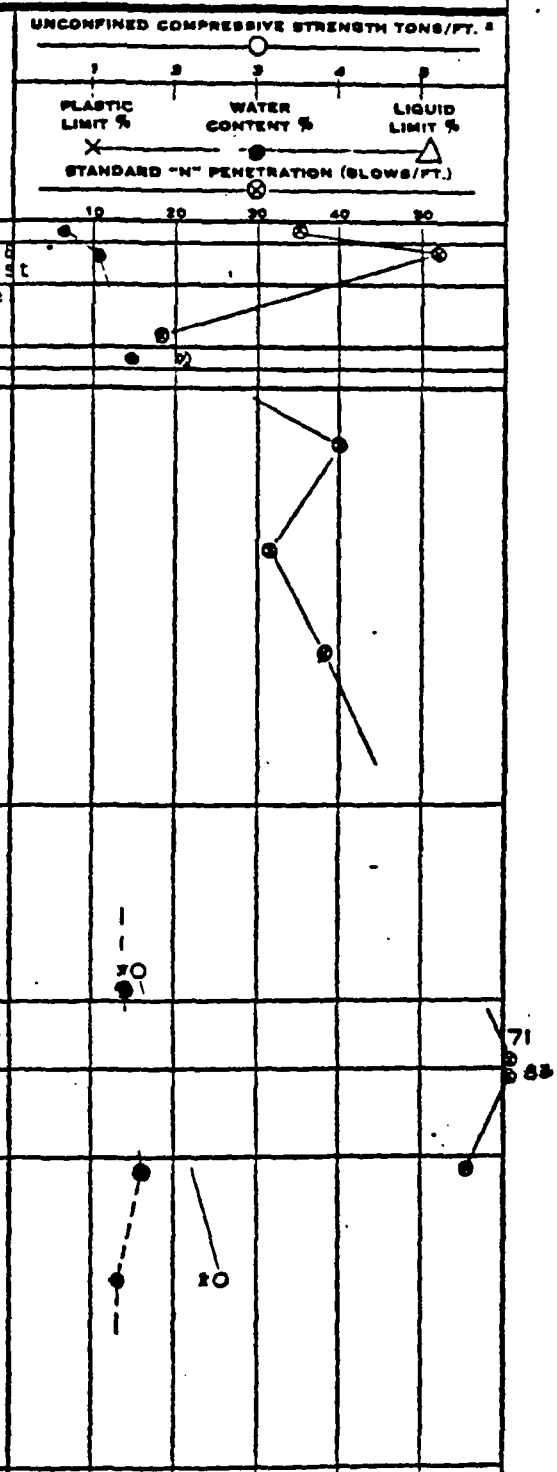
BORING STARTED	11-20-70		
BORING COMPLETED	11-20-70		
DIR.		FOREMAN	GK
DRAWN	MP	APPROVED	KS
JOB #	14141	SHEET	1 of 1

LOG OF BORING NO. B-10

OWNER: Wayne Disposal Compa	ARCHITECT-ENGINEER
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Sanitary Landfill

SURFACE ELEVATION +737.0

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
	1	SS	"A"
	1A		Silty fine sand, tr. clay - dk. brown & dk. gray - sl. organic - dense - moist
			Med. to coarse sand and fine grave brown & gray - med. dense - saturated (SP-GP)
	2	SS	
	2A		"B" Brown Clay
10.0	3	SS	Fine to coarse sand and gravel, trace silt @ 10' and 20' - brown & gray - dense - saturated - some gravel is weathered (SW-GW)
	4	SS	
20.0	5	SS	
	6	WO	
30.0		ST	Silty clay, some gravel, trace to some sand - gray - tough (CL)
	7	SS	
40.0	8	SS	Fine to coarse sand & fine to med. gravel - gray & slightly dk. gray - very dense - wet (SW-GP)
	8A		Fine to med. sand, trace to some gravel, trace silt - gray - very dense - wet (SP)
	9	SS	
50.0	10	ST	Silty clay, trace to some sand, trace gravel - reddish brown & gray - very tough (CL)
	11	ST	
60.0		FT	



End of Boring

*Calibrated Penetrometer

"A": Fine to coarse sand and fine gravel, trace to some silt, trace clay & topsoil, trace roots - brown, dk. brown & dk. gray - dense - moist (SW-GP)

"B": Topsoil and fine sandy organic silt, trace roots - black - moist - medium dense (OL-SM)

50' NX and 25' of 4" casing used.

Perforated section of NX casing set at 32' after boring. Hole below casing backfilled with pea gravel mixed with bentonite.

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	11-26-71		
BORING COMPLETED	11-26-71		
RIG	19	FOREMAN	PS
DRAWN	MP	APPROVED	CWP
JOB #	14141-A	SHEET	1 of 1

LOG OF BORING NO. B 26

OWNER: Wayne Disposal Company	ARCHITECT-ENGINEER:
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Sanitary Landfill

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % / STANDARD "N" PENETRATION (BLOWS/FT.) (10 20 30 40 50)
					SURFACE ELEVATION +737.0		
		RB					
10.0					No Samples Taken. See Boring B-18 performed 15 ft. south.		
20.0		RB					
30.0	1	ST			Silty clay, trace to some gravel, trace sand - gray - very tou gh (CL)	137	
	2	ST					
40.0	3	SS			Fine to coarse sand & gravel trace silt - lt. to med. gray wet (SW-GW)	-	60
		RB			Cobbles and boulders		
50.0					End of Boring 45' NX casing with perforated section left in hole. This casing driven through clay layer 28' to 39'. Top 10' of casing backfilled with bentonit[illegible] [illegible] water.		

*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.
W.L.		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

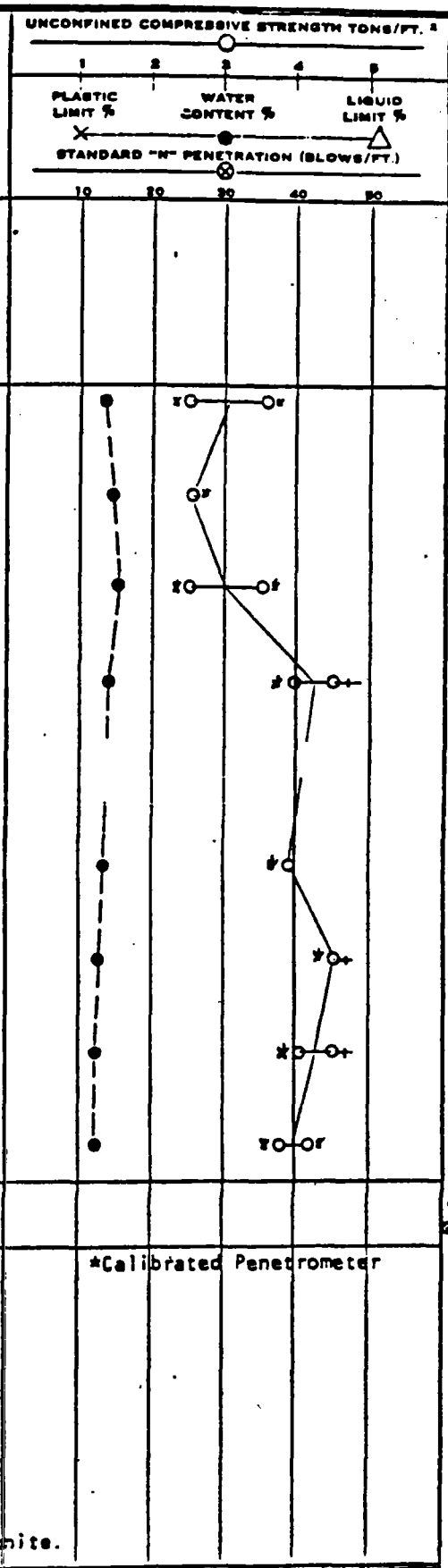
BORING STARTED	11-29-71
BORING COMPLETED	11-30-71
RIG 19	FOREMAN PS
DRAWN MP	APPROVED CWP
JOB # 14141-A	SHEET 1 of 1

LOG OF BORING NO. B-27

OWNER	ARCHITECT-ENGINEER
Wayne Disposal Comr	
SITE: Route 25, Elgin, Illinois	PROJECT NAME: Proposed Sanitary Landfill

SURFACE ELEVATION +737.0

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST. RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
50.0				No samples taken. See Boring B-18 performed 30 ft. south. Limestone boulders and cobbles 38' to 39.5' and from 45' to 50'. Clay starts at 44.5'.	
	1	ST		Silty clay, trace to some sand, trace gravel - reddish brown-gray, with pockets and seams of fine sand at 55' - very tough to hard (CL)	128
	2	ST			127
60.0	3	ST			125
	4	ST			127
70.0		ST			
	5	ST			127
80.0	6	ST			129
	7	ST			130
90.0	8	ST			
96.5	9	SS		Fine to coarse sand, some fine to medium gravel - gray - very dense - saturated (SW-SP-GW)	
				End of Boring 45' of 4" casing used. 95' of NX casing left in hole. Perforated section at 95'. Casing driven through clay at 50'-93'. Casing backfilled at 40' and at ground surface with bentonite.	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
WL	WS OR WD	
WL	BCR	ACR
WL		

SOIL TESTING SERVICES INC.
111 PFINGSTEN ROAD
NORTHBROOK, ILLINOIS

BORING STARTED	11-30-71		
BORING COMPLETED	11-30-71		
RIG	19	FOREMAN	PS
DRAWN	MP	APPROVED	CWP
JOB #	14141-A	SHEET	1 of 1

APPENDIX B

THEORETICAL

LEACHATE GENERATION COMPUTATIONS

THEORETICAL

LEACHATE GENERATION COMPUTATIONS

Mean Annual Precipitation = 34.7 in/yr

Infiltration Coefficient = 0.05

Area of Proposed Site, A_1 = 48 acres

Maximum Infiltration, q_L = 34.7 in/yr x 0.05
= 1.7 in/yr
= 0.14 ft/yr

Quantity of Precipitation Derived Leachate Generated,

$Q_L = q_L A_1$

Q_L = (0.14 ft/yr x 48 acres x 43,560 ft^2/acre x 7.48 gal/ft^3)
÷ (365 days/yr x 48 acres) = 125 gal/acre/day
= 6000 gal/day
= 4.2 gal/min

Average Piezometric Surface Elevation = El. 720

Average Landfill Bottom Elevation = El. 715

Average Landfill Bottom Elevation Below El. 720 = El. 706

Lowest Landfill Bottom Elevation = El. 697

Leachate Withdrawal Level = El. 720

Clay Side Seal is Assumed to Be Initially Unsaturated.

Maximum Groundwater Head across Clay Side Seal,

h = (El. 720 - El. 706)

= 14 feet

Minimum Thickness of Clay Side Seals,

l_c = 10 feet

Maximum Hydraulic Gradient through Clay Side Seals,

$i = h/l_c$

= 14 ft ÷ 10 ft

$i = 1.4$

Assumed Maximum Permeability of Clay Side Seals and Bottom Liner,

$k = 1 \times 10^{-7}$ cm/sec = 0.103 ft/yr

Average Porosity of Clay Side Seals and Bottom Liner,

$n_1 = 28.6\%$

Maximum Groundwater Face Approach Velocity through Clay Side Seal (inward),

$v_c = ki$

= 0.103 ft/yr x 1.4

v_c = 0.144 ft/yr

Maximum Groundwater Pore Velocity through Clay Side Seal (inward),

$v_s = v_c/n_1$

= 0.144 ft/yr ÷ 0.286

v_s = 0.503 ft/yr

Approximate Minimum Time to Saturate Clay Side Seals by Groundwater,

$t_1 = l_c/v_s$

= 10 ft ÷ 0.503 ft/yr

t_1 = 20 years

Approximate Landfill Side Seal Area below El. 720,

$A_2 = 152{,}000\ ft^2$

Approximate Groundwater Discharge into Refuse through Clay Side Seals,

$Q_s = v_c\ A_2$

$= 0.144\ ft/yr \times 152{,}000\ ft^2 \times 7.48\ gal/ft^3$

$= 163{,}700\ gal/yr$

$Q_s = 450\ gal/day$

Mean Thickness of Natural Clay Bottom Liner,

$l_L = 30$ feet

Natural Clay Bottom Liner is Assumed to be Initially Saturated.

Maximum Groundwater Head across Bottom Liner (upward),

h_b = (El. 720 - El. 706)

= 14 feet Average h_b = 7 feet

Maximum Hydraulic Gradient through Bottom Liner (upward),

$i_b = h_b/l_L$

$= 14\ ft \div 30\ ft$

$i_b = 0.47$ Average $i_b = 0.23$

Maximum Groundwater Face Approach Velocity through Bottom Liner (upward),

$v_{cb} = ki_b$

$= 0.103\ ft/yr \times 0.47$

$v_{cb} = 0.048\ ft/yr$ Average $v_{cb} = 0.024\ ft/yr$

Approximate Landfill Bottom Area below El. 720,

$A_3 = 816{,}000\ ft^2$

Approximate Maximum Rate of Groundwater Discharge into Refuse through Bottom Liner,

$Q_D = v_{cb} A_3$
$= 0.048 \text{ ft/yr} \times 816{,}000 \text{ ft}^2 \times 7.48 \text{ gal/ft}^3$
$= 293{,}000 \text{ gal/yr}$
$Q_D = 800 \text{ gal/day}$ Average $Q_D = 400$ gal/day

Assumed Porosity of Refuse (See Reference 3, Page 205),

$n_2 = 35\%$

Capacity (Air Space) below Landfill Bottom El. 720,

$V = 490{,}300$ c.y.

Volume of Leachate to Saturate Refuse below El. 720,

$V_v = n_2 V$
$= 0.35 \times 490{,}300 \text{ c.y.} \times 27 \text{ ft}^3/\text{c.y.} \times 7.48 \text{ gal/ft}^3$
$V_v = 3.5 \times 10^7$ gal

Approximate Landfill Bottom and Side Area below El. 720,

$A_4 = 968{,}000 \text{ ft}^2$

Approximate Minimum Time to Accumulate Volume of Groundwater and Leachate Equal to Volume Required to Saturate Refuse below El. 720,

$t_3 = V_v/(Q_L + Q_D)$
$= 3.5 \times 10^7 \text{ gal} \div [(6000 \text{ gal/day} + 800 \text{ gal/day}) \times 365 \text{ days/yr}]$
$t_3 = 14$ years Average $t_3 = 15$ years

(Note that life of site is 10 to 20 years, therefore time to saturate will be more on the order of 14 to 34 years.)

These computations have been made in accordance with currently accepted engineering practice, and are based on an interpretation of field and laboratory data and the assumption that the landfill is constructed and maintained in accordance with the drawings.

DRAWINGS

EXHIBITS

EXHIBITS

1. Generalized Geologic Sequence of Overburden and Bedrock, Kane County, Illinois

2. Water Quality of the Shallow Aquifer in Kane County, Illinois

3. Boring Summary

4. Soil and Rock Classification, Terminology, & Symbols

5. Engineering Properties of the Gray Silty Clay

6. Engineering Properties of the Gray Clayey Silt

7. Engineering Properties of the Red Silty Clay

8. Soil Classification Charts

9. An Ordinance Approving the Site Location Suitability for a New Regional Pollution Control Facility

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray Silty Clay	B-9, S-5	CL						12.9	3.00	3.15				
" "	B-9, S-6	"						16.6	3.50				6.7×10^{-8}	
" "	B-9, S-7	"						18.0	4.5	4.46				
" "	B-12, S-3	"						13.5	4.5+					
" "	B-12, S-4a	"						15.6	4.5+					
" "	B-13, S-3	"						19.0	3.50					
" "	B-13, S-4	"						16.5	2.50					
" "	B-13, S-5	"						17.4	2.50					
" "	B-13, S-6	"	Silty Clay	2.0	5.0	52.0	41.0	17.0	4.00					6.0
" "	B-13, S-7	"						18.5	3.50					
" "	B-14, S-2	"						15.5	4.25					
" "	B-14, S-3	"						17.5	4.5					
" "	B-15, S-1b	"						9.4						
" "	B-15, S-2	"						15.2	1.75					
" "	B-15, S-3	"						20.9	2.00					
" "	B-15, S-4	"						18.8	1.75				2.68×10^{-8} (REMOLDED)	

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray Silty Clay	B-15, S-5	CL						17.7	1.50		32	18	4.16×10^{-8}	
" "	B-15, S-6	"						20.2	1.25					
" "	B-17, S-1	"						21.5	1.50					
" "	B-17, S-3	"						12.6	2.25					
" "	B-17, S-4	"						14.9	1.75		26	14	1.53×10^{-8}	
" "	B-17, S-5	"						13.5	2.25					
" "	B-17, S-6a	"						13.7	1.25					
" "	B-18, S-5	"						13.1	2.00					
" "	B-18, S-6	"						13.6	2.00					
" "	B-18, S-7	"						16.5	1.75					
" "	B-18, S-8	"						18.4	1.50					
" "	B-18, S-9	"						17.7	1.75					
" "	B-18, S-10	"						20.1	1.25					
" "	B-18, S-13	"						13.0	2.75					
" "	B-19, S-2	"						16.3	4.00					
" "	B-19, S-3	"	Silty Clay	0.0	8.0	43.0	49.0	20.9	2.25		39	20	3.68×10^{-8}	
" "	B-20, S-2	"						12.4	1.50					

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u * (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray Silty Clay	B-20, S-3	CL						12.9	2.75					
" "	B-20, S-4	"	Loam	6.0	33.0	38.0	23.0	13.5	2.00					9.2
" "	B-22, S-5	"						18.5	2.00					
" "	B-22, S-9	"						15.5	3.00					
" "	B-22, S-10	"						18.1	4.25					
" "	B-22, S-11a	"						17.0	2.00					
" "	B-23, S-5	"						21.1	1.75					
" "	B-23, S-6	"						21.8	2.00					
" "	B-23, S-7	"						13.8	3.25					
" "	B-23, S-8	"						16.3	3.75					
" "	B-23, S-10	"						20.7	2.50					
" "	B-26, S-4	"						17.3	3.25					
" "	B-26, S-5	"						17.8	3.25					
" "	B-26, S-6	"						19.9	3.25					
" "	B-26, S-7	"						17.7	3.50				3.17×10^{-8}	
" "	BP-27, S-4	"						14.5	2.50					
" "	BP-27, S-5	"						14.3	4.00					

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil ·scription	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
ray ilty Clay	BP-27, S-6	CL	Silty Clay Loam	0.0	2.6	62.4	35.0	17.7	4.5+		30	14		
" "	BP-27, S-7	"						19.8	4.5					
" "	BP-27, S-8	"						19.9	3.50		36	16		
" "	BP-27, S-9a	"						12.7						
" "	BP-27, S-9b	"						14.0	3.50					
" "	BP-28, S-3T3	"						13.3	3.00					
" "	BP-28, S-5	"						13.8	3.00					
" "	BP-28, S-6	"						17.6	3.00					
" "	BP-28, S-7	"						16.4	3.50					
" "	BP-30, S-3	"						14.8			20	8		
" "	BP-30, S-4	CL-ML						10.7	2.00		17	5		
" "	BP-30, S-3T2	CL	Silty Clay Loam	0.0	15.4	54.6	30.0	17.1	4.5+		38	21		
" "	STS-B7-70-S1	"						19.0	1.50					
" "	STS-B7-70-S2	"						25.0	1.30					
" "	STS-B7-70-S3	"						16.0	4.5+					
" "	STS-B7-70-S6	"						19.0	4.5+					

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray Silty Clay	STS-B7-70-S7	CL						15.0	2.80					
" "	STS-B7-70-S8	"						13.0	3.15					
" "	STS-B7-70-S9	"						16.0	1.60					
" "	STS-B8-70-S9	"						18.0	2.60					
" "	STS-B8-70-S10	"						18.0	2.85					
" "	STS-B8-70-S11	"						19.0	2.55					
" "	STS-B8-70-S12	"						20.0	2.85					
" "	STS-B9-70-S8	"						20.0	1.25					
" "	STS-B9-70-S9	"						11.0	4.5+					
" "	STS-B9-70-S10	"						15.0	3.80					
" "	STS-B9-70-S11	"						18.0	4.20					
" "	STS-B9-70-S12	"						19.0	4.5					
Gray, Very Silty Clay	B-14, S-1	CL-ML						13.2	3.75					
" "	B-19, S-4	"						13.9	1.50					
" "	B-21, S-4	"						11.6	3.00					
" "	B-21, S-5	"						10.5	2.50					
" "	B-21, S-6	"						12.7	2.50					

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray Very Silty Clay	B-21, S-7	CL-ML						13.1	2.25					
" "	B-22, S-7	"						13.9	3.50					
" "	B-22, S-8	"						14.9	3.25				4.55×10^{-8}	
" "	B-24, S-12	"						10.9	4.5+					
" "	B-26, S-3	"						15.4	4.25					
" "	BP-28, S-3T1	"	Silt Loam	0.0	20.8	59.2	20.0	15.3	4.00		21	5	5.5×10^{-8} (G_s = 2.77)	11.6
" "	BP-29, S-3T2	"	"	0.0	17.9	64.6	17.5	11.7	2.50		16	5		
" "	BP-29, S-13	"						12.5					2.9×10^{-8} (G_s = 2.73)	13.6
" "	BP-29, S-3T3	"						11.9	2.00					
" "	BP-29, S-14	"						13.2	2.00		17	5		
" "	BP-29, S-15b	"						13.8	4.00		21	7		
" "	BP-29, S-16	"						13.8	4.00					
Gray, Sandy Silty Clay	B-15, S-13	"						12.5	4.5					
Black Silty Clay	BP-27, S-21b	CL						26.7	3.00					
Brownish-Gray Silty Clay	B-8, S-3	CL						14.8	2.25	1.79				

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
rownish-Gray ilty Clay	B-8, S-4	CL						12.7	3.25					
reen-Gray ilty Clay	BP-27, S-20	"						11.2	4.5+		22	7		
reenish-Gray andy, Silty lay	BP-27, S-22	"						12.9	2.50					
ray-Red-Gray ilty Clay & ilt	B-22, S-13	CL,ML						13.1	2.50					
reen-Blue-ray Silty lay	B-19, S-15	CL						22.3	2.5					
	A V E R A G E:			1.1	14.7	53.4	30.8	16.0	2.93	3.13	26	11	3.87×10^{-8}	10.1
	M A X I M U M:			6.0	33.0	64.6	49.0	26.7	4.5	4.46	39	21	6.7×10^{-8}	13.6
	M I N I M U M:			0.0	2.6	38.0	17.5	9.4	1.25	1.79	16	5	1.53×10^{-8}	6.0

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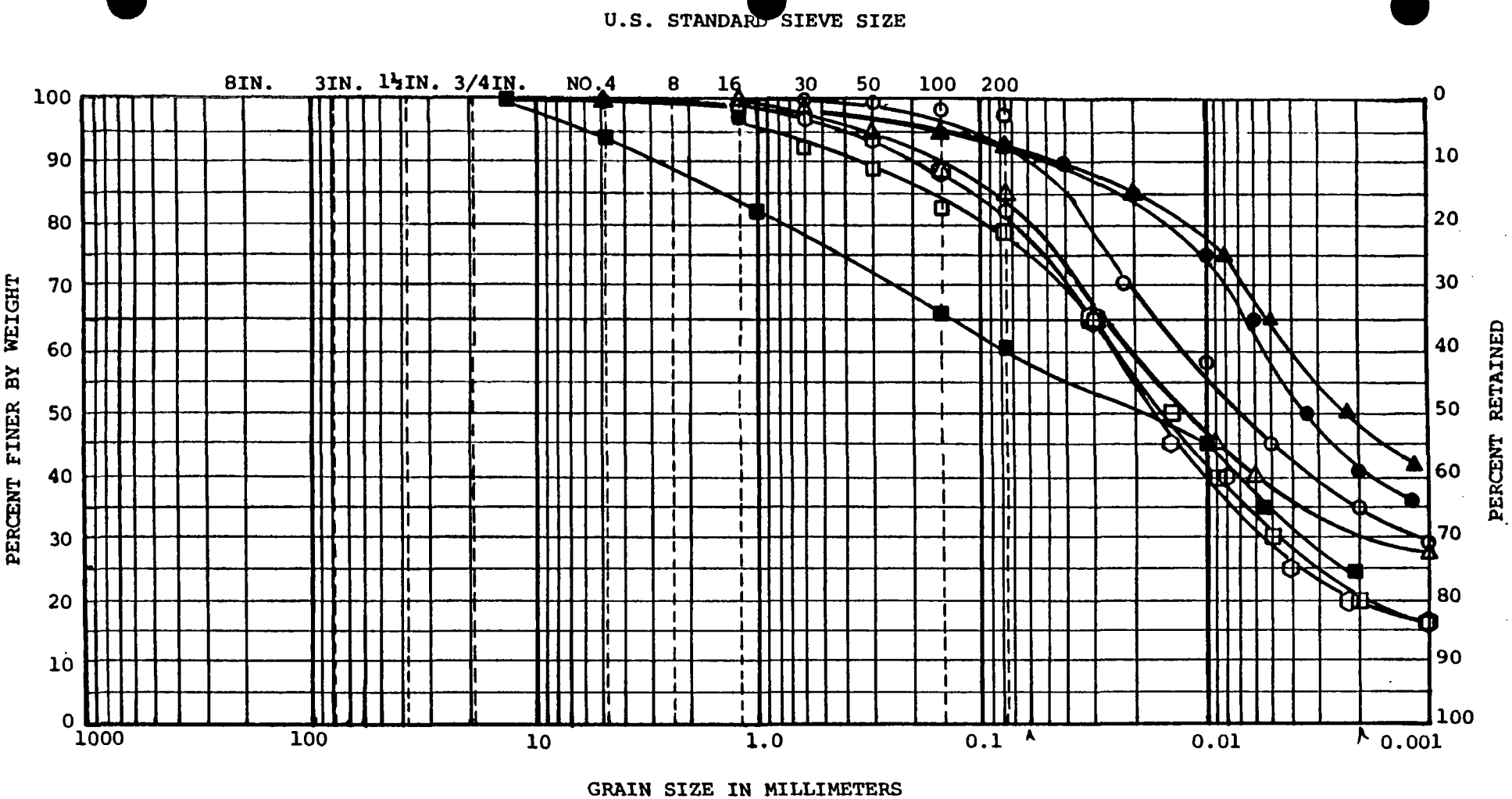

COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE NO.	DEPTH	CLASSIFICATION	NAT. WC	L.L.	P.L.	PI.	REMARKS

WOODLAND LANDFILL II - #110

Summary of

Gray Silty Clay

PATRICK ENGINEERING INC.

PARTICLE SIZE DISTRIBUTION

ENGINEERING PROPERTIES OF THE GRAY CLAYEY SILT

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray, Clayey Silt	B-14, S-5	ML						13.3						
" "	B-15, S-6	"						10.4						
" "	B-17, S-2	"						11.3						
" "	B-18, S-4	"						11.3						
" "	B-21, S-3	"						11.4						
" "	B-21, S-13	"						11.7						
" "	B-22, S-6	"						20.6						
" "	B-23, S-15	"						11.0						
" "	B-24, S-3	"						13.6						
" "	B-25, S-7	"						12.5						
" "	BP-29, S-11	"						14.1			15	3		
" "	BP-29, S-3T1	"	Silt Loam	0.0	26.7	59.3	14.0	13.0						
" "	BP-29, S-3T1b	"						13.2			13	2		
" "	BP-29, S-12a	"						13.8						
" "	BP-29, S-12b	"						14.2						
" "	STS-B9-70-S7	"						22.0	2.35					
" "	B-24, S-2	ML-CL						13.2						

ENGINEERING PROPERTIES OF THE GRAY CLAYEY SILT

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray, Clayey Silt	B-25, S-6	ML,CL	Silt Loam	6.0	23.0	54.0	17.0	13.2			20	6	7.03×10^{-8}	
Gray Silt	B-17, S-14	ML						10.6						
" "	B-19, S-6	"						11.6						
" "	B-20, S-16	"						14.4						
" "	B-23, S-9	"						12.3						
Brownish-Gray Clayey Silt	B-8, S-1	"						14.2						
" "	B-8, S-2	"						13.5						
" "	B-16, S-4	"						11.7						
" "	B-22, S-16	"						10.0						
" "	B-22, S-15	ML-CL						12.7						
Gray Sandy Silt	B-17, S-13	ML						13.5						
" "	B-23, S-11	"						10.3						
Gray, Clayey Sandy Silt	B-13, S-2	"						10.5						
" "	B-14, S-7a	"						11.1						
" "	B-24, S-13b	"						11.7						
" "	BP-27, S-11	"						10.1						

ENGINEERING PROPERTIES OF THE GRAY CLAYEY SILT

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Gray, Clayey Sandy Silt	BP-27, S-12	ML	Loam	0.0	37.2	47.8	15.0	12.0			15	3		
Gray Sandy Gravely Silt	B-21, S-12b	"						10.0						
" "	B-18, S-15	ML-SM						13.4						
Brownish-Gray Sandy Silt	B-16, S-5	ML						10.0						
" "	B-23, S-16	"						11.7						
Brownish-Gray Sandy, Clayey Silt	B-16, S-6	"						9.9						
" "	B-16, S-7	"						11.5						
" "	B-19, S-5b	"						15.7						
Greenish-Brownish-Gray Silt	BP-27, S-23	"						18.4						
A V E R A G E:				2.0	29.0	53.7	15.3	12.7	2.35		16	4	7.03×10^{-8}	
M A X I M U M:				6.0	37.2	59.3	17.0	22.0			20	6		
M I N I M U M:				0.0	23.0	47.8	14.0	9.9			13	2		

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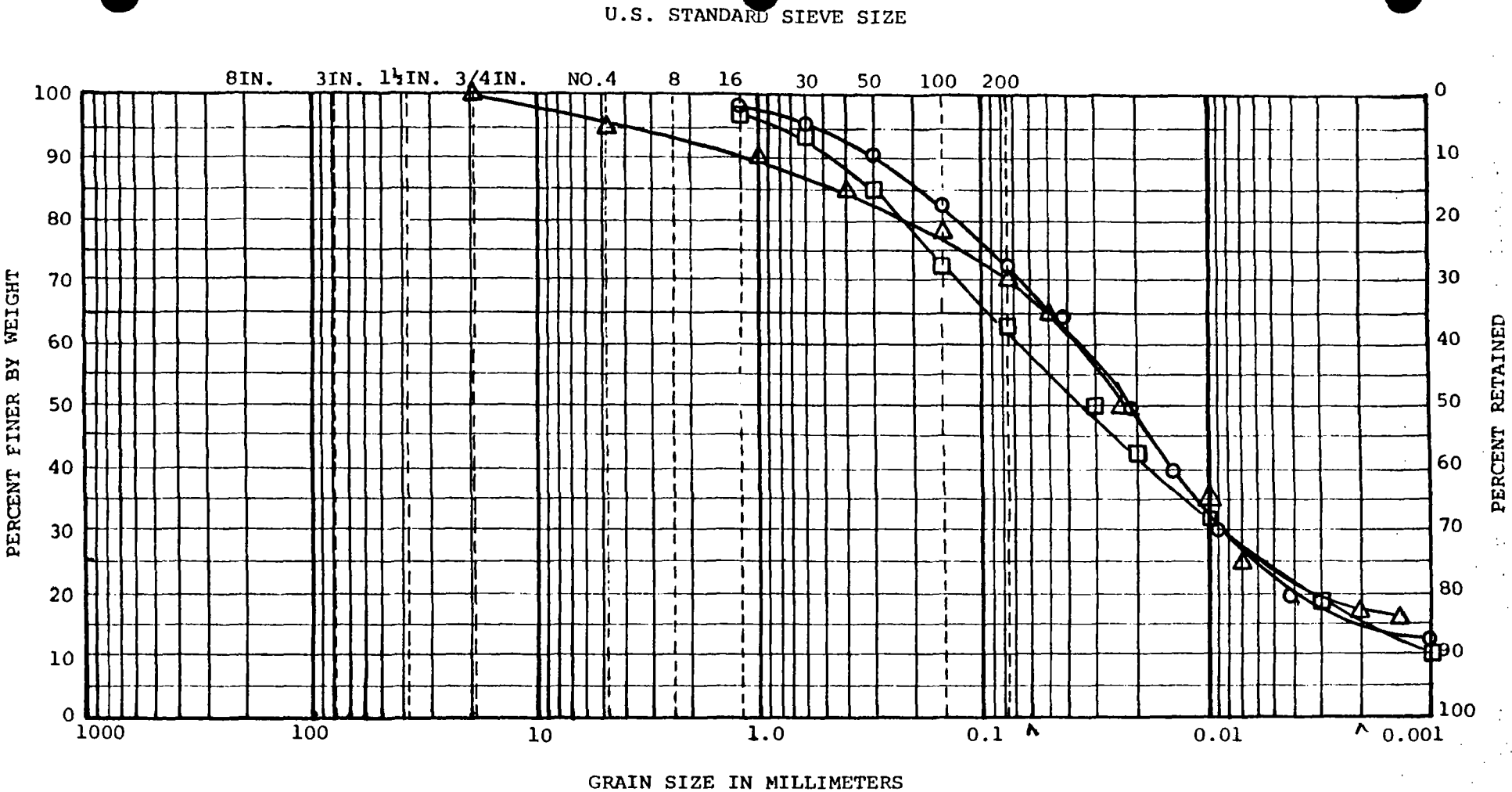


COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE NO.	DEPTH	CLASSIFICATION	NAT. WC	L.L.	P.L.	PI.	REMARKS

WOODLAND LANDFILL II - #110

Summary of

Gray Clayey Silt

PATRICK ENGINEERING INC.

PARTICLE SIZE DISTRIBUTION

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	B-6, S-1	CL						20.6	3.25					
" "	B-6, S-2	"						11.9	3.50					
" "	B-6, S-3	"						13.6	4.00	3.81				
" "	B-6, S-4	"						14.9						
" "	B-6, S-5	"						16.9	2.00					
" "	B-6, S-6	"						13.9	2.50	2.68				
" "	B-6, S-7	"						14.0	2.75	2.92				
" "	B-6, S-8	"						13.6	3.75	4.28				
" "	B-6, S-9	"						12.8	4.5+	7.46				
" "	B-6, S-10	"						12.7	4.5+	6.56				
" "	B-6, S-11	"						13.5	4.5+	4.71				
" "	B-6, S-12	"						12.8	4.5+	6.12				
" "	B-6, S-13	"						12.1	3.75					
" "	B-6, S-14	"						12.1	4.5+	5.12				
" "	B-12, S-5a	"						14.1	2.25					
" "	B-12, S-5b	"						13.5	1.75	1.49				
" "	B-12, S-6	"						15.2	2.00					
" "	B-12, S-7	"						14.9	2.25	2.27				

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	B-12, S-8	CL						14.1	2.50	2.98				
" "	B-12, S-9	"						14.1	3.25	3.09				
" "	B-12, S-10	"						14.0	3.50	3.46				
" "	B-12, S-11	"						13.3	2.50	3.04				
" "	B-12, S-12	"						15.3						
" "	B-12, S-13	"						14.3	2.50	2.80				
" "	B-12, S-14	"						13.3	3.50					
" "	B-12, S-15	"						13.2	3.25					
" "	B-12, S-16	"						14.0	3.25					
" "	B-13, S-8	"						11.8	4.5+					
" "	B-13, S-9	"						11.4	4.5					
" "	B-13, S-10	"						10.7	4.5+					
" "	B-13, S-11	"						11.3	4.5+					
" "	B-14, S-7b	"						12.8	4.5					
" "	B-14, S-8	"						10.8	4.5					
" "	B-14, S-9	"						10.6	4.5+					
" "	B-14, S-10	"						11.1	4.5+					

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil escription	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
eddish-Brown ilty Clay	B-14, S-11	CL						11.1	4.5+					
" "	B-15, S-7	"						12.5	3.75				4.20×10^{-8}	
" "	B-15, S-8	"						12.9	3.75		28	16		9.0
" "	B-15, S-9	"						12.6	4.5+					
" "	B-15, S-10	"						12.1	4.25					
" "	B-15, S-11	"						12.5	4.00					
" "	B-15, S-12	"						11.8	4.00					
" "	B-16, S-8	"						14.2	2.50					
" "	B-16, S-9	"						13.1	3.25					
" "	B-16, S-10	"						14.7	2.00					
" "	B-16, S-11	"						12.8	4.25					
" "	B-16, S-12	"						12.3	4.5+					
" "	B-16, S-13a	"						11.1	4.5+					
" "	B-17, S-6b	"						14.4	2.00					
" "	B-17, S-7	"						14.7	1.75					
" "	B-17, S-8	"						13.6	2.50					
" "	B-17, S-9	"						13.5	3.25					

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	B-17, S-10	CL						13.4	3.25					
" "	B-17, S-11	"						13.7	4.00					
" "	B-18, S-1a	"						34.5	1.00					
" "	B-18, S-11	"						13.3	4.25					
" "	B-18, S-12	"						13.4	4.00					
" "	B-19, S-7	"						14.0	2.25					
" "	B-19, S-8	"						13.6	3.00					
" "	B-19, S-9	"						14.0	4.00					
" "	B-19, S-10	"						13.3	4.5					
" "	B-19, S-11	"						12.8	4.5					
" "	B-19, S-12	"						13.9	2.25					
" "	B-19, S-13	"						13.0	3.00					
" "	B-20, S-5	"						14.6	2.00					
" "	B-20, S-6	"						14.7	1.75					
" "	B-20, S-7	"	Clay Loam	1.5	24.5	43.0	31.0	14.2	2.50					5.4
" "	B-20, S-8	"						12.6	3.75					
" "	B-20, S-9	"						14.3	2.50					

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	B-20, S-10	CL						14.6	2.00					
" "	B-20, S-11	"						13.6	2.00					
" "	B-20, S-12	"						14.2	1.75					
" "	B-20, S-13	"						14.3	2.25					
" "	B-20, S-14	"						13.4	3.00					
" "	B-20, S-15	"						12.9	3.25					
" "	B-21, S-8	"						12.5	4.5				2.13×10^{-8}	
" "	B-21, S-9	"						10.7	4.5+					
" "	B-21, S-10	"						11.5	4.5+					
" "	B-21, S-11	"						11.3	4.5+					
" "	B-21, S-12a	"						9.3	4.5+					
" "	B-22, S-14	"						11.2	4.5+					
" "	B-23, S-14	"						12.8	4.5					
" "	B-24, S-7b	"						11.9	4.5+					
" "	B-24, S-8	"						10.3	4.5+					
" "	B-24, S-9	"						12.6	4.5		28	14	8.47×10^{-8}	
" "	B-24, S-10	"						11.5	4.5+					

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	B-24, S-11	CL						11.4	4.5+					
" "	B-25, S-5a	"						18.8	2.25					
" "	B-25, S-14	"							3.70					
" "	B-25, S-15	"							4.5+					
" "	B-26, S-2	"						23.9	1.00					
" "	B-26, S-13	"						9.2	4.5+					
" "	B-26, S-14	"						10.7	4.5+					
" "	B-26, S-15	"						12.4	4.5+					
" "	BP-27, S-1	"						22.6	2.50					
" "	BP-27, S-14	"						12.5	4.5+					
" "	BP-27, S-15	"						12.3	4.5+		25	11		
" "	BP-27, S-16	"						11.9	4.5+					
" "	BP-27, S-17	"						12.2	4.5+					
" "	BP-27, S-18	"						12.0	4.5+					
" "	BP-27, S-19	"						12.3	4.5+					
" "	BP-28, S-2	"						15.2	1.50					
" "	BP-28, S-8b	"						12.7						

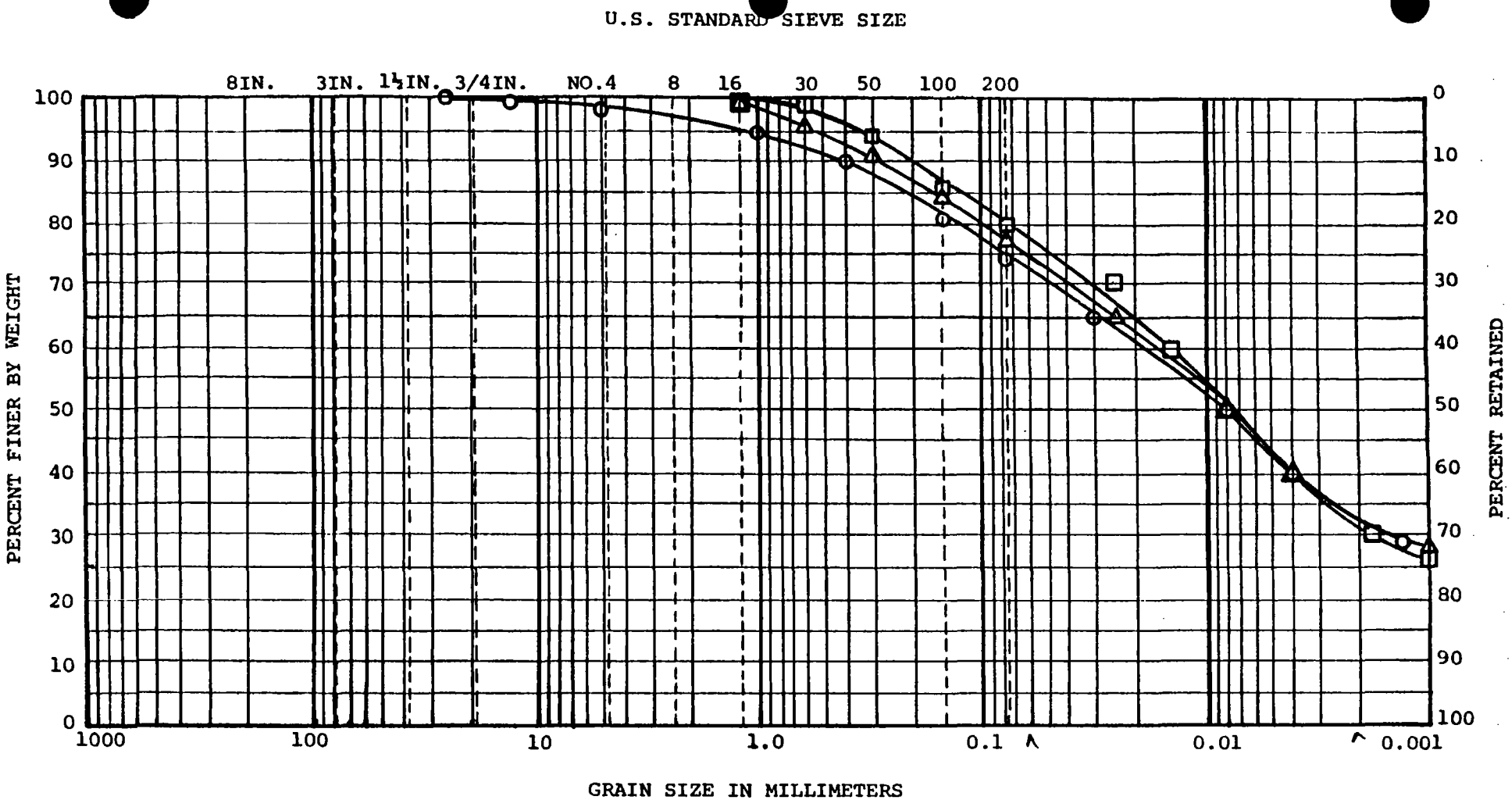
ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
Reddish-Brown Silty Clay	BP-28, S-9	CL						13.4	4.5+		24	11		
" "	BP-28, S-3T4		Clay Loam	0.0	20.5	47.5	32.0	12.2	4.0		25	11	6.9×10^{-9} (G_s = 2.69)	15.0
" "	BP-29, S-19	"						11.7	4.5+					
" "	BP-29, S-20	"						12.7	4.5+					
" "	BP-29, S-3T4	"	Clay Loam	0.0	22.3	45.2	32.5	12.2	4.5		24	12		
" "	BP-29, S-3T5	"						12.8	4.5+					15.3
" "	BP-29, S-21	"						12.5	4.5+					
" "	BP-30, S-7b	"						10.4	4.5+					
" "	BP-30, S-3T1	"						14.5						
" "	BP-30, S-8	"						11.7	4.5+					
" "	BP-30, S-9	"						12.2	4.5+					
" "	BP-30, S-10	"						12.6	4.5+					
" "	BP-30, S-11	"						11.8	4.5+					
" "	STS-B7-70-S9a	"						13.0	4.5+					
" "	STS-B7-70-S10	"						10.0	4.5+					
" "	STS-B7-70-S11	"						12.0	4.30					
" "	STS-B7-70-S12	"						13.0	4.5+					

ENGINEERING PROPERTIES OF THE RED SILTY CLAY

Soil escription	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)	LL	PI	Permeability (cm/sec)	CEC (me/100g)
eddish-Brown ilty Clay	STS-B7-70-S13	CL						11.5	4.5+					
ed-Brown to rown-Gray ilty Clay	B-8, S-8	"						10.5	4.5	8.72				
" "	B-8, S-9	"						10.7	4.5+					
" "	B-8, S-10	"						11.5	4.5+					
" "	B-8, S-11	"						15.3						
" "	B-8, S-12	"						10.0	4.5+	8.91				
rown-Gray ilty Clay	B-19, S-14	"						17.0	2.25					
reenish-rayish-Brown ilty Clay	B-17, S-12	"						17.4	2.25					
reenish-rown & Gray ilty Clay	B-14, S-12	CL-ML						19.6	3.25					
rown, Silty andy Clay	STS-B9-70-S2	CL-SC						20.0	2.80					
A V E R A G E:					22.4	45.2	31.8	13.4	3.65	4.47	26	12	3.87×10^{-8}	11.2
M A X I M U M:					24.5	47.5	32.5	18.8	4.5+	8.91	28	16	8.47×10^{-8}	15.3
M I N I M U M:					20.5	43.0	31.0	9.2	1.00	1.49	24	11	6.9×10^{-9}	5.4

Form N 207



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE NO.	DEPTH	CLASSIFICATION	NAT. WC	L.L.	P.L.	PI.	REMARKS

WOODLAND LANDFILL II - #110

Summary of

Reddish Brown Silty Clay

PATRICK ENGINEERING INC.

PARTICLE SIZE DISTRIBUTION

EXHIBIT 3

BORING SUMMARY

Boring #	Ground Elevation (MSL)	Boring Depth (Ft.)	Bedrock or Refusal Elevation	Piezometric Surface Elevation	Notes
B-4-75	751.7	70.0		728.2	
B-4A-76	734.8	125.0		724.8	El. top of well screen = 610.8
B-5-75	727.4	70.0		727.4	
B-6-75	726.7	70.0		726.7	
B-8-75	731.5	70.0		730.0	
B-9-75	752.6	70.0		740.6	
B-10-75	731.4	80.0		729.9	
B-11-75	733.1	80.0		729.6	
B-12-76	722.8	80.0		720.6	
B-13-81	737.8	62.0	675.8	733.3	
B-14-81	742.9	63.5	679.4	736.2	
B-15-81	732.7	73.5	659.2	730.2	
B-16-81	739.7	76.0	663.7	732.7	
B-17-81	730.8	74.0	656.8	717.6	
B-18-81	738.5	79.5	659.0	729.0	
B-19-81	741.6	80.0		720.6	
B-20-81	728.7	80.0		723.2	
B-21-81	733.5	73.0	660.5	730.0	
B-22-81	755.0	80.0		726.7	
B-23-81	755.3	80.0		738.3	
B-24-81	728.6	75.0	653.6	726.7	
B-25-81	750.9	80.0		726.9	
B-26-81	746.6	78.7	667.9	735.1	
BP-27	744.6	81.6	663.0	737.8	
BP-28	747.6	51.5			
BP-29	753.0	70.0			
BP-30	731.7	68.5	663.2	718.1	El. top of well screen = 668.2
BP-31	751.5	55.0		722.1	El. top of well screen = 701.5
STS-B4-70	733.7	52.0		725.7	
STS-B5-70	723.9	52.0		720.9	
STS-B6-70	728.0	52.0		715.0	
STS-B7-70	739.7	52.0		730.7	

EXHIBIT 3

Boring #	Ground Elevation (MSL)	Depth (Ft.)	Bedrock or Refusal Elevation	Piezometric Surface Elevation	Notes
STS-B8-70	747.8	51.5		741.8	
STS-B9-70	741.1	51.5		729.1	
STS-B10-70	737.0	51.5		729.0	
STS-B11-70	760.1	51.5		755.1	
STS-B12-70	762.0	51.5		749.0	
STS-B13-70	748.0	51.5		727.0	
STS-B14-70	762.5	51.5		752.5	
STS-B18-71	737.0	60.0		734.0	
STS-B26-71	737.0	50.0			
STS-B27-71	737.0	96.5			

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-27

DRILLER D & G START 5/20/82 COMPLETE 5/20/82

PAGE 1 OF 5

RIG B-56 LOC. See Location Map

GROUND EL. 744.6 W.L.: -6.8' during drilling & TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	0.0	FILL - Sand & gravel					Rotary drilling with drilling mud. 9' of 4" Ø casing
			SS-1 1.0-2.5	5 4 4		22.6	q_u* = 2.5 tsf
	2.0	Brown silty clay, trace sand, med. plasticity, stiff, moist CL					
	3.5	Brown fine to med. sand, dense, moist, occ. thin silt lense SP	SS-2 3.5-5.0	13 16 23			
	5.5	Brown fine to coarse sand, some fine gravel, dense, moist to wet SP USDA: Sand	SS-3 6.0-7.5	19 18 15			% passing #4 = 77.7 % passing #200 = 4.3
	9.0	Gray silty clay, occ. silt lenses above 11.0', med. plasticity, very stiff, moist CL	SS-4 8.5-10.0	8 13 15		14.5	q_u* = 1.5 to 2.5 tsf
			SS-5 11.0-12.5	8 11 19		14.3	q_u* = 4.0 tsf
	12.8	Boulder					
	13.3	Gray silty clay, occ. fine gravel, med. plasticity, hard, moist CL USDA: Silty clay loam	3T-1 13.5-15.5				0"/24" Recovery Tube crushed during pushing.
			SS-6 16.0-17.5	10 14 25		17.7	% passing #200 = 97.4 ! q_u* > 4.5 tsf LL = 30, PI = 14
	20.0		SS-7 18.5-20.0	8 12 20		19.8	q_u* = 4.5 tsf

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/20/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-27

DRILLER D & G START 5/20/82 COMPLETE 5/20/82

PAGE 2 OF 5

RIG B-56 LOC. See Location Map

GROUND EL. 744.6 W.L.: -6.8' during drilling

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	20.0						
		Gray silty clay, med. plasticity, very stiff to hard, moist CL	SS-8 21.0-22.5	10 15 25		19.9	q_u* = 3.5 tsf LL = 36, PI = 16
		Gray sandy clayey silt lense at 22.0'					
		Possible boulder from 23.0' to 23.3'					
		Occ. gravel fragments below 24.5'	SS-9A SS-9B 23.5-25.0	14 20 22		12.7 14.0	q_u* = 3.5 tsf
	26.0	Gray silty fine to med. sand, dense, wet to saturated SM	SS-10A SS-10B 26.0-27.5	19 19 25			% passing #50 = 94.8 % passing #200 = 14.2
		USDA: Loamy sand (SS-10A)					
	28.0	Sandy clayey silt, occ. gravel (rounded), med. dense, very moist ML	SS-11 28.5-30.0	9 9 9		10.1	
		USDA: Loam					% passing #30 = 93.5 % passing #200 = 62.8
			SS-12 31.0-32.5	8 8 9		12.0	LL = 15, PI = 3
	33.0	Gray fine to coarse sand, dense, moist to wet SP	SS-13 33.5-35.0	20 23 18			
	34.5	Red-brown silty clay, trace sand, med. plasticity, hard, moist CL	SS-14 38.5-40.0	12 14 30		12.5	q_u* > 4.5 tsf
	40.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/20/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-27

DRILLER D & G START 5/20/82 COMPLETE 5/20/82

PAGE 3 OF 5

RIG B-56 LOC. See Location Map

GROUND EL. 744.6 W.L.: -6.8' during drilling

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	40.0	Red-brown silty clay, trace sand, med. plasticity, hard, moist CL					
			SS-15 43.5-45.0	16 23 25		12.3	q_u* > 4.5 tsf LL = 25, PI = 11
			SS-16 48.5-50.0	45 50 60		11.9	q_u* > 4.5 tsf
			SS-17 51.0-52.5	18 30 60 3"		12.2	q_u* > 4.5 tsf
			SS-18 53.5-55.0	17 23 32		12.0	q_u* > 4.5 tsf
			SS-19 58.5-60.0	22 32 52		12.3	q_u* > 4.5 tsf
	60.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/20/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-27

DRILLER D & G START 5/20/82 COMPLETE 5/20/82

PAGE 4 OF 5

RIG B-56 LOC. See Location Map

GROUND EL. 744.6 W.L.: -6.8' during drilling

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	60.0	Red-brown silty clay, trace sand, med. plasticity, hard, moist CL					
	62.0	Olive-gray silty clay, trace sand, occ. gravel, med. plasticity, hard, moist CL	SS-20 63.5-65.0	19 41 60		11.2	q_u* >4.5 tsf LL = 22, PI = 7
	67.0	Dark brown dense organic silt, low plasticity, dry to moist OL					Total Organic Matter = 3.6 %
	69.0	Black organic silty clay, low plasticity, very stiff, moist OL	SS-21A SS-21B 68.5-70.0	32 52 65		35.9 26.7	q_u* = 3.0 tsf Total Organic Matter = 6.4 %
	73.5	Gray and green sandy silty clay, med. plasticity, very stiff, moist CL	SS-22 73.5-75.0	14 19 26		12.9	q_u* = 2.5 tsf
	78.5	Light green, gray, and brown silt, very dense, dry to moist ML	SS-23 78.5-80.0	19 30 38		18.4	
	80.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/20/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-27

DRILLER D & G START 5/20/82 COMPLETE 5/20/82

PAGE 5 OF 5

RIG B-56 LOC. See Location Map

GROUND EL. 744.6 W.L.: -6.8' during drilling

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	80.0	Light green, gray, and brown silt, very dense, dry to moist ML					Grouted hole on 5/21/82 using 3 bags cement and ½ bag bentonite.
	81.6	End of boring at 81.6' at bedrock or boulder.					

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/20/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-28

DRILLER D & G START 5/21/82 COMPLETE 5/21/82

PAGE 1 OF 3

RIG B-56 LOC. See Location Map

GROUND EL. 747.6 W.L.: No water encountered during drilling.
& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	0.0	Brown sandy clayey silt, loose, moist, FILL — ML	SS-1 1.0-2.5	3 3 4		15.6	Solid stem auger drilling to 15.0'. Rotary drilling with drilling mud below 15.0'. 9' of 4" Ø steel casing.
	2.2	Brown fine to med. sand, loose, moist, FILL — SP	SS-2 3.5-5.0	2 2 3		15.2	q_u* = 1.5 tsf
	4.0	Brown silty clay, med. plasticity, med. consistency, moist — CL					
	7.0	Brown sandy clayey silt, little gravel, loose, moist — ML	SS-3 8.5-10.0	3 2 4		16.6	
	9.8	Brown fine to coarse sand, trace gravel, med. dense, wet — SP	SS-4 13.5-15.0	12 9 8			For Sample 3T-1: K = 5.5 x 10^{-8} cm/sec; CEC = 11.6 meq/100g; % passing #200 = 79.2; LL = 21, PI = 5; G_s = 2.77
	17.0	Gray silty clay, trace sand, med. plasticity, occ. gravel, very stiff, moist — CL-ML; USDA: Silt Loam	3T-1 18.5-20.5			15.3	9"/24" Recovery; q_u* = 4.0 tsf
	20.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/21/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-28

DRILLER D & G START 5/21/82 COMPLETE 5/21/82

PAGE 2 OF 3

RIG B-56 LOC. See Location Map

GROUND EL. 747.6 W.L.: No water encountered during drilling. & TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	20.0	Gray silty clay, trace sand, occ. gravel, med. plasticity, very stiff, moist CL					
			3T-2 23.5-25.5				Sample slipped out of tube upon removal.
			3T-3 26.5-28.5			13.3	3"/24" Recovery Drove on gravel piece. q_u* = 3.0 tsf
			SS-5 28.5-30.0	13 20 25		13.8	q_u* = 3.0 tsf
			SS-6 33.5-35.0	9 13 16		17.6	q_u* = 3.0 tsf
			SS-7 38.5-40.0	10 15 21		16.4	q_u* = 3.5 tsf
	40.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/21/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-28

DRILLER D & G START 5/21/82 COMPLETE 5/21/82

PAGE 3 OF 3

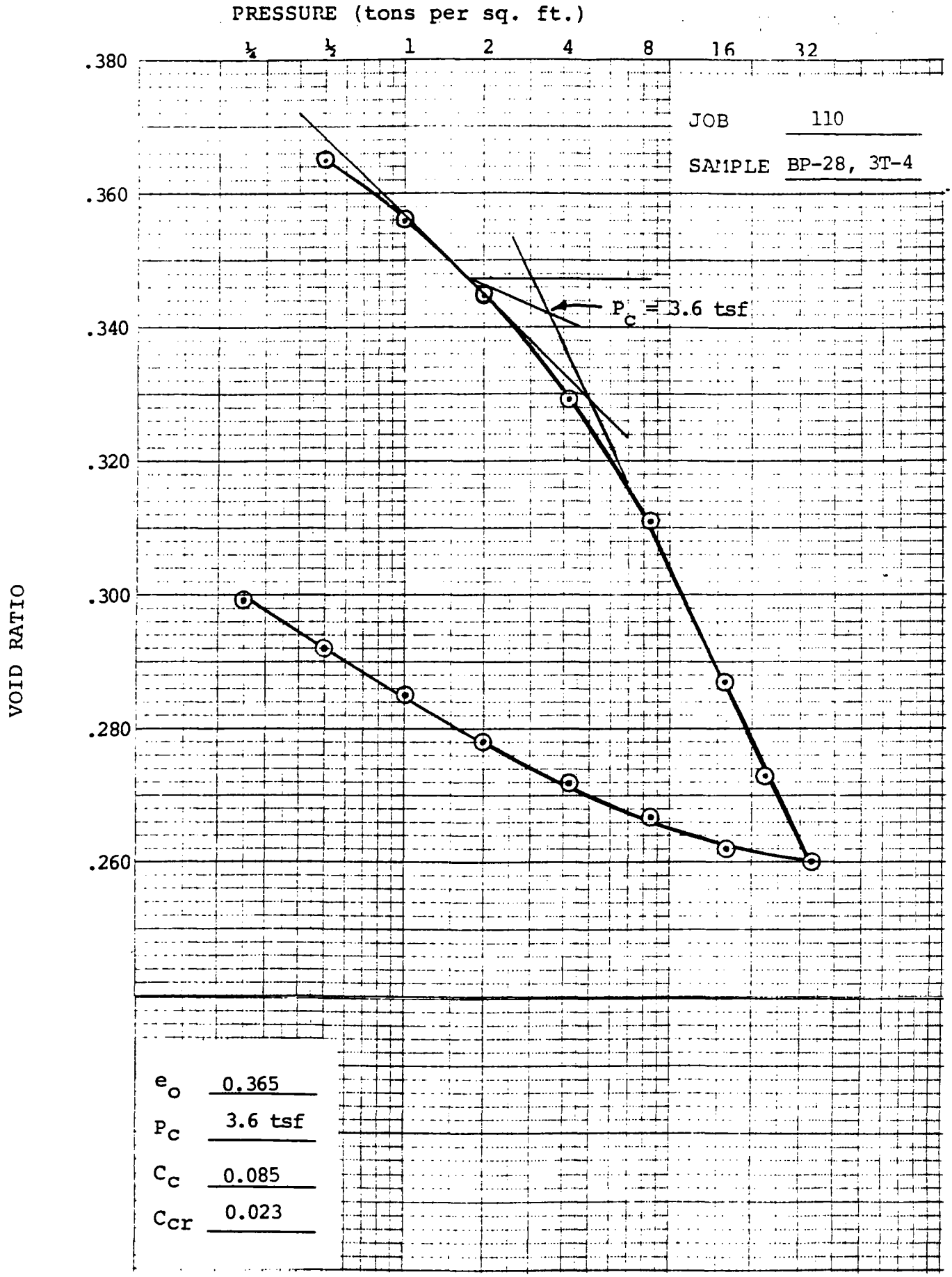
RIG B-56 LOC. See Location Map

GROUND EL. 747.6 W.L.: No water encountered during drilling. & TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	40.0	Gray silty clay, trace sand, occ. gravel, med. plasticity, very stiff, moist CL					
	43.5	Gray gravel, some sand, very dense, wet GW-GC At 44.5', 4" lense of red-brown silty clay	SS-8A SS-8B 43.5-45.0	45 48 18		clay: 12.7	Gravel: % passing 1" = 84.9 % passing #4 = 44.0 % passing #200 = 11.4 USDA: Loamy sand (SS-8A)
	45.5	Red-brown silty clay, little sand, occ. gravel, med. plasticity, hard, moist CL					G_s = 2.69
			SS-9 48.5-50.0	16 25 32		13.4	LL = 24, PI = 11 q_u* > 4.5 tsf
		USDA: Clay Loam	3T-4 50.0-51.5			12.2	q_u* > 4.0 tsf LL = 25, PI = 11 k = 6.9 x 10^{-9} cm/sec k(consolidation) = 2.2 x 10^{-8} cm/sec % passing #200 = 79.5 CEC = 15.0 meg/100g 16½"/18" Recovery Tube penetration refusal after 18".
	51.5	End of boring at 51.5' in red-brown silty clay.					Hole grouted using 3 bags cement and ½ bag bentonite.

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/21/82 JOB NO. 110

VOID RATIO VS. LOG PRESSURE



Form No. 213

PATRICK ENGINEERING INC.

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-29

DRILLER D & G START 5/24/82 COMPLETE 5/24/82

PAGE 1 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 753.0 W.L.: After drilling: Hole remained filled with drilling fluid.

& TIME:

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	0.0						Below 6.0', Rotary drilling using water. 14' of 4" Ø steel casing.
		Brown fine to coarse silty sand, med. dense, moist FILL SM	SS-1A SS-1B 1.0-2.5	13 13 13			
	1.8	Brown & gray sandy gravel, (pea gravel size), med. dense, dry FILL GP					
	3.5	Brown fine to coarse sand, little gravel, med. dense, moist SP	SS-2 3.5-5.0	6 9 9			
		Occ. silt pockets below 7.0'.	SS-3 6.0-7.5	6 5 4			
	8.0	Below 8.0', alternating ±4" layers of brown sandy silt and brown fine to coarse sand, little gravel, loose, moist ML & SP	SS-4A SS-4B 8.5-10.0	4 3 3		18.0	SS-4B is silt portion
			SS-5 11.0- 12.5	4 4 7			Mostly gravel-sized cuttings in sampler. Drilling water not allowing gravels to surface out of hole.
	12.0	Brown very clayey silt, loose, low to high plasticity, moist ML	SS-6 12.5- 14.0	4 3 5		36.6	
	15.0	Brown fine to med. sand, med. dense, dry to moist SP	SS-7 15.0- 16.5	5 6 6			
	18.5	Brown sand, some fine gravel, med. dense, dry to moist SP	SS-8 18.5- 20.0	5 7 12			Drove on gravel piece.
	20.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/24/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-29

DRILLER D & G START 5/24/82 COMPLETE 5/24/82

PAGE 2 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 753.0 W.L.: After drilling: Hole remained filled & TIME: with drilling fluid.

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	20.0	Brown fine to coarse sand, some fine gravel, dense, moist to wet SP					16' of 4" Ø steel casing
			SS-9 21.0-22.5	20 15 13			Mostly gravel-sized cuttings in sampler. 17.5' of 4" Ø steel casing. Added bentonite to drilling water to remove gravel-sized cuttings.
			SS-10 22.5-24.0	13 25 19			
	24.0	Gray clayey silt, med. dense, occ. coarse sand, occ. fine gravel, med. plasticity, moist ML					At 27.5': 20.5' of 4" Ø steel casing. Flushed bentonite from hole. Used water as fluid.
			SS-11 26.0-27.5	4 4 8		14.1	LL = 15, PI = 3 % passing #200 = 73.3
		USDA: Silt Loam	3T-1			13.0	10"/27" Recovery
			3T-1B 28.0-30.2			13.2	Bottom 10" of tube crushed due to gravel piece. 3T-1B is sample from bottom 4" of tube that protruded from tube. LL = 13, PI = 2
			SS-12A SS-12B 31.0-32.5	5 6 6		13.8 14.2	
	32.5	Gray very silty clay, med. plasticity, stiff, wet CL-ML	3T-2 32.5-34.5			11.7	27.3' of 4" Ø steel casing. LL = 16, PI = 5 23"/24" Recovery
		USDA: Silt Loam	SS-13 34.5-36.0	5 9 9		12.5	q_u* = 1.5 to 2.5 tsf K = 2.9 x 10^{-8} cm/sec CEC = 13.6 meg/100g G_s = 2.73 % passing #200 = 82.1 Water loss into hole.
			3T-3 36.0-38.0			11.9	CEC = 13.4 meg/100g q_u* = 2.0 tsf 17"/24" Recovery Bottom 3" of tube bent.
			SS-14 38.0-39.5	6 9 6		13.2	q_u* = 2.0 tsf LL = 17, PI = 5
	40.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/24/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-29

DRILLER D & G START 5/24/82 COMPLETE 5/24/82

PAGE 3 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 753.0 W.L.: After drilling: Hole remained filled & TIME: with drilling fluid.

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	40.0	Gray v. silty clay, little sand, occ. fine gravel and sand lenses, med. plasticity, very stiff to hard, moist CL-ML	SS-15A SS-15B 41.0-42.5	10 17 18		13.8	q_u* = 4.0 tsf LL = 21, PI = 7
							33.5' of 4" Ø steel casing.
			SS-16 43.5-45.0	10 59 40		13.8	q_u* = 4.0 tsf Fractured gravel in tip of sampler.
			SS-17 46.0-47.5	43 67" 3"			Gravel cave-in only recovered. 42.5' of 4" Ø steel casing. Added Revert to drilling water to remove gravels at bottom of hole.
	48.0	Gray silty fine sand and gray clayey silt, med. dense, saturated SM & ML	SS-18 48.5-50.0	11 8 13		13.0	
	52.5	Red-brown silty clay, trace sand, occ. gravel, hard, low plasticity, moist CL	SS-19 53.5-55.0	16 26 35		11.7	q_u* > 4.5 tsf
							47.5' of 4" Ø steel casing.
							53' of 4" Ø steel casing.
		From 58.2 to 58.5, drilled thru boulder or gravel.	SS-20 58.5-60.0	20 28 35		12.7	q_u* > 4.5 tsf
	60.0						

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/24/82 JOB NO. 110

SUBSURFACE EXPLORATION LOG

PROJECT Woodland Landfill Expansion

BORING NO. BP-29

DRILLER D & G START 5/24/82 COMPLETE 5/24/82

PAGE 4 OF 4

RIG B-56 LOC. See Location Map

GROUND EL. 753.0 W.L.: After drilling: Hole remained filled & TIME: with drilling fluid.

LOG	DEPTH (FT.)	SOIL DESCRIPTION	SAMPLE TYPE & NO. / DEPTH (FT.)	SPT 6"	REC.	MOIST %	NOTES & TEST RESULTS
	60.0	Red-brown silty clay, little sand, occ. gravel, low plasticity, hard, moist CL USDA: Clay Loam	3T-4 60.0-61.1		■	12.2	LL = 24, PI = 12 8"/13" Recovery Full pressure of rig on tube and no further penetration after 13". Bottom 3" of tube caved. % passing #200 = 77.7 q_u* > 4.5 tsf
			3T-5 63.5-64.5		■	12.8	11"/12" Recovery CEC = 15.3 meg/100g Downpressure = 1400 psi Penetration refusal after 12". Bottom 1" of tube caved. q_u* > 4.5 tsf
			SS-21 68.5-70.0	29 36 44	■	12.5	q_u* > 4.5 tsf
	70.0	End of boring at 70' in red-brown silty clay.					Hole grouted on 5/25/82 using 3 bags cement and ½ bag bentonite.

PATRICK ENGINEERING, INC. PREPARED BY KMB DATE 5/24/82 JOB NO. 110

EXHIBIT 3

Boring #	Ground Elevation (MSL)	Depth (Ft.)	Bedrock or Refusal Elevation	Piezometric Surface Elevation	Notes
STS-B8-70	747.8	51.5		741.8	
STS-B9-70	741.1	51.5		729.1	
STS-B10-70	737.0	51.5		729.0	
STS-B11-70	760.1	51.5		755.1	
STS-B12-70	762.0	51.5		749.0	
STS-B13-70	748.0	51.5		727.0	
STS-B14-70	762.5	51.5		752.5	
STS-B18-71	737.0	60.0		734.0	
STS-B26-71	737.0	50.0			
STS-B27-71	737.0	96.5			

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)
Gray Silty Clay	STS-B7-70-S7	CL						15.0	2.80	
" "	STS-B7-70-S8	"						13.0	3.15	
" "	STS-B7-70-S9	"						16.0	1.60	
" "	STS-B8-70-S9	"						18.0	2.60	
" "	STS-B8-70-S10	"						18.0	2.85	
" "	STS-B8-70-S11	"						19.0	2.55	
" "	STS-B8-70-S12	"						20.0	2.85	
" "	STS-B9-70-S8	"						20.0	1.25	
" "	STS-B9-70-S9	"						11.0	4.5+	
" "	STS-B9-70-S10	"						15.0	3.80	
" "	STS-B9-70-S11	"						18.0	4.20	
" "	STS-B9-70-S12	"						19.0	4.5	
Gray, Very Silty Clay	B-14, S-1	CL-ML						13.2	3.75	
" "	B-19, S-4	"						13.9	1.50	
" "	B-21, S-4	"						11.6	3.00	
" "	B-21, S-5	"						10.5	2.50	
" "	B-21, S-6	"						12.7	2.50	

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)
Gray Silty Clay	BP-27, S-6	CL	Silty Clay Loam	0.0	2.6	62.4	35.0	17.7	4.5+	3
" "	BP-27, S-7	"						19.8	4.5	
" "	BP-27, S-8	"						19.9	3.50	3
" "	BP-27, S-9a	"						12.7		
" "	BP-27, S-9b	"						14.0	3.50	
" "	BP-28, S-3T3	"						13.3	3.00	
" "	BP-28, S-5	"						13.8	3.00	
" "	BP-28, S-6	"						17.6	3.00	
" "	BP-28, S-7	"						16.4	3.50	
" "	BP-30, S-3	"						14.8		2
" "	BP-30, S-4	CL-ML						10.7	2.00	1
" "	BP-30, S-3T2	CL	Silty Clay Loam	0.0	15.4	54.6	30.0	17.1	4.5+	3
" "	STS-B7-70-S1	"						19.0	1.50	
" "	STS-B7-70-S2	"						25.0	1.30	
" "	STS-B7-70-S3	"						16.0	4.5+	
" "	STS-B7-70-S6	"						19.0	4.5+	

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay %< .002mm	w (%)	q_u* (tsf)	q_u (tsf)
Gray Silty Clay	B-9, S-5	CL						12.9	3.00	3.15
" "	B-9, S-6	"						16.6	3.50	
" "	B-9, S-7	"						18.0	4.5	4.46
" "	B-12, S-3	"						13.5	4.5+	
" "	B-12, S-4a	"						15.6	4.5+	
" "	B-13, S-3	"						19.0	3.50	
" "	B-13, S-4	"						16.5	2.50	
" "	B-13, S-5	"						17.4	2.50	
" "	B-13, S-6	"	Silty Clay	2.0	5.0	52.0	41.0	17.0	4.00	
" "	B-13, S-7	"						18.5	3.50	
" "	B-14, S-2	"						15.5	4.25	
" "	B-14, S-3	"						17.5	4.5	
" "	B-15, S-1b	"						9.4		
" "	B-15, S-2	"						15.2	1.75	
" "	B-15, S-3	"						20.9	2.00	
" "	B-15, S-4	"						18.8	1.75	

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)
Gray Silty Clay	B-15, S-5	CL						17.7	1.50	
" "	B-15, S-6	"						20.2	1.25	
" "	B-17, S-1	"						21.5	1.50	
" "	B-17, S-3	"						12.6	2.25	
" "	B-17, S-4	"						14.9	1.75	
" "	B-17, S-5	"						13.5	2.25	
" "	B-17, S-6a	"						13.7	1.25	
" "	B-18, S-5	"						13.1	2.00	
" "	B-18, S-6	"						13.6	2.00	
" "	B-18, S-7	"						16.5	1.75	
" "	B-18, S-8	"						18.4	1.50	
" "	B-18, S-9	"						17.7	1.75	
" "	B-18, S-10	"						20.1	1.25	
" "	B-18, S-13	"						13.0	2.75	
" "	B-19, S-2	"						16.3	4.00	
" "	B-19, S-3	"	Silty Clay	0.0	8.0	43.0	49.0	20.9	2.25	3
" "	B-20, S-2	"						12.4	1.50	

ENGINEERING PROPERTIES OF THE GRAY SILTY CLAY

Soil Description	Boring #, Sample #	USCS	USDA	% Gravel % > #4	% Sand #4 > % > #200	% Silt #200 > % > .002mm	% Clay % < .002mm	w (%)	q_u* (tsf)	q_u (tsf)
Gray Silty Clay	B-20, S-3	CL						12.9	2.75	
" "	B-20, S-4	"	Loam	6.0	33.0	38.0	23.0	13.5	2.00	
" "	B-22, S-5	"						18.5	2.00	
" "	B-22, S-9	"						15.5	3.00	
" "	B-22, S-10	"						18.1	4.25	
" "	B-22, S-11a	"						17.0	2.00	
" "	B-23, S-5	"						21.1	1.75	
" "	B-23, S-6	"						21.8	2.00	
" "	B-23, S-7	"						13.8	3.25	
" "	B-23, S-8	"						16.3	3.75	
" "	B-23, S-10	"						20.7	2.50	
" "	B-26, S-4	"						17.3	3.25	
" "	B-26, S-5	"						17.8	3.25	
" "	B-26, S-6	"						19.9	3.25	
" "	B-26, S-7	"						17.7	3.50	
" "	BP-27, S-4	"						14.5	2.50	
" "	BP-27, S-5	"						14.3	4.00	

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 13 DATE STARTED 3-09-81 DATE COMPLETED 3-09-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 737.8

END OF BORING 675.8

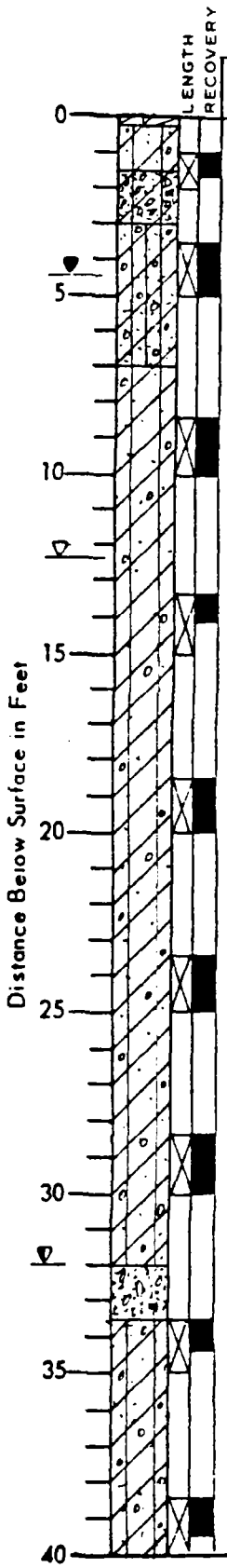
WATER TABLE

AT END OF BORING -12.5 feet

24 HOURS - 4.5 feet

WHILE DRILLING -32.0 feet

SHEET 1 OF 2



SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0.3	737.5	Dark brown clayey TOPSOIL
1	SS	13/6"				1.5	736.3	Brown silty CLAY, some sand and gravel, moist (CL)
						3.0	734.8	Firm brownish-gray silty clayey GRAVEL and SAND; cobble at -2', moist (SC)
2	SS	18	10.5					Firm gray sandy clayey SILT, little gravel, moist (ML)
						7.0	730.8	
3	SS	16	19.0	3.5*				Very tough to hard gray silty CLAY, trace sand and gravel, occasional cobbles, moist (CL)
								Sample 6: Ion Exchange 6.0 me/100 gm soil
4	SS	17	16.5	2.5*				
5	SS	20	17.4	2.5*				
6	SS	19	17.0	4.0*				
7	SS	24	18.5	3.5*				
						32.0	705.8	Gray SAND, some gravel, saturated (SW)
						33.5	704.3	Hard reddish-brown silty CLAY, some gravel and sand, moist (CL)
8	SS	45	11.8	4.5+*				
9	SS	70	11.4	4.5*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

DRILL RIG NO. 60

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 13(Cont'd) DATE STARTED 3-09-81 DATE COMPLETED 3-09-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 737.8

END OF BORING 675.8

WATER TABLE

AT END OF BORING -12.5 feet

24 HOURS - 4.5 feet

WHILE DRILLING -32.0 feet

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ_d DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	10	SS	107	10.7	4.5+*				Hard reddish-brown silty CLAY, some gravel and sand, moist (CL)
	11	SS	50/3"	11.3	4.5+*				
							52.0	685.8	
	12	SS	50/3"						Very dense light gray silty GRAVEL and broken ROCK pieces (GM)
	13	SS	50/3"						

End of Boring at -62.0 Feet

Note: Auger refusal at -62.0 feet attributed to bedrock or boulder.

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 14 DATE STARTED 3-11-81 DATE COMPLETED 3-11-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 742.9

END OF BORING 679.4

WATER TABLE

▽ AT END OF BORING - 7.6 feet

▼ 24 HOURS - 6.7 feet

▼ WHILE DRILLING -15.0 feet

SHEET 1 OF 2

SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
		-				1.5	741.4	FILL - Brown fine to coarse SAND and small to large GRAVEL, trace to little silt & clay (SM-GM)
1	SS	21	13.2	3.75*		7.0	735.9	Very tough gray very silty CLAY, little to some sand and gravel, moist (CL-ML); 8" layer of gray silt beginning at 3.7'
2	SS	35	15.5	4.25*				Hard gray silty CLAY, trace sand and gravel, moist (CL)
3	SS	38	17.5	4.5*		15.0	727.9	
4a b	SS	28	18.8 -	2.0* -		22.0	720.9	Alternating layers of firm gray fine to coarse SAND, some small to medium GRAVEL, saturated and very tough gray silty CLAY, trace sand and gravel, moist (SW-CL)
5	SS	9	13.3			28.0	714.9	Loose gray clayey SILT, trace sand, very moist (ML)
6	SS	32	10.4			32.0	710.9	Dense gray sandy (fine to coarse) SILT, very moist (ML)
7a b	SS	31	11.1 12.8	- 4.5*		34.5	708.4	Dense gray clayey sandy SILT, trace gravel, moist (ML)
8	SS	75	10.8	4.5+*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Distance Below Surface in Feet

Boring Log Continued

DRILL RIG NO. 60

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 14(Cont'd) DATE STARTED 3-11-81 DATE COMPLETED 3-11-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 742.9

END OF BORING 679.4

WATER TABLE

AT END OF BORING - 7.6 feet

24 HOURS - 6.7 feet

WHILE DRILLING -15.0 feet

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	9	SS	50/4"	10.6	4.5+*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
	10	SS	50/6"	11.1	4.5+*				
	11	SS	50/5"	11.1	4.5+*				
							57.0	685.9	
	12	SS	61	19.6	3.25*				Very tough greenish-brown and gray very silty CLAY with small weathered rock pieces, moist (CL-ML)
							62.0	680.9	Weathered BEDROCK or BOULDER

End of Boring at -63.5 Feet

Note: Auger refusal at -63.5 feet attributed to bedrock or boulder.

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 15 DATE STARTED 3-04-81 DATE COMPLETED 3-04-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 732.7

END OF BORING 659.2

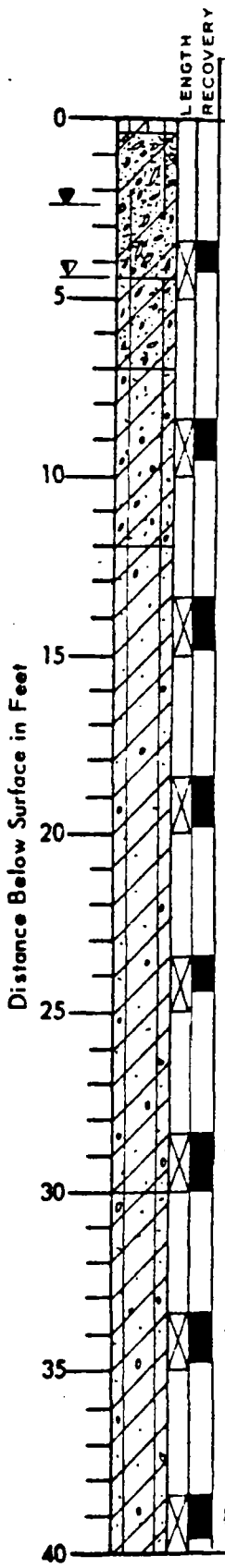
WATER TABLE

AT END OF BORING

24 HOURS - 2.5 feet

WHILE DRILLING - 4.5 feet

SHEET 1 OF 2



SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0.3	732.4	Reddish-brown clayey sandy (fine to coarse) SILT, very moist (ML)
								Firm brown fine to coarse SAND and small to large GRAVEL, trace to little silt & clay, wet (SM-GM)
1a b	Lg SS	24**	- 9.4			4.5	728.2	Gray very sandy and gravelly silty CLAY, moist (CL)
						7.0	725.7	
2	SS	20	15.2	1.75*				Tough gray silty CLAY, little to some sand and gravel, moist (CL)
						12.0	720.7	
3	SS	25	20.9	2.0*				Sample 4 - Remolded permeability = 2.68×10^{-8} cm/sec. Very tough to tough gray silty CLAY, trace sand and gravel, moist (CL) Sample 5 - permeability = 4.16×10^{-8} cm/sec. LL = 32 PI = 18
4	SS	20	18.8	1.75*				
5	SS	19	17.7	1.5*				
6	SS	27	20.2	1.25*				
						30.0	702.7	
7	SS	37	12.5	3.75*				Sample 7 - permeability = 4.20×10^{-8} cm/sec. Very tough reddish-brown silty CLAY, little sand and gravel, moist (CL) Sample 8 - LL = 28 PI = 16 Ion Exchange = 9.0 me/100gm of soil
8	SS	56	12.9	3.75*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Distance Below Surface in Feet

Boring Log Continued

TESTING SERVICE CORPORATION

DRILL RIG NO. 53 **Hollow Stem Auger Split Spoon used

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 15(Cont'd) DATE STARTED 3-04-81 DATE COMPLETED 3-04-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 732.7

END OF BORING 659.2

WATER TABLE

AT END OF BORING

24 HOURS - 2.5 feet

WHILE DRILLING - 4.5 feet

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	9	SS	56	12.6	4.5+*				
	10	SS	58	12.1	4.25*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
	11	SS	50	12.5	4.0*				
	12	SS	54	11.8	4.0*				
							62.0	670.7	
	13	SS	37	12.5	4.5*				Hard gray sandy silty CLAY, trace gravel, moist (CL-ML)
							68.5	664.2	
	14	SS	104	12.4					Very dense brown and gray silty clayey GRAVEL and weathered ROCK pieces, some sand, very moist (GM-GC)

End of Boring at -73.5 Feet

Note: Auger refusal at -73.5 feet attributed to bedrock or boulder.

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 53

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 16 DATE STARTED 3-3-81 DATE COMPLETED 3-3-81 JOB 18,064

ELEVATIONS

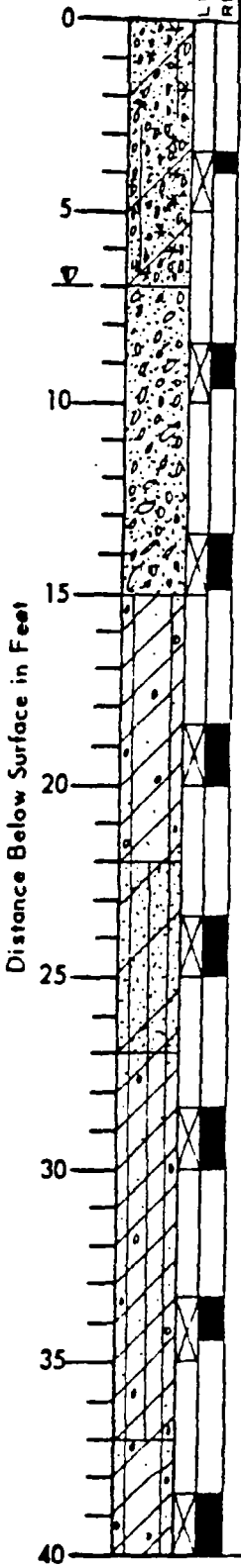
GROUND SURFACE 739.7

END OF BORING 663.7

WATER TABLE

AT END OF BORING Grouted upon completion of drilling.

While Drilling -7.0'



SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	Lg. SS	21**						FILL - Brown small rounded GRAVEL (pea gravel) and fine to coarse SAND, occasional large cinders, trace silt and clay (GW-SW)
						7.0	732.7	
2a b	Lg. SS	35**						Dense to firm brown to brownish-gray gravelly (small to large) fine to coarse SAND, occasional cobbles, saturated (SW)
3a b	Lg. SS	16**						
						15.0	724.7	
4	SS	10	11.7					Firm brownish-gray clayey SILT, some sand, trace gravel, moist (ML)
						22.0	717.7	
5	SS	14	10.0					Firm brownish-gray sandy (fine to coarse) SILT, trace clay, trace gravel, moist (ML)
						27.0	712.7	
6	SS	21	9.9					Firm brownish-gray sandy clayey SILT, trace gravel, moist (ML)
7	SS	25	11.5					
						37.0	702.7	
8	SS	21	14.2	2.5*				Very tough reddish-brown silty CLAY, little sand and gravel, moist (CL)

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 16 (Cont'd.) DATE STARTED 3-3-81 DATE COMPLETED 3-3-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 739.7

END OF BORING 663.7

WATER TABLE

AT END OF BORING Grouted upon completion of drilling.

While Drilling -7.0'

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
9	SS	27	13.1	3.25*				Very tough reddish-brown silty CLAY, little sand and gravel, moist; sandy clayey silt pocket noted in Sample 10 (CL)
10	SS	28	14.7	2.0*				
						52.0	687.7	
11	SS	35	12.8	4.25*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
12	SS	39	12.3	4.5+*				
13 a b	SS	36	11.1 22.5	4.5+* --		64.3	675.4	Dense dark brown SILT, trace clay, moist (ML)
						68.0	671.7	
14	SS	66						Very dense greenish-gray, brown and dark brown very silty GRAVEL and SAND, trace clay, very moist (GM-SM)
15	SS	100/4"				74.3	665.4	
								Weathered BEDROCK or BOULDER

End of Boring at -76.0 Feet

Note: Auger refusal at -76.0 feet attributed to bedrock or boulder.

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 53

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 17 DATE STARTED 3-6-81 DATE COMPLETED 3-6-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 730.8

END OF BORING 656.8

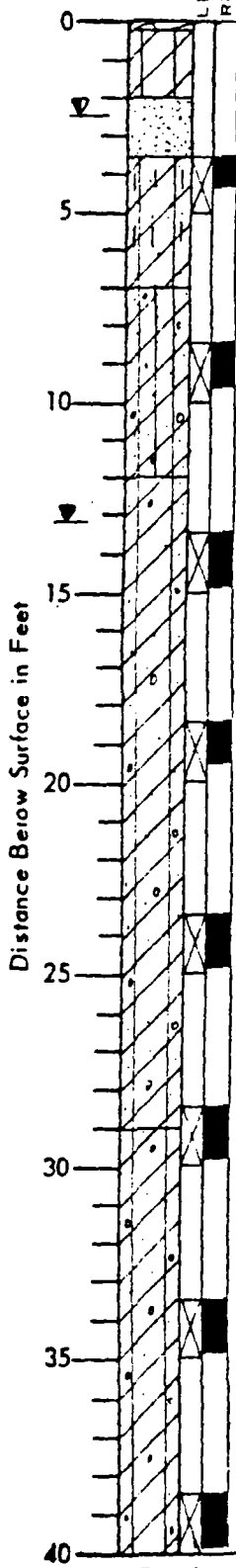
WATER TABLE

AT END OF BORING

24 HOURS -13.2' Measured inside temporary monitoring well.

While Drilling -2.5'

SHEET 1 of 2



SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						0.2	730.6	FILL - Dark brown TOPSOIL
						2.0	728.8	FILL - Dark brown silty CLAY (CL)
1	SS	14	21.5	1.5*		3.5	727.3	Light brown medium to coarse SAND, wet (SP)
						7.0	723.8	Tough gray silty CLAY with laminations of fine sand and silt, moist (CL)
2	SS	20	11.3					Firm gray clayey SILT, some sand, trace gravel, moist (ML)
						12.0	718.8	
3	SS	18	12.6	2.25*				
4	SS	14	14.9	1.75*				Sample 4 - permeability = 1.53×10^{-8} cm/sec. LL = 26 PI = 14 Very tough to tough gray silty CLAY, some sand, trace gravel, moist (CL)
5	SS	16	13.5	2.25*				
6a	SS	29	13.7	1.25*		29.0	701.8	
6b			14.4	2.0*				Very tough to tough reddish-brown silty CLAY, little sand and gravel, moist (CL)
7	SS	22	14.7	1.75*				
8	SS	28	13.6	2.5*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Distance Below Surface in Feet

Boring Log Continued

DRILL RIG NO. 72

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 17 (Cont'd.) DATE STARTED 3-6-81 DATE COMPLETED 3-6-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 730.8

END OF BORING 656.8

WATER TABLE

AT END OF BORING

24 HOURS -13.2' Measured inside temporary monitoring well.

While Drilling - 2.5'

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	36	13.5	3.25*				Very tough to hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
50		10	SS	39	13.4	3.25*				
55		11	SS	37	13.7	4.0*		55.0	675.8	
60		12	SS	30	17.4	2.25*				Very tough greenish-grayish brown silty CLAY, little sand, moist (CL)
65		13	SS	18	13.5			63.5	667.3	Firm light gray sandy SILT, some gravel, trace clay, very moist (ML)
70		14	SS	72	10.6			67.0	663.8	Very dense gray SILT, some sand and small gravel, little clay, very moist (ML)
75								72.0	658.8	BEDROCK or BOULDER
80										

End of Boring at -74.0 feet

Note: Auger refusal at -74.0 feet attributed to bedrock or boulder.

A temporary monitoring well was installed at this location at a depth of 74.0'. The monitoring well consisted of 2" PVC pipe with slots in the bottom 10 feet. The 24 hour water reading for this boring was measured inside the PVC pipe using an electronic measuring device.

*Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

DRILL RIG NO. 72

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 18 DATE STARTED 3-12-81 DATE COMPLETED 3-12-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 738.5

END OF BORING 659.0

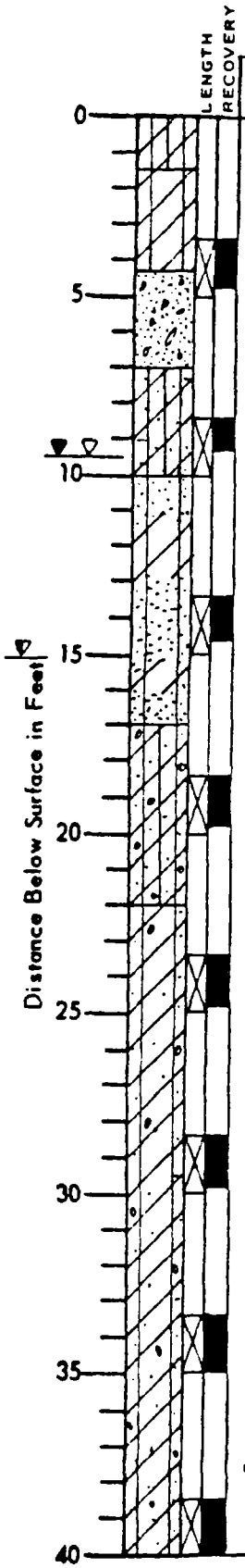
WATER TABLE

AT END OF BORING - 9.5'

24 HOURS - 9.5'

While Drilling -15.0'

SHEET 1 of 2



SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
						1.5	737.0	Loose brown clayey SILT, very moist (ML)
1a	SS	7	34.5	1.0*				Tough brown silty CLAY, moist (CL)
1b			-	-		4.3	734.2	Loose brown fine to coarse SAND, trace coarse sand and small gravel, very moist (SW)
						7.0	731.5	Very loose brown sandy (fine) SILT with laminations of silty clay, very moist (ML)
2	SS	2	34.9			10.0	728.5	Firm gray layers of fine SAND and silty fine SAND with laminations of silty clay and clayey sandy silt, wet (SP, SM)
3	SS	20	18.1			17.0	721.5	Firm gray clayey SILT, some sand and small gravel, moist (ML)
4	SS	24	11.3			22.0	716.5	Very tough to tough gray silty CLAY, some to little sand and small gravel, moist (CL)
5	SS	31	13.1	2.0*				
6	SS	28	13.6	2.0*				
7	SS	32	16.5	1.75*				
8	SS	20	18.4	1.5*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 18 (Cont'd.) DATE STARTED 3-12-81 DATE COMPLETED 3-12-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 738.5

END OF BORING 659.0

WATER TABLE

AT END OF BORING - 9.5'

24 HOURS - 9.5'

While Drilling -15.0'

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	9	SS	25	17.7	1.75*				Tough gray silty CLAY, little to trace sand and gravel, moist (CL)
	10	SS	20	20.1	1.25*				
							52.0	686.5	
	11	SS	58	13.3	4.25*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
	12	SS	70	13.4	4.0*				
							62.0	676.5	
	13	SS	51	13.0	2.75*				Very tough gray silty CLAY, little sand and gravel, moist (CL)
							67.0	671.5	
	14 a b	SS	30	23.0 17.6					Dense dark brown and reddish-brown clayey SILT (ML), moist with layers of gray clayey silty fine sand (SM-SC), moist
							72.0	666.5	
	15	SS	56	13.4					Very dense gray gravelly sandy SILT, trace clay, moist (ML-SM)
							78.0	660.5	
	16	SS	50/1"						Weathered BEDROCK or BOULDER

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

End of Boring at -79.5 feet

Note: Auger refusal at -79.5 feet attributed to [illegible] rock or boulder

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 19 DATE STARTED 2-27-81 DATE COMPLETED 2-27-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 741.6

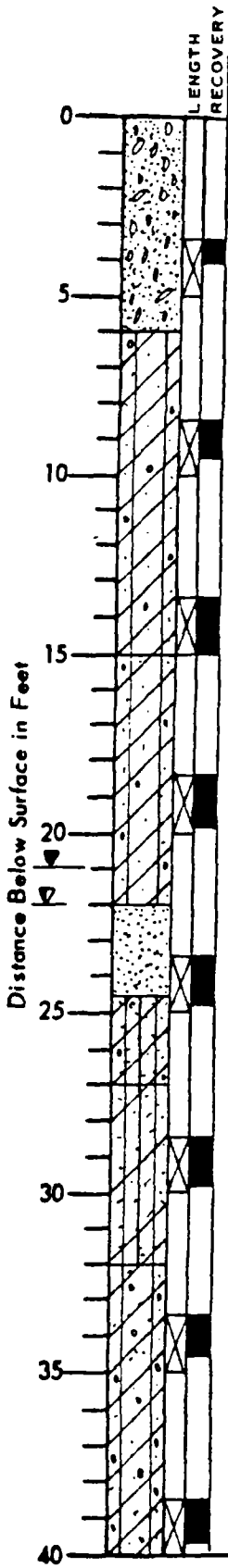
END OF BORING 661.6

WATER TABLE

AT END OF BORING -65.0'

24 HOURS -21.0'

While Drilling -22.0'



LENGTH	RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
		1	SS	9						Loose brown fine to coarse SAND, trace to little small gravel, moist (SW)
								6.0	735.6	
		2	SS	21	16.3	4.0*				Hard to very tough brownish-gray to gray silty CLAY, trace sand and gravel, moist (CL)
										Sample 3 - permeability = 3.68×10^{-8} cm/sec.
		3	SS	14	20.9	2.25*				LL = 39 PI = 20
								15.0	726.6	
		4	SS	14	13.9	1.5*				Tough gray very silty CLAY, trace sand and gravel, moist (CL-ML)
								22.0	719.6	Firm gray fine SAND, wet (SP)
		5a b	SS	22	15.7			24.5	717.1	Firm grayish-brown clayey sandy SILT, trace gravel, moist (ML)
								27.0	714.6	
		6	SS	16	11.6					Firm gray SILT, some sand, trace clay, very moist (ML)
								32.0	709.6	
		7	SS	37	14.0	2.25*				Very tough reddish-brown silty CLAY, little sand and gravel, moist (CL)
		8	SS	39	13.6	3.0*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 19 (Cont'd.) DATE STARTED 2-27-81 DATE COMPLETED 2-27-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 741.6

END OF BORING 661.6

WATER TABLE

AT END OF BORING -65.0'

24 HOURS -21.0'

While Drilling -22.0'

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	39	14.0	4.0*				
50		10	SS	35	13.3	4.5*				Hard to very tough reddish-brown silty CLAY, little sand and gravel, moist (CL)
55		11	SS	52	12.8	4.5*				
60		12	SS	58	13.9	2.25*				
65		13	SS	34	13.0	3.0*				*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
								67.0	674.6	
70		14	SS	26	17.0	2.25*				Very tough dark grayish-brown silty CLAY, little sand, trace gravel, moist (CL)
								72.0	669.6	
75		15	SS	29	22.3	2.5*				Very tough greenish, bluish gray silty CLAY, occasional sand pockets, moist (CL)
								77.0	664.6	
80		16	SS	43						Dense light grayish-tan SILT with sand, gravel & weathered rock pieces, moist (ML)

End of Boring at -80.0 feet

DRILL RIG NO. 79

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 20 DATE STARTED 3-5-81 DATE COMPLETED 3-5-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 728.7

END OF BORING 648.7

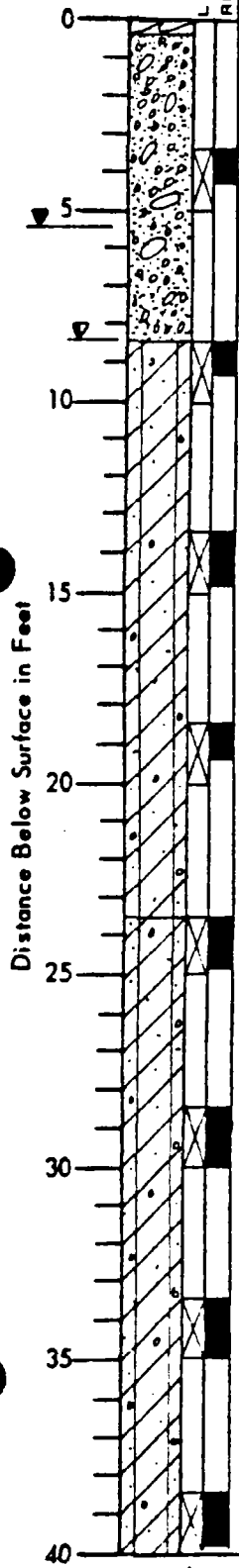
WATER TABLE

AT END OF BORING

24 HOURS -5.5' Measured inside hollow stem auger.

While Drilling - 8.5'

SHEET 1 of 2



LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.3	728.4	Dark brown sandy silty TOPSOIL
	1a b	SS	22						Firm brown fine to coarse SAND and small to large GRAVEL, moist (SW-GW)
	2	SS	15	12.4	1.5*		8.5	720.2	
	3	SS	26	12.9	2.75*				Tough to very tough gray silty CLAY, some sand and gravel, moist (CL)
	4	SS	30	13.5	2.0*				Sample 4 - Ion Exchange = 9.2 me/100 grams of soil
	5	SS	28	14.6	2.0*		23.5	705.2	
	6	SS	20	14.7	1.75*				Tough to very tough reddish-brown silty CLAY, little sand and gravel, moist (CL)
	7	SS	22	14.2	2.5*				Sample 7 - Ion Exchange = 5.4 me/100 grams of soil
	8	SS	30	12.6	3.75*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 20 (Cont'd.) DATE STARTED 3-5-81 DATE COMPLETED 3-5-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 728.7

END OF BORING 648.7

WATER TABLE

AT END OF BORING

24 HOURS -5.5' Measured inside hollow stem auger.

While Drilling - 8.5'

Distance Below Surface in Feet: 40, 45, 50, 55, 60, 65, 70, 75, 80

LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
	9	SS	29	14.3	2.5*				
	10	SS	48	14.6	2.0*				
	11	SS	38	13.6	2.0*				
	12	SS	31	14.2	1.75*				Very tough reddish-brown silty CLAY, little sand and gravel, moist (CL)
	13	SS	46	14.3	2.25*				
	14	SS	42	13.4	3.0*				
	15	SS	40	12.9	3.25*				
							77.0	651.7	
	16	SS	83	14.4					Very dense gray SILT, little clay, some sand, trace gravel, moist (ML)

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

End of Boring at -80.0 feet

DRILL RIG NO. 72

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 21 DATE STARTED 3-13-81 DATE COMPLETED 3-13-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 733.5

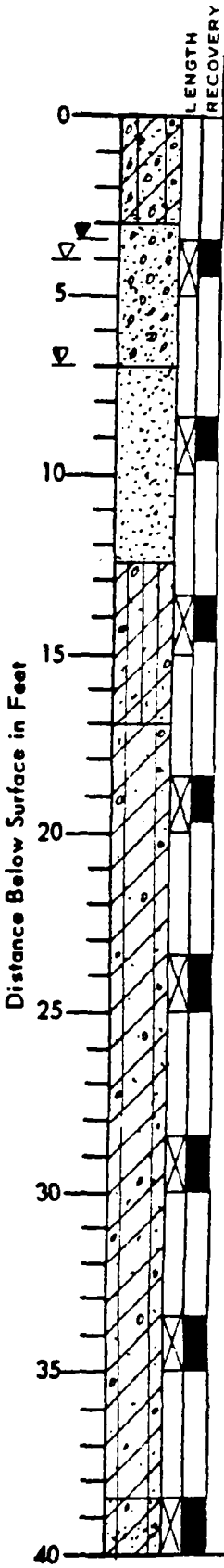
END OF BORING 660.5

WATER TABLE

AT END OF BORING - 4.0'

24 HOURS - 3.5'

While Drilling - 7.0'



SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
								FILL - Brown very sandy and gravelly silty CLAY (CL)
						3.0	730.5	
1	SS	21						Firm brown fine to coarse SAND, some small gravel, wet (SW)
						7.0	726.5	
2	SS	35						Dense brown fine to medium SAND, wet (SP)
						12.5	721.0	
3	SS	22	11.4					Firm gray clayey SILT, some sand and gravel, moist (ML)
						17.0	716.5	
4	SS	40	11.6	3.0*				
5	SS	35	10.5	2.5*				Very tough gray very silty CLAY, some sand and gravel, occasional sand seams below 28.5', moist (CL-ML)
6	SS	28	12.7	2.5*				
7	SS	44	13.1	2.25*				
8	SS	39	12.5	4.5*		38.5	695.0	Hard reddish-brown silty CLAY, little sand & gravel, occasional sand seams, moist (CL)

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Sample 8 - permeability = 2.13×10^{-8} cm/sec.

Boring Log Continued

DRILL RIG NO. 60

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 21 (Cont'd.) DATE STARTED 3-13-81 DATE COMPLETED 3-13-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 733.5

END OF BORING 660.5

WATER TABLE

AT END OF BORING - 4.0'

24 HOURS - 3.5'

While Drilling - 7.0'

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	68	10.7	4.5+*				Hard reddish-brown silty CLAY, little sand and gravel, occasional sand seams, moist (CL)
50		10	SS	80	11.5	4.5+*				
55		11	SS	75	11.3	4.5+*				
60		12a b	SS	77	9.3 10.0	4.5+* -		59.5	674.0	Very dense light gray sandy gravelly SILT, moist (ML)
								62.0	671.5	Dense light gray clayey SILT with considerable sand and gravel, very moist (ML)
65		13	SS	30	11.7					
								67.0	666.5	Very dense light gray very sandy SILT, some gravel, trace clay, wet (ML)
70		14	SS	58						
								71.5	662.0	Weathered BEDROCK or BOULDER
75										
80										

End of Boring at -73.0 feet

Note: Auger Refusal at -73.0 feet attributed to bedrock or boulder.

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 22 DATE STARTED 2-27-81 DATE COMPLETED 2-27-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 755.0

END OF BORING 675.0

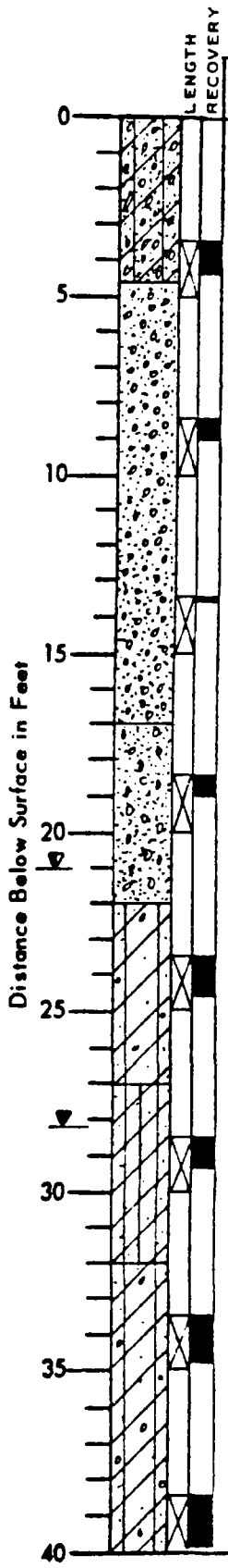
WATER TABLE

AT END OF BORING

24 HOURS -28.3 feet measured inside hollow stem auger

WHILE DRILLING -21.0 feet

SHEET 1 OF 2



SAMPLE NO.	TYPE	N	WC	Q_u	DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS	9	15.9			4.7	750.3	FILL - Brown silty clayey SAND and GRAVEL, occasional cobbles (SC-SM)
2	SS	5						FILL - Brown small rounded GRAVEL (pea gravel), trace to little sand, very moist (SC-SM)
3	SS	4						
4	Lg SS	29**				17.0	738.0	Firm brown fine to coarse SAND and small to medium GRAVEL, very moist to saturated (SW-GW)
5	Lg SS	17**	18.5	2.0*		22.0	733.0	Very tough gray silty CLAY, little sand and gravel, moist (CL)
6	SS	4	20.6			27.0	728.0	Very loose gray very clayey SILT, trace fine sand, very moist (ML)
7	SS	19	13.9	3.5*		32.0	723.0	Very tough gray very silty CLAY, trace sand and gravel, moist (CL-ML) Sample 8 - permeability = 4.55×10^{-8} cm/sec
8	SS	22	14.9	3.25*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

TESTING SERVICE CORPORATION

DRILL RIG NO. 53 **Large dia. Split Spoon used

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 22(Cont'd) DATE STARTED 2-27-81 DATE COMPLETED 2-27-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 755.0

END OF BORING 675.0

WATER TABLE

AT END OF BORING

24 HOURS -28.3 feet measured inside hollow stem auger

WHILE DRILLING -21.0 feet

SHEET 2 of 2

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										Very tough gray very silty CLAY, trace sand and gravel, moist (CL-ML)
								42.0	713.0	
45		9	SS	22	15.5	3.0*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
50		10	SS	26	18.1	4.25*				
		11a	SS	27	17.0	2.0*				
		11b			-	-		54.5	700.5	
55										Firm gray sandy small to large GRAVEL, wet (SW)
								57.0	698.0	
60		12	SS	38						Dense gray fine to medium SAND, wet (SP)
								62.0	693.0	
65		13	SS	21	13.1	2.5*				Alternating zones of gray to reddish gray very tough silty CLAY and firm clayey SILT; little sand, trace gravel, moist (CL,ML)
								67.0	688.0	
70		14	SS	112	11.2	4.5+*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
								72.0	683.0	
75		15	SS	77	12.7					Very dense brownish-gray very clayey SILT, little to some sand, trace gravel, moist (ML-CL)
80		16	SS	62	10.0					

End of Boring at-80.0 Feet

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 53

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 23 DATE STARTED 2-25-81 DATE COMPLETED 2-25-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 755.3

END OF BORING 675.3

WATER TABLE

AT END OF BORING

24 HOURS -17.0 feet measured inside hollow stem auger

WHILE DRILLING -43.5 feet

SHEET 1 OF 2

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
0										
5		1a b	Lg SS	42**						Dense to very dense brown fine to coarse SAND and small to large GRAVEL; little to trace silt above 7.0', moist to very moist (SW-GW)
10		2a b	Lg SS	70**						Note: There were frequent zones where the samples showed less gravel than sand (gravelly SAND)
15		3a b	Lg SS	64**						
20		4	Lg SS	48**						
								21.5	733.8	
25		5	Lg SS	20**	21.1	1.75*				Tough to very tough gray silty CLAY, trace to little sand and gravel, moist; cobble at 32' and 37.5' (CL)
30		6	SS	16	21.8	2.0*				
35		7	SS	24	13.8	3.25*				
40		8	SS	19	16.3	3.75*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Boring Log Continued

TESTING SERVICE CORPORATION

DRILL RIG NO. 52

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 23(Cont'd) DATE STARTED 2-25-82 DATE COMPLETED 2-25-82 JOB 18,064

ELEVATIONS

GROUND SURFACE 755.3

END OF BORING 675.3

WATER TABLE

AT END OF BORING

24 HOURS -17.0 measured inside hollow stem auger

WHILE DRILLING -43.5 feet

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	▽ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										Very tough gray silty CLAY, trace sand and gravel, moist (CL)
								43.5	711.8	
45		9	SS	18	12.3					Firm gray SILT, some sand, trace clay, trace gravel, moist (ML)
								48.0	707.3	
50		10	SS	17	20.7	2.5*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
								53.5	701.8	
55		11	SS	16	10.3					Firm gray sandy (fine to coarse) SILT, trace gravel and clay, moist (ML)
								58.5	696.8	
60		12	SS	12						Firm to dense gray fine to coarse SAND and small to large GRAVEL, saturated (SW-GW)
65		13a b	SS	30						Note: Layer of gray fine to medium SAND at 64.5' (SP)
								68.0	687.3	
70		14	SS	38	12.8	4.5*				Hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
								72.0	683.3	
75		15	SS	52	11.0					Very dense gray clayey SILT, little sand, trace gravel, moist (ML)
								77.0	678.3	
80		16	SS	74	11.7					Very dense dark brownish-gray sandy SILT, trace clay, moist (ML)

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

End of Boring at -80.0 Feet

DRILL RIG NO. 53

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 24 DATE STARTED 3-05-81 DATE COMPLETED 3-05-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 728.6

END OF BORING 653.6

WATER TABLE

AT END OF BORING - 2.0 feet

24 HOURS - 1.9 feet

WHILE DRILLING -20.0 feet

SHEET 1 OF 2

SAMPLE NO.	TYPE	N	WC	Q_u	DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
								Firm brown fine to coarse SAND and small to large GRAVEL, occasional cobbles, moist to wet (SW-GW)
						3.5	725.1	
1	SS	13	12.5					Firm brown sandy very clayey SILT, trace gravel, moist (ML)
						7.0	721.6	
2	SS	15	13.2					Firm gray very clayey SILT, little sand, trace gravel, moist (ML-CL) layer of brown and gray silty clayey sand from 18.5' to 19.0'
3	SS	19	13.6					
4	SS	18				19.0	709.6	Firm gray very sandy SILT, trace clay, moist; occasional wet sand and gravel seams (ML)
5	SS	29				24.7	703.9	
6a b	SS	62						Very dense gray fine to coarse SAND and small to medium GRAVEL (SW-GW) with layers of gray fine to medium sand, wet
7a b	SS	39	11.9	4.5+*		34.0	694.6	
								Hard reddish-brown very silty CLAY, little sand, trace gravel, occasional thin sand seams, moist (CL-ML) ? CL
8	SS	85	10.3	4.5+*				

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

Distance Below Surface in Feet: 0, 5, 10, 15, 20, 25, 30, 35, 40

Boring Log Continued

DRILL RIG NO. 60

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 24(Cont'd) DATE STARTED 3-05-81 DATE COMPLETED 3-05-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 728.6

END OF BORING 653.6

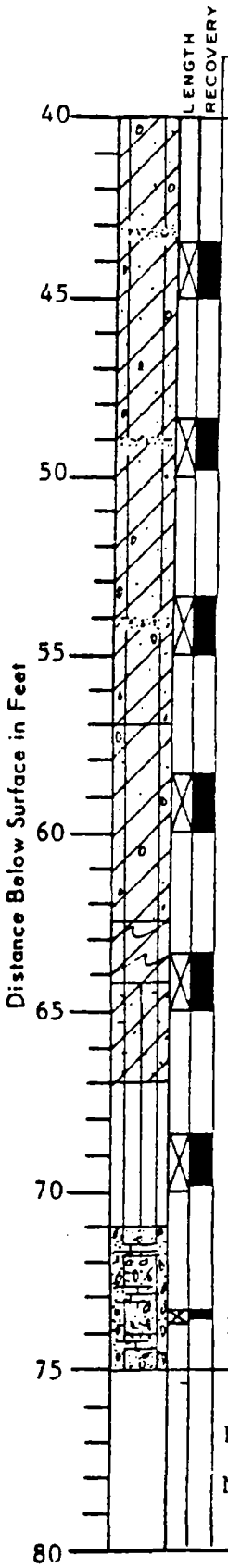
WATER TABLE

AT END OF BORING - 2.0 feet

24 HOURS - 1.9 feet

WHILE DRILLING -20.0 feet

SHEET 2 of 2



Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										Sample 9 - permeability = 8.47×10^{-8} cm/sec
										LL = 28 PI = 14
45		9	SS	58	12.6	4.5*				Hard reddish-brown very silty CLAY, little sand, trace gravel, occasional thin sand seams, moist
										(CL-ML) ? CL
50		10	SS	51	11.5	4.5+*				
55		11	SS	50	11.4	4.5+*				
								57.0	671.6	
60		12	SS	93	10.9	4.5+*				Hard gray very silty CLAY, some sand and gravel, moist (CL-ML)
								62.5	666.1	
65		13a	SS	135	30.3			64.2	664.4	Very dense dark brown highly consolidated silty organic CLAY, moist (OL)
		13b			11.7					Very dense dark gray clayey very sandy SILT, moist (ML)
								67.0	661.6	
70		14	SS	64						Very dense gray SILT, wet (ML)
								71.0	657.6	
75		15	SS	100/3"						Very dense gray silty sandy GRAVEL and weathered ROCK pieces, moist (GM)
80										

End of Boring at -75.0 Feet

Note: Auger refusal at -75.0 Feet attributed to bedrock or boulder

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO. 60

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 25 DATE STARTED 2-26-81 DATE COMPLETED 2-26-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 750.9

END OF BORING 670.9

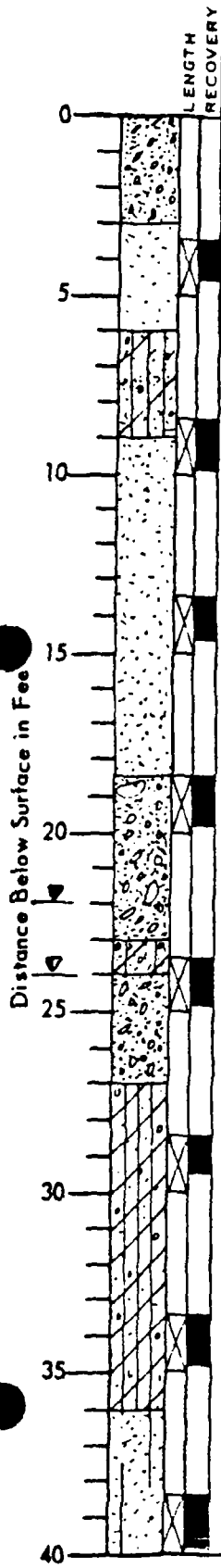
WATER TABLE

AT END OF BORING -50.0 feet

24 HOURS -22.0 feet (caved)

WHILE DRILLING -24.0 feet

SHEET 1 OF 2



LENGTH	RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
										Brown gravelly(small to medium) SAND, moist (SW)
								3.0	747.9	
		1a b	SS	5						Loose brown fine SAND, moist (SP)
								6.0	744.9	
										Firm brown very sandy SILT, trace clay and small gravel; a few fine sand seams, moist (ML)
		2	SS	11				12.0	738.9	
										Firm brown fine SAND, trace coarse sand, moist (SP)
		3a b	SS	14						
								18.5	732.4	
		4a b	SS	52						Very dense brown fine to coarse SAND and small to large GRAVEL, a few cobbles from 20' to 23', moist (SW-GW)
								23.0	727.9	
		5a b	SS	13	18.8 -	2.25* -		24.0	726.9	Very tough brown silty CLAY, trace sand and gravel, occasional sandy silty seams, moist (CL)
								27.0	723.9	Firm brown gravelly (small) fine to coarse SAND, saturated (SW)
		6	SS	24	13.2					Sample 6 - permability = 7.03×10^{-8} cm/sec LL = 20 PI = 6
										Firm gray clayey SILT, little sand, trace gravel, moist CL-ML ~~(ML)~~
		7	SS	16	12.5					*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
								36.0	714.9	Very loose gray fine SAND, trace silt, saturated (SP)
		8	SS	1						

Boring Log Continued

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 25(Cont'd) DATE STARTED 2-26-81 DATE COMPLETED 2-26-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 750.9

END OF BORING 670.9

WATER TABLE

AT END OF BORING -50.0 feet

24 HOURS -22.0 feet (caved)

WHILE DRILLING -24.0 feet

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40										
45		9	SS	26						Firm grayish-brown to gray fine to medium SAND, saturated (SP)
50		10	SS	22						
55		11a b	SS	42				54.0	696.9	Dense brownish-gray silty fine to coarse SAND, wet (SM)
60		12	SS	85				58.0	692.9	Very dense to firm gray fine to coarse SAND, trace silt and small gravel, below 64.0' saturated (SW)
65		13	SS	26						
70		14	SS	52		3.7*		67.0	683.9	Very tough to hard reddish-brown silty CLAY, little sand and gravel, moist (CL)
75		15	SS	86		4.5+*				*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
								77.0	673.9	Very dense gray clayey SILT, little sand, trace gravel, moist (ML)
80		16a b	SS	57				79.5	671.4	Very dense dark brown highly consolidated clayey ORGANIC SILT, trace wood, moist (OL) with interbedded clayey SILT, moist (ML)

End of Boring at -80.0 Feet

TESTING SERVICE CORPORATION

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 26 DATE STARTED 2-26-81 DATE COMPLETED 2-26-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 746.6

END OF BORING 667.9

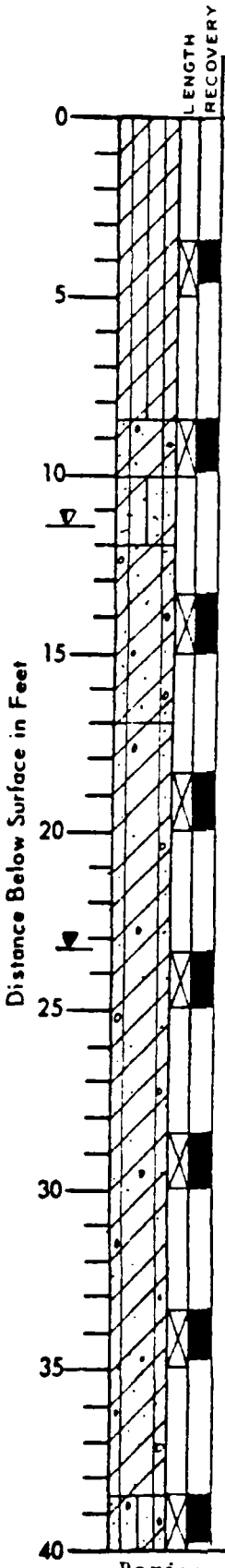
WATER TABLE

AT END OF BORING

24 HOURS 23.4 measured inside hollow stem auger

WHILE DRILLING -11.5 feet

SHEET 1 OF 2



SAMPLE NO.	TYPE	N	WC	Q_u	γDRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
1	SS	11	36.7					Firm brown clayey SILT, very moist (ML)
2	SS	20	23.9	1.0*		8.5	738.1	Tough brown silty CLAY, trace sand and gravel, moist (CL)
						10.0	736.6	Brown sandy SILT, trace clay, very moist (ML)
						12.0	734.6	
3	SS	23	15.4	4.25*				Hard gray very silty CLAY, trace sand and gravel, moist (CL-ML)
						17.0	729.6	
4	SS	23	17.3	3.25*				Very tough gray silty CLAY, trace sand and gravel, moist (CL)
								Sample 7 - permeability = 3.17×10^{-8} cm/sec
5	SS	18	17.8	3.25*				
6	SS	14	19.9	3.25*				
7	SS	15	17.7	3.5*				*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
8	SS	31				38.5	708.1	Dense gray sandy SILT, trace clay and gravel, very moist (ML)

Boring Log Continued

PROJECT WOODLAND LANDFILL, SOUTH ELGIN, ILLINOIS

CLIENT WASTE MANAGEMENT, INC., 900 JORIE BOULEVARD, OAK BROOK, ILLINOIS 60521

BORING 26(Cont'd) DATE STARTED 2-26-81 DATE COMPLETED 2-26-81 JOB 18,064

ELEVATIONS

GROUND SURFACE 746.6

END OF BORING 667.9

WATER TABLE

AT END OF BORING

24 HOURS -23.4 feet measured inside hollow stem auger

WHILE DRILLING -11.5 feet

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	% DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
40								41.0	705.6	Dense gray sandy SILT, trace clay and gravel, very moist (ML)
								43.5	703.1	Gray silty CLAY, trace sand and gravel, occasional cobbles, moist (CL)
45		9	SS	63/9"						Very dense gray fine SAND, trace small gravel, saturated (SP)
								47.0	699.6	
50		10	SS	57						Very dense gray fine to coarse SAND, occasional cobbles and boulders, saturated (SW)
								52.0	694.6	
55		11	SS	42						Dense gray fine to coarse SAND and small to medium GRAVEL, saturated (SW-GW)
60		12a b	SS	54				59.5	687.1	
65		13	SS	84	9.2	4.5+*				Hard reddish-brown silty CLAY, little sand and gravel, moist; sand seam at 69.5', moist (CL)
70		14	SS	141	10.7	4.5+*				*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
75		15	SS	166	12.4	4.5+*		74.5	672.1	Very dense dark brownish-gray clayey sandy SILT, trace gravel, moist (ML)
								76.0	670.6	Weathered BEDROCK or BOULDER
		16	SS	100/2"						
80		End of Boring at -78.7 Feet								

TESTING SERVICE CORPORATION

DRILL RIG NO. 53 Note: Auger refusal attributed to

TEAM, Inc.

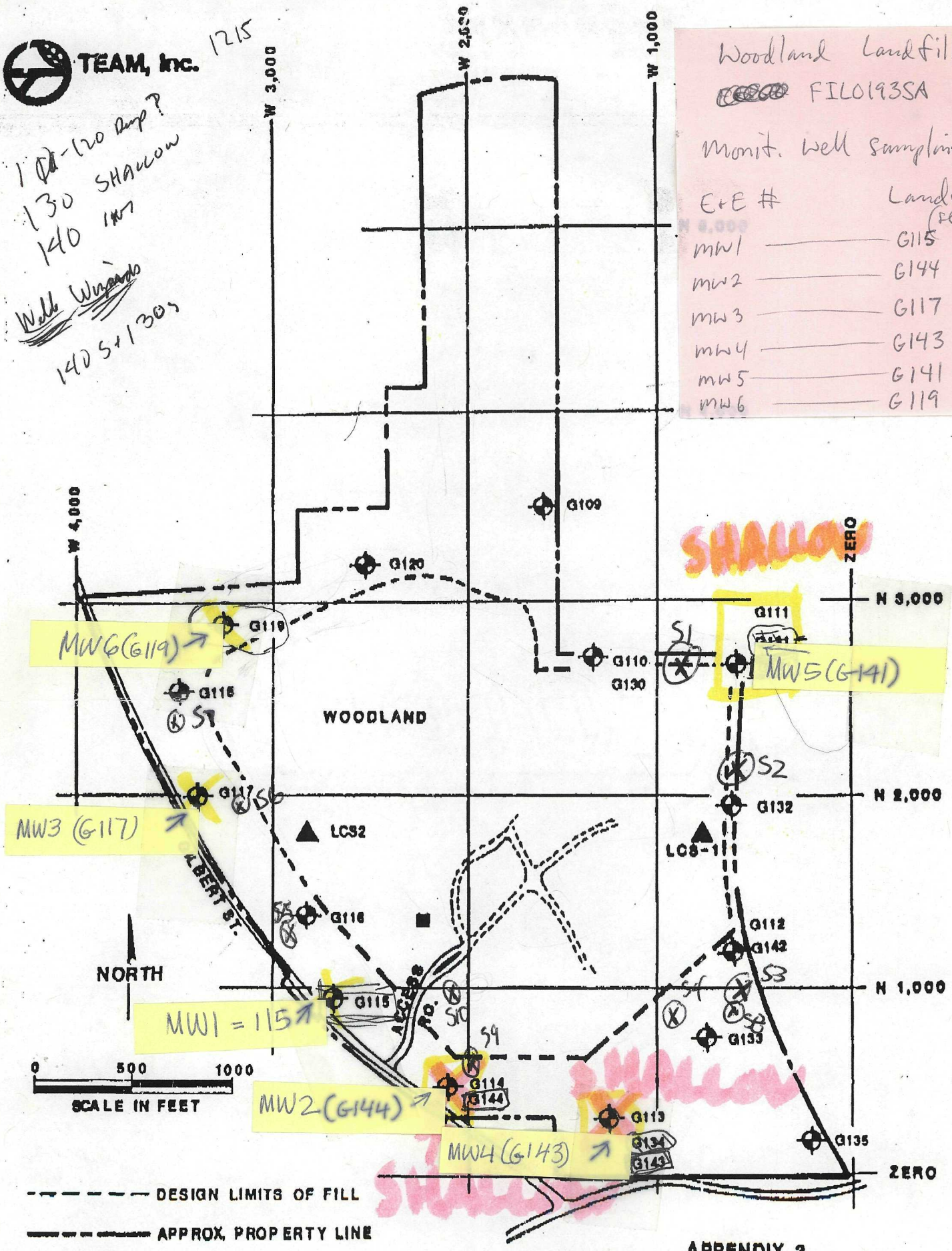
1215

1 ~~Q~~-120 Rep?
130 SHALLOW
140 INT

Well Winpado
140 S+130S

Woodland Landfill
~~[illegible]~~ FIL0193SA
Monit. Well sampling locations

E+E #	Landfill # (see map)
MW1	G115
MW2	G144
MW3	G117
MW4	G143
MW5	G141
MW6	G119



APPENDIX 3
WOODLAND SANITARY LANDFILL
GROUNDWATER MONITORING WELL LOCATIONS

TEAM, Inc.

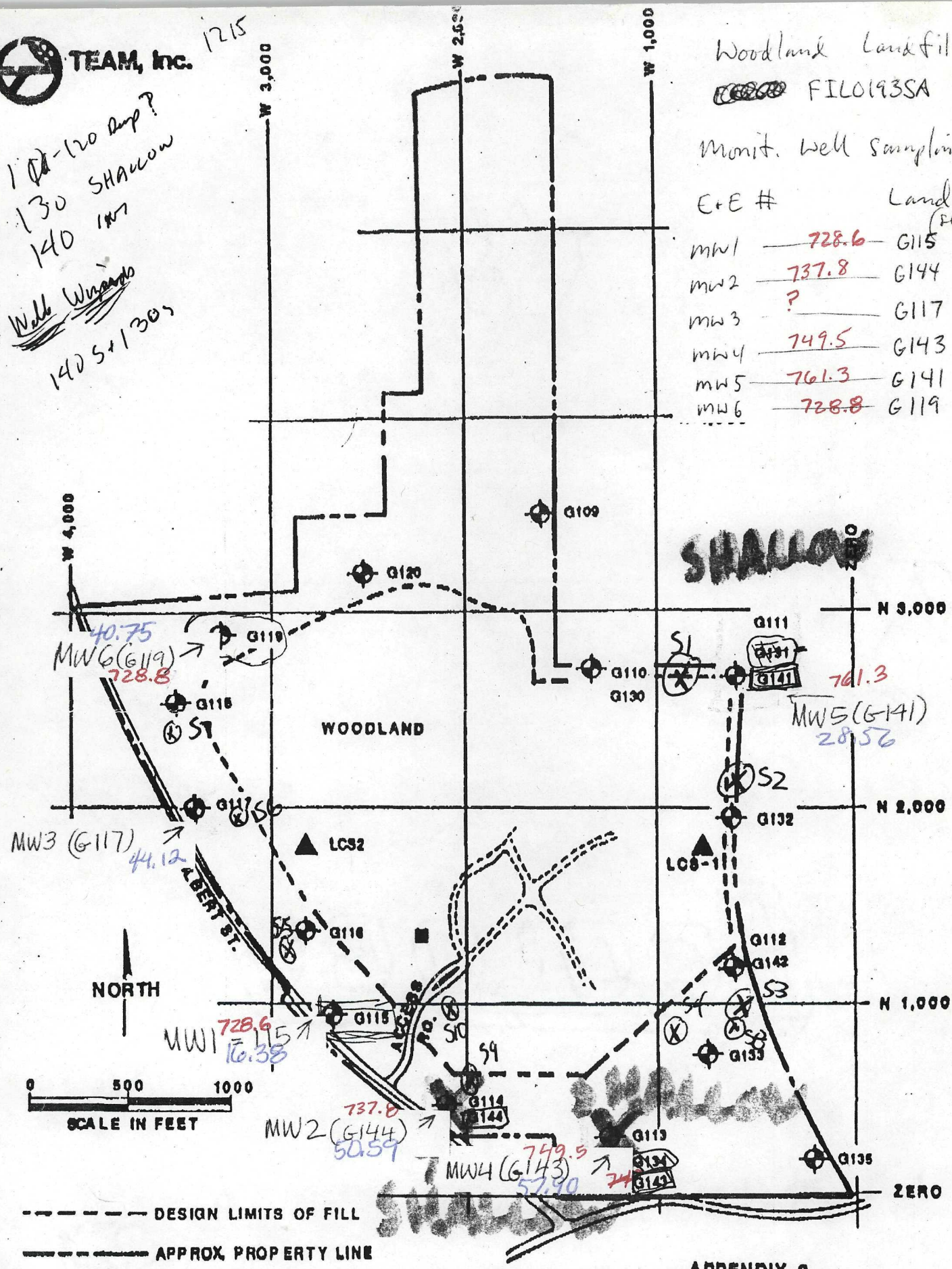
1215

1 Qt-120 Dup?
130 SHALLOW
140 INT
Well Wizards
140 S+130 S

Woodland Landfill
FIL0193SA
Monit. Well Sampling Locations

E+E #		Landfill # (see map)
MW1	728.6	G115
MW2	737.8	G144
MW3	?	G117
MW4	749.5	G143
MW5	761.3	G141
MW6	728.8	G119

Ground elevation



APPENDIX 3
WOODLAND SANITARY LANDFILL
GROUNDWATER MONITORING WELL LOCATIONS

TSC

TESTING SERVICE CORPORATION
457 East Gundersen Drive, Wheaton, Illinois 60187
Telephone: 653-3920 Area Code 312

DR. LAWRENCE A. DuBOSE, president
CHARLES C. LUTHER, vice-president
LYLE E. THOMPSON, vice-president
NOBLE D. MORAN, vice-president

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foundations

December 9, 1976

L - 14,058A

Waste Management, Inc.
P.O. Box 563
Palos Heights, Illinois 60463

Attention: Mr. Bert Fowler

Re: Observation Wells
South Elgin Landfill
Kane County, Illinois

Gentlemen:

We have completed the installation of the three (3) observation wells for the above captioned project. Enclosed are copies of the drilling logs for the borings.

It has been a pleasure to assist with this work. Please call if there are questions or if we may be of further service.

Respectfully submitted,

TESTING SERVICE CORPORATION

Prepared by:

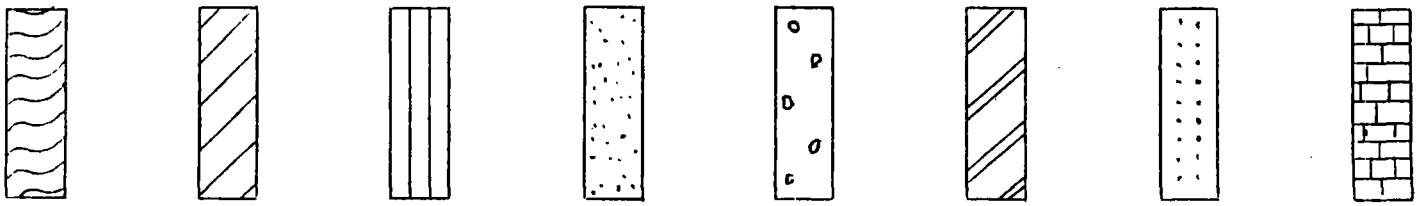
Charles C. Luther, P.E.
Director of Engineering

Lawrence A. DuBose, President
Registered Structural Engineer
Illinois, No. 2421

LAD:CCL:jdh

Enclosure: Legend for Boring Logs
3 Boring Logs

LEGEND FOR BORING LOGS



PEAT and ORGANIC SOIL | CLAY | SILT | SAND | GRAVEL | SHALE | SANDSTONE | LIMESTONE

ST = Shelby Tube Sample
A = Auger Sample
SS = Split Spoon Sample
WC = In situ water content
γ_{dry} = Dry unit weight in pounds per cubic foot
N = Penetration Resistance in Blows per Foot - by driving 2" O.D. Split Spoon Sampler a distance of 12 inches with a 140-pound weight freely falling 30 inches
▽ = water level at end of boring
▼ = water level after elapsed time interval
Q_u = Unconfined compression strength in Tons per Square Foot
* = Denotes strength was based on pocket penetrometer measurements. Maximum range = 5.0

MATERIAL	SIZE RANGE
BOULDER	Over 8 inches
COBBLE	8 inches to 2-1/2 inches
Coarse GRAVEL	2-1/2 inches to 1 inch
Medium GRAVEL	1 inch to 3/8 inch
Small GRAVEL	3/8 inch to No. 4 sieve
Coarse SAND	No. 4 sieve to No. 20 sieve
Medium SAND	No. 20 sieve to No. 60 sieve
Fine SAND	No. 60 sieve to No. 200 sieve
SILT or CLAY	Finer than No. 200 sieve

COHESIVE SOILS (over 30 per cent CLAY by weight)

Classification	Q_u
Very Soft	0.35
Soft	0.35 to 0.59
Stiff	0.60 to 0.99
Tough	1.00 to 1.99
Very Tough	2.00 to 3.99
Hard	4.00 and over

Term	Per Cent by Weight
CLAY	over 50 (no modifiers)
CLAY	30 to 50 (modifier - Silty, Sandy, Gravelly)

COHESIONLESS SOILS (less than 30 per cent CLAY by weight)

Classification	N
Very Loose	0 - 4
Loose	5 - 9
Firm	10 - 29
Dense	30 - 49
Very Dense	50 and over

Term	Per Cent by Weight
SILT, SAND or GRAVEL	Major portion (with modifier)
Silty, Sandy, Gravelly	35 to 50
Clayey	20 to 30

Modifying Term	Per Cent by Weight
Trace	1 - 10
Little	10 - 20
Some	20 - 35
And	35 - 50

PROJECT INSTALLATION OF OBSERVATION WELLS, SOUTH ELGIN LANDFILL, KANE COUNTY, IL.

CLIENT WASTE MANAGEMENT, INC., P.O. Box 563, Palos Heights, Illinois 60463

BORING 101 (So. of Cell #1) DATE STARTED 12-3-76 DATE COMPLETED 12-3-76 JOB 14,058A

ELEVATIONS

GROUND SURFACE

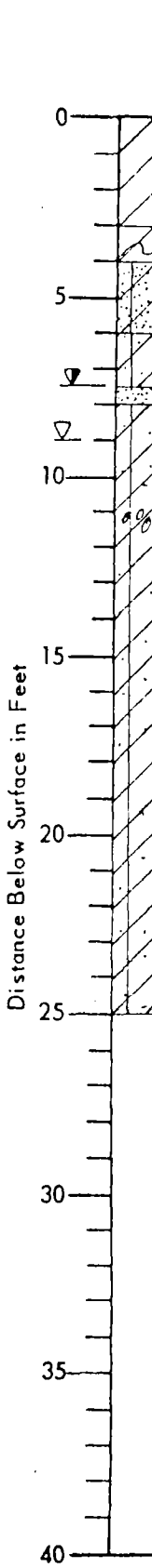
END OF BORING

WATER TABLE

AT END OF BORING - 9.0'

24 HOURS

While Drilling - 7.5'



LENGTH	RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
										FILL - Brown CLAY
								3.0		Black clayey TOPSOIL
								4.0		Gray silty SAND with some clay, moist
								6.0		Gray silty CLAY with some sand
								7.5		Tan fine to medium SAND, wet
								8.0		
										Gray silty CLAY with some sand Layer of cobbles at 11.5', moist
		1	SS		14.7	1.67 1.5*				
				End of Boring at 25.0 feet						

*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.

TESTING SERVICE CORPORATION

DRILL RIG NO.

MONITORING WELL #1

PROJECT INSTALLATION OF OBSERVATION WELLS, SOUTH ELGIN LANDFILL, KANE COUNTY, IL.

CLIENT WASTE MANAGEMENT, INC., P.O. Box 563, Palos Heights, Illinois 60463

BORING 102 (No. of Cell #2) DATE STARTED 12-3-76 DATE COMPLETED 12-3-76 JOB 14,058A

ELEVATIONS

GROUND SURFACE

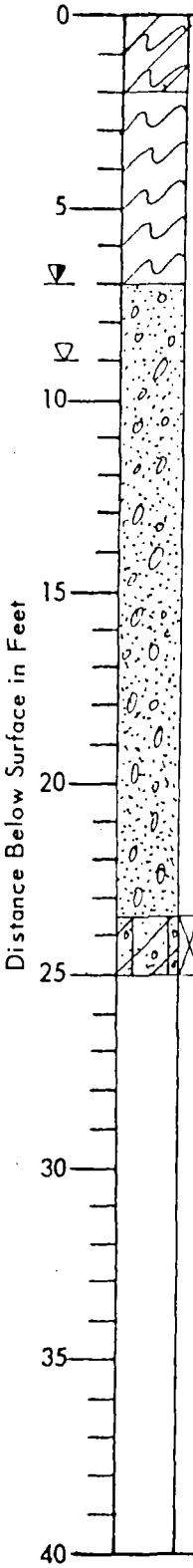
END OF BORING

WATER TABLE

AT END OF BORING - 9.0'

24 HOURS

While Drilling - 7.0'



LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
							2.0		Black clayey TOPSOIL
							7.0		Brown PEAT
							23.5		Tan fine to very coarse SAND & GRAVEL, saturated
	1	SS							Gray silty very sandy CLAY with some gravel

End of Boring at 25.0 feet

TESTING SERVICE CORPORATION

DRILL RIG NO.

MONITORING WELL # 4

PROJECT INSTALLATION OF OBSERVATION WELLS, SOUTH ELGIN LANDFILL, KANE COUNTY, I

CLIENT WASTE MANAGEMENT, INC., P.O. Box 563, Palos Heights, Illinois 60463

BORING 103 DATE STARTED 12-4-76 DATE COMPLETED 12-4-76 JOB 14,058

ELEVATIONS

GROUND SURFACE

END OF BORING

WATER TABLE

AT END OF BORING "Dry"

24 HOURS

While Drilling "Dry"

Distance Below Surface in Feet	LENGTH RECOVERY	SAMPLE NO.	TYPE	N	WC	Q_u	γ_d DRY	DEPTH	ELEV.	SOIL DESCRIPTIONS
0										Tough light brown silty CLAY, trace coarse sand to small gravel
								3.0		
5										
10										
15										Tough reddish brown silty CLAY, trace coarse sand to small gravel
20										
25		1	SS	2.8 3.25*						
				End of Boring at 25.0 feet						*-Approximate unconfined compression strength based on measurements with a calibrated pocket penetrometer.
30										
35										
40										

TESTING SERVICE CORPORATION

DRILL RIG NO.

MONITORING WELL #2