

Schmidt-Salts

TECHNICAL MEMORANDUM NO. 2

**MONITORING WELL INSTALLATION
STOUGHTON CITY LANDFILL
STOUGHTON, WISCONSIN**

RECEIVED

JUN 22 1989

BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

SUBMITTED BY:

**STOUGHTON CITY LANDFILL
STEERING COMMITTEE**

JUNE 21, 1989

PREPARED BY:

**ENVIRONMENTAL RESOURCES MANAGEMENT-NORTH CENTRAL, INC.
102 WILMOT ROAD, SUITE 300
DEERFIELD, ILLINOIS 60015**

PROJECT NO. 8007



ERM-North Central, Inc.
Environmental Resources Management

102 Wilnot Road - Suite 300 - Deerfield, Illinois 60015 ☎ (312) 940-7200

June 21, 1989

Mr. Michael A. Valentino
Remedial Project Manager
U.S. Environmental Protection Agency
Region V (Mail Code: 5HS-11)
230 South Dearborn Street
Chicago, Illinois 60604

RECEIVED
JUN 22 1989
BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

RE: Stoughton City Landfill
Technical Memorandum No. 2
Monitoring Well Installation Report

Dear Mr. Valentino:

Enclosed for your review are three copies of the above referenced report.

Please contact me or John Imse if you have any questions regarding this report.

Very truly yours,

ERM-NORTH CENTRAL, INC.

Paul J. Kopydlowski
Project Geologist

rms
enclosures

cc: Briand C. Wu, Uniroyal Plastics Corporation, Inc.
Robert Kardasz, City of Stoughton
Robin Schmidt, WDNR
Michael Duran, Strand Associates

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
LIST OF TABLES		
LIST OF FIGURES		
1.0	INTRODUCTION	1
2.0	MONITORING WELL INSTALLATION	1
3.0	MONITORING WELL CONSTRUCTION AND DESIGN	1
4.0	SCREEN DEPTHS	5
5.0	SUMMARY	6
APPENDIX A	Well Construction Logs	
APPENDIX B	Drilling Logs	

LIST OF TABLES

<u>Table No.</u>	<u>Description</u>
1	Total Depths and Screening Intervals of the Monitoring Wells

LIST OF FIGURES

<u>Figure No.</u>	<u>Description</u>
1	Monitoring Well Cluster Locations
2	Surficial Aquifer Monitoring Well - Construction Details

STOUGHTON CITY LANDFILL MONITORING WELL INSTALLATION

1.0 INTRODUCTION

This Monitoring Well Installation Report (Technical Memorandum No. 2) is submitted at the direction of the Stoughton City Landfill Steering Committee in accordance with both Article IX, Part B.4 of the Administrative Order by Consent and the project schedule as outlined in Section 6.0 of the Work Plan for the Remedial Investigation and Feasibility Study, Stoughton City Landfill. The purpose of this report is to describe and summarize the installation of the monitoring wells.

2.0 MONITORING WELL INSTALLATION

Drilling operations at the Stoughton City Landfill site commenced on April 26, 1989, and were completed on May 22, 1989. A total of 12 wells were installed at six locations surrounding the landfilled area (Figure 1). The well locations were mutually agreed upon by the USEPA, PRPs, and ERM-North Central.

The monitoring wells were constructed to comply with applicable Federal, State and local regulations concerning ground water monitoring of hazardous waste management sites.

3.0 MONITORING WELL CONSTRUCTION AND DESIGN

The shallow wells were constructed according to the specifications in the Sampling Plan, of the RI. The well construction of the deep monitoring wells was altered to overcome

problems encountered during the deep well installation. Cobbles and boulders made drilling with hollow stem augers difficult, therefore, mud rotary drilling was used. Volclay, a bentonite-rich grout, was substituted for the bentonite pellet seal and the Portland cement/bentonite grout. The change of well design was approved by the USEPA, Region V prior to the installation of the deeper wells.

The generalized well construction design of the shallow and deep wells are shown in Figure 2. The detailed well construction diagrams are included in Appendix A. The following procedures were used to install the monitoring wells.

- o The shallow wells were advanced using a nominal 6-inch I.D. hollow stem auger (nominal 10-inch borehole) to total depth. The top portion of the deeper wells was also advanced using a nominal 6-inch I.D. hollow stem auger until auger refusal, at a depth of 20 to 30 feet. The borehole was then advanced through the auger with a 5-5/8 inch bit utilizing the mud rotary drilling method to total depth.

- o Soils above the water table in the shallow wells were continuously sampled using a 2-inch or 3-inch diameter split spoon. Split spoon samples of the soil below the water table in the shallow well and in the deeper monitoring wells were collected every 5 feet. All soils were screened in the split spoon with an HNu photoionization detector, described, and logged by an ERM geologist. The soils were classified using the USCS. The borehole logs are included in Appendix B.

- o Soil samples were collected from the screened interval portion of each monitoring well except MW-6D. Well MW-6D was the first deep well to be drilled and the positioning of the screen was not immediately apparent. These samples were delivered to Soils and Engineering Services Laboratory, Inc. for particle size distribution analysis using ASTM Method D-422.

- o An additional soil sample was collected from above the water table in each of the shallow wells. These samples were sent to CompuChem Laboratories for the complete suite of TCL/TAL analyses.

- o A confining layer was encountered from 6 to 24 feet during the drilling of MW-2D. An undisturbed sample was collected with a Shelby tube and delivered to Soils and Engineering Services Laboratory, Inc. for measurement of hydraulic conductivity using a falling head permeameter.

- o The well screen installed in each well was a 10-foot length of stainless steel with No. 10 (0.010 inch) manufactured slot openings. A stainless steel plug was fitted into the bottom of the screen before installation.

- o The well casing in the shallow wells were constructed with 2-inch I.D., flush joint, Type 304, stainless steel pipe. In the deeper wells, the first 10 feet of riser above the screen was also of stainless steel.

The remaining riser pipe is of 2-inch I.D., low carbon steel. The well screens and risers were installed in the boring prior to removal of the augers.

- o The annular space around the screen was backfilled in all wells with washed, rounded, well sorted silica sand. Additionally, in the deep wells, very fine, No. 530 silica sand was placed on top of the coarser sand pack, in accordance with the specifications set by the USEPA. Formation collapse was common in the deeper wells.
- o Compressed bentonite pellets were placed above the sand pack in all the shallow wells and in MW-2D. Due to the small annular space and high water table, no bentonite pellets were added to the other deep wells for fear of complications caused by bridging of the pellets.
- o The remaining space above the bentonite seal in the shallow wells was filled with a cement/bentonite grout placed with a tremie pipe. In the deeper wells, Volclay, a bentonite-rich grout was placed directly on the sand pack except in MW-2D where the Volclay was placed on top of the bentonite pellet seal.
- o The steel riser pipes were fitted with a vented cap.

- o Four-inch diameter protective steel casing was placed over the riser pipe and cemented to a depth of 2.5 feet below the ground surface. The cement was sloped away from the casing. A slot was cut at the base of the protective casing to let water drain.

- o Three guard posts consisting of 3-inch diameters steel were cemented around each well and the previously installed piezometers.

- o All equipment used in construction of the well were decontaminated prior to the initiating of the well installation.

Following the installation, the monitoring wells were developed by bailing or pumping at least 3 well volumes of water from the well. The development ceased when consistent values of pH, conductivity, and temperature were obtained. Ground water removed during well development was collected and stored in drums.

4.0 SCREEN DEPTHS

The shallow wells, approximately 15 feet deep, were constructed such that the screen interval extended 2 feet above the top of the water table so that lighter than water contaminants, if present, may enter the well. The screened intervals and total depths of each well are summarized in Table 1.

The deep wells, up to a maximum depth of 80 feet, were constructed such that the screen interval was positioned below the water table in an attempt to determine the vertical

distribution of the contaminants. A very hard layer (much slower drilling rate) was encountered between the 70 to 80 foot depth in MW-3D, MW-4D, MW-5D, and MW-6D. This surface may be the bedrock surface.

A confining layer between the 5-foot and 24-foot depth was encountered in MW-2D. As specified in the Sampling Plan of the RI, the well screen was placed immediately below the confining layer.

5.0 SUMMARY

Twelve monitoring wells were installed between April 26 and May 22, 1989, at the Stoughton City Landfill site in accordance with the Work Plan of the RI. The well locations were mutually agreed upon between the USEPA, PRPs, and ERM-North Central, prior to installation.

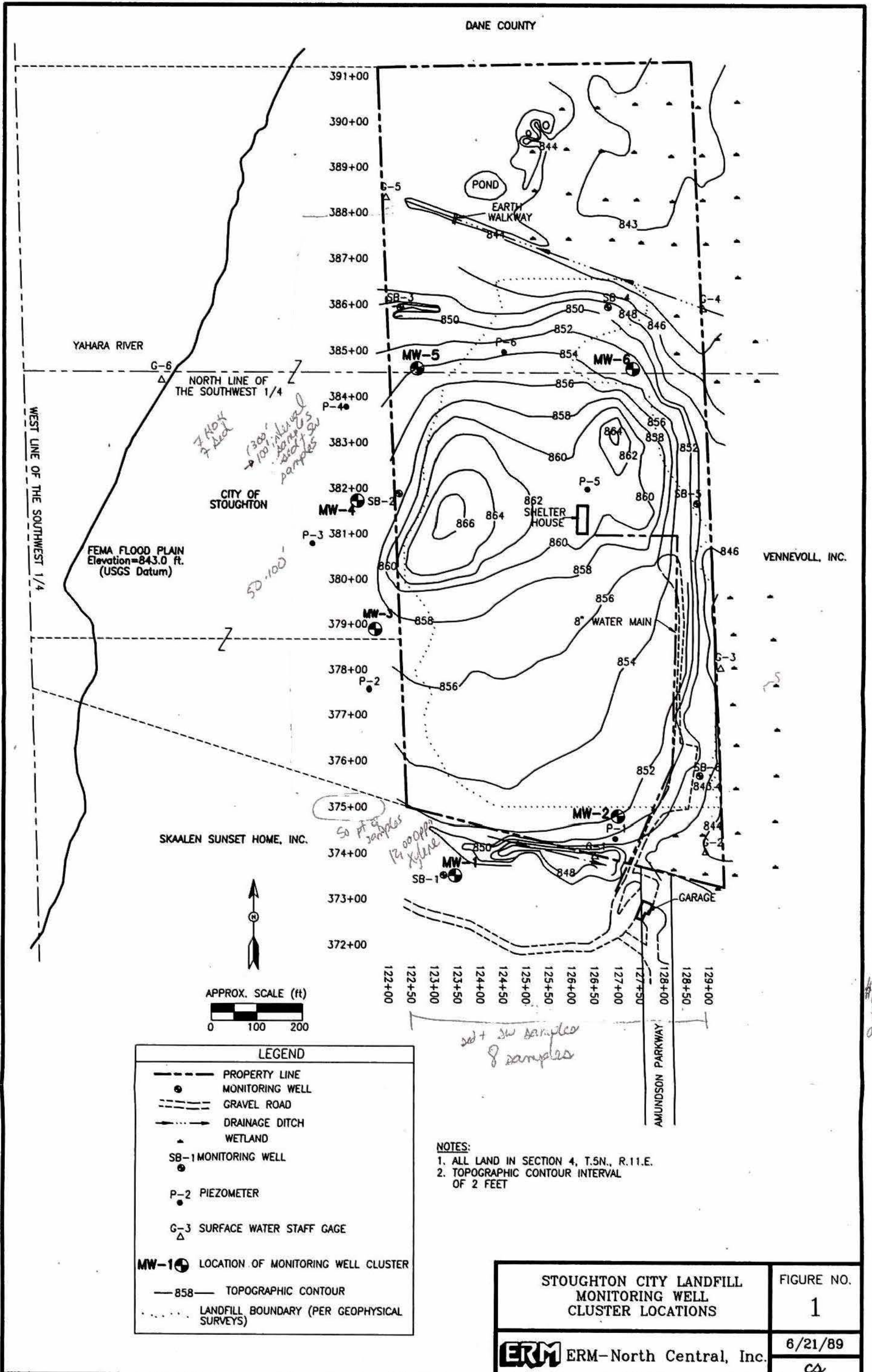
The twelve wells installed included six well clusters consisting of one shallow and one deep well. The shallow wells were constructed and installed in accordance to the specifications set in the Sampling Plan of the RI. Due to difficulties encountered while drilling the deep wells, alterations were made to the construction design. The alterations in the design were approved by the USEPA, prior to the deep well installation.

TABLES

TABLE 1
STOUGHTON CITY LANDFILL
TOTAL DEPTHS AND SCREENED INTERVALS
OF THE MONITORING WELLS

WELL NUMBER	TOTAL DEPTH (FEET)	SCREENED INTERVAL (FEET)
MW-1S	15.1	5.1 - 15.1
MW-1D	79.0	68.8 - 78.8
MW-2S	15.0	4.99 - 14.99
MW-2D	36.0	24 - 34
MW-3S	17.3	7.3 - 17.3
MW-3D	79.0	61.51 - 71.51
MW-4S	15.0	4.83 - 14.83
MW-4D	73.5	63.3 - 73.3
MW-5S	15.07	5.07 - 15.07
MW-5D	75.59	65.59 - 75.59
MW-6S	13.67	3.67 - 13.67
MW-6D	65.0	46 - 56

FIGURES



*300' interval
100' interval
250' interval
50' interval*

50' interval

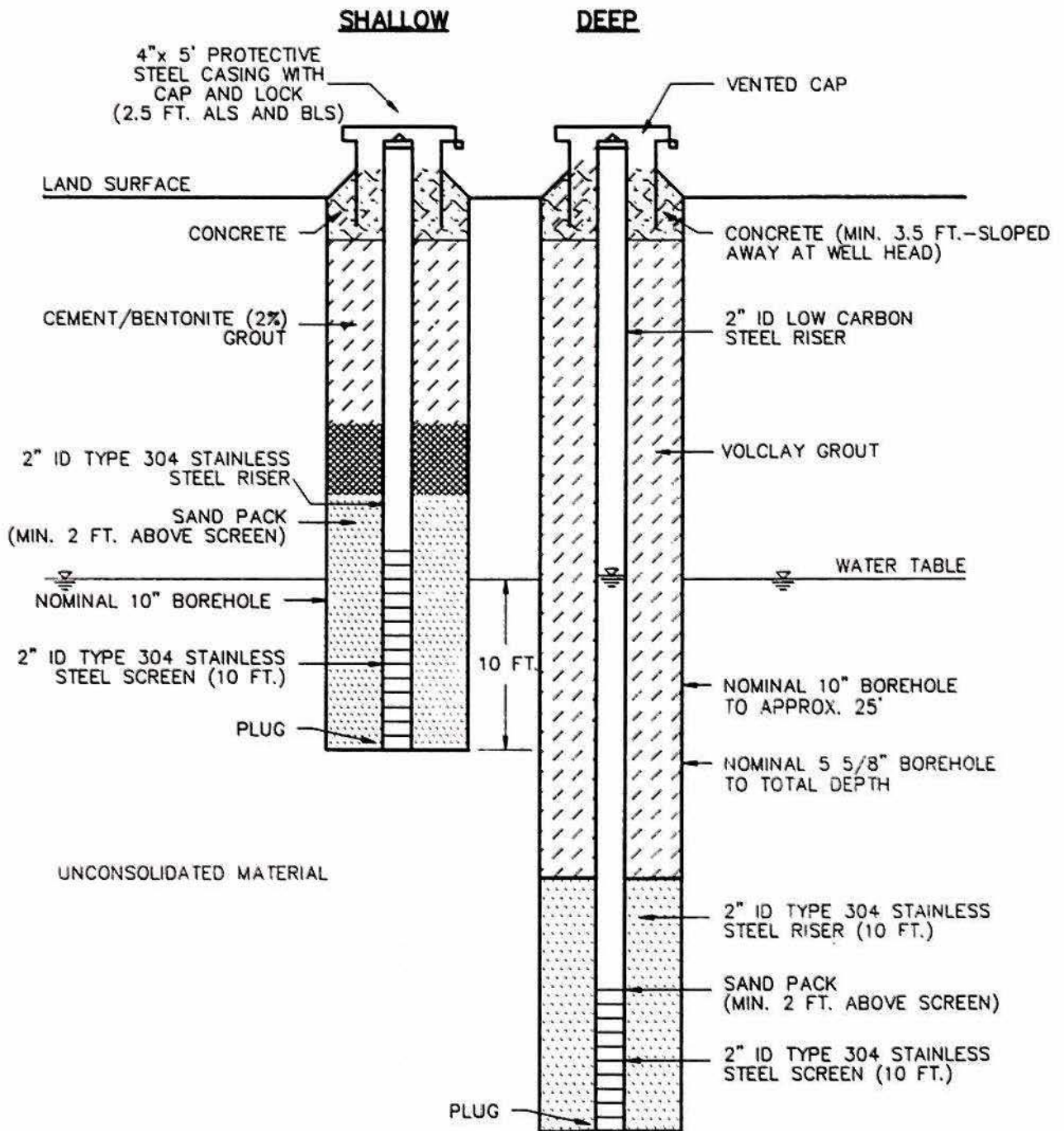
50 ft of samples
12,000ppm xylene

*20 + 30 samples
8 samples*

*\$60,000 -
\$70,000
analytical
bill*

LEGEND	
	PROPERTY LINE
	MONITORING WELL
	GRAVEL ROAD
	DRAINAGE DITCH
	WETLAND
	SB-1 MONITORING WELL
	P-2 PIEZOMETER
	G-3 SURFACE WATER STAFF GAGE
	MW-1 LOCATION OF MONITORING WELL CLUSTER
	858 TOPOGRAPHIC CONTOUR
	LANDFILL BOUNDARY (PER GEOPHYSICAL SURVEYS)

STOUGHTON CITY LANDFILL MONITORING WELL CLUSTER LOCATIONS	FIGURE NO. 1
	6/21/89 <i>CS</i>
ERM ERM-North Central, Inc.	



NOTE: NOT TO SCALE

STOUGHTON CITY LANDFILL
SURFICIAL AQUIFER MONITORING
WELL-CONSTRUCTION DETAILS

FIGURE
2

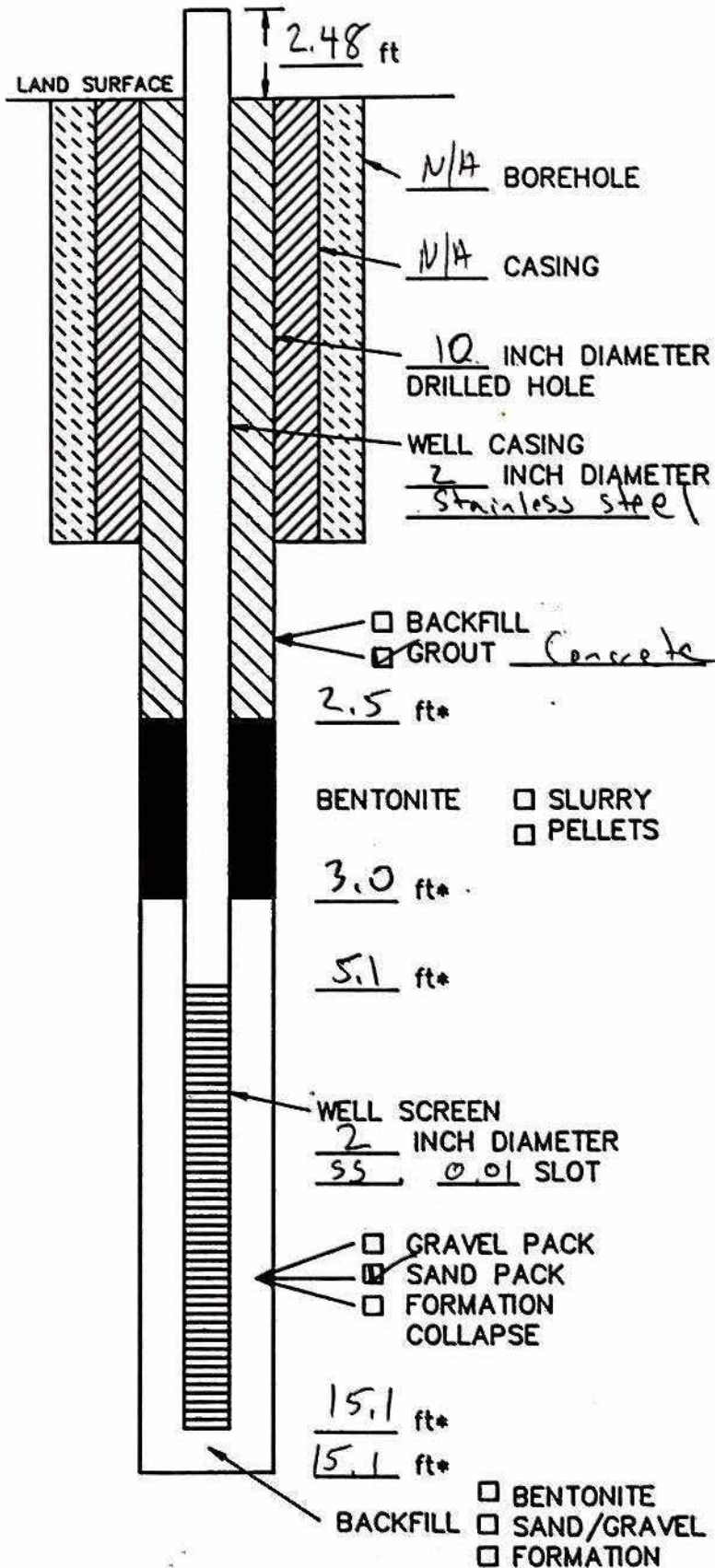
ERM North Central, Inc.

8/19/89

mo

**APPENDIX A
WELL CONSTRUCTION LOGS**

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL Mw/S
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 857.58 feet SURVEYED CONC. 855.10 ESTIMATE
 INSTALLATION DATE(S) 5/2/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Dr.
 DRILLING FLUID N/A

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 8 gals - bailer

FLUID LOSS DURING DRILLING N/A G/
 WATER REMOVED DURING DEVELOPMENT 8 G/

STATIC DEPTH TO WATER 9.71 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

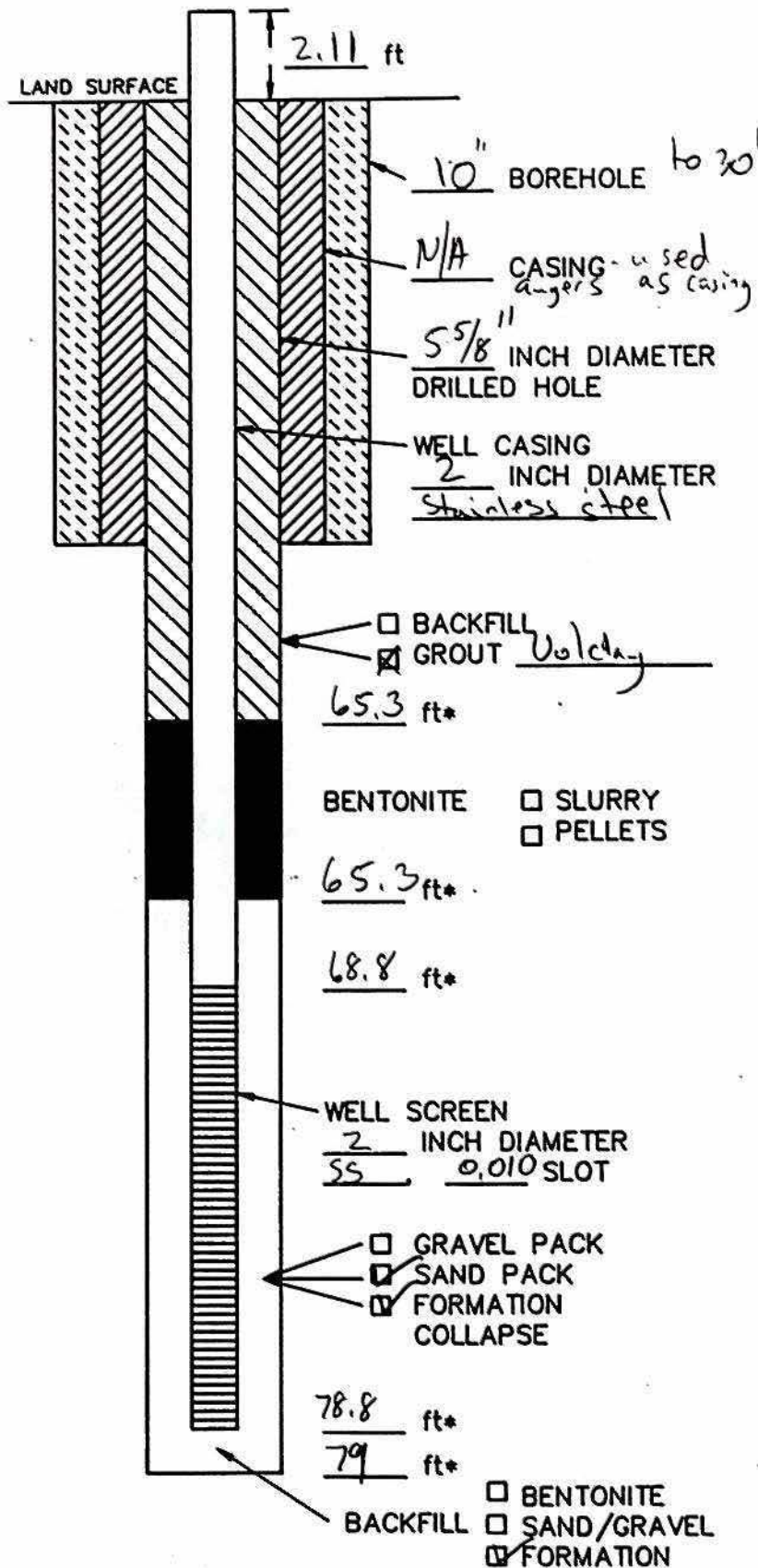
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring Well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW 1D

TOWN/CITY Stoughton

COUNTY Dane STATE WI

PERMIT NO. _____

LAND-SURFACE ELEVATION AND DATUM MP 855.90 feet SURVEYED
Conc. 853.79 ESTIMATED

INSTALLATION DATE(S) 5/15 - 5/16/89

DRILLING METHOD Hollow Stem Auger to 30' Mud Rotary 30 - 79'

DRILLING CONTRACTOR Wisconsin Test Drill

DRILLING FLUID Quick Gel mud

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/16/89 - 250 gal of tap water - Excellent Recovery

5/24/89 - 45 gal. - Hand Pump

FLUID LOSS DURING DRILLING NONE G.

WATER REMOVED DURING DEVELOPMENT 295 G.

STATIC DEPTH TO WATER 7.72 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

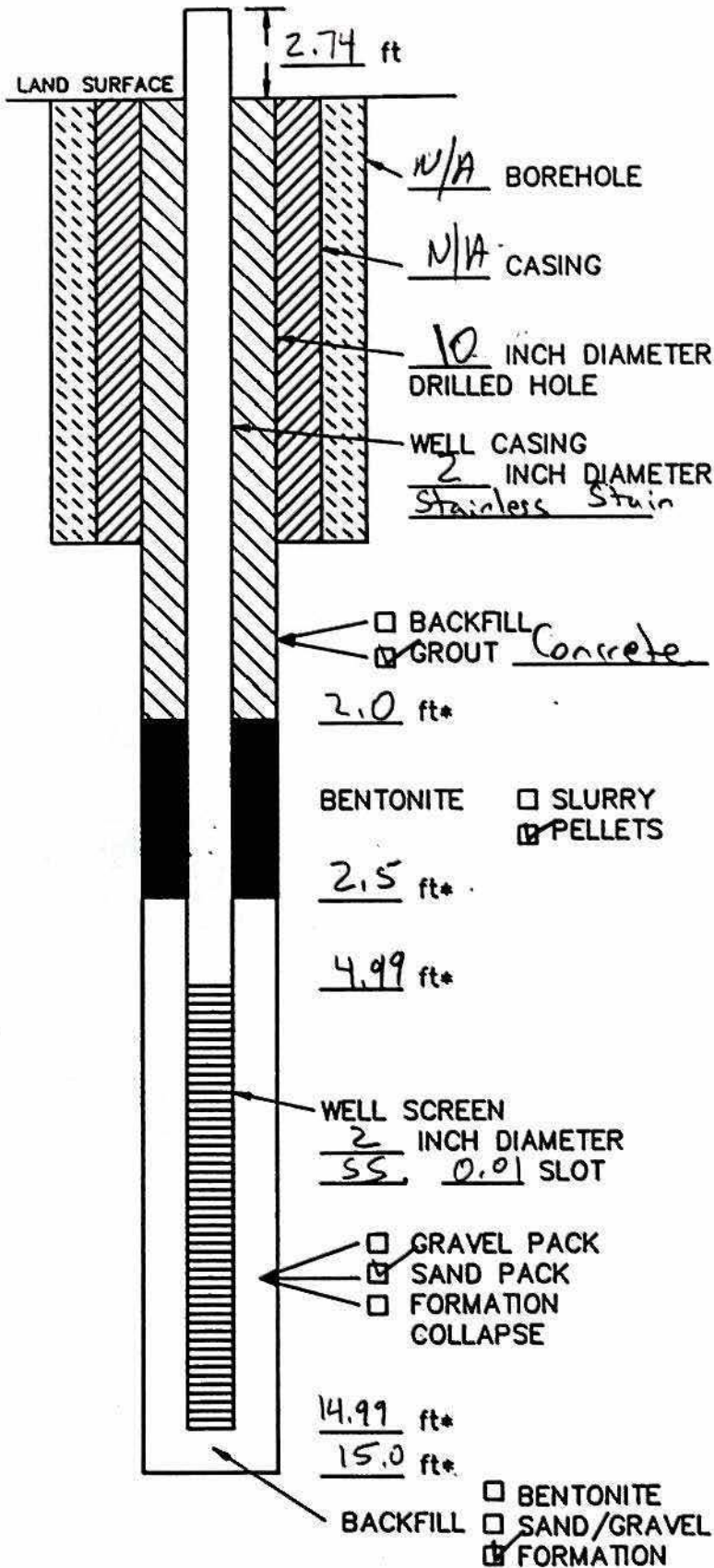
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW-2S
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM mp 854.25 feet SURVEYED
conc. 851.51 ESTIMATE
 INSTALLATION DATE(S) 4/27 - 5/1/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Drill
 DRILLING FLUID N/A

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 12.5 gal. - bailer

FLUID LOSS DURING DRILLING N/A G/
 WATER REMOVED DURING DEVELOPMENT 12.5 G/

STATIC DEPTH TO WATER 9.65 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

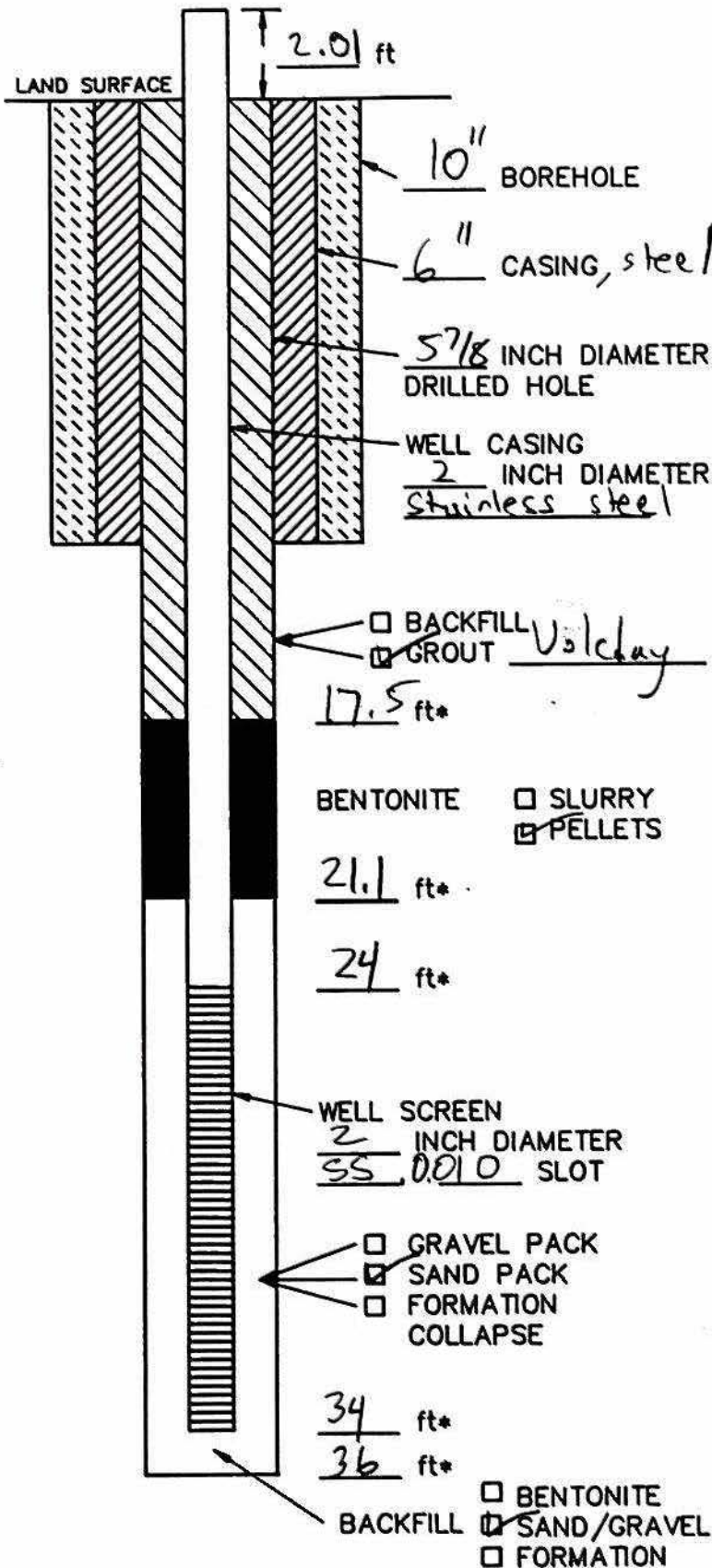
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS Positive Reading on LEL meter during drilling operations.

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW-2D
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 853.89 feet SURVEYED
CONC. 851.88 ESTIMATE
 INSTALLATION DATE(S) 5/22/89
 DRILLING METHOD Hollow stem auger / Mud Rotary
 DRILLING CONTRACTOR Wisconsin Test Drills
 DRILLING FLUID 1/4 Bag of Quick Gel

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 150 gallons of clean water (tap water); Good return.

5/29/89 - 12.5 gal. - Hand Pump
 FLUID LOSS DURING DRILLING NONE GAL
 WATER REMOVED DURING DEVELOPMENT 12.5 GAL

STATIC DEPTH TO WATER 5.93 FEET BELOW M.F.

PUMPING DEPTH TO WATER _____ FEET BELOW M.F.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

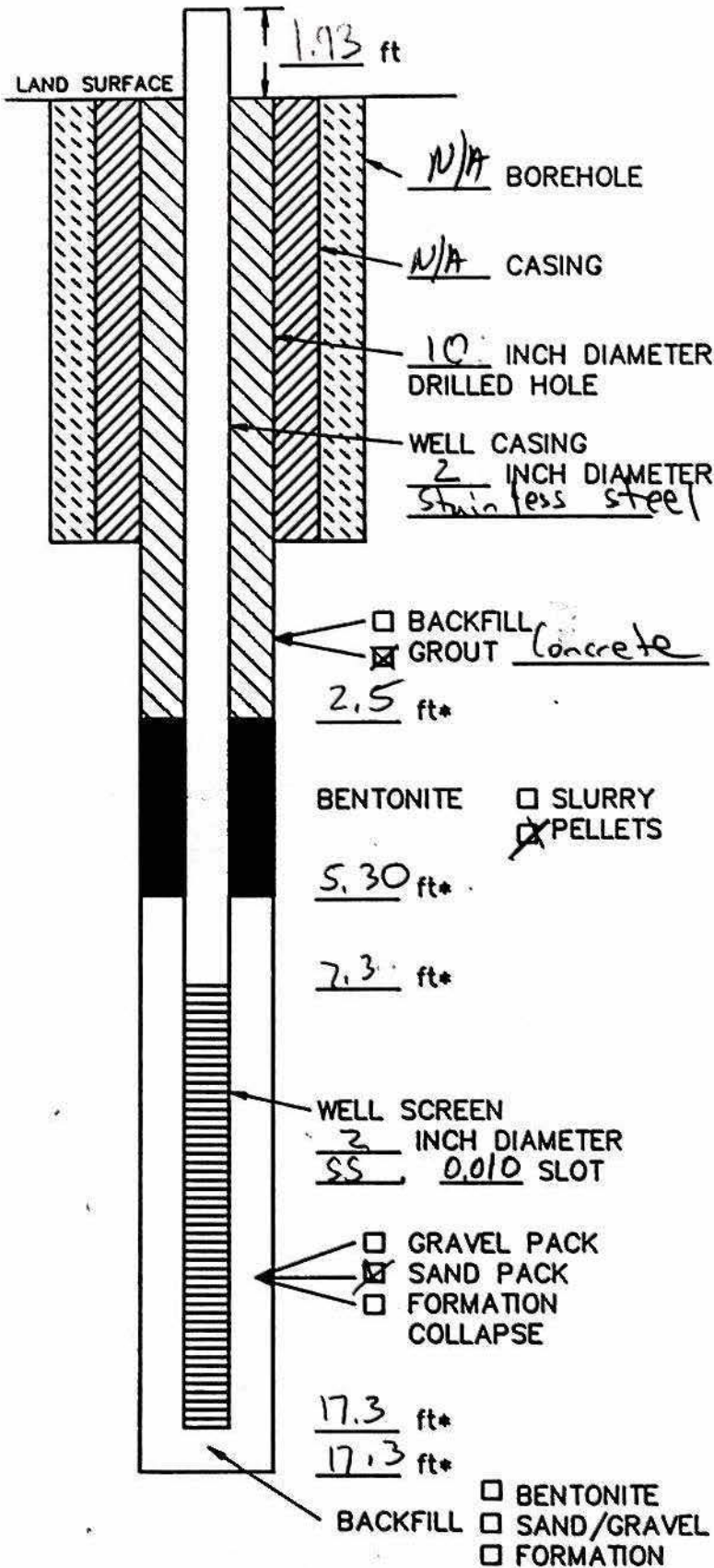
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS water from well is very dark gray.

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW 35
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 859.0' feet SURVEYED
CONC. 857.16 ESTIMATE
 INSTALLATION DATE(S) 5/2/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Drilling
 DRILLING FLUID N/A

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 12.5 gal. - Bailer

FLUID LOSS DURING DRILLING N/A GAL
 WATER REMOVED DURING DEVELOPMENT 12.5 GAL

STATIC DEPTH TO WATER 11.01 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

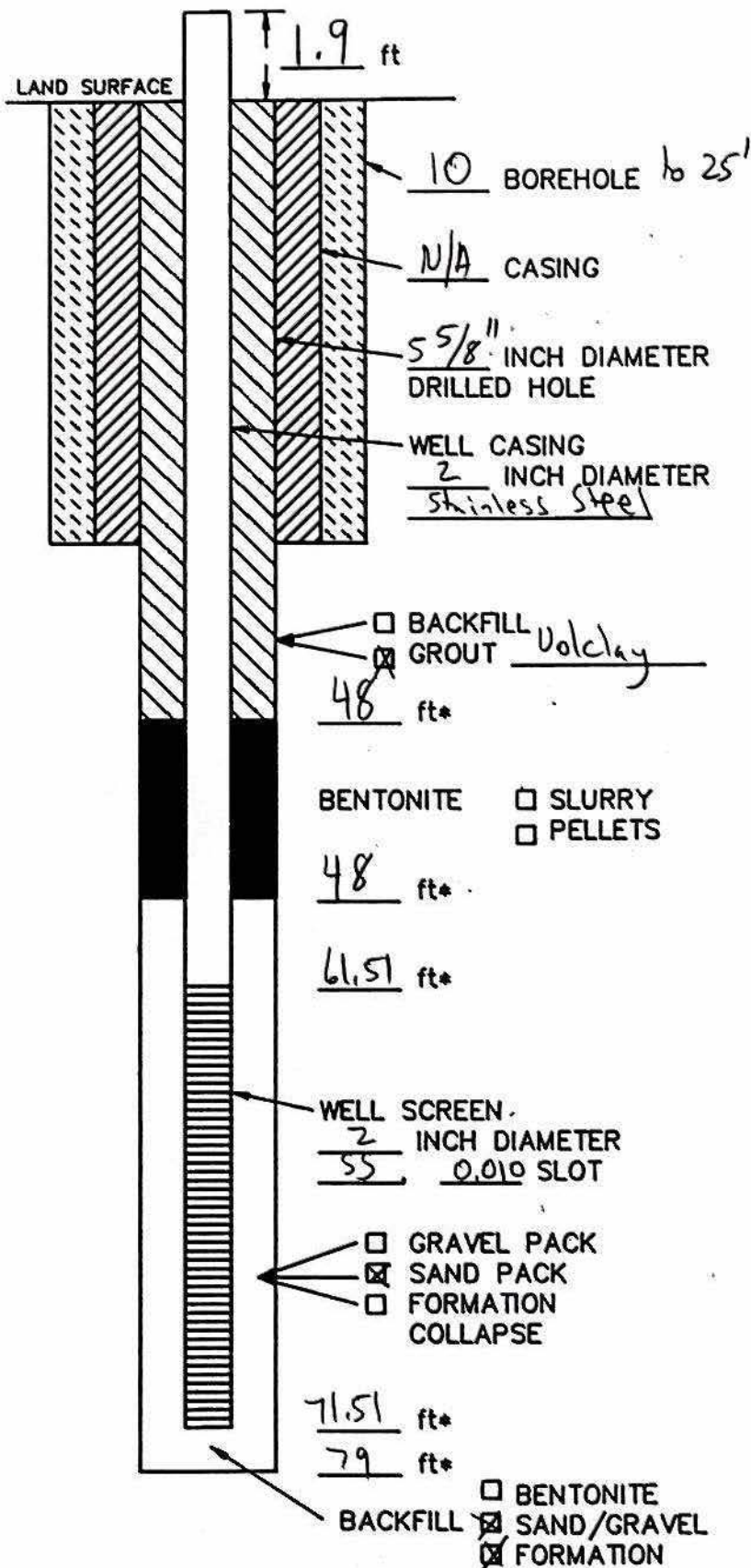
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

Stoughton City

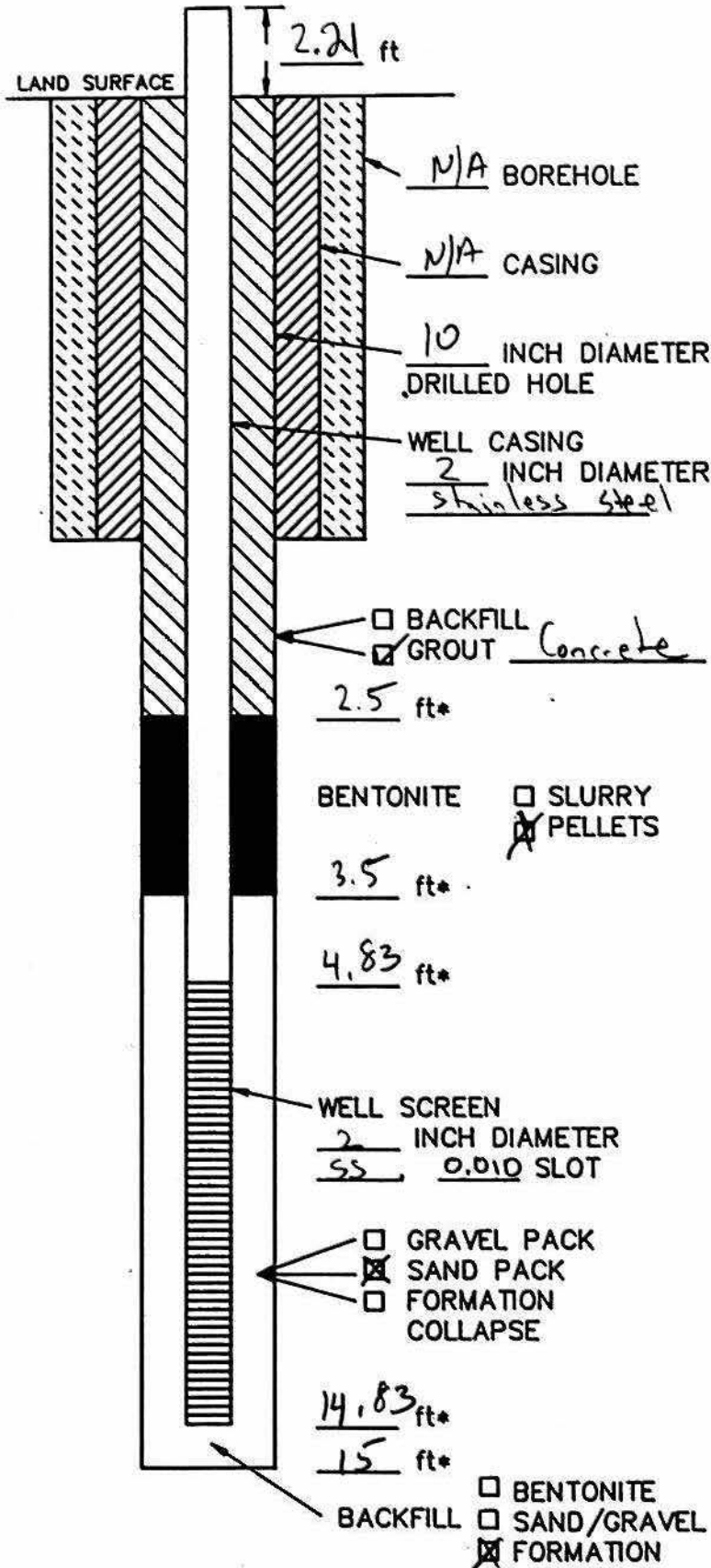
PROJECT Landfill WELL MW 3D
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 858.17 feet SURVEYED
CONC. 857.07 ESTIMATE
 INSTALLATION DATE(S) 5/5 - 5/8/89
 DRILLING METHOD Small Stem Auger 28-95
 DRILLING CONTRACTOR Wisconsin Test Drill
 DRILLING FLUID Quick Gel

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/8/89 - Purge with tap water - 200 gal
Excellent recovery
5/23/89 - 40 gal. - Hand Pump
 FLUID LOSS DURING DRILLING NONE GAL
 WATER REMOVED DURING DEVELOPMENT 240 GAL
 STATIC DEPTH TO WATER 10.88 FEET BELOW M.
 PUMPING DEPTH TO WATER _____ FEET BELOW M.
 PUMPING DURATION _____ HOURS
 YIELD _____ gpm DATE _____
 SPECIFIC CAPACITY _____ gpm/ft
 WELL PURPOSE Monitoring well

REMARKS _____

 PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



PROJECT Stoughton City Landfill WELL MW-4
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 856.36 feet SURVEYED CONC. 854.15 ESTIMATED
 INSTALLATION DATE(S) 5/3/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Drilling
 DRILLING FLUID N/A

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 20 gal. - Bailor

FLUID LOSS DURING DRILLING N/A G.
 WATER REMOVED DURING DEVELOPMENT 20 G.

STATIC DEPTH TO WATER 8.30 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

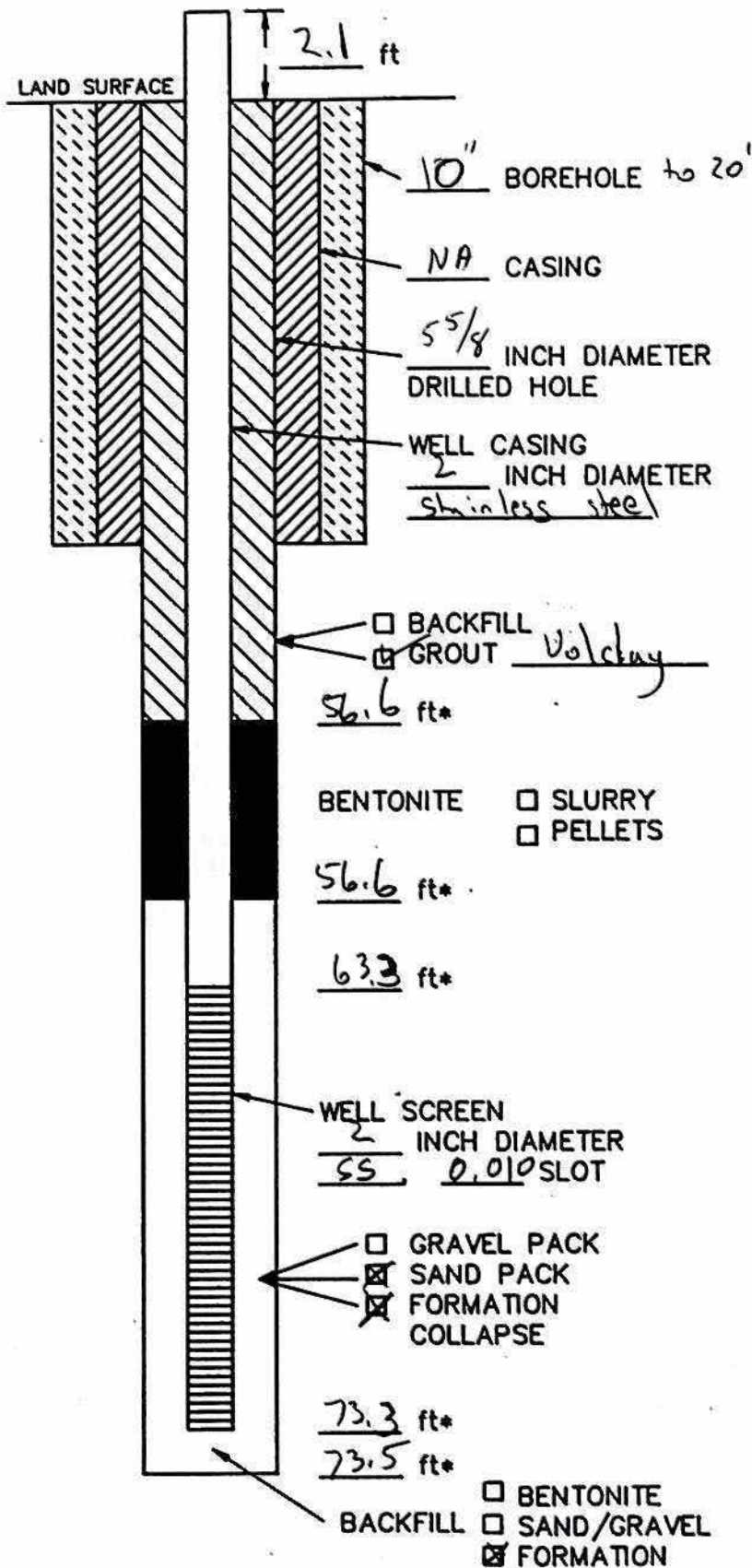
REMARKS _____

PREPARED BY Michael E. Roche

MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW-45
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 856.27 feet SURVEYED
CONC. 854.17 ESTIMATED
 INSTALLATION DATE(S) 5/16 - 5/17/89
 DRILLING METHOD hollow stem auger 0-2 and rotary 20-72'
 DRILLING CONTRACTOR Wisconsin test drill
 DRILLING FLUID Quick Gel

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/17/89 - Purged with 250 gal. of tap water - Good Return.
5/24/89 - 45 gal. - Hand Pump

FLUID LOSS DURING DRILLING NONE G.
 WATER REMOVED DURING DEVELOPMENT 295 G.

STATIC DEPTH TO WATER 8.21 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

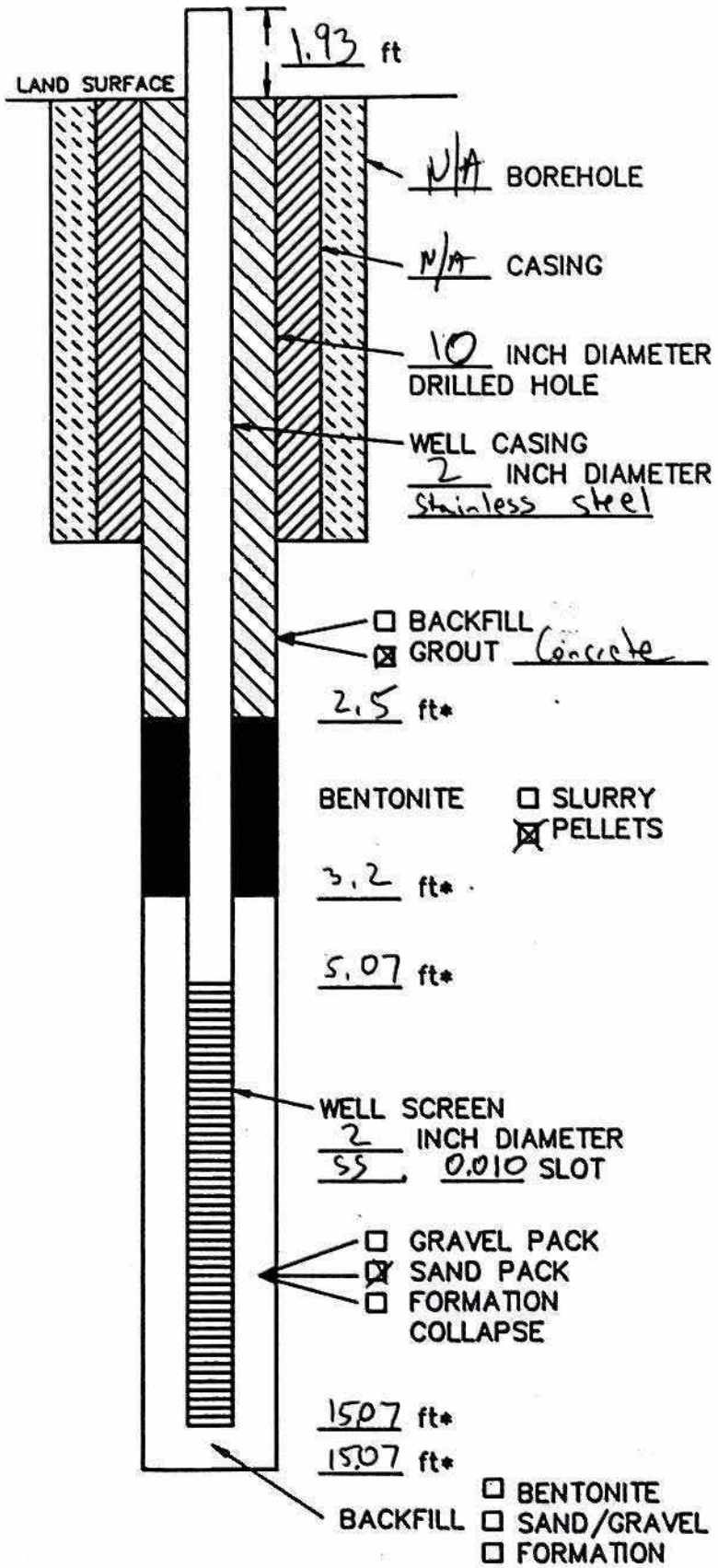
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



PROJECT Stoughton City Landfill WELL MW-SS
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 856.29 feet SURVEYED
CONC. 854.36 ESTIMATE
 INSTALLATION DATE(S) 5/3/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Drilling
 DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/22/89 - 20 gals - Boiler

FLUID LOSS DURING DRILLING NONE GA
 WATER REMOVED DURING DEVELOPMENT 20 GA

STATIC DEPTH TO WATER 8.21 FEET BELOW M.L.
 PUMPING DEPTH TO WATER _____ FEET BELOW M.L.

PUMPING DURATION _____ HOURS
 YIELD _____ gpm DATE _____
 SPECIFIC CAPACITY _____ gpm/ft
 WELL PURPOSE Monitoring Well

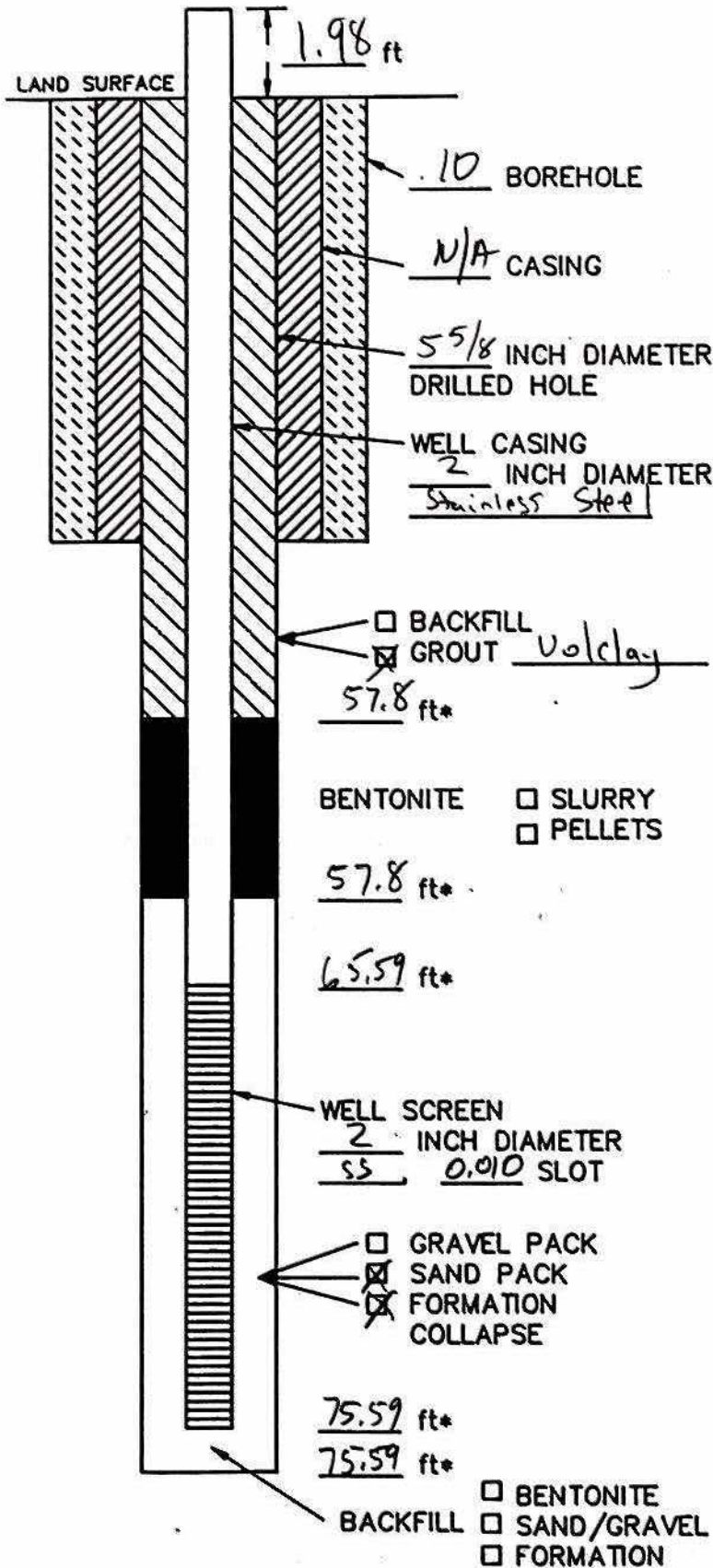
REMARKS _____

PREPARED BY Michael E. Roche

MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

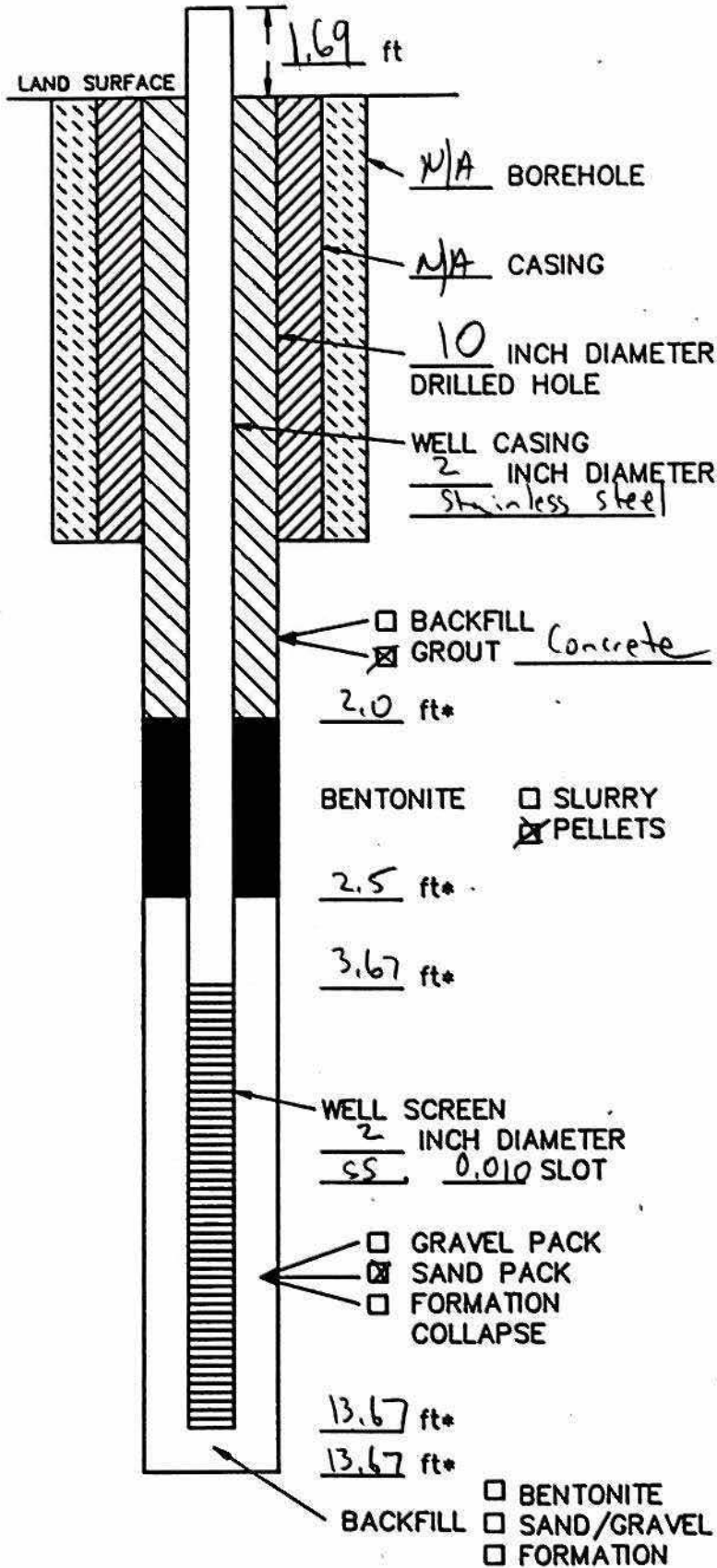
PROJECT Stoughton City Landfill WELL MW-5D
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 856.13 feet SURVEYED
CONC. 854.15 ESTIMATE
 INSTALLATION DATE(S) 5/11-5/12/89
 DRILLING METHOD Hollow Stem Auger 0-2
and Rotary 25-75
 DRILLING CONTRACTOR _____
 DRILLING FLUID Quick Gel

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/12/89 - Purged with 250 gal. of
tap water - Good recovery.
5/23/89 - 50 gal - Hand Pump
 FLUID LOSS DURING DRILLING NONE GA
 WATER REMOVED DURING DEVELOPMENT
300 GA
 STATIC DEPTH TO WATER
8.05 FEET BELOW M.
 PUMPING DEPTH TO WATER _____ FEET BELOW M.
 PUMPING DURATION _____ HOURS
 YIELD _____ gpm DATE _____
 SPECIFIC CAPACITY _____ gpm/ft
 WELL PURPOSE Monitoring well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



PROJECT Stoughton City Landfill WELL MW-6S
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 853.63 feet SURVEYED
CONC. 851.94 ESTIMATED
 INSTALLATION DATE(S) 5/4/89
 DRILLING METHOD Hollow Stem Auger
 DRILLING CONTRACTOR Wisconsin Test Drill
 DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/19/89 - 15 gal - Bailor

FLUID LOSS DURING DRILLING NONE G.
 WATER REMOVED DURING DEVELOPMENT 15 G.

STATIC DEPTH TO WATER 5.51 FEET BELOW M.

PUMPING DEPTH TO WATER _____ FEET BELOW M.

PUMPING DURATION _____ HOURS

YIELD _____ gpm DATE _____

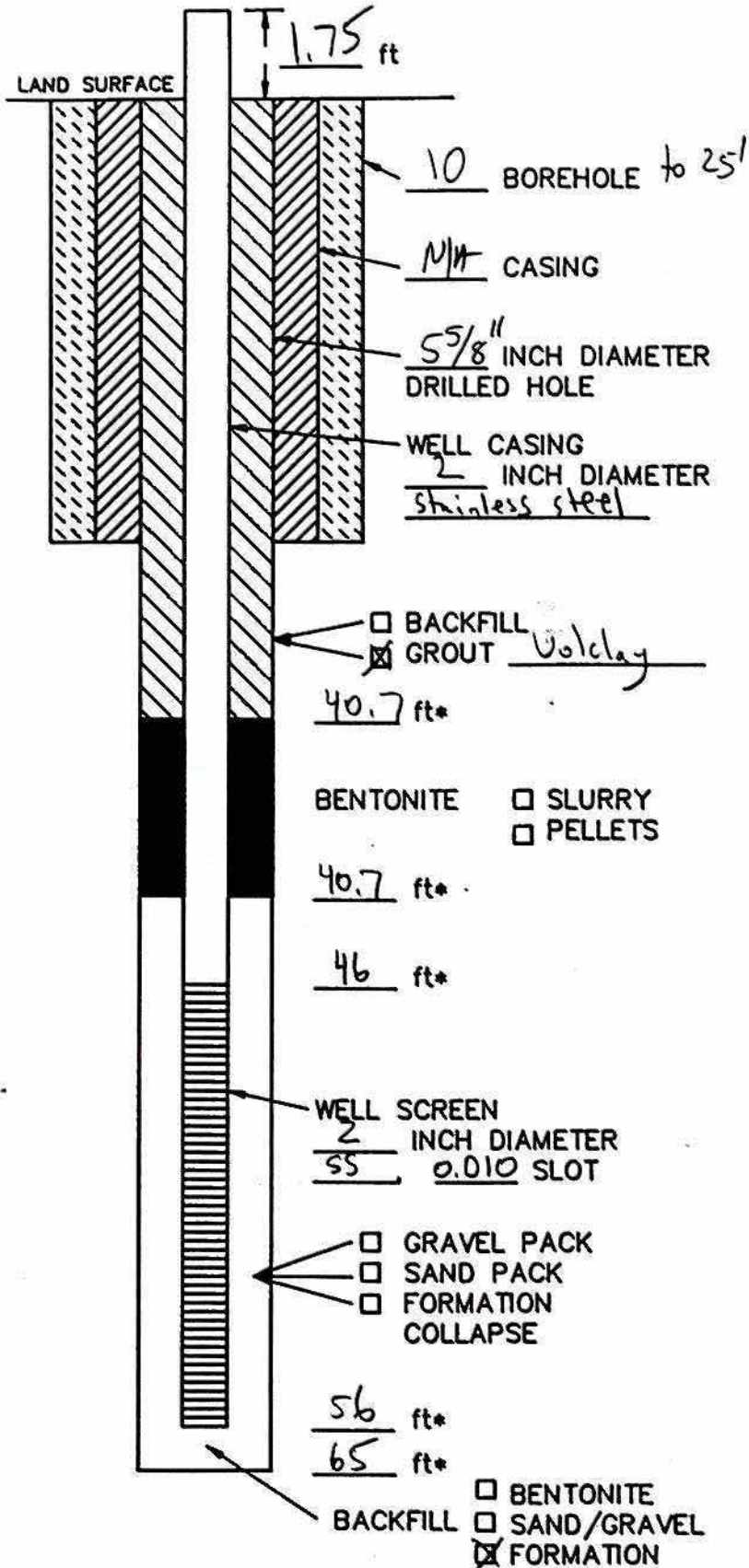
SPECIFIC CAPACITY _____ gpm/ft

WELL PURPOSE Monitoring well

REMARKS _____

PREPARED BY Michael E. Roche

WELL CONSTRUCTION LOG



MEASURING POINT IS TOP OF WELL CASING UNLESS OTHERWISE NOTED.

* DEPTH BELOW LAND SURFACE

PROJECT Stoughton City Landfill WELL MW-6A
 TOWN/CITY Stoughton
 COUNTY Dane STATE WI
 PERMIT NO. _____
 LAND-SURFACE ELEVATION AND DATUM MP 853.21 feet SURVEYED ESTIMATED
CONC. 851.46
 INSTALLATION DATE(S) 5/9 - 5/10/89
 DRILLING METHOD Hollow Stem Auger Mud Rotary
 DRILLING CONTRACTOR Wisconsin Test Drilling
 DRILLING FLUID Quick Gel

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
5/10/89 - Paired with 250 gal. tap water - Good recovery
5/23/89 - 45 gals. - Hand Pump
 FLUID LOSS DURING DRILLING NONE G
 WATER REMOVED DURING DEVELOPMENT 295 G
 STATIC DEPTH TO WATER 5.06 FEET BELOW M
 PUMPING DEPTH TO WATER _____ FEET BELOW M
 PUMPING DURATION _____ HOURS
 YIELD _____ gpm DATE _____
 SPECIFIC CAPACITY _____ gpm/ft
 WELL PURPOSE Monitoring well

REMARKS _____

 PREPARED BY Michael E. Roche

**APPENDIX B
DRILLING LOGS**

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoval

Location Stoughton, MA

W.O. Number 8007 JPSLWT

Borehole Number MW-15

Total Depth 15'

Diameter 10"

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Auger

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/2/89

DEPTH	DRIVEN (") RECOVERY (")	BLDWS	* HMU (ppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
		2 3 6 10	0	A	- CL - <u>Clay</u> ; silty, sandy, medium brown, moist, stiff, top 6" has some organics.
		2 6 8 11	0	B	
5		1 5 6 8	0	C	5' - sandy, gray, lean
					7' - SP - <u>sand</u> ; clayey, gray, wet, very dense
10		3 12 20 35	0		
15					15' - End of Borehole.
20					* - Background Reading on HMU = 0.2 ppm - Collected: SL MW 15 (10-12') for gradation analysis. SL MW 15 BIS for chemical analysis.
25					
30					

Project Stoughton City Landfill

Owner Unicoval

Location Stoughton, WI

W.O. Number 8007 JPSLWT

Borehole Number MW-1D

Total Depth 79'

Diameter 10" 0-30'
5 1/2" 30-79'

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Mud Rotary 30-79'

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/15-5/16/89

DEPTH	DRIVEN (")	RECOVERY (%)	BLOWS	MW (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
						Color, Texture, Structures
						- CL- <u>Clay</u> , sandy, silty, medium brown, moist, stiff.
5						5' - SP-SM; <u>Sand</u> ; Alternating layers of silty sand, and clean sand. Light brown, wet, soft to stiff.
10						
			22 18 20 23	0		12.5' - minor silt layers and very fine grained sand layers, gray, An 1/4" black organic band in sample.
15						
			10 10 18 44	0		- silt layers, clayey, multi-colored banding.
20						
			24 124	6 8 11 15	0	- Drove 24"; 8" recovery, 16" cave; 5' multi-colored, fine to coarse grained, Fe oxide staining. 3" very fine grained, silty, brown
25						
			34 34	0		30' - GM-SM; <u>Gravel and sand</u> ; Alternating layers of gravel and sand, silty, variable color, wet, dense to very dense.
30						

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Page 2/3

Project Stoughton City Landfill

Owner Uniroyal

Location Stoughton, WI

W.O. Number 8007 JP SLWT

Borehole Number MW-1D

Total Depth _____

Diameter _____

Drilling Company Wisconsin Test Drilling

Drilling Method _____

Sampling Method _____

Log By Michael Roche Date Drilled 5/15-5/16/89

DEPTH	DRIVEN RECOVERY (%)	BLDGS	H ₂ O (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
35		34 54/2	36	0	
					37' SP - <u>Sand</u> ; gravelly, brown, wet, dense, occasional cobbles, lenses of very fine grained sand.
40		23 35	30 28	0	
					42' - no silt lenses; very little gravel.
45		16 23	24 33	0	
50		13 40/4		0	
55		34 50/5		0	
60		21 57	39	0	
65		22 77		0	64' CC - <u>Clay</u> , very sandy 64.5' SP - <u>Sand</u> ; little gravel, brown, wet, dense, occasional cobbles.

ERN-NORTH CENTRAL, INC. DRILLING LOG
 Project Stoughton City Landfill Owner Uniroyal
 Location Stoughton, WI W.O. Number 8007 JP SLWI
 Borehole Number MW-1D Total Depth _____ Diameter _____
 Drilling Company Wisconsin Test Drilling Drilling Method _____
 Sampling Method _____ Log By Michael Roche Date Drilled 5/15 - 5/16/79

DEPTH	DRIVEN (") RECOVERY (")	BLDG'S	MW (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
70		437	0		
75		437	0		
80					79' End of Boring
					- Collected: SLMW 1D (74-75.5') for gradational analysis.

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoval

Location Stoughton, WI

W.O. Number 8007 JPSLWT

Borehole Number MW-ZS

Total Depth 15'

Diameter 10"

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Auger

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 4/27-5/1/89

DEPTH	DRIVEN (") RECOVERY (")	BLOWS	H _N U (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
	4 12	11 10	0	A	- <u>Fill</u> - Alternating layers of gravel, sand, clay and trash - asphalt, black roof paper.
	4 12	4 16	0	B	
5	16 8	8 10	0	C	
	3 3	6 10	0.1	D	
10	4 8	6 10	0		9' - CL - <u>Clay</u> , very silty, sandy, black, moist, stiff, laminated 11' - very sandy (fine grained), gray
15					15' End of Borehole
20					- collected: SL MW ZS (10-12') for gradational analysis. SL MW ZS DIS for chemical analysis.
25					
30					

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoval

Location Stoughton, WI

W.O. Number 8007 JPSLWT

Borehole Number MW-2D

Total Depth 36'

Diameter 5 5/8" 0-10'
10" 10-36'

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Auger, 0-10'
and Rotary, 10-36'

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/18 - 5/22/89

DEPTH	DRIVEN (")	RECOVERY (%)	BLOWS	HRU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION Color, Texture, Structures
						<u>Fill</u> - Alternating layers of clay, clay sand, sand, and gravel. Some black layers with trash.
5						5' - CL - <u>Clay</u> , sandy, gray to black
						7' - sandy, silty, gray to black, very moist to wet, firm to stiff. wet from 6.5-7.5'
10						9.5' - 11.5' - Shelby tube sample.
15						15' - Sand stringers, grayish blue.
			8 11 9 9	0		
20						19' - sandy, black, very soft.
			1 24	0		
25						25' - Sand stringers, light gray
						26' - SP-SM - <u>Sand</u> - gravelly, very silty, brown, wet, moderately dense.
30						29' - SC-GC - <u>Sand and Gravel</u> ; very clayey, gray to variable color, wet, moderately dense to dense.
			21 12 13 20	0		

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoyal

Location Stoughton, WI

W.O. Number 8007 JP SLWT

Borehole Number MW-2D Total Depth 36.0

Diameter 10' 10-10'
5 7/8' 10-26'

Drilling Company Wisconsin Test Drilling

Drilling Method Mud Rotary 10-36'
Hollow Stem Auger 0-10'

Sampling Method Split Spoon

Log By Michael Rucke

Date Drilled 5/18-5/22/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOKS	HMU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
35	8 29 21 36	0			36.0' End of Borehole
40					- Collected: SL MW 2D (29-31') for gradational analysis.
45					SL MW 2D (9.5-11.5') for permeability test and Atterberg Limits.
50					
55					
60					
65					

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Page 1/1

Project Stoughton City Landfill

Owner Unicoyal

Location Stoughton, WI

W.O. Number 8007 JPSLWT

Borehole Number MW-3S

Total Depth 17

Diameter 10"

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Auger

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/2/89

DEPTH	DRIVEN (") RECOVERY (")	BLDMS	H ₂ O (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
5	3 13	22 12	0	A	-CL - Clay; silty, sandy, medium brown, moist, stiff 1.5' - G.C.G.M.; Gravel; sandy, silty, clayey, occasional cobble, variable color, moist, dense, with lenses of clayey, silty sand. Layers of cobbles and boulders. -SS refusal on boulder.
	8 9	13 24	0	B	
	6 10	22 22	0.1	C	
	16 5/2		0	D	
	4 30	36 12	0	E	
	5 15	35 12	0	F	
	40 5/4	50 5	0	G	
15					17' - End of Borehole
20					-collected: SL MW 3S (12-13.5') for gradational analysis. SL MW 3S CIS for chemical analysis.
25					
30					

Project Stoughton City LandfillOwner UnicroyalLocation Stoughton, WIW.O. Number 8007 JPSLWTBorehole Number MW-3DTotal Depth 79Diameter 10" 0-2-79
5 3/8" 25-79Drilling Company Wisconsin Test DrillingDrilling Method Hollow Stem Auger
Mud RotarySampling Method Split SpoonLog By Michael RocheDate Drilled 5/5-5/8/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOWS	HNU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
5					SC - Sand; clayey, gravelly, medium brown, moist, moderately dense
10					1.5' - GC-Gm - Gravel; very sandy, alternating layers of silt and clay, medium brown moist, moderately dense to very dense
15					13' - GP-SP - sand and Gravel; variable color, wet, medium dense to dense,
20					- with cobbles
25					23.5' - SP - Sand, gravelly, variable color, wet, dense, occasional gravel and cobbles.
30					- fine to coarse sand (75%); coarse Gravel (20%) silt/clay (5%)
33'					SP - sand; fine to medium grained; trace fine gravel.

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Page 2/3

Project Stoughton City Landfill

Owner Unicoyal

Location Stoughton, WI

W.O. Number 8007 JP SL WT

Borehole Number _____ Total Depth _____ Diameter _____

Drilling Company Wisconsin Test Drilling Drilling Method _____

Sampling Method _____ Log By Michael Rucke Date Drilled 5/5 - 5/8/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOWS	HNU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
35					38' - <u>SP-Sand</u> ; same as above
		15 18	0		
40		22 28			
		12 19	0		
45		18 19			
		15 22	0		
50		30 34			
		26 30	0		
55		51			
		24 38	0		
60					
		40 58	0		
65					

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill Owner Unicoyal
 Location Stoughton, WI W.O. Number 8007 JPSLWT
 Borehole Number MW-4S Total Depth 15' Diameter 10"
 Drilling Company Wisconsin Test Drilling Drilling Method Hollow Stem Auger
 Sampling Method Split Spoon Log By Michael Roche Date Drilled 5/3/89

DEPTH	DRIVEN (=) RECOVERY (=)	BLOWS	H ₂ O (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
		4 10 12 14	0	A	- SM - Sand; clayey, silty, gravelly, light brown, moist, moderately dense, top 6" is organic-rich
		3 7 12 14	0	B	3.5' - SP - Sand; gravelly, light brown, moist, dense, lenses of gravel and cobbles
5		8 11 18 35	0	C	
		15 30 40 37	0	D	6' - SP - GP - Alternating layers of sand and gravel, light brown to variable color, wet, dense
		12 17 18 16	0		
10					
15					15' - End of borehole
20					Collected: SL MW 4S (8-10') for gradational analysis. SL MW 4S A1S for chemical analysis.
25					
30					

Project Stoughton City Landfill Owner Unicoyal
 Location Stoughton, VT W.O. Number 8007 JPSLWT
 Borehole Number MW-4D Total Depth 73.5 Diameter 10" to 20"
5 5/8" to 73.5'
 Drilling Company Wisconsin Test Drilling Drilling Method Hollow Stem Auger - 20'
Full Rotary - 73.5'
 Sampling Method Split Spoon Log By Michael Roche Date Drilled 5/16-5/17/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOWS	MHU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
5					-SC- Sand; clayey, gravelly, brown, moist, dense, lenses of cobbles
10					7' - SP - Sand; Gravelly, occasional cobbles, variable color, wet, moderately dense to dense, lenses of cobbles.
15		24, 30 27, 25	0		
20		17, 39 29	0		20' - some lenses of clayey sand. 25' - no cobbles, little gravel
25		20, 28 33, 37	0		
30		23, 29 35, 37	0		

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Page 2/3

Project Stoughton City LandfillOwner UnicoyalLocation Stoughton, WIW.O. Number 8007 JP SLWTBorehole Number MW-4DTotal Depth 73.5'

Diameter _____

Drilling Company Wisconsin Test Drilling

Drilling Method _____

Sampling Method _____

Log By Michael RuckeDate Drilled 5/16-5/17/89

DEPTH	DRIVEN (") RECOVERY (%)	BLDG'S	PNU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
35	20 33 38 50	0			
40		18 26 21 35	0		
45		50 71	0		
50		47 62 24 31	0		
55		21 25 36 51	0		
60		18 37 38 54	0		
65		19 43 30 37	0		

47'-SP-GP - alternating lenses of sand and gravel;
with cobbles, dense to very dense, wet,
variable color; Gravel is very silty.

ERM-NORTH CENTRAL, INC. DRILLING LOG
 Project Stoughton City Landfill Owner Uniroyal
 Location Stoughton, WI W.O. Number 8007 JP SLWI
 Borehole Number MW-4D Total Depth 73.5' Diameter _____
 Drilling Company Wisconsin Test Drilling Drilling Method _____
 Sampling Method _____ Log By Michael Roche Date Drilled 5/16-5/17/89

DEPTH	DRIVEN (") RECOVERY (")	BLOWS	H ₂ O (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION Color, Texture, Structures
70		30 52		0	
75					
80					
					73' - Top of Bedrock? ; 15 minutes of drilling for last 73.5' - End of Borehole.
					Collected: SLMW4D (69-70')

Project Stoughton City Landfill Owner Unicoyal
 Location Stoughton WI W.O. Number 8007 JPSLWT
 Borehole Number MW-55 Total Depth 15' Diameter 10"
 Drilling Company Wisconsin Test Drilling Drilling Method Hollow Stem Auger
 Sampling Method Split Spoon Log By Michael Roche Date Drilled 5/3/89

DEPTH	DRIVEN (") RECOVERY (")	BLOCKS	HNU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
		6 26 18 15	0	A	- SM - Sand; silty, clayey, gravelly, medium brown, moist, dense, occasional cobbles.
		17 10 13 13	0	B	
5		7 10 11 12	0	C	5' - SP - Sand; gravelly, light brown, very moist, moderately dense.
		4 6 50 2	0	D	7' - SP-GP - Alternating layers of sand and gravel; with cobbles, boulders, light brown to variable color, wet, dense to very dense.
10		15 19 22 19	0		
15					15' - End of Borehole.
20					Collected: SLMW 55 (9-11') for Gradational Analysis SLMW 55CIS for chemical Analysis.
25					
30					

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoyal

Location Stoughton, VT

W.O. Number 8007 JPSLWT

Borehole Number MW-5D

Total Depth 75.5

Diameter 10" to 25"

Drilling Company Wisconsin Test Drilling

Drilling Method Mud Rotary to 75.5'

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/11-5/12/89

DEPTH	DRIVEN (=) RECOVERY (=)	BLOWS	HNU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
5					-sm- sand, clayey, gravelly, medium brown, moist, dense, occasional cobbles. 3' - SP-GP - Alternating sand and gravel layers; light brown to variable color, very moist to wet, dense to very dense.
10					
		54	0		
15					
		45 48 56	0		
20					
		100	0		
25					
					27' - no cobbles, moderately dense
		18 21	0		
30					30.5' - SP - Sand; gravelly, brown, wet, moderately dense to dense, occasional gravel lenses.

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Uniroyal

Location Stoughton, WI

W.O. Number 8007 JP SLWT

Borehole Number MW-5D

Total Depth 75.5'

Diameter _____

Drilling Company Wisconsin Test Drilling

Drilling Method _____

Sampling Method _____

Log By Michael Rucke

Date Drilled 5/11-5/12/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOWS	HN (Vpps)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION Color, Texture, Structures
35		12 17 23	0		
40		25 34 35	0		
45		24 31 37	0		46' - Clay seam, 1" thick
50		13 32 30 35	0		52' - SP-GP; <u>Alternating layers of sand and gravel</u> ; variable color, wet, moderately dense.
55		13 19 23 17	0		57' - SP - <u>Sand</u> ; gravelly, brown, wet, dense, fine to medium grained
60		19 23 25 26	0		
65		21 30 38 29	0		

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Uniroyal

Location Stoughton, WI

W.O. Number 8007 JP SLWI

Borehole Number MW-5D

Total Depth 75.5'

Diameter _____

Drilling Company Wisconsin Test Drilling

Drilling Method _____

Sampling Method _____

Log By Michael Roche Date Drilled 5/11 - 5/12/89

DEPTH	DRIVEN (") RECOVERY (")	BLOWS	FPAU (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
70		50			70' - Finer sand
75		18			74' - Clay seam, sandy with sand stringers, 4" thick 75' - Bedrock 75.5' - End of borehole.
80					Collected: SL mw 5D (69-71') for gradation analysis.

ERM-NORTH CENTRAL, INC.

DRILLING LOG

Project Stoughton City Landfill

Owner Unicoval

Location Stoughton, MA

W.O. Number 8007 JPSLWT

Borehole Number MW-6S

Total Depth 13.67

Diameter 10"

Drilling Company Wisconsin Test Drilling

Drilling Method Hollow Stem Auger

Sampling Method Split Spoon

Log By Michael Roche

Date Drilled 5/4/89

DEPTH	DRIVEN (")	RECOVERY (%)	B.L.O.S	H ₂ O (V _{ppm})	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
						Color, Texture, Structures
			3 10		A	- <u>Fill</u> - SC - sand, clayey, silty, gravelly, brown to black, moist, moderately dense, trash, (1' of clayey sand cap)
			7 13 16 15	0	B	
S			2 12 16 21	0.1	C	4' - sm - <u>sand</u> ; silty, occasional gravel, black, moist, moderately dense (old soil horizon) 5' - <u>LSP</u> - <u>sand</u> , silty, gravelly, light brown, wet, dense
			9 10 9 15		0	8' - SC - <u>sand</u> ; clayey, gravelly, tan, wet, moderately dense
10						
15						13.67' - End of Borehole.
						Collected:
						SLMW6S (7-9') for gradational analysis
						SLMW6S B1S for chemical analysis
20						
25						
30						

Project Stoughton City Landfill Owner Unicoyal
 Location Stoughton VT W.O. Number 8007 JPSLWT
 Borehole Number MW-6D Total Depth 65' Diameter 10" to 25"
 Drilling Company Wisconsin Test Drilling Drilling Method Hollow Stem Auger to 25'
 Sampling Method Split Spoon Log By Michael Roche Date Drilled 5/9-5/10/89

DEPTH	DRIVEN (") RECOVERY (%)	BLOWS	MW (Vppm)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION
					Color, Texture, Structures
1.5'					- Fill - CL-SC - C _u and sandy clay, brown, moist, stiff - black, some rubble
5					4.1' 5.1' - SP - Sand; Gravelly, very clayey, light brown, very moist to wet, dense, lenses of gravel and cobbles.
10		66	0		
15		89	0		
17'					17' - GP - Gravel, very sandy, very silty, light brown to variable color, wet, very dense.
20		1738 50/1	0		
25		3592	0		25.5' - GP-SP - sand and gravel; light brown, wet, dense to very dense, lenses of cobbles, fine to medium grained sand.
30		1428 2838	0		
		118			

ERN-NORTH CENTRAL, INC.

DRILLING LOG

Page 2/2

Project Stoughton City Landfill

Owner Uniroyal

Location Stoughton, WI

W.O. Number 8007 JP SLWT

Borehole Number MW-6D

Total Depth 65'

Diameter _____

Drilling Company Wisconsin Test Drilling

Drilling Method _____

Sampling Method _____

Log By Michael Rucke Date Drilled 5/9-5/10/89

DEPTH	DRIVEN (") RECOVERY (")	BLDG	MW (Vppa)	Sample Number	DESCRIPTION/SOIL CLASSIFICATION Color, Texture, Structures
35		29 50/4	0		
40		30 19 44 23	0		
		67	0		
45					
		86	0		
50					50' - SP - <u>Sand</u> ; fine to medium grained, brown, wet, dense to very dense, lenses of gravel with cobbles and boulders.
55		28 45 44	0		
					58' - ML - <u>Silt</u> ; sandy, brown
60		18 25 42 50/4 38 52 28 32	0		60.5' - SP-GP - <u>Sand and gravel</u> ; brown, wet, dense to very dense, silt lenses.
65					64' - Bedrock (?) - 25 minutes drilling for last 3" 65' - End of Borehole