ENVIRONMENTAL MONITORING PLAN
LANDFILL NO. 6
CANTON, NORTH CAROLINA

BLUE RIDGE PAPER PRODUCTS INC. – CANTON MILL
DIVISION OF EVERGREEN PACKAGING
CANTON, NORTH CAROLINA

MAY 2009

SME

Sevee & Maher Engineers, Inc.

Waste Management and Hydrogeologic Consultants
Cumberland Center, Maine

NORTH CAROLINA PROFESSIONAL SEAL 20489 ENGINEER JOHN E. SEVEE

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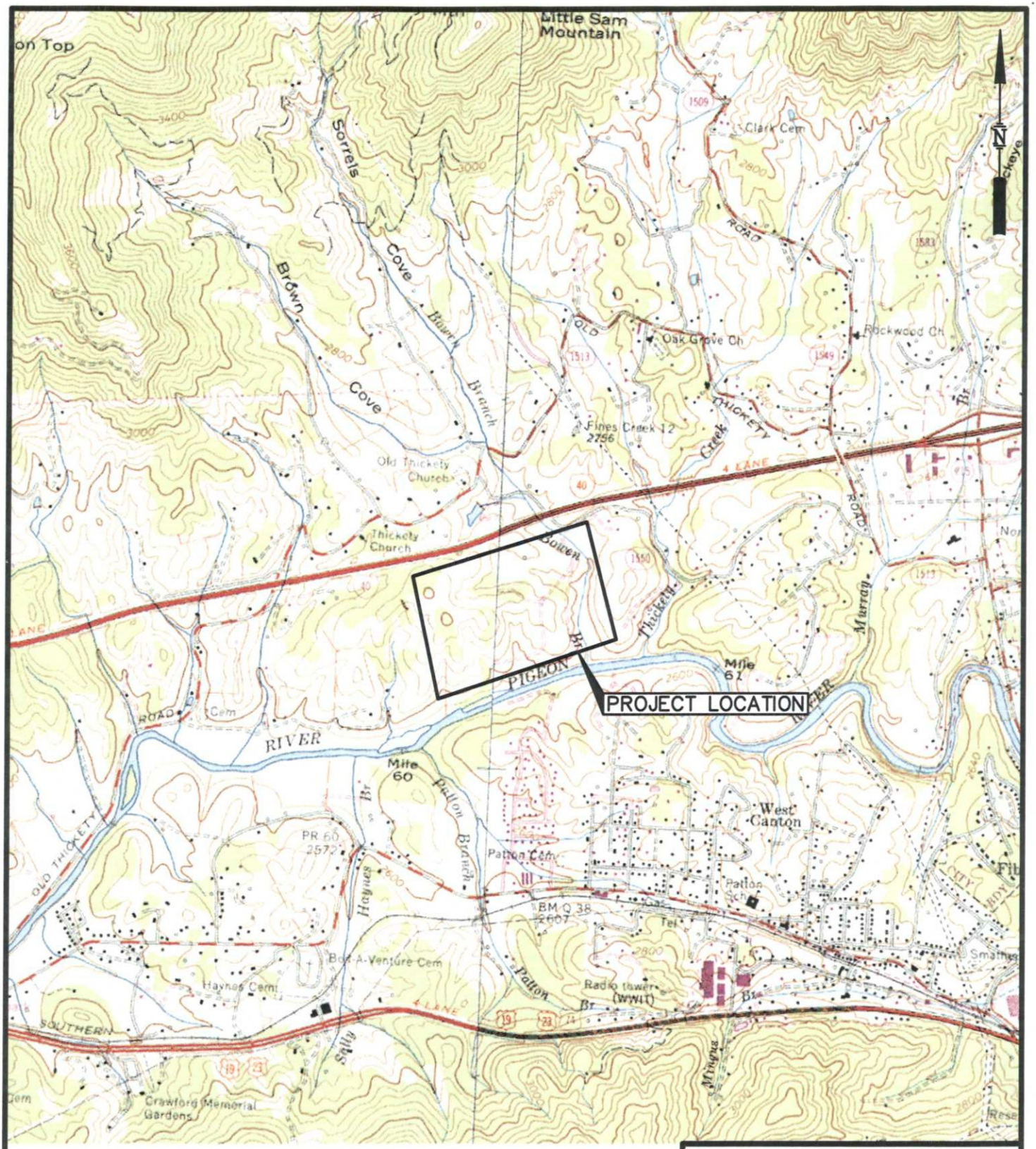
1.0 INTRODUCTION

This Environmental Monitoring Plan (EMP) summarizes the sampling procedures and analytical methods to be used for groundwater, surface water, underdrain, and leachate monitoring at the Blue Ridge paper Products Inc.'s (BRPP) Landfill No. 6 site in Canton, North Carolina (See Figure 1-1). The procedures, protocols, methods, and monitoring locations in this EMP shall not be changed or altered without approval from the North Carolina Department of Environment and Natural Resources (NCDENR).



BASE MAP ADAPTED FROM 7.5 MIN
USGS TOPOGRAPHIC QUADRANGLES:
CLYDE, NC–1978 & CANTON, NC–1990

1000 0 2000 4000 FEET

FIGURE 1–1
SITE LOCATION MAP
BLUE RIDGE PAPER PRODUCTS, INC.
LANDFILL NO. 6
CANTON, NORTH CAROLINA

SME
Sevee & Maher Engineers, Inc.

DWG: SITE LMN: NO–6 CTB: HPSTD REV: 4/22/09

\\Aserver\cfs\Brpp\NC\6a-west\acad\SITE.dwg, 4/24/2009 1:15:37 PM, paf

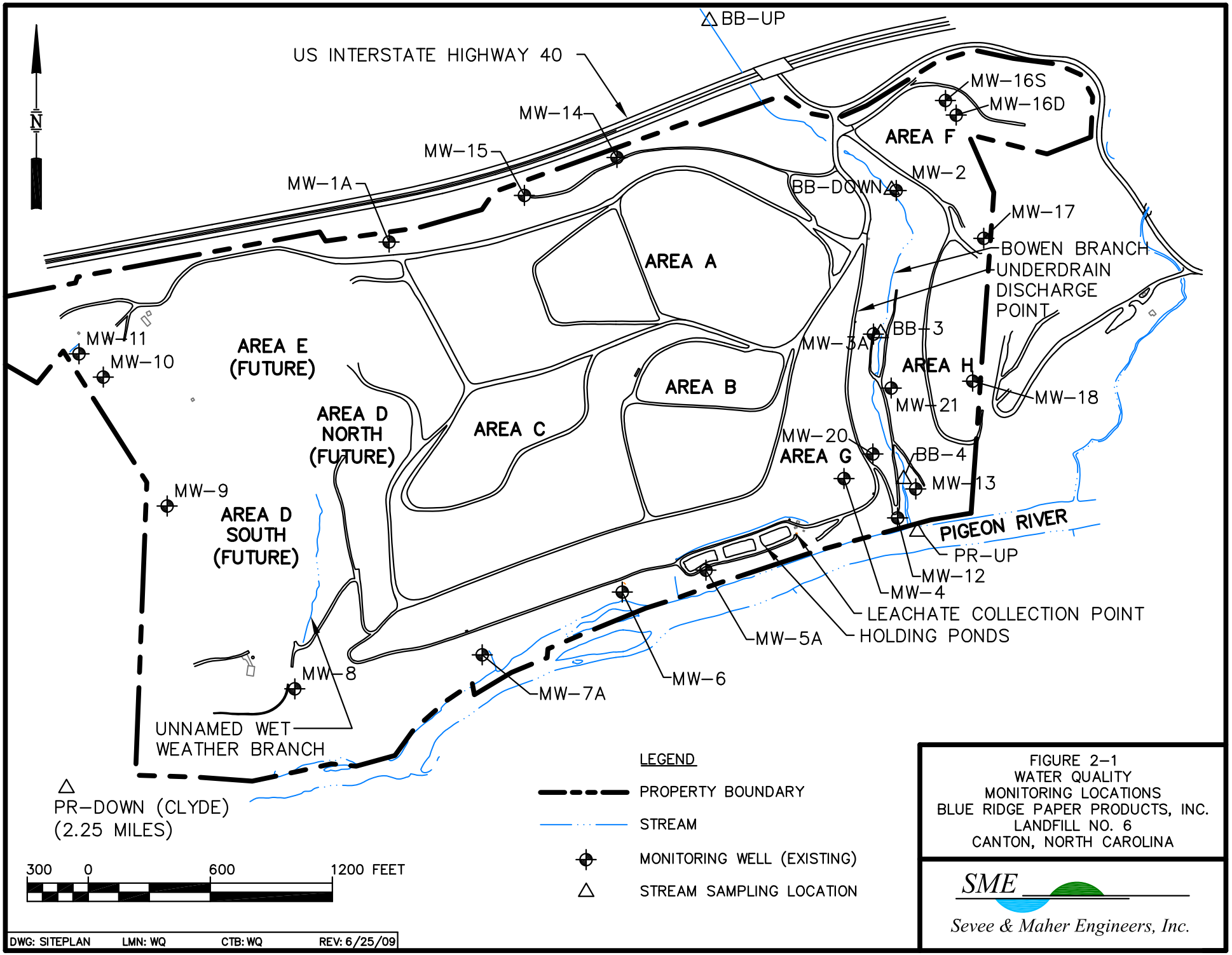
2.0 SAMPLING LOCATIONS AND FREQUENCY

Samples will be collected from twenty-one (21) groundwater locations, six (6) surface water locations, one (1) underdrain location, and one (1) leachate location on a semi-annual basis in March and November. The groundwater, surface water, underdrain, and leachate locations are listed in Table 2-1 and shown on Figure 2-1.

TABLE 2-1

ENVIRONMENTAL MONITORING LOCATIONS
LANDFILL NO. 6
BLUE RIDGE PAPER INC., CANTON, NORTH CAROLINA

GROUNDWATER LOCATIONS		
MW-1A	MW-8	MW-16S
MW-2	MW-9	MW-16D
MW-3A	MW-10	MW-17
MW-4	MW-11	MW-18
MW-5A	MW-12	MW-20
MW-6	MW-13	MW-21
MW-7A	MW-14	
	MW-15	
SURFACE WATER LOCATIONS		
BB-UP (Bowen Branch Upstream)		
BB-DOWN (Bowen Branch Downstream)		
BB-3		
BB-4		
PR-UP		
PR-DOWN		
UNDERDRAIN LOCATION		
Bowen Branch Underdrain Discharge Point		
LEACHATE LOCATION		
Leachate Collection Point in Area G		


N
US INTERSTATE HIGHWAY 40
BB-UP
MW-14
MW-15
MW-1A
MW-16S
MW-16D
AREA F
MW-2
BB-DOWN
MW-17
BOWEN BRANCH
UNDERDRAIN
DISCHARGE
POINT
AREA A
BB-3
MW-3A
AREA H
MW-18
MW-21
AREA B
AREA C
MW-11
MW-10
AREA E
(FUTURE)
AREA D
NORTH
(FUTURE)
MW-20
AREA G
BB-4
MW-13
MW-9
AREA D
SOUTH
(FUTURE)
PIGEON RIVER
PR-UP
MW-12
MW-4
LEACHATE COLLECTION POINT
HOLDING PONDS
MW-5A
MW-6
MW-7A
MW-8
UNNAMED WET
WEATHER BRANCH
PR-DOWN (CLYDE)
(2.25 MILES)
300 0 600 1200 FEET
LEGEND
PROPERTY BOUNDARY
STREAM
MONITORING WELL (EXISTING)
STREAM SAMPLING LOCATION
FIGURE 2-1
WATER QUALITY
MONITORING LOCATIONS
BLUE RIDGE PAPER PRODUCTS, INC.
LANDFILL NO. 6
CANTON, NORTH CAROLINA
SME
Sevee & Maher Engineers, Inc.
DWG: SITEPLAN LMN: WQ CTB: WQ REV: 6/25/09
P:\Brpp\NC\6a-Valleyfill\acad\Siteplan.dwg, 6/25/2009 10:46:02 AM, mbiskup

3.0 WATER QUALITY MONITORING PARAMETERS

The field and laboratory monitoring parameters, analytical methods, and reportable detection limits (RDLs) for the groundwater, surface water, underdrain, and leachate monitoring are shown in Table 3-1.

TABLE 3-1

ANALYTICAL PROGRAM
LANDFILL NO. 6
BLUE RIDGE PAPER INC., CANTON, NORTH CAROLINA

Water Quality Parameter	Units	Analytical Method	RDLs[1]
Specific Conductance at 25°C (Field)	µmhos/cm	SM 2510B	10
Temperature (Field)	degrees C	SM 2550B	0.1
pH (Field)	pH units	SM 4500 HB	0.1
Turbidity (Field)	NTU	Field Screen	1.0
Nitrate-Nitrite as N	mg/l	SM 4500 NO3H	0.20
Nitrite as N	mg/l	SM 4500 NO2B	0.01
Total Dissolved Solids	mg/l	SM 2540C	25
Total Organic Carbon	mg/l	SM 5310C	0.5
Total Recoverable Phenols	mg/l	EPA 420.1	0.005
Chloride	mg/l	EPA 300.0	1.0
Fluoride	mg/l	EPA 300.0	0.1
Sulfate	mg/l	EPA 300.0	1.0
Arsenic ICPMS	mg/l	EPA 200.8	0.005
Barium	mg/l	EPA 200.7	0.01
Cadmium ICPMS	mg/l	EPA 200.8	0.001
Calcium	mg/l	EPA 200.7	0.01
Chromium ICPMS	mg/l	EPA 200.8	0.002
Copper ICPMS	mg/l	EPA 200.8	0.005
Iron	mg/l	EPA 200.7	0.05
Lead ICPMS	mg/l	EPA 200.8	0.005
Magnesium	mg/l	EPA 200.7	0.01
Manganese ICPMS	mg/l	EPA 200.8	0.005
Mercury	mg/l	EPA 245.1	0.0002
Nickel ICPMS	mg/l	EPA 200.8	0.005
Potassium	mg/l	EPA 200.7	0.5
Selenium ICPMS	mg/l	EPA 200.8	0.005
Silver ICPMS	mg/l	EPA 200.8	0.002
Sodium	mg/l	EPA 200.7	0.05
Zinc	mg/l	EPA 200.7	0.02
TOX	mg/l	SW 846 9020B	0.03
BOD[2]	mg/l	SM 5210B	2.0
COD[2]	mg/l	EPA 410.4	20
Total Phosphorous[3]	mg/l	SM 4500 PE	0.02

Notes:
1. RDL = Reportable Detection Limits
2. BOD and COD are done on the leachate and underdrain samples only.
3. Total phosphorous as Phosphate is done on leachate only.

Method Reference: The analytical methods selected are presented in Test Methods for Evaluating Solid Waste, OSWER, SW-846, Third Edition, as revised; Methods for Chemical analysis of Water and Wastes, EMSL, EPA-600/4-79-020, revised March 1983; and Standard Methods for the Examination of Water and Wastewater, APHA, 19th Edition, 1995. Equivalent and appropriate analytical methods may be substituted with Juniper Ridge Landfill approval, e.g., manual for automated and vice versa.

4.0 SAMPLING PROCEDURES

The following sections describe the procedures to be followed for collecting groundwater, surface water, underdrain, and leachate samples at the BRPP site. Sample recordkeeping forms and chain-of-custody forms to be completed for each water quality monitoring location are presented in Appendix A. Monitoring well installation diagrams for the BRPP monitoring wells are presented in Appendix B.

4.1 Groundwater Sample Collection

There is typically one of three possible purging and sampling procedures followed for collection of samples from the monitoring well locations at the BRPP site. The specific sampling methods are shown in Subsection 4.1.2, 4.1.3, and 4.1.4.

4.1.1 Well Inspection and Water Level Measurement. Upon arrival at each groundwater sampling location, the sampling personnel will observe the physical condition of the monitoring well(s). The inspection will include observation of the condition of the ground surface seal and the well guard pipe to evaluate if any evidence of frost heaving, cracks, or vandalism are present. The condition of the monitoring well will be recorded on the field data records. Periodically, the area around the well may have to be cleared of weeds, brush, or other materials prior to beginning the water sampling activity.

Following inspection of the sampling location, the water level will be measured. The water level in the well casing will be determined by lowering a clean electronic sounding probe into the well until contact with the water surface is made. The distance from the monitoring well reference elevation to the water surface contact will be entered into the field records. Water levels in the monitoring wells will be measured to the nearest 0.01 foot. In all cases, the depth to water will be referenced to the top of the PVC well casing (permanently marked measurement reference point). In instances where water is flowing from the well casing, the water level will be noted as

such. Upon removing the water level probe, it will be decontaminated as described in Section 5.0.

4.1.2 Monitoring Wells Where a Bladder Pump is Used. A submersible bladder pump is used to purge and sample monitoring well locations listed below. The bladder pump is adjusted to remove water from the monitoring well at a rate of approximately 200 millimeters per minute. Field measurements for pH, conductivity, temperature, and turbidity are monitored at five-minute or more intervals until three consecutive field readings are within the field parameter stabilization listed below for approximately 30 minutes prior to sample collection. The use of a bladder pump is applicable at the following wells:

MW-13	MW-16S
MW-14	MW-18
MW-15	MW-21
MW-16D	

Field parameter stabilization criteria:

pH	± 0.1 standard pH unit with respect to previous pH measurement.
Specific conductance	± 10% of previous measurement.
Turbidity	± 10% or <10 NTU of previous measurement.
Temperature	± 1°C of previous measurement.

4.1.3 Monitoring Wells Where a Submersible Grundfos Pump is Used. A submersible Grundfos pump is used to purge and sample the monitoring well locations listed below. The Grundfos pump is adjusted to remove water from the monitoring well at a flow rate of between 1.0 and 1.5 gpm. Field measurements for pH, conductivity, temperature, and turbidity are taken every six to ten minutes until three or more well volumes are removed and the field parameters stabilize as discussed in Section 4.1.2. A sample is collected after completing the above purging process. If the water column is drawn down to the pump head, the pump will be turned off and a sample of

the recharge water will be collected. The use of a Grundfos pump is applicable at the following locations:

MW-10
MW-17
MW-20

4.1.4 Monitoring Wells Where a Bailer is Used for Sample Collection. A Teflon bailer is used to purge and sample the monitoring locations listed below. In the case where the well has sufficient recharge, three well volumes of water will be removed from the well prior to sample collection. In the case where the recharge is insufficient and the well water is drawn down significantly, the well will be purged close to dry and a sample of the recharge will be collected. In the case where the monitoring well produces three volumes of water, periodic field measurements of pH, conductivity, temperature, and turbidity will be monitored, and purging will continue until these parameters have stabilized as discussed in Section 4.1.2. The following wells will be sampled using a bailer:

MW-1A	MW-7A
MW-2	MW-8
MW-3A	MW-9
MW-4	MW-11
MW-5A	MW-12
MW-6	

4.2 Surface Water and Underdrain Sampling Procedure

Surface water samples from the six surface water locations as well as the one underdrain location listed in Table 2-1 will be collected in the following manner:

1. Collect the sample by immersing the sample bottle or sampling device not more than 1 foot below the water surface. If a stream is being sampled, the sample point will be upstream of the sampler with the opening of the sample bottle or sampling device oriented upstream, but avoiding floating debris. If a culvert is

being sampled, the sample bottle or sampling device will be placed where the water flows out of the bottom of the culvert.

2. Directly fill the appropriate sample containers from the sampling device if needed.

3. If possible, measure the following parameters in the water body:

   - temperature
   - pH
   - specific conductance
   - turbidity

   If direct measurement is not possible, these parameters will be measured from water remaining in the sampling device or a separate plastic bottle. This information will be recorded in the sample data record, sample labels will be completed, and the chain-of-custody (COC) procedures will be initiated.

4. Complete the Surface Water or Underdrain Sample Data Record (see Appendix A).

4.3 Leachate Sampling Procedure

Leachate samples will be collected from the leachate manhole by either using a Teflon bailer or a glass beaker attached to a pole. After filling sample bottles, pH, conductivity, temperature, and turbidity readings will be taken.

The information will be recorded on a Leachate Sample Data Record (see Appendix A), sample labels will be completed, and the COC procedures will be initiated.

4.4 Sample Volume, Preservation, and Holding Times

Obtaining required sample volumes, adhering to specified sample preservation procedures and complying with allowable sample holding times are necessary to produce analytical testing results which will be representative of the site water quality conditions. In preparing for each sampling event, the sampling personnel will prepare schedules which will permit adequate laboratory notification and sample delivery to allow testing within the allowable holding times. Preservation of collected samples is accomplished by refrigerating samples at 4 degrees Celsius (°C) and in some cases by acidification. Physical preservation of the samples will be accomplished by storing the filled sample bottles in covered insulated coolers constructed of impact resistant plastic. Efforts will be made to pack the coolers such that the sample bottles are not subject to movement or breakage.

4.5 Field Instrumentation Calibration

Sampling quality control will include the daily calibration of field equipment used to measure pH, turbidity, and specific conductance.

5.0 EQUIPMENT DECONTAMINATION

Decontamination of the sampling equipment and instrumentation is required prior to initiation of sampling and between each sample location to minimize the potential for cross contamination between samples. Clean nitrile or PVC gloves will be worn to reduce contamination potential when performing the decontamination activities, when handling decontaminated sampling equipment, as well as prior to and during all sampling.

5.1 Field Instrumentation Decontamination

Field instrumentation, i.e., pH, specific conductance, turbidity, and temperature probes and meters will, under no circumstances, be introduced into a sampling device or sample bottle. To minimize latent influences between sampling locations, the probes and meters will be rinsed with distilled water and, when appropriate, wiped dry with clean paper towels. The electronic water level probe will be introduced into monitoring well(s) prior to the purging process. Upon extraction from a monitoring well, the probe and associated electric lead wire(s) will be cleaned with consecutive rinses of distilled water.

5.2 Bladder Pump and Grundfos Pump Decontamination

The Grundfos pumps and bladder pumps used for well purging and sampling, along with the tubing attached to them, will be decontaminated as follows. The bladder pump is cleaned with a solution of soapy water, deionized (DI) water rinse, rinsed with alcohol, and followed by a DI water rinse. Each bladder as well as the pump seals and tubing are replaced between wells. The outside of the Grundfos pump is cleaned in the same manner as the bladder pump. Several gallons of DI water is pumped through the Grundfos pump and all tubing is replaced between samples.

5.3 Teflon Bailer Decontamination

Each Teflon bailer used to purge and sample at monitoring well locations will be cleaned in the Rogers and Callcott laboratory with a soapy hot water scrub, hot water rinse, alcohol rinse, and DI water rinse. Each bailer will be wrapped with tin foil after decontamination and prior to use.

6.0 SAMPLE CUSTODY

Chain-of-custody (COC) procedures will be followed during sample collection and handling activities during both the field and laboratory operations. The COC procedures assure that each sample is accounted for at all times. To maintain the highest degree of control in sample handling, preprinted labels will be utilized so that all necessary information is retained with the sample. COC records will be used to maintain control over sample access during and after shipment from the sampling location. Additionally, proper completion of field sample logs, accession books, tracking sheets, and extraction logs by appropriate field and laboratory personnel will provide for thorough tracking of the samples from collection through analysis and final reporting.

The objectives of sample identification, custody, and tracking procedures are as follows:

- All samples collected for analysis are uniquely labeled for identification purposes throughout the analytical process.
- Samples are correctly analyzed and results are traceable to field records.
- Important sample characteristics are preserved.
- Samples are protected from loss, damage, or tampering.
- Any alteration of samples (e.g. preservation or damage due to shipment or other processes) is documented.
- A record of sample integrity and analytical fate is established.

6.1 Sample Monitoring Forms

The use of standard forms accomplishes one or more of the specific objectives of sample identification, custody, and tracking. Standard forms used by the samplers for water quality monitoring are provided in Appendix A and are discussed below. See attached COC form, field sampling log, and calibration form.

6.1.1 Chain-of-Custody Record. The COC Record is initiated in the field by the individual physically in charge of sample collection. The COC must be completed prior to the shipment of samples to the laboratory. The COC contains information specific to the sample location, date and time of sample collection, the sampler, the project name and number, laboratory project number, the number of containers of each sample being shipped, an itemization of the analyses requested for each sample and any remarks about the sample(s) prior to shipment. The completed COC is signed by the sampler and enclosed with the samples. The COC is then signed each time possession of the samples changes, with the signatures of the persons relinquishing and receiving the samples, as well as the time and date of the sample exchange being indicated on the COC Record.

6.1.2 Sample Collection Forms. The Monitoring Well, Surface Water, Underdrain, and Leachate Sampling Forms will be completed in the field by the individual placed in charge of sample collection. This form correlates the assigned sample bottle designation to a specific well. The forms also list pertinent sampling information that must be recorded at the time of sample collection (i.e., date and time of sampling and field parameter test results).

6.1.3 Instrument Calibration Form Field instrument calibration procedures will be recorded on the Instrument Calibration Form on a daily basis.

6.2 Packing and Shipping

Samples will be packed and shipped so as to maintain the sample container integrity as well as to provide for the health and safety of the sample transporter.

6.2.1 Packing. Sample containers are generally packed in picnic coolers for shipment. Bottles are to be packed tightly so that no motion is possible. Styrofoam, vermiculite, and bubble-pack are suitable as bottle packing material for most instances. (High-hazard samples may require different packing.) Ice is placed in double Ziploc™ bags and added to the coolers in order to maintain the required 4°C preservation requirement. All necessary paperwork will be placed in a separate Ziploc™ bag and also placed in the cooler. The cooler top will then be closed and taped shut. Custody sealing and taping of coolers may be required for certain samples/occasions.

6.2.2 Shipping. The standard procedure followed for shipping environmental samples to the analytical laboratory is:

1. For projects where the laboratory can be practically accessed:

   - Deliver all samples directly to the laboratory.

2. For projects where the laboratory is not practically accessed:

   - All shipping of environmental samples must be done through Federal Express or an equivalent overnight delivery service.

   - If prompt shipping and laboratory receipt of the samples cannot be guaranteed (i.e. Sunday and holidays), the samplers will be responsible for proper storage of the samples until suitable transportation arrangements can be made.

7.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Quality assurance/quality control (QA/QC) is an integral part of this EMP to provide for assessment of the adequacy of the analytical results and their intended use. QA/QC activities associated with sampling include utilization of standardized collection procedures and sample data records, calibration of field instruments, and adherence to COC procedures. Analytical QA/QC involves the use of approved analytical protocols by qualified laboratories. Assessment of analytical data quality is performed through review of method-specified quality control data, to be reported along with the analytical results. To ascertain that the QA/QC objectives are met, the following data validation methods will be used to verify the accuracy and precision of the reported results.

- Chain of Custody for each sample is continuous and included with report.
- Verification that all sample holding times were met.
- Identification of values falling outside of historical (>5 sample rounds) range.
- Identification of wells whose depths have changed since construction.

8.0 REPORTING

The BRPP program will include semi-annual and annual reporting to the NCDENR in accordance with current waste management regulations.

APPENDIX A

STANDARD RECORDKEEPING FORMS AND CHAIN OF CUSTODY FORM

ROGERS & CALLCOTT
LABORATORY SERVICES
P.O. Box 5655, Greenville, SC 29606
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

Client Name _____

Address _____

_____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Rogers & Callcott Lab No.	Yr.__ Date	Time	Sample Description	Total Number of Containers	PARAMETERS								
													Filtered (Yes/No)
													Cooled (Yes/No)
													Container Type (P/G)
													Container Volume
													Sample Type (Grab/Composite)
													Sample Source (WW, GW, DW, Other)
													Sample Source Chlorinated (Yes/No)
													Lab Receipt Cl, Check
													Lab Receipt pH Check
													Preserved (Code)
													A–None B–HNO_3 C–H_2SO_4 D–NaOH E–HCL F–$Na_2S_2O_3$ G–Boric Acid H–Ascorbic Acid I– ____
													COMMENTS:

SAMPLER Relinquished by (Sig.) ①	Date/Time	Received by (Sig.) ② Shipper Name & #	Date/Time	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	Temperature of blank or representative sample
Seal # at'chd by ◯	Recvd. Intact by ◯	Seal # at'chd by ◯	Recvd. Intact by ◯	At time of collection ____ °C At time of lab receipt ____ °C

ACCREDITED IN ACCORDANCE WITH nelac

Columbia Analytical Services™

2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Confirmation of Sample Receipt

To:	Guy Cote	**From:**	Kate Aguilera
Email:	guy@smemaine.com	**Email:**	KAguilera@caslab.com
Fax:	207-829-5692	**Fax:**	805-526-7270
Phone:	207-829-5016	**Phone:**	805-526-7161 x234

Samples for analysis have been received by Columbia Analytical Services on 4/29/09 and assigned our Service Request number **P0901459**. **Please verify the following information and notify me of any corrections as soon as possible.**

The estimated completion date for this work is: **5/13/09**

Client: Sevee & Maher Engineers, Inc.
Project: Quarterly & Annual Gas Analysis - Mt. Carberry/09004.02
PO Number: 09004.02

EDD Required: No
Tier: II

Report To: Guy Cote
Sevee & Maher Engineers, Inc.
4 Blanchard Road
PO Box 85a
Cumberland, ME 04021

Billing Address: Guy Cote
Sevee & Maher Engineers, Inc.
4 Blanchard Road
PO Box 85a
Cumberland, ME 04021

Comments: Canisters are backfilled with Helium.
The canister samples indicated on the CoC were shipped via FEDEX ground and will have a separate laboratory job number.

Thank you for your business!

A - Test is Authorized H - Test is On Hold P - Test is Authorized for Prep Only C - Test has been Cancelled * - Test has assigned QC

				ASTM D5504-01 Sulfur Bag	ASTM D5504-01 TRS H2S Bag
P0901459-001	SP-010-A	Air	4/28/09 1331	A	A
P0901459-002	SP-010-B	Air	4/28/09 1335	A	A
P0901459-003	SP-010-C	Air	4/28/09 1338	A	A

Test Comments:

Group	Test/Method	Samples	Comments
VOA GC AIR	ASTM D5504-01/TRS H2S Bag	1-3	Please include total TRS along with normal speciated 20 compound analysis.

FIELD DATA LOG FOR GROUND WATER SAMPLING

ROGERS & CALLCOTT ENGINEERS, INC.

Well Number:_____ ☐ Development ☐ Purging

Date:_____ Field Personnel:_____

Site Name/Location:_____

Page____ of ____

For Low Flow Sampling: Page _____ of _____

Method of Well Evacuation

Pump	Bailer
☐ Grundfos	☐ Non Disposable Teflon
☐ Submersible	☐ Disposable Teflon
☐ Peristaltic	☐ Disposable Poly
☐ Bladder	☐ Dedicated Teflon
☐ Waterra	☐ Dedicated PVC

☐ Continuous (Recovery Well)

☐ _____

One Volume Multiplier (gal/ft) = $\pi r^2 h$ (7.48) (r in feet)
Well Diameter (gal/ft.) 1"= 0.041; 2"= 0.163; 3"= 0.367
4"= 0.653; 6"= 1.470

Water Volume Calculations

Initial Depth to Ground Water (a):_____@_____
Total Depth of Well (b):_____
Length of Water Column in Well (b-a):_____
Well Casing Diameter (inches):_____
Depth to Immiscible Layer:_____

# of Casings	Gallons to be Removed	Gallons / mLs Removed
1 Casing Vol = (b-a) x Multiplier		
3 Casing Vol		

Circle One that Applies

Measuring Point: TOC / Ground Surface
Riser Material: PVC / Steel / Teflon
Steel Protective Casing? Yes / No
Bollards? Yes / No
Flush Mount? Yes / No
Well Locked? Yes / No
Well Pad Condition? Okay / _____
Well Integrity Satisfactory? Okay / _____
Vegetation: Overgrown/ Moderate/ Light/ None

Water Removal / Field Analysis Data

Date	Time	Increment	Removal Rate (gal/m) or (ml/m)	Water Level, (feet)	Water Volume Removed (gal) or (ml)	pH (units) ± 0.1-Stable	Temp (°C)	Conductivity (uS/cm) 10%-Stable	Dissolved Oxygen (mg/L)	Hydrogen Sulfide (ppm)	ORP (mVolts)	Odor (Subj*)	Turbidity (NTU)	Comments

Weather Conditions/~Temp:_____/_____°F

** Subjective (1) None (2) Slight (3) Moderate (4) Strong*

Well Yield: (Low/ Moderate/ High) Sample Clarity:_____ Precipitate:_____ Fe^{+2} mg/L=_____

Sample Collection Time _____

Comments _____

Reviewed by: _____ Date: _____

Revised 2/3/09

Rogers and Callcott Enginers

Continuing Calibration Verification

Client: _____ Date: _____

Conductivity Meter
EPA 9050A

Meter Make / Model: YSI EC300 SN: _____ Probe: _____

Time	Analyst	Conc. of Standard, µmhos/cm @25°C	Actual Reading of Standard, µmhos/cm
			@ _____ °C
			@ _____ °C

pH Meter
EPA 9040C

Meter Make / Model: YSI pH100 SN: _____ Probe: _____

Time	Analyst	Conc. of Buffer, units	Actual Reading of Buffer, units

Turbidity Meter
Field Screen Method

Meter Make / Model: Hach 2100P SN: _____

Time	Analyst	Assigned Conc. of Standard, NTU	Actual Reading of Standard, NTU

Field Duplicate

Well ID: _____

Time	Analyst	Conductivity, µmhos/cm	pH, units	Turbidity, NTU	Temperature, °C

Note: Refer to daily calibration log for instrument calibration and chemical inventory information / documentation.

Reviewed by: _____ Date: _____

Revised 03/18/09

Rogers and Callcott Enginers

Field Meter Calibration Record

Client: _____ **Date:** _____

Conductivity Meter Calibration
EPA 9050A

Meter Make / Model: YSI EC300 SN: _____ Probe: _____

Time: _____ Analyst: _____ Cell Constant _____

Chemical Inventory	Conc. of Standard, µmhos/cm @25°C		Actual Reading of Standard, µmhos/cm	Actual Reading of Standard, @ Temperature, °C
	SSS conc:			

Temperature compensation for conductivity meter : _____

Note: Temperature is recorded from the conductivity meter for reporting purposes.

pH Meter Calibration
EPA 9040C

Meter Make / Model: YSI pH100 SN: _____ Probe: _____

Time: _____ Analyst: _____ Slope: _____

Chemical Inventory	Conc. of Buffer, units		Actual Reading of Buffer, units
	4.0		
	7.0		
	10.0		
	SSS conc:		

Temperature compensation for pH meter : _____

Note: Temperature is recorded from the conductivity meter for reporting purposes.

Turbidity Meter Calibration
Field Screen Method

Meter Make / Model: Hach 2100P SN: _____ Date of most recent calibration: _____

Time: _____ Analyst: _____

Chemical Inventory	Assigned Conc. of Standard, NTU	Actual Reading of Standard, NTU

Reviewed by: _____ Date: _____

Revised 03/18/09

APPENDIX B

MONITORING WELL INSTALLATION DIAGRAMS

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	NO. OF BLOWS, N	RELATIVE DENSITY
SANDS:	0-4	Very Loose
	5-10	Loose
	11-20	Firm
	21-30	Very Firm
	31-50	Dense
	OVER 50	Very Dense

		CONSISTENCY
SILTS & CLAYS:	0-2	Very Soft
	3-4	Soft
	5-8	Firm
	9-15	Stiff
	16-30	Very stiff
	31-50	Hard
	OVER 50	Very Hard

PARTICAL SIZE IDENTIFICATION

BOULDERS:		Greater than 300 mm
COBBLES:		75 mm to 300 mm
GRAVEL:	Coarse -	19.0 mm to 75 mm
	Fine -	4.75 mm to 19.0 mm
SANDS:	Coarse -	2.00 mm to 4.75 mm
	Medium -	0.425 mm to 2.00 mm
	Fine -	0.075 mm to 0.425 mm
SILTS & CLAYS:		Less than 0.075 mm

KEY TO DRILLING SYMBOLS

- Undisturbed Sample
- Split Spoon Sample
- Water Table 24 HR.
- Water Table at Time of Drilling
- Pressuremeter Test
- Loss of Drilling Water

KEY TO SOIL CLASSIFICATIONS

- ASPHALT
- CL - Low plasticity inorganic clays
- CH - High plasticity inorganic clays
- ML - Low plasticity inorganic silts and very fine sands
- MH - High plasticity inorganic silts
- SP - Poorly graded sands
- SW - Well graded sands
- GP - Poorly graded gravels
- PARTIALLY WEATHERED ROCK - A transitional material between soil and rock which retains the relict structure of the parent rock.
- CONCRETE
- GW - Well graded gravels
- OL - Low plasticity organic silts and clays
- OH - High plasticity organic silts and clays
- SM - Silty sands
- GM - Silty gravels
- SC - Clayey sands
- GC - Clayey gravels
- SP-SM - Typical Dual Classification

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-1A

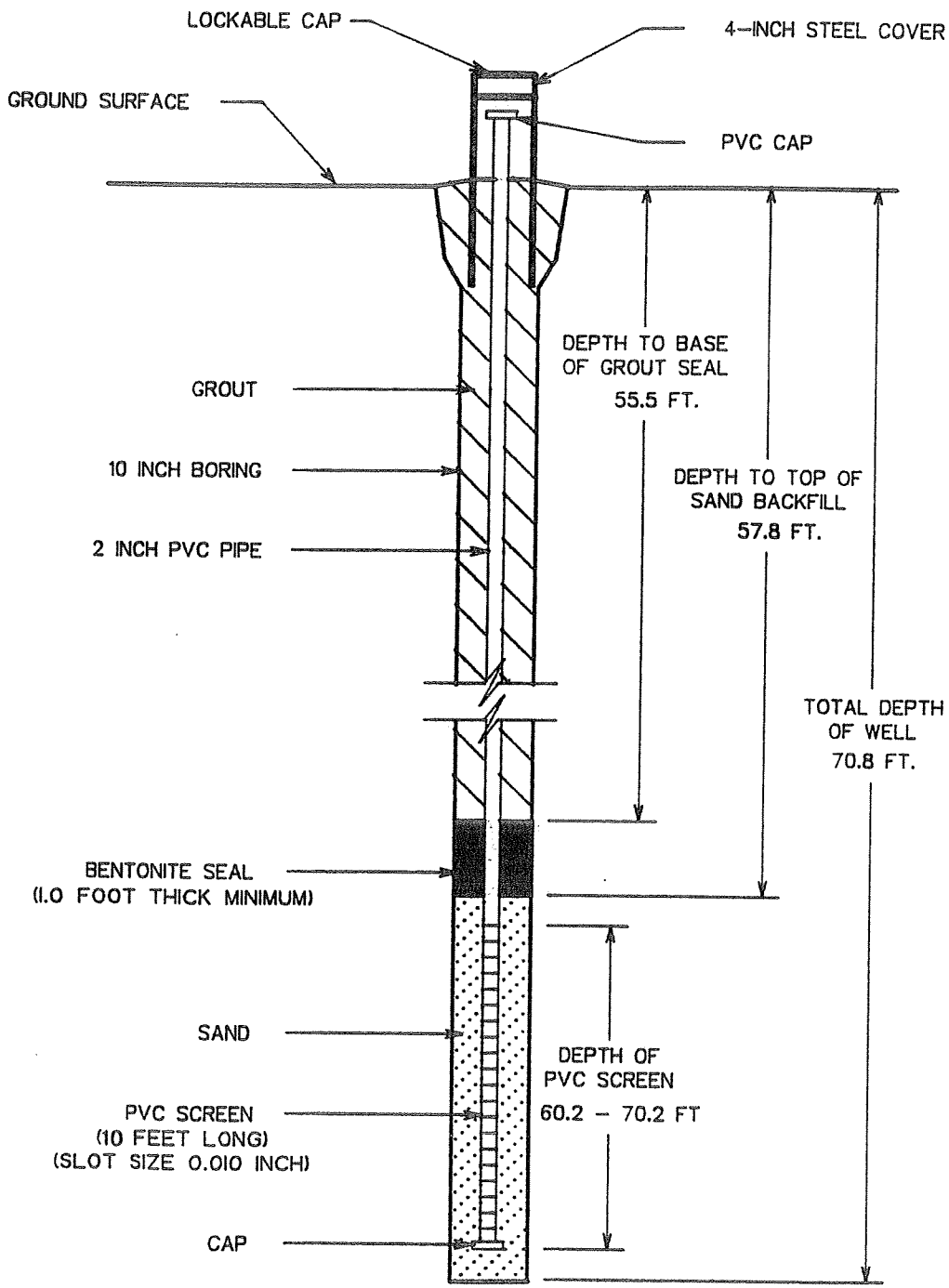
GROUND SURFACE ELEVATION 2765 FT. (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/29/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL
INSTALLATION RECORD
CHAMPION LANDFILL NO. 6A
CANTON, SOUTH CAROLINA

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0	Hard moist reddish brown fine sandy micaceous SILT relic foliation - high angle - Residuum.		41
7.0	Hard dry reddish brown very micaceous SILT - relic foliation.		32
12.0	Very hard dry red to brown medium sandy micaceous SILT with relic structure.		54
18.0	Very hard dry tan to brown medium to coarse sandy micaceous SILT with relic structure.		74
			50=5.5"
27.0	Hard moist gray to reddish brown fine sandy very micaceous SILT with relic structure.		45
32.0	Hard moist gray to green minor medium sandy very micaceous SILT with relic structure.		41
38.0	Hard moist medium to dark gray minor medium sandy very micaceous SILT with relic structure.		39

REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	MW- 1A
DATE DRILLED	January 27, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 2	

LAW ENGINEERING

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
43.0	Hard moist brown to gray fine to medium sandy micaceous SILT with relic structure.		32
48.0	Very stiff wet dark gray fine to medium sandy micaceous SILT with relic structure.		20
53.0	Hard wet tan to gray fine to medium sandy micaceous SILT with layering.		40
58.0	Partially weathered rock which sampled as (wet gray fine to medium sandy micaceous SILT with layering).		50=5"
63.0	Partially weathered rock which sampled as (wet brown fine to medium sandy micaceous SILT with layering).		50=3"
68.0	Partially weathered rock which sampled as wet light to dark brown medium to coarse sandy micaceous SILT with layering.		50=4.5"
70.8	Boring terminated at 70.8 feet. Auger refusal at 70.8 feet. Ground water encountered at 47.32 feet after 24 hours. Monitoring well installed to 70.2 feet on January 29, 1992.		

REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	MW- 1A
DATE DRILLED	January 27, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 2 OF 2	

LAW ENGINEERING

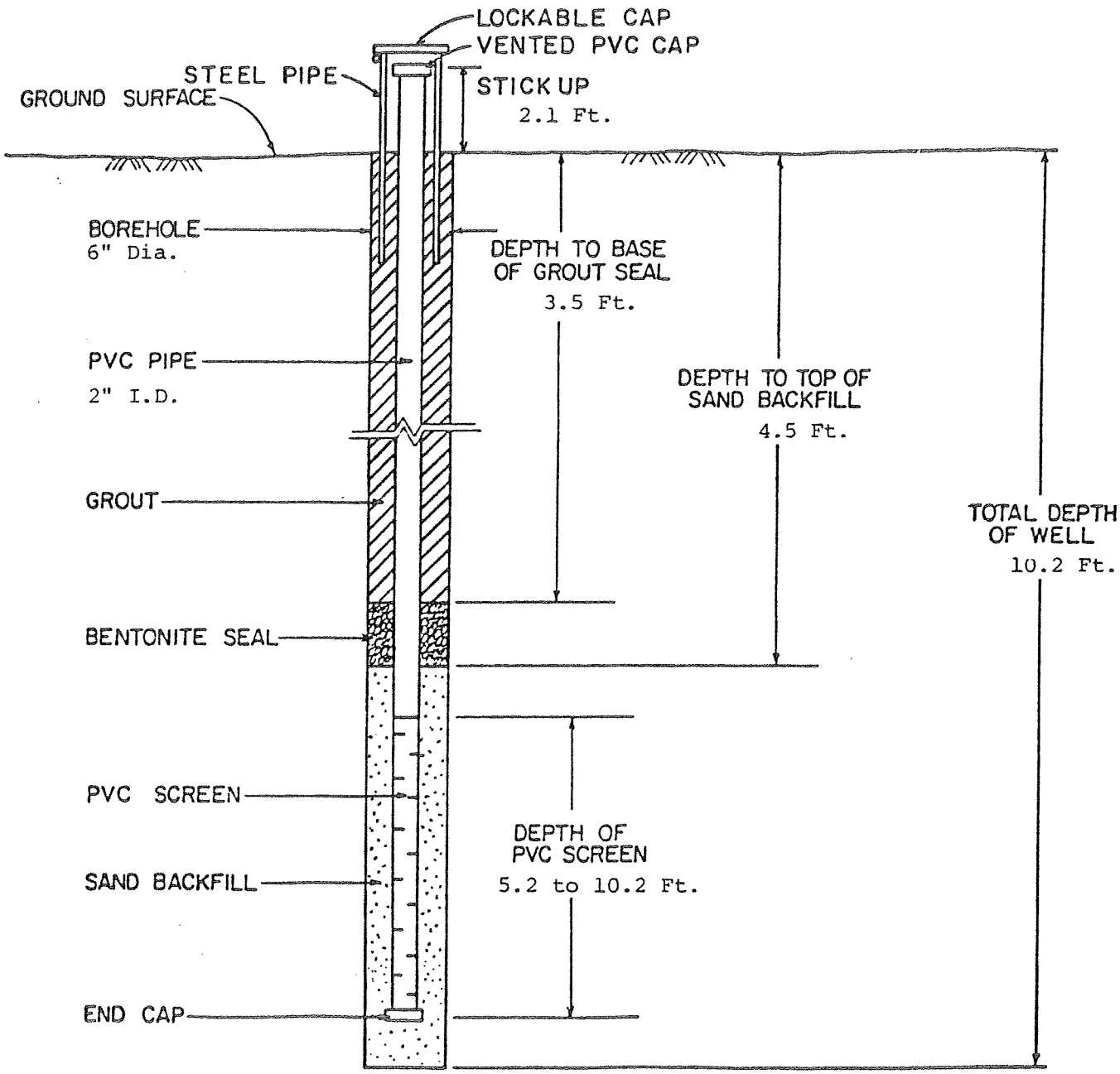
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-2 GROUND SURFACE ELEVATION 2595.31 Ft.

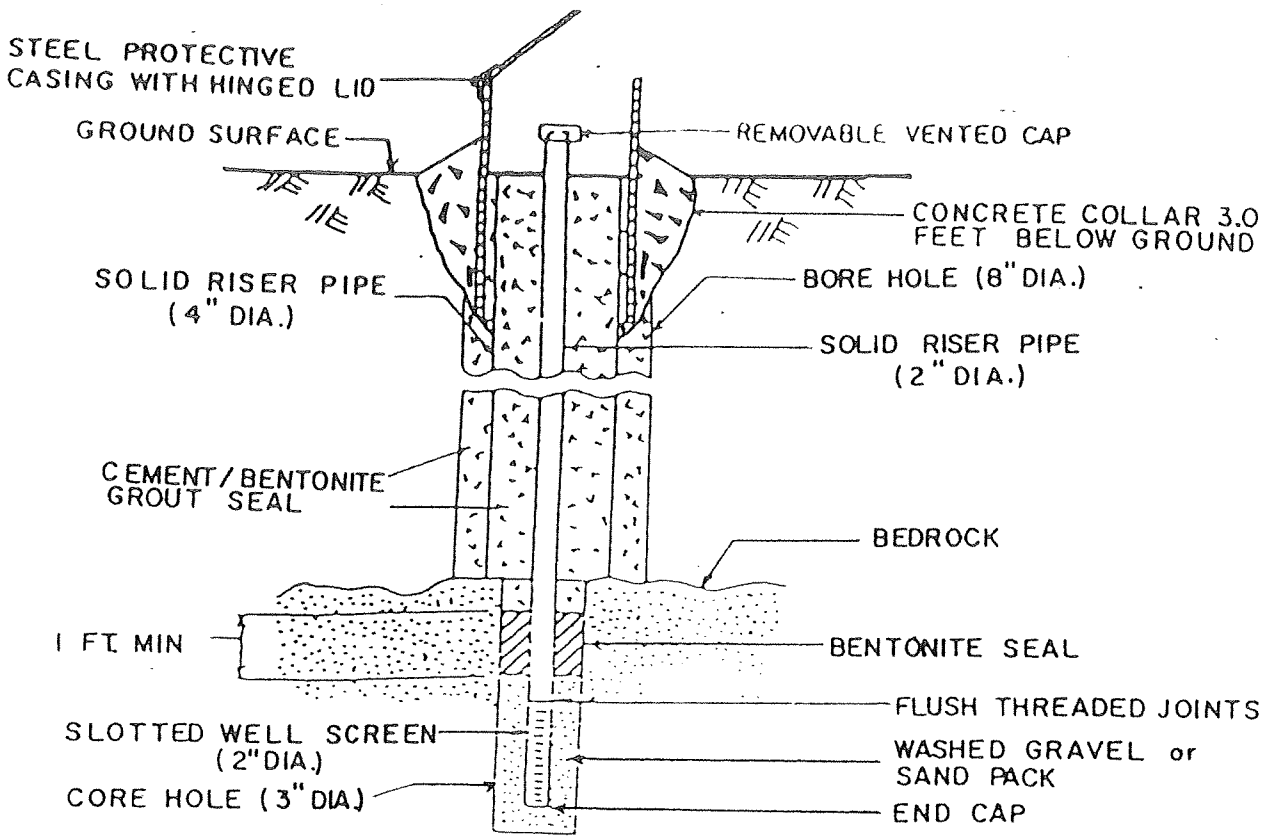
LOCATION Southwest of Area F

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-2

TYPICAL DIAGRAM – TYPE III MONITORING WELL



MONITORING WELL INSTALLATION DETAILS

WELL NUMBER	MW-3A				
GROUND ELEVATION (FT.)	--				
GROUND WATER ELEVATION (FT.) MEASURED ON:	--				
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	17.5				
MEASURING POINT ELEVATION (FT.)	--				
SCREEN LENGTH (FT.)	10.0				
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	7.5				
PVC HEIGHT ABOVE GROUND (FT.)	2.5				
THICKNESS OF BENTONITE SEAL	1.2				
THICKNESS OF CEMENT SEAL	4.0				
4 INCH DIAMETER PVC LENGTH BELOW GROUND SURFACE (FT.)	5.0				

Champion International
Canton Landfill
Haywood County, N.C.

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INSTALLATION DETAILS
TYPE III MONITORING WELLS

JOB NO. AV-1834 | FIGURE 2

DEPTH FT.	DESCRIPTION	CORE SIZE	% @ TIME MIN.	ELEV.	REMARKS	% R Q D
	Partially weathered rock sampled as red brown and black gray fine to coarse sandy SILT Auger refusal at 5 feet, moved 20 feet. Auger **	NQ			N = 50/1" N = 50/0"	
5.0	Hard to very hard white and light gray mica gneiss	100			Weathering slight to fresh 5.0 to 35.3 ft.	100
		100			Severly iron stained and soil filled joint Steep dip 15.6 to 17.1 ft	100
		100			◁ S	95
	** bore 0 to 5 feet. Auger refusal at 5 feet, set and grouted 4" PVC casing to 5 feet. Begin NQ coring	100			Iron and manganize stained joint Steep dip 25.3 to 25.5 ft.	100
		100			◁ S Closely to very closely spaced joints Low dip 32.5 to 33.4 ft.	100
		100			Very closely spaced Healed joints 33.4 to 33.7	98
35.3					◁ L	
	Coring terminated at 35.3 feet Boring terminated at 35.3 feet Monitoring well installed to 17.5 feet (see Figure 2 for details) Ground water measured at 0.5 feet after 24 hours	100				

NOTE: Boring MW-3B was backfilled with soil.

TEST BORING RECORD

BORING NO. MW-3A, B

DATE DRILLED 10-30-87

JOB NO. AV-1834

LAW ENGINEERING TESTING CO.

|50| % ROCK CORE RECOVERY — WATER TABLE, 1 HR.

N - STANDARD PENETRATION ◁ LOSS OF DRILLING WATER

R.Q.D. ROCK QUALITY DESIGNATION

◁ ROCK JOINT:

L = LOW DIP 0–30°

M = MED. DIP 30°–60°

S = STEEP DIP 60°–90°

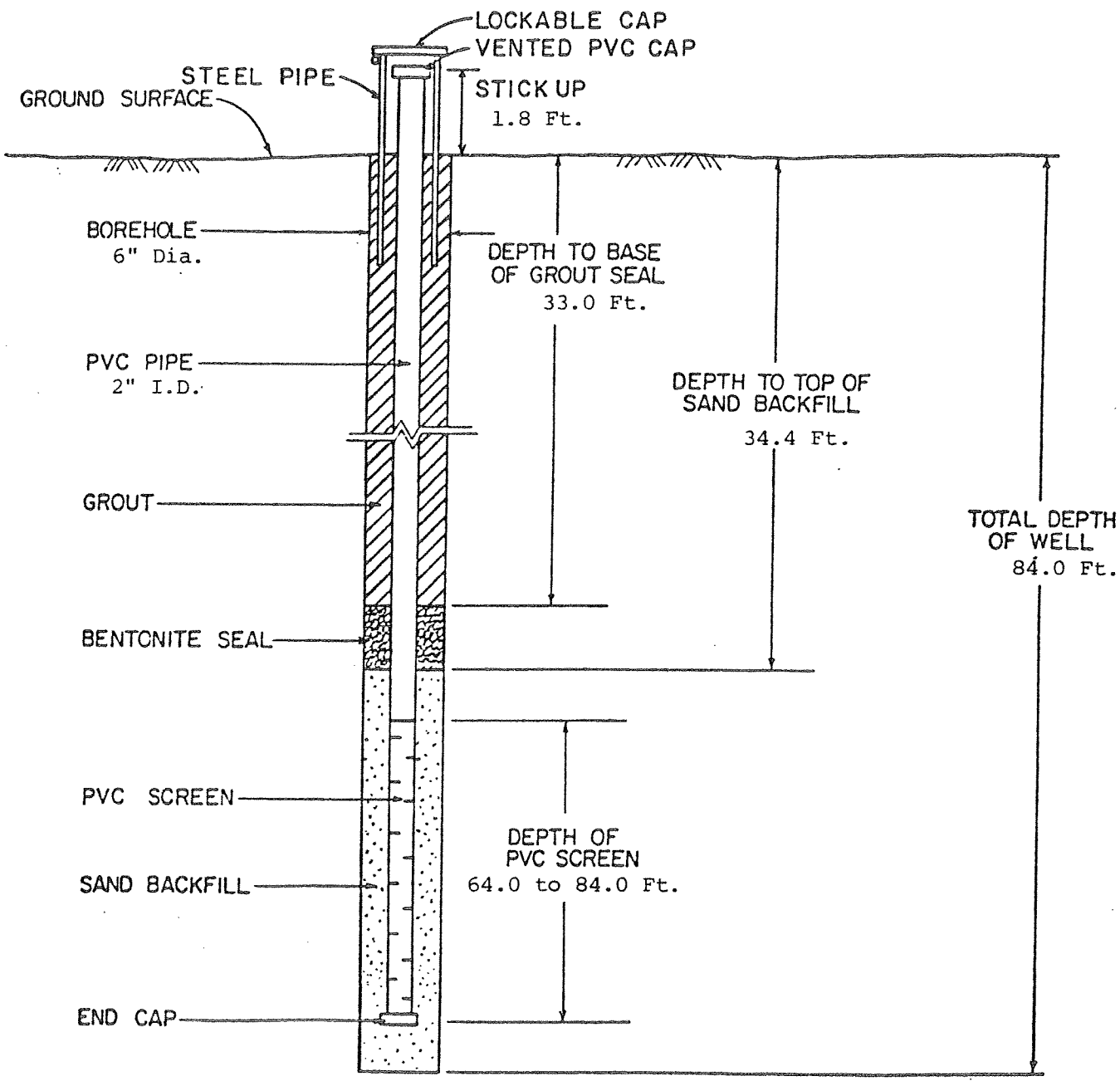
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

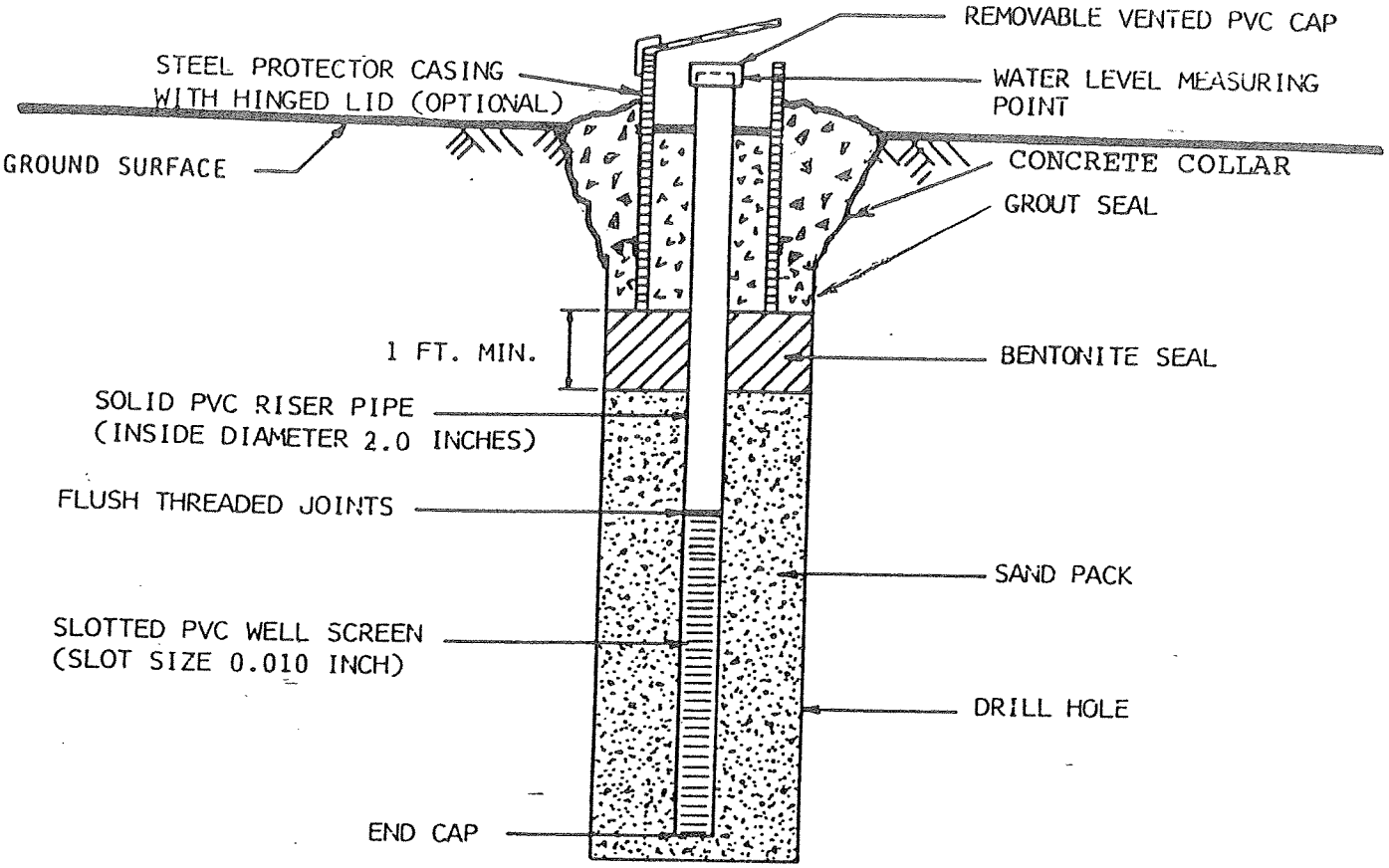
WELL NUMBER MW-4 GROUND SURFACE ELEVATION 2629.63 Ft.

LOCATION Southeast of Area B

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-4



TYPICAL DIAGRAM OF MONITORING WELLS
(NOT TO SCALE)

MONITORING WELL INSTALLATION DETAILS

WELL NUMBER	MW-5A	MW-7A	MW-13		
GROUND ELEVATION (FT.)	---	---	---		
GROUND WATER ELEVATION (FT.) MEASURED ON:	---	---	---		
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	42.0	23.5	34.0		
MEASURING POINT ELEVATION (FT.)	---	---	---		
SCREEN LENGTH (FT.)	10.0	10.0	10.0		
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	32.0	13.5	24.0		
PVC HEIGHT ABOVE GROUND (FT.)	2.5	2.5	2.5		
THICKNESS OF BENTONITE SEAL (FT.)	1.1	1.3	1.5		
THICKNESS OF CEMENT SEAL (FT.)	28.3	9.5	19.6		

NOTES:

Champion International
Canton Landfill
Haywood County, N.C.

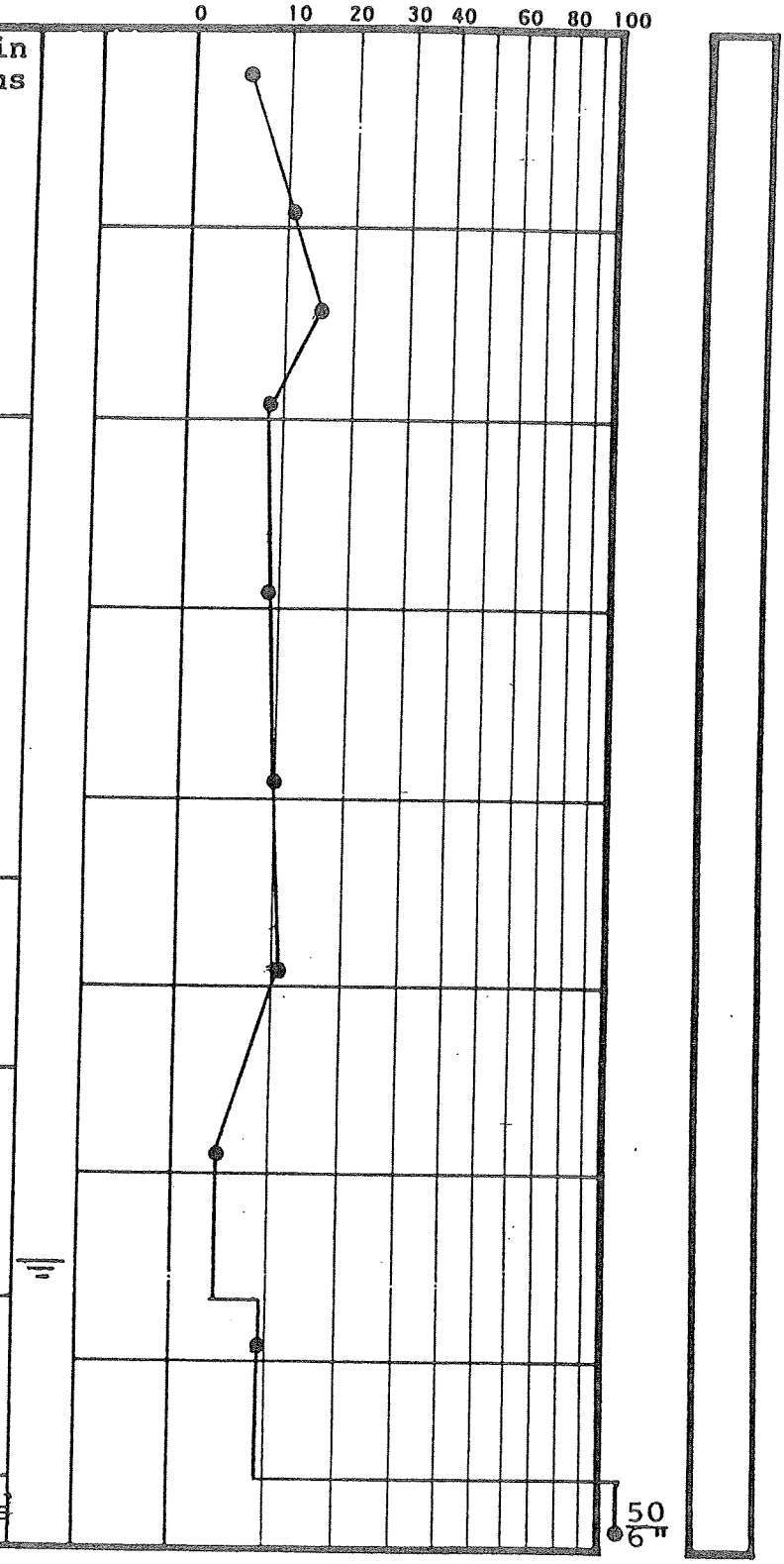
LAW ENGINEERING

MONITORING WELL INSTALLATION DETAILS

JOB NO. AV-1834

FIGURE 3

DEPTH FT.	DESCRIPT	PENETRATION-BLOWS PER FT.
0.0	6-inches of pea gravel underlain by firm to stiff brown micaceous fine to medium sandy SILT with rock fragments - Fill	
10.0	Stiff red brown and tan brown micaceous fine to medium sandy SILT - Fill	
22.0	Stiff brown clayey micaceous fine to coarse sandy SILT-Fill	
27.0	Firm brown micaceous fine to coarse sandy SILT - Fill	
33.0	Stiff gray brown micaceous fine to medium sandy SILT - Residuum	
38.0	Partially weathered rock sampled as tan gray brown silty micaceous fine to coarse SAND	



BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. MW-5A

DATE DRILLED 10-29-87

JOB NO. AV-1834

PAGE 1 OF 2

LAW ENGINEERING TESTING COMPANY

DEPTH FT.	DESCRIPTI	PENETRATION-BLOWS PER FT. 0 10 20 30 40 60 80 100
38.0	Partially weathered rock sampled as tan gray brown silty micaceous fine to coarse SAND	
42.0	Auger refusal at 42.0 feet Boring terminated at 42.0 feet Monitoring well installed to 42.0 feet (see Figure 3 for details) Ground water measured at 32.3 feet after 24 hours	

BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. MW-5A

DATE DRILLED 10-29-87

JOB NO. AV-1834

PAGE 2 OF 2

LAW ENGINEERING TESTING COMPANY

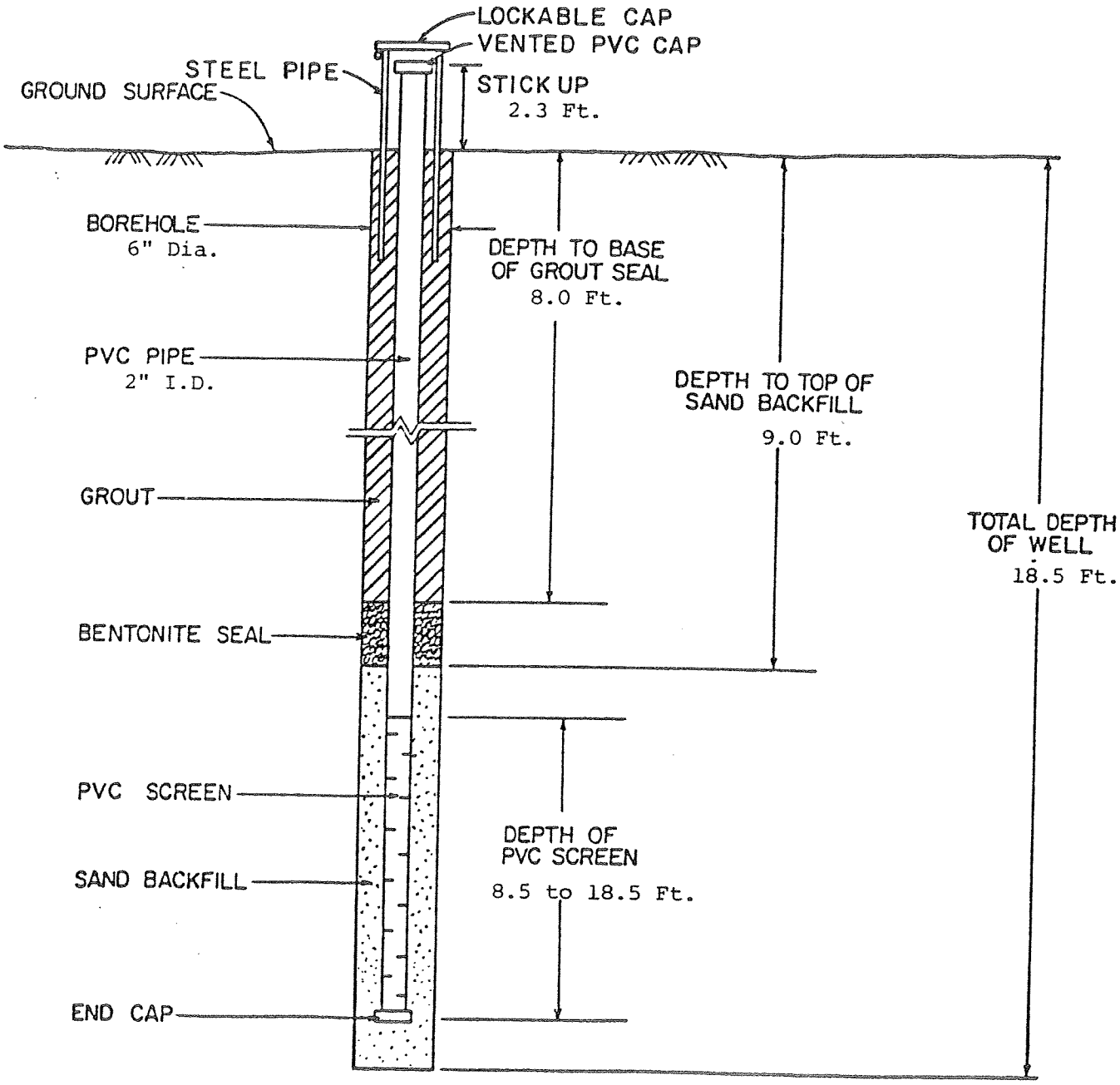
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

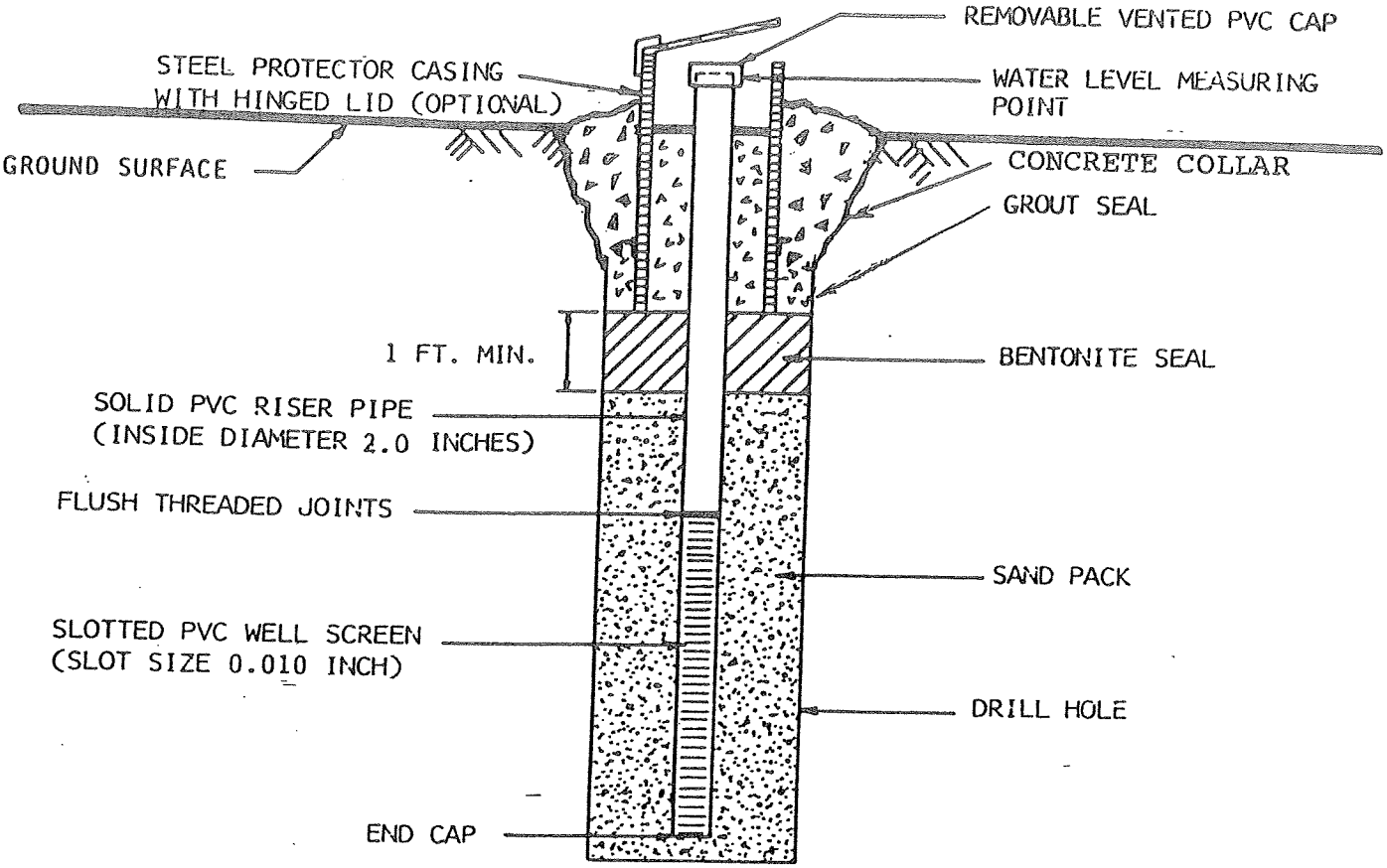
WELL NUMBER MW-6 GROUND SURFACE ELEVATION 2549.72 Ft.

LOCATION South - Southeast of Area C

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-6



TYPICAL DIAGRAM OF MONITORING WELLS
(NOT TO SCALE)

MONITORING WELL INSTALLATION DETAILS

WELL NUMBER	MW-5A	MW-7A	MW-13		
GROUND ELEVATION (FT.)	---	---	---		
GROUND WATER ELEVATION (FT.) MEASURED ON:	---	---	---		
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	42.0	23.5	34.0		
MEASURING POINT ELEVATION (FT.)	---	---	---		
SCREEN LENGTH (FT.)	10.0	10.0	10.0		
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	32.0	13.5	24.0		
PVC HEIGHT ABOVE GROUND (FT.)	2.5	2.5	2.5		
THICKNESS OF BENTONITE SEAL (FT.)	1.1	1.3	1.5		
THICKNESS OF CEMENT SEAL (FT.)	28.3	9.5	19.6		

NOTES:

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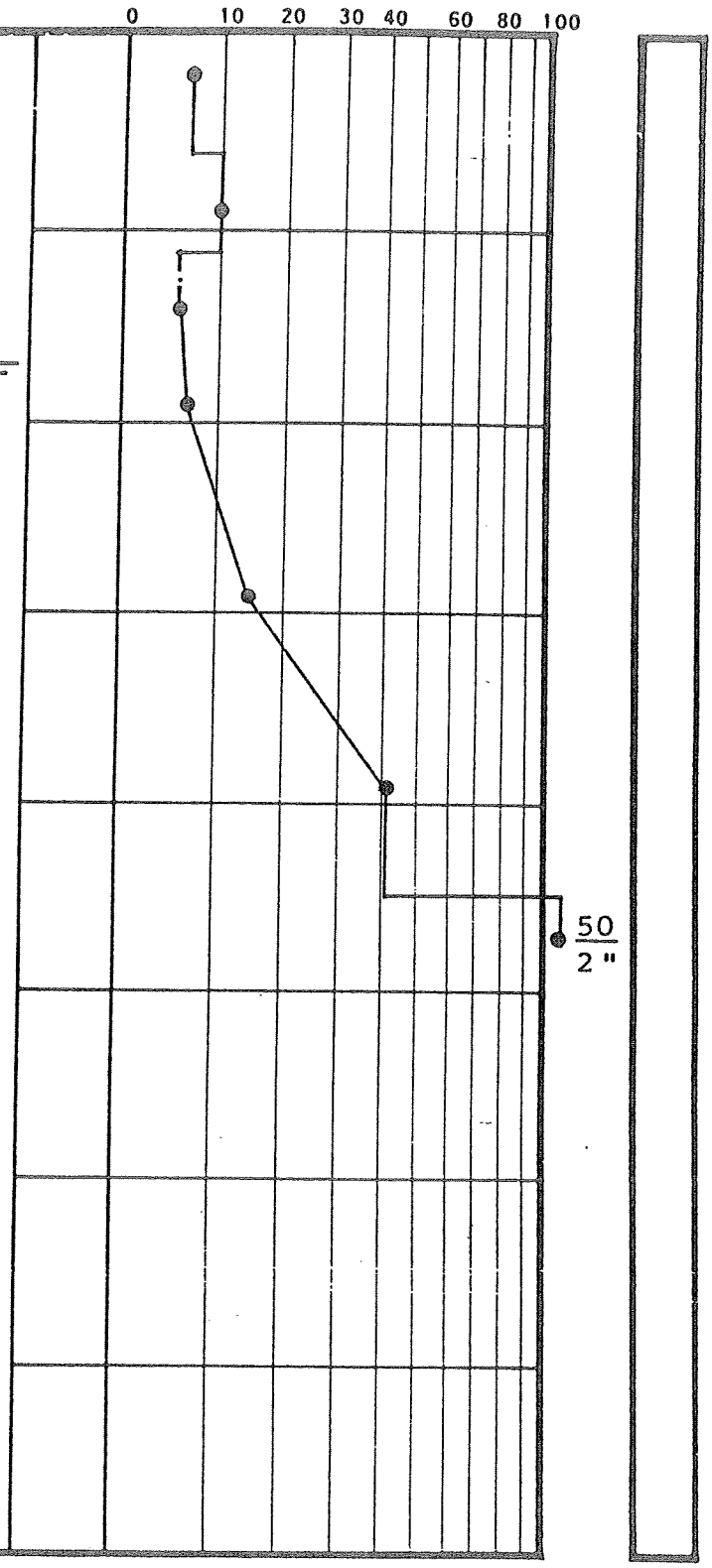
MONITORING WELL INSTALLATION DETAILS

JOB NO. AV-1834 FIGURE 3

DEPTH FT.	DESCRIPTI	PE RATION-BLOWS PER FT.
0.0	Firm brown clayey micaceous fine to coarse sandy SILT - Fill	
3.0	Stiff gray tan micaceous fine to medium sandy SILT - Possible Residuum or Alluvium	
5.5	Firm gray brown fine sandy SILT - Residuum Boulders 11 feet to 12.5 feet	
12.5	Stiff to hard gray tan micaceous fine to coarse sandy SILT with rock fragments	
22.5	Partially weathered rock sampled as tan brown fine to coarse sandy SILT	50/2"
25.0	Boring terminated at 25.0 feet Monitoring well installed to 23.5 feet (see Figure 3 for details) Ground water measured at 8.5 feet after 24 hours	



BORING AND SAMPLING MEETS ASTM D-1586
CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE
50 % ROCK CORE RECOVERY
WATER TABLE, 24 HR.
WATER TABLE, 1 HR.
LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. MW-7A
DATE DRILLED 10-27-87
JOB NO. AV-1834
PAGE 1 OF 1

LAW ENGINEERING TESTING COMPANY

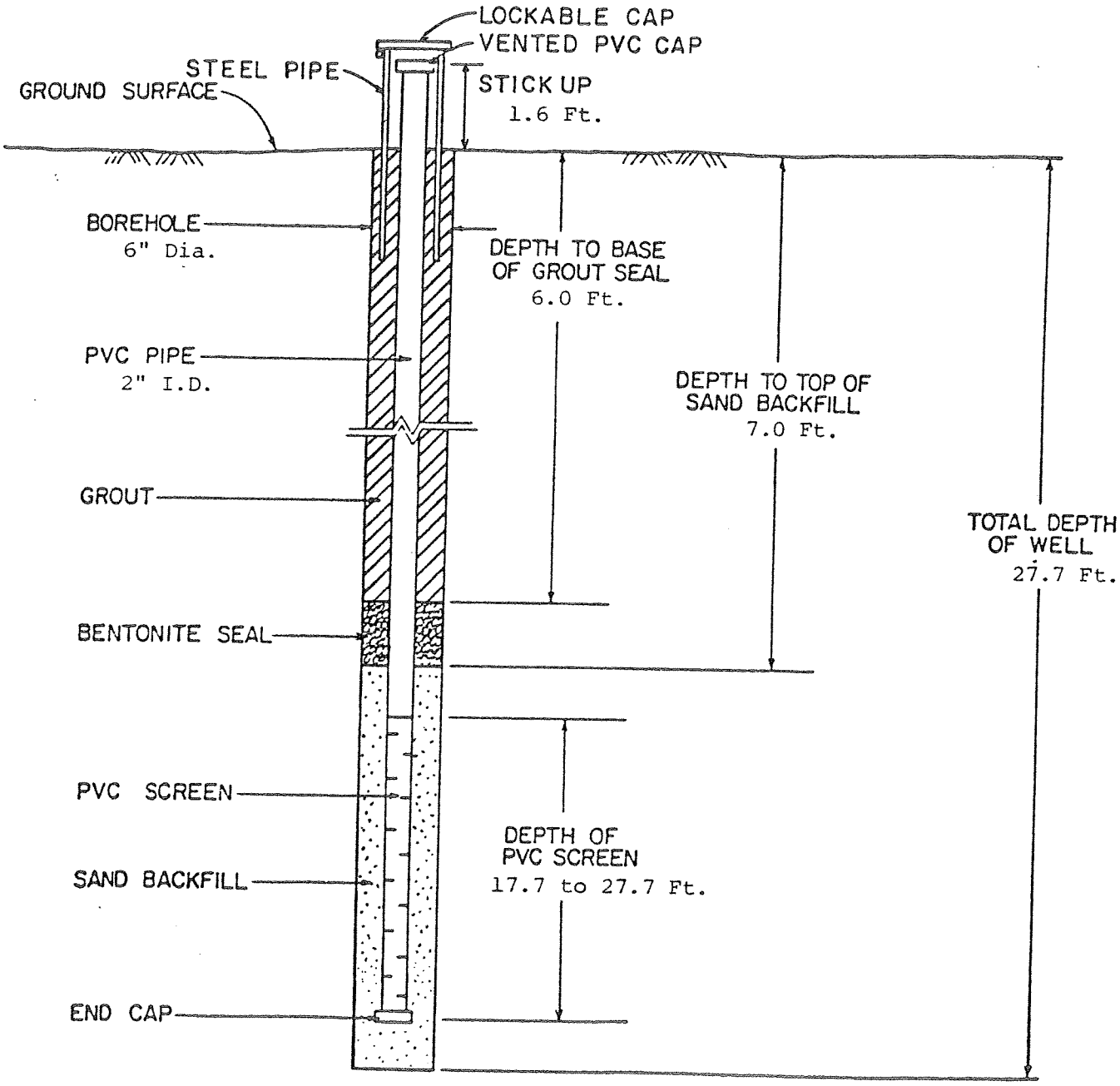
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-8 GROUND SURFACE ELEVATION 2594.39 Ft.

LOCATION South of Area D

INSTALLATION DATE 7-8-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-8

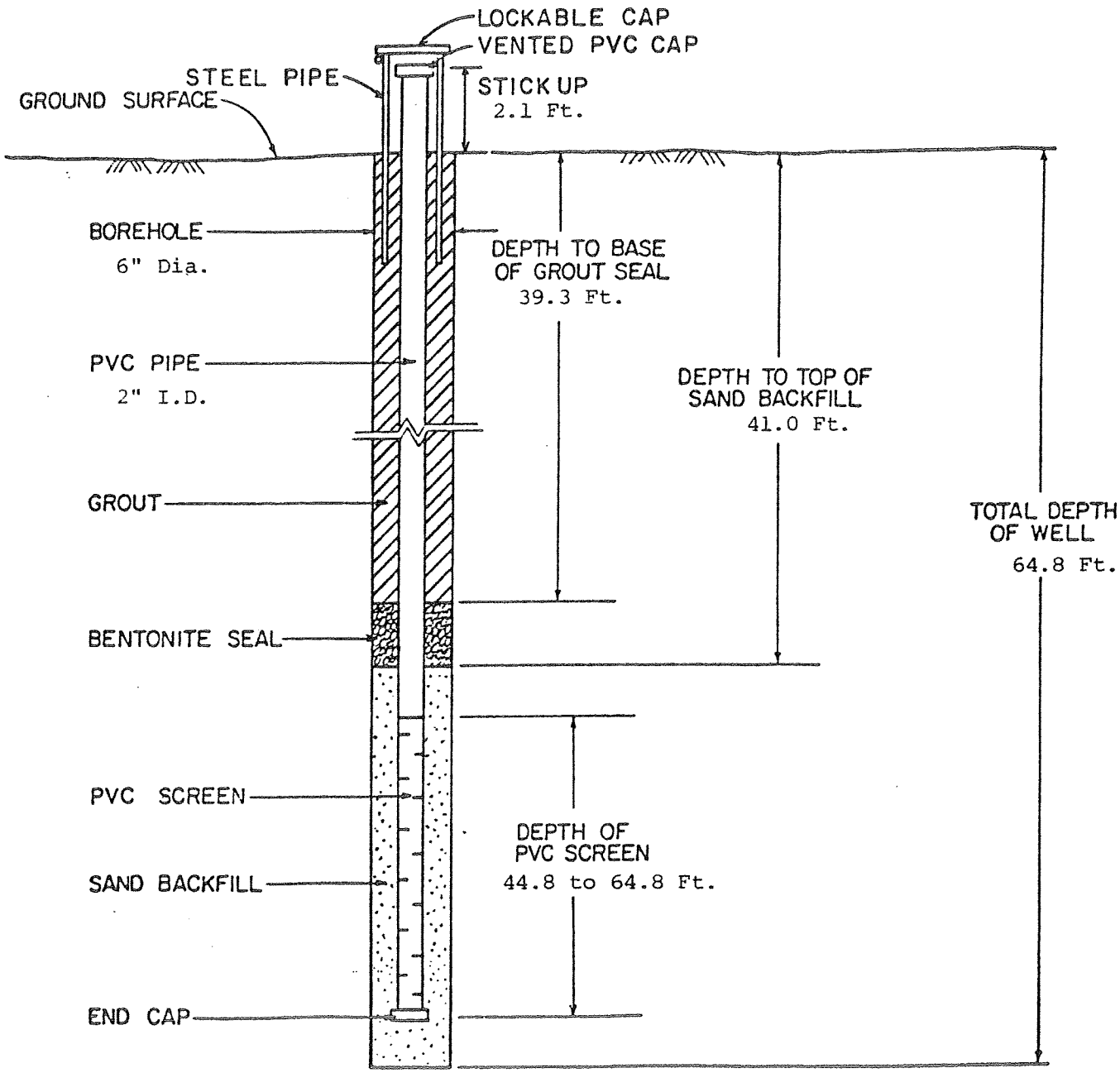
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-9 GROUND SURFACE ELEVATION 2684.02 Ft.

LOCATION West of Area D

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-9

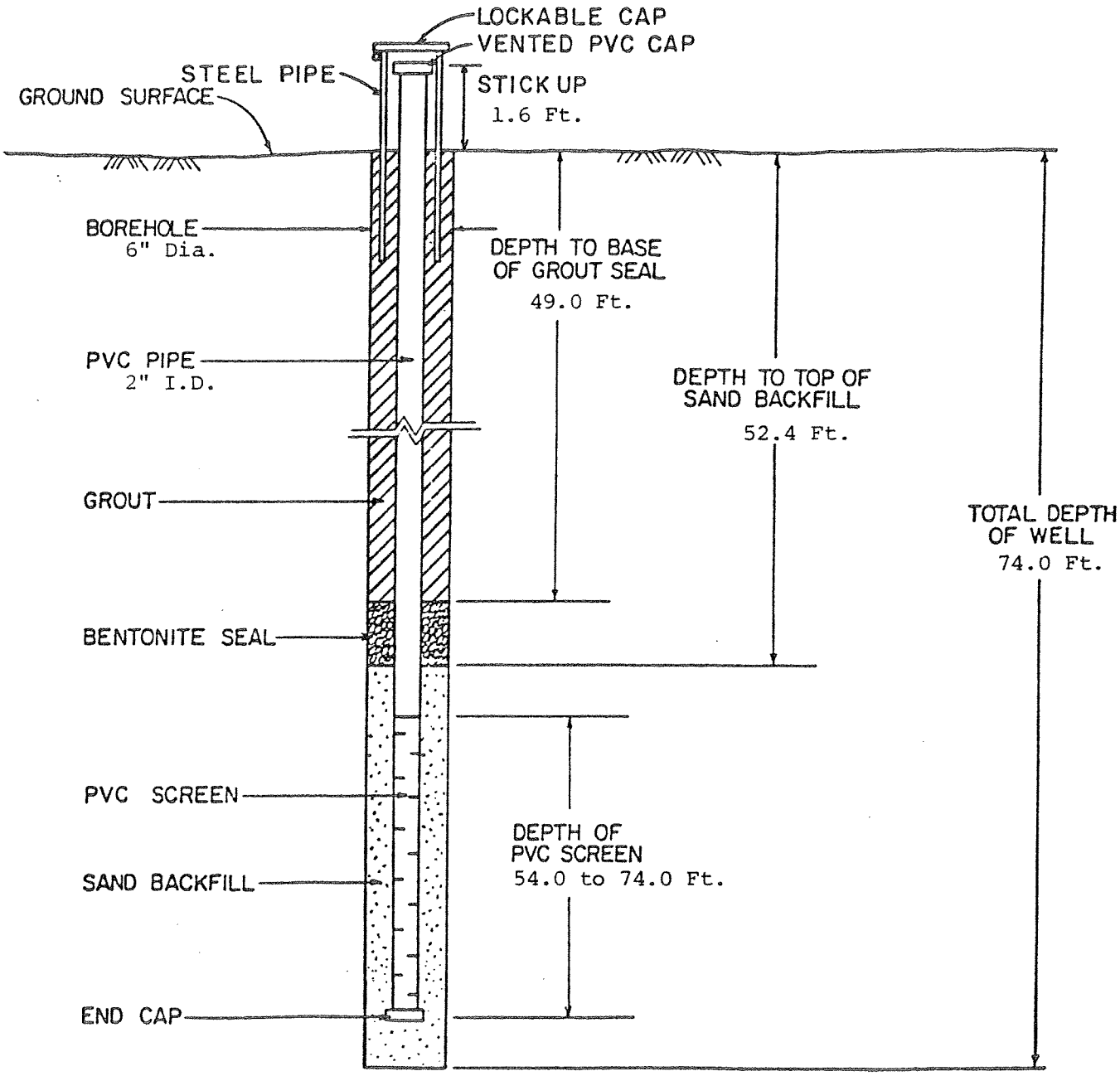
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-10 GROUND SURFACE ELEVATION 2677.78 Ft.

LOCATION West of Area E

INSTALLATION DATE 7-7-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-10

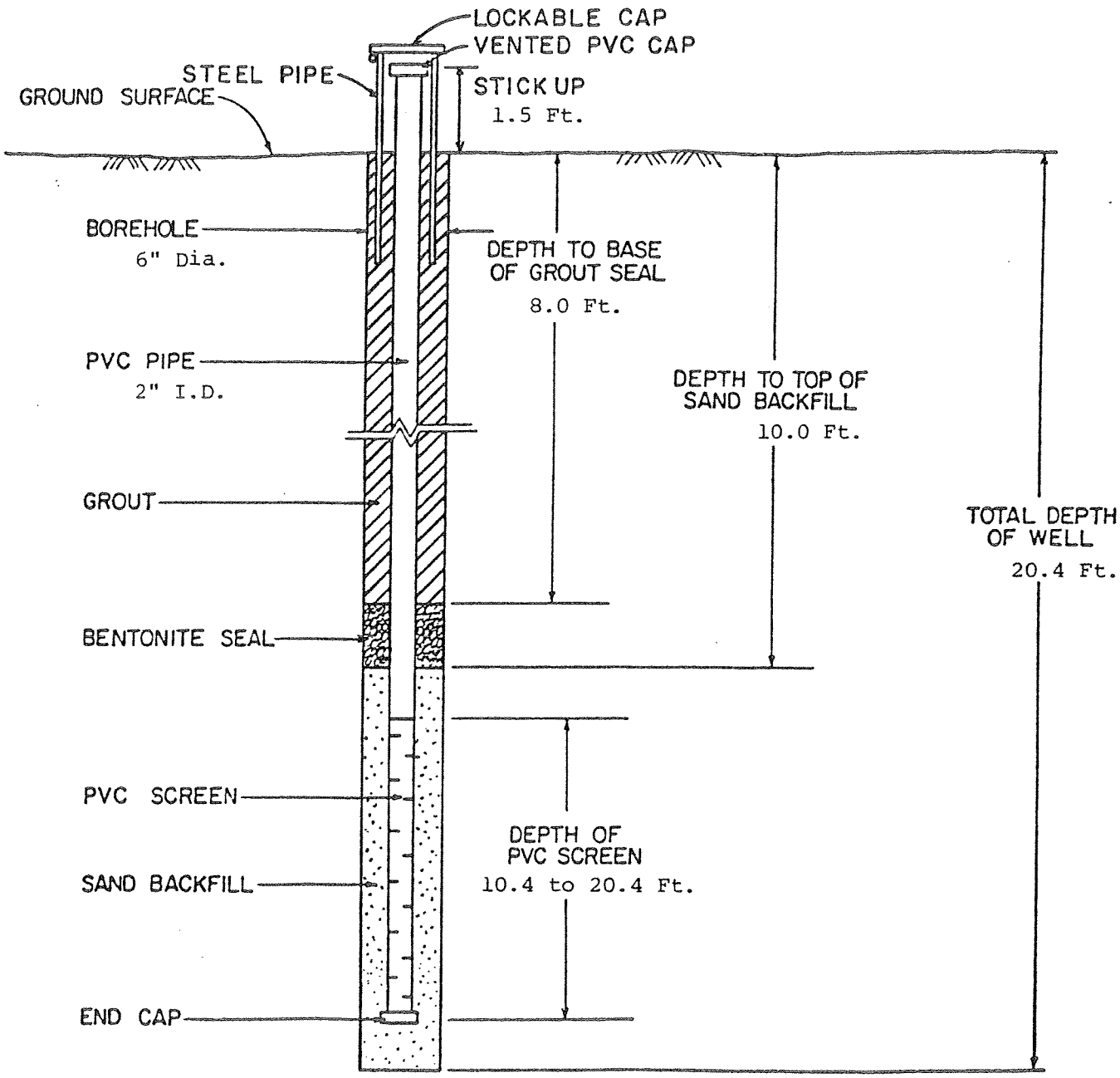
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

WELL NUMBER MW-11 GROUND SURFACE ELEVATION 2639.44 Ft.

LOCATION West of Area E

INSTALLATION DATE 7-8-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-11

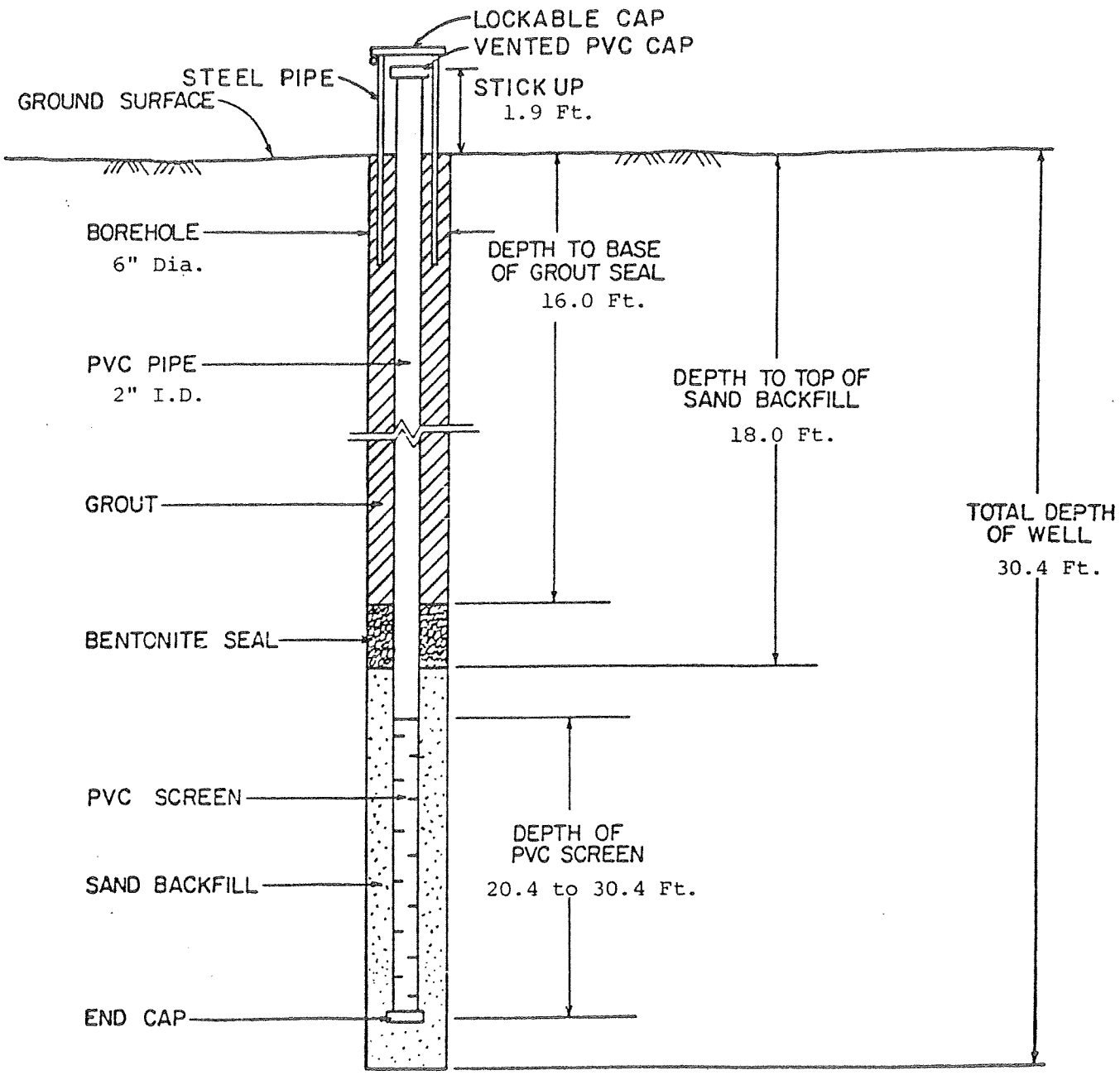
MONITORING WELL INSTALLATION RECORD

JOB NAME Landfill No. 6 JOB NUMBER CH 4507 C

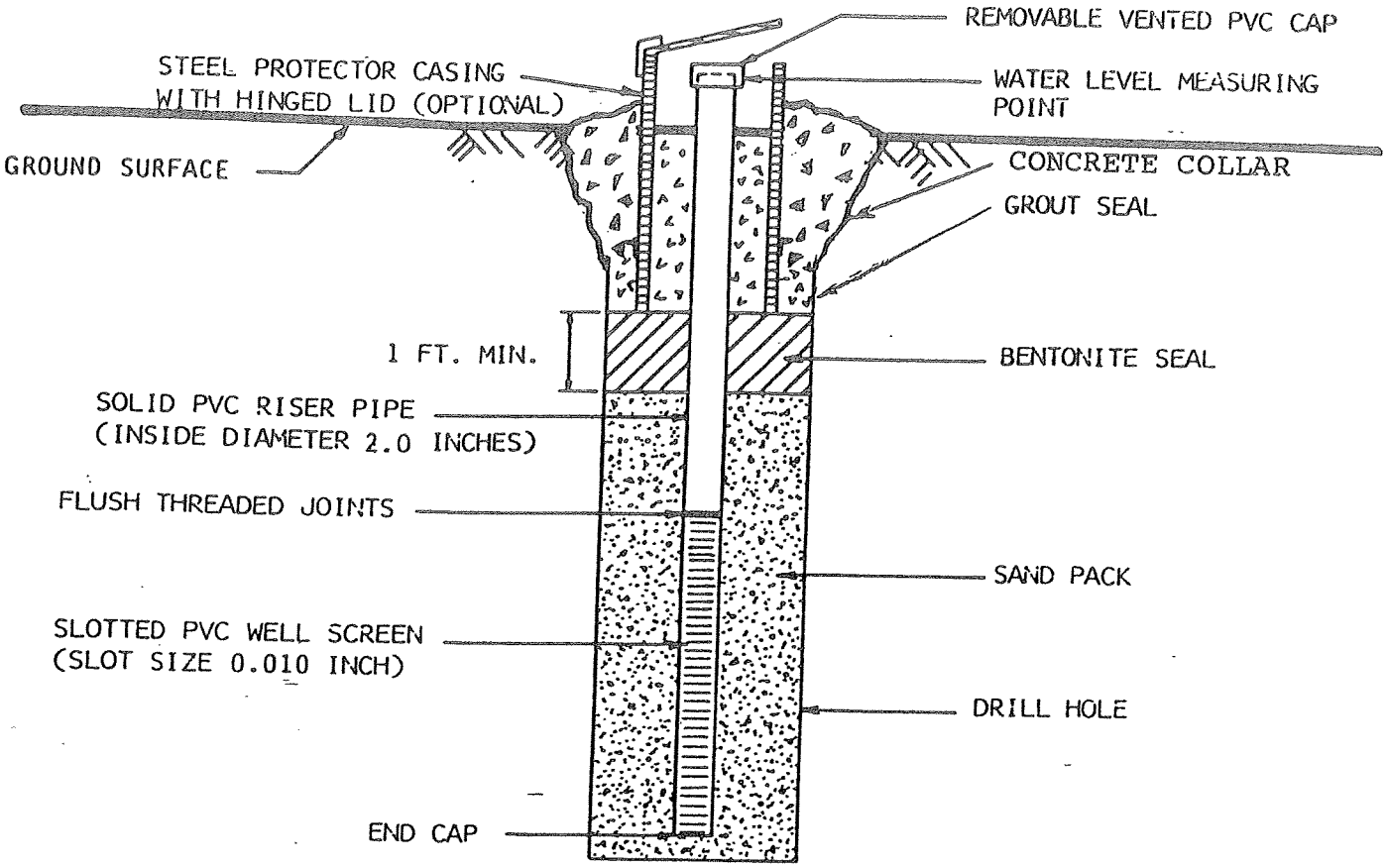
WELL NUMBER MW-12 GROUND SURFACE ELEVATION 2543.73 Ft.

LOCATION Northwest of Junction of Bowen Branch and Pigeon River

INSTALLATION DATE 7-6-83



Champion Papers Canton, North Carolina	LAW ENGINEERING TESTING COMPANY CHARLOTTE, NORTH CAROLINA	MONITORING WELL INSTALLATION RECORD MW-12



TYPICAL DIAGRAM OF MONITORING WELLS
(NOT TO SCALE)

MONITORING WELL INSTALLATION DETAILS

WELL NUMBER	MW-5A	MW-7A	MW-13		
GROUND ELEVATION (FT.)	---	---	---		
GROUND WATER ELEVATION (FT.) MEASURED ON:	---	---	---		
TOTAL DEPTH OF WELL BELOW GROUND SURFACE (FT.)	42.0	23.5	34.0		
MEASURING POINT ELEVATION (FT.)	---	---	---		
SCREEN LENGTH (FT.)	10.0	10.0	10.0		
SOLID RISER LENGTH BELOW GROUND SURFACE (FT.)	32.0	13.5	24.0		
PVC HEIGHT ABOVE GROUND (FT.)	2.5	2.5	2.5		
THICKNESS OF BENTONITE SEAL (FT.)	1.1	1.3	1.5		
THICKNESS OF CEMENT SEAL (FT.)	28.3	9.5	19.6		

NOTES:

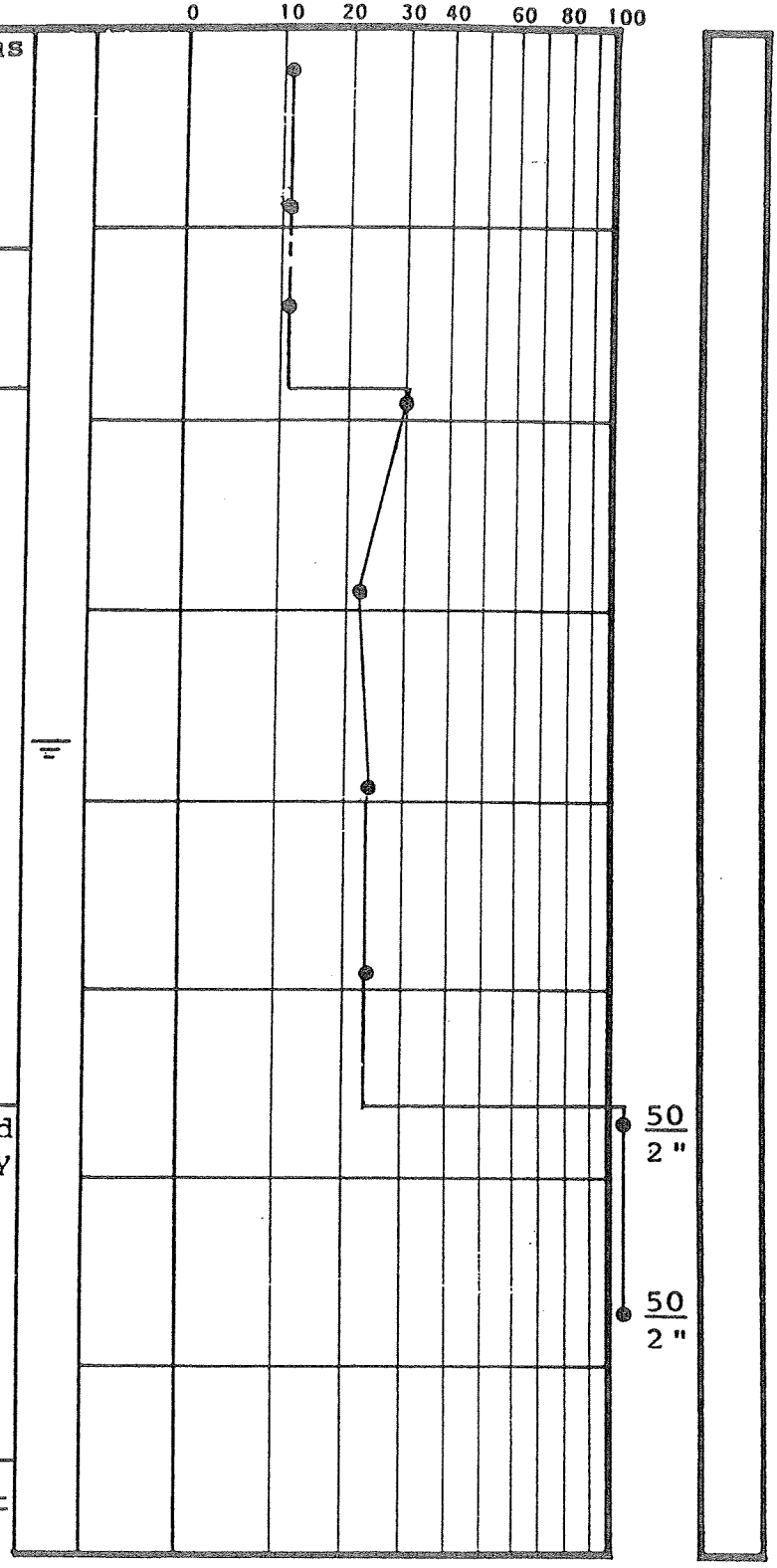
Champion International
Canton Landfill
Haywood County, N.C.

LAW ENGINEERING

MONITORING WELL INSTALLATION DETAILS

JOB NO. AV-1834 FIGURE 3

DEPTH FT.	DESCRIPTI	PE TRATION-BLOWS PER FT.
0.0	Stiff red brown clayey micaceous fine to coarse sandy SILT with gravel and roots - Fill	
5.5	Stiff tan brown clayey fine to medium sandy SILT - Possible Residuum or Fill Rock seam 8.5 to 9.0 feet	
9.0	Very stiff gray brown and tan micaceous fine to medium and fine to coarse sandy SILT with rock fragments - Residuum	
28.0	Partially weathered rock sampled as tan gray fine to medium sandy SILT	
37.5	Boring terminated at 37.5 feet Monitoring well set to 34.0 feet (see Figure 3 for details) Ground water measured at 18.3 feet after 24 hours	



BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I. D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50 % ROCK CORE RECOVERY

WATER TABLE, 24 HR.

WATER TABLE, 1 HR.

LOSS OF DRILLING WATER

TEST BORING RECORD

BORING NO. MW-13

DATE DRILLED 10-28-87

JOB NO. AV-1834

PAGE 1 OF 1

LAW ENGINEERING TESTING COMPANY

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-14

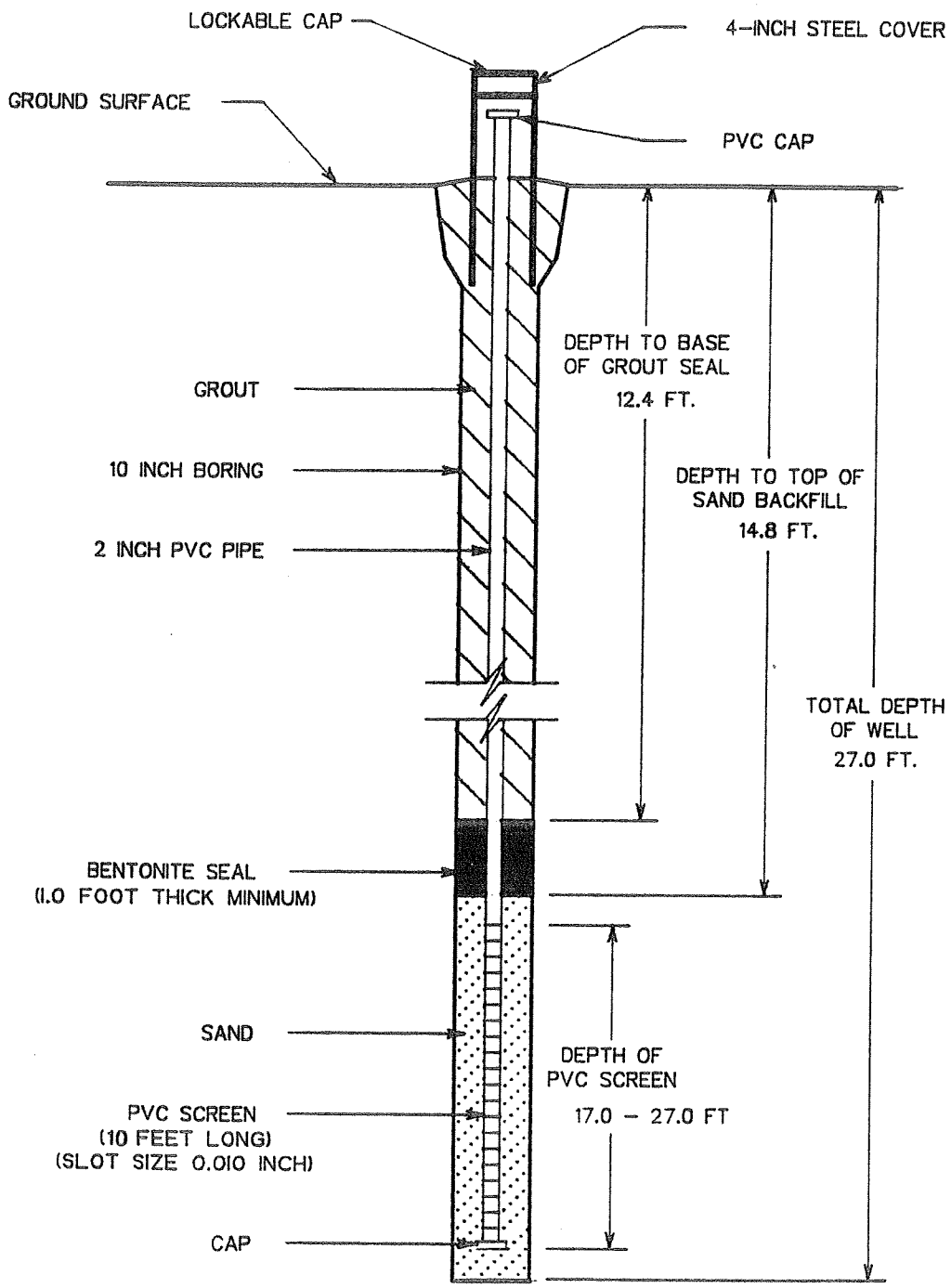
GROUND SURFACE ELEVATION 2650 FT. (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/24/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL
INSTALLATION RECORD
CHAMPION LANDFILL NO. 6A
CANTON, SOUTH CAROLINA

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0			
0.5	Grass and topsoil.		
	Stiff moist light brown fine to medium sandy micaceous SILT - Residuum.		14
7.0			
	Stiff moist white to gray medium to coarse sandy micaceous SILT.		10
12.0			
	Firm wet light to medium brown fine to medium sandy micaceous SILT with relic foliation.		12
17.0			
	Firm wet light to medium brown micaceous silty medium to coarse SAND with relic structure.		13
22.0			
	Hard wet brown to black minor fine sand very micaceous SILT with relic foliation.		36
27.0			
	Boring terminated at 27.0 feet. Auger refusal at 27.0 feet. Ground water encountered at 10.43 feet at time of boring. Monitoring well installed to 27.0 feet on January 24, 1992.		

REMARKS:

TEST BORING RECORD

BORING NUMBER	MW-14
DATE DRILLED	January 24, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 1	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

LAW ENGINEERING

JOB NAME CHAMPION NO. 6 LANDFILL

JOB NUMBER 2410446501

WELL NUMBER MW-15

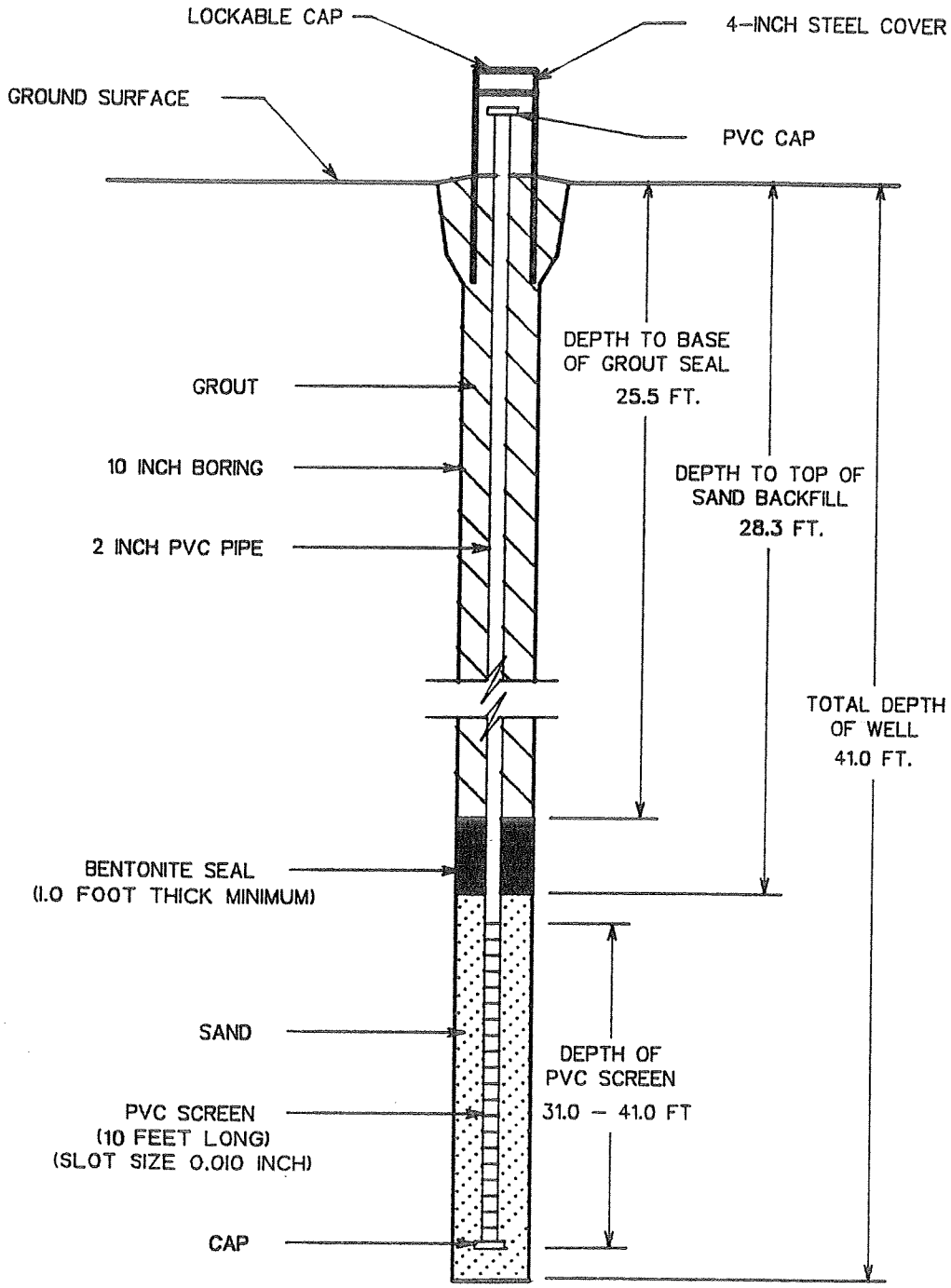
GROUND SURFACE ELEVATION 2610 FT. (MSL)

LOCATION SEE ATTACHED LOCATION MAP

MEASURING POINT ELEVATION

INSTALLATION DATE 1/27/92

LATITUDE LONGITUDE



LAW ENGINEERING
GREENVILLE, SOUTH CAROLINA

MONITORING WELL
INSTALLATION RECORD
CHAMPION LANDFILL NO. 6A
CANTON, SOUTH CAROLINA

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION - BLOWS/FOOT (0 10 20 30 40 60 80 100)
0.0	Drilling platform of fill soil.		
8.0	Very stiff moist light to medium brown fine sandy very micaceous SILT - Residuum.		17
11.0	Very stiff moist gray to brown minor fine sandy very micaceous SILT with relic foliation.		21
17.0	Very stiff moist gray very micaceous SILT with relic foliation.		23
22.0	Very stiff wet gray very micaceous SILT with minor white clayey inclusions.		18
27.0	Very stiff wet dark gray to dark brown fine sandy very micaceous SILT with relic foliation.		25
33.0	Very stiff wet dark gray very micaceous SILT with minor white clayey layering.		26
38.0	Very hard wet dark gray medium to coarse sandy micaceous SILT.		50/5"
40.0	Boring terminated at 40.0 feet. Auger refusal at 40.0 feet. Monitoring well installed to 41.0 feet on January 27, 1992. No ground water encountered at time of boring.		

REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

TEST BORING RECORD

BORING NUMBER	MW-15
DATE DRILLED	January 24, 1992
PROJECT NUMBER	2410446501
PROJECT	CHAMPION #6A LANDFILL
PAGE 1 OF 1	

LAW ENGINEERING

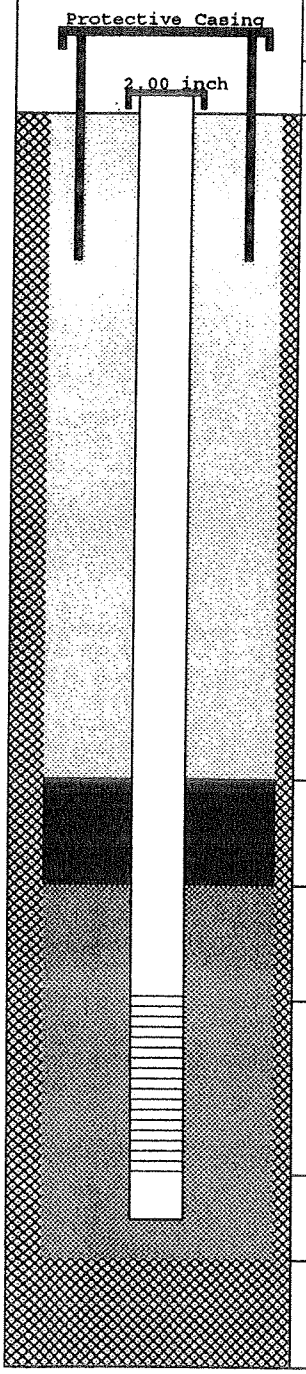
Well Completion Summary

Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	R.WILLIS

WELL ID	MW-16S
START DATE	01/24/96
COMPLETION DATE	01/24/96

WATER LEVELS



DEPTH		ELEV.
2.00	TC	2.00
0.00	GS	0.00
54.00	BN	-54.00
56.00	SP	-56.00
58.00	SC	-58.00
68.00	BS	-68.00
68.00	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	NONE
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 2.00 inch Interval: 0.00 to 58.00 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 2.00 ft. Protective Casing: 3.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 54.00 ft.

Seal Type: BENTONITE Interval: 54.00 to 56.00 ft.

Sand Pack Type: #1 SAND Interval: 56.00 to 68.00 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 2.00 Interval: 58.00 to 68.00 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing	SP = Top Sand Pack	= Grout
GS = Ground Surface	SC = Top Screen	= Seal
BN = Top Seal	BS = Bottom Screen	= Sand Pack
	TD = Total Depth	= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 68.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: R.WILLIS
BORING ID	: MW-16S	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/24/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						AUGERED INTERVAL.
-1	1									
-2	2									
-3	3									
-4	4			Sandy silt, ML	REDDISH BROWN	LSE	MST			
-5	5									
-6	6			Interval Not Sampled						AUGERED INTERVAL.
-7	7									
-8	8									
-9	9									
-10	10									
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20			Sandy silt, ML	RED	SFT	MST			

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 68.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: R.WILLIS
BORING ID	: MW-16S	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/24/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy silt, ML	RED	SFT	MST			
-21	21									
-22	22			Interval Not Sampled						AUGERED INTERVAL.
-23	23									
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 68.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: R.WILLIS
BORING ID	: MW-16S	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/24/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						AUGERED INTERVAL.
-41	41									
-42	42									
-43	43									
-44	44									
-45	45									
-46	46									
-47	47									
-48	48									
-49	49									
-50	50									
-51	51									
-52	52									
-53	53									
-54	54									
-55	55									
-56	56									
-57	57									
-58	58									
-59	59									
-60	60									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 68.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: R.WILLIS
BORING ID	: MW-16S	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/24/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						AUGERED INTERVAL.
-61	61									
-62	62									
-63	63									
-64	64			Sandy elastic silt, MH	REDDISH BROWN	NA	WET			STARTING TO SHOW MOISTURE TD AT 68 FT.BGS.
-65	65									
-66	66									
-67	67									
-68	68									
-69	69									
-70	70									
-71	71									
-72	72									
-73	73									
-74	74									
-75	75									
-76	76									
-77	77									
-78	78									
-79	79									
-80	80									

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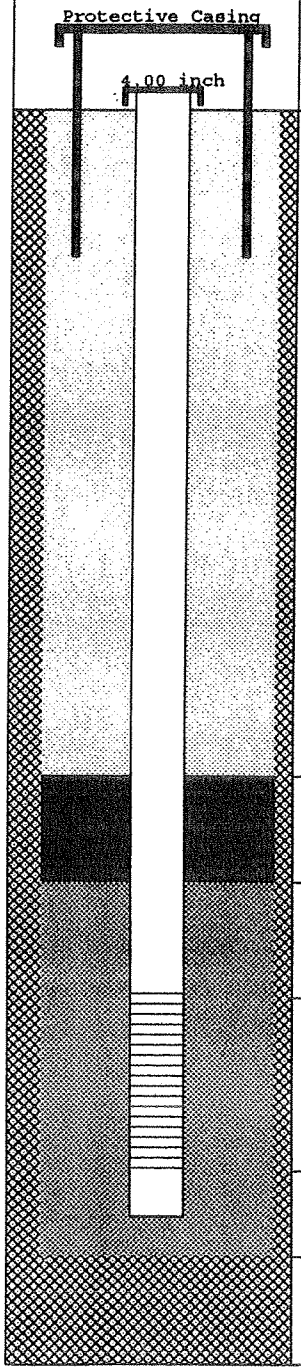
Well Completion Summary

Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	E.MACKEY

WELL ID	MW-16D
START DATE	01/23/96
COMPLETION DATE	01/24/96

WATER LEVELS



DEPTH		ELEV.
0.00	TC	0.00
0.00	GS	0.00
95.00	BN	-95.00
97.00	SP	-97.00
99.00	SC	-99.00
109.50	BS	-109.50
109.50	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	AIR
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 99.00 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 0.00 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 95.00 ft.

Seal Type: BENTONITE MED.CHIPS Interval: 95.00 to 97.00 ft.

Sand Pack Type: #2 SAND Interval: 97.00 to 109.50 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 99.00 to 109.50 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing	SP = Top Sand Pack	= Grout
GS = Ground Surface	SC = Top Screen	= Seal
BN = Top Seal	BS = Bottom Screen	= Sand Pack
	TD = Total Depth	= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Sandy silt, ML	REDDISH BROWN	SFT	MST	6 12 12 12		
-1	1									
				No Sample Recovered						
-2	2		50	Sandy silt, ML	REDDISH BROWN	SFT	MST	10 12 13 15		
-3	3									
				No Sample Recovered						
-4	4		70	Sandy silt, ML	YELLOWISH RED	SFT	MST	132 14 16 20		
-5	5									
				No Sample Recovered						
-6	6		70	Sandy elastic silt, MH	RED	FRM	MST	42 10 12 13		TOP 6" WAS OLD ROADWAY WITH GRAVEL, SOIL BELOW WELL COMPACTED.
-7	7									
				No Sample Recovered						
-8	8		95	Sandy silt, ML	YELLOWISH RED	SFT	MST	7 13 20 27		SLIGHTLY MICACEOUS.
-9	9									
-10	10			No Sample Recovered						
			90	Sandy silt, ML	STRONG BROWN	SFT	MST	9 16 16 20		IRON STAINING, LARGE MICA FLAKES PRESENT.
-11	11									
-12	12			No Sample Recovered						
			95	Sandy silt, ML	STRONG BROWN	FRM	MST	8 8 9 12		
-13	13									
-14	14			No Sample Recovered						
			95	Sandy silt, ML	BROWN	FRM	MST	12 15 17 22		SOME SAPROLITIC CHARACTER ISTICS PRESENT.
-15	15									
-16	16			No Sample Recovered						
			80	Sandy elastic silt, MH	RED	STF	MST	12 32 18 21		CLAY CONTENT INCREASES WITH DEPTH.
-17	17									
				No Sample Recovered						
-18	18		75	Sandy elastic silt, MH	RED	FRM	MST	9 16 19 19		
-19	19									
				No Sample Recovered						
-20	20		70	Sandy elastic silt, MH	RED	FRM	MST	10 19 22 27		

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy elastic silt, MH	RED	FRM	MST			
-21	21			Sandy silt, ML	DARK BROWN	SFT	MST			IRON STAINING.
				No Sample Recovered						
-22	22		75	Sandy silt, ML	BROWN	SFT	MST	6 12 14 20		
-23	23									
				No Sample Recovered						
-24	24		75	Sandy silt, ML	BROWN	FRM	MST	10 18 19 21		MICACEOUS.
-25	25									
				No Sample Recovered						
-26	26		65	Silty sand, SM	LT.YELLOW BROWN	FRM	MST	11 19 20 22		SAPROLITIC SOIL.
-27	27									
				No Sample Recovered						
-28	28		70	Sandy silt, ML	LT.YELLOW BROWN	FRM	MST	15 17 18 22		FOLIATION AND BANDING PRESENT, SAPROLITIC SOIL.
-29	29									
				No Sample Recovered						
-30	30		65	Sandy silt, ML	LT.YELLOW BROWN	FRM	MST	11 18 19 21		BANDING AND FOLIATION PRESENT.
-31	31									
				No Sample Recovered						
-32	32		75	Sandy silt, ML	OLIVE YELLOW	FRM	MST	11 15 19 25		SAPROLITIC SOIL.
-33	33									
				No Sample Recovered						
-34	34		70	Sandy silt, ML	OLIVE YELLOW	FRM	MST	15 18 19 25		
-35	35									
				No Sample Recovered						
-36	36		100	Sandy silt, ML	DK.YELLOW BROWN	SFT	MST	12 32 39 37		
-37	37									
-38	38		65	Sandy silt, ML	BROWN	LSE	MST	28 22 34 39		
-39	39									
				No Sample Recovered						
-40	40		100	Sandy silt, ML	BROWN	SFT	MST	19 50 0 0		SPOON REFUSAL AT 40.7'.

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: B.MACKEY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy silt, ML	BROWN	SFT	MST			SPOON REFUSAL AT 40.7'.
-41	41			Interval Not Sampled						AUGERED INTERVAL.
-42	42			Sandy silt, ML	BROWN	LSE	WET			AUGER REFUSAL AT 72'. SATURATION AT 64'.
-43	43									
-44	44									
-45	45									
-46	46									
-47	47									
-48	48									
-49	49									
-50	50									
-51	51									
-52	52									
-53	53									
-54	54									
-55	55									
-56	56									
-57	57									
-58	58									
-59	59									
-60	60									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Sandy silt, ML	BROWN	LSE	WET			AUGER REFUSAL AT 72'. SATURATION AT 64'.
-61	61									
-62	62									
-63	63									
-64	64									
-65	65									
-66	66									
-67	67									
-68	68									
-69	69									
-70	70									
-71	71									
-72	72			Gneiss						BIOTITE GNEISS.WATER BEARING FRACTURE 105'-106'.TD AT 109.5 FT.BGS.
-73	73									
-74	74									
-75	75									
-76	76									
-77	77									
-78	78									
-79	79									
-80	80									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss						BIOTITE GNEISS.WATER BEARING FRACTURE 105'-106'.TD AT 109.5 FT.BGS.
-81	81									
-82	82									
-83	83									
-84	84									
-85	85									
-86	86									
-87	87									
-88	88									
-89	89									
-90	90									
-91	91									
-92	92									
-93	93									
-94	94									
-95	95									
-96	96									
-97	97									
-98	98									
-99	99									
-100	100									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 109.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: B.MACKBY/R.WILLIS
BORING ID	: MW-16D	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/23/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/24/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss						BIOTITE GNEISS.WATER BEARING FRACTURE 105'-106'.TD AT 109.5 FT.BGS.
-101	101									
-102	102									
-103	103									
-104	104									
-105	105									
-106	106									
-107	107									
-108	108									
-109	109									
-110	110									
-111	111									
-112	112									
-113	113									
-114	114									
-115	115									
-116	116									
-117	117									
-118	118									
-119	119									
-120	120									

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Well Completion Summary

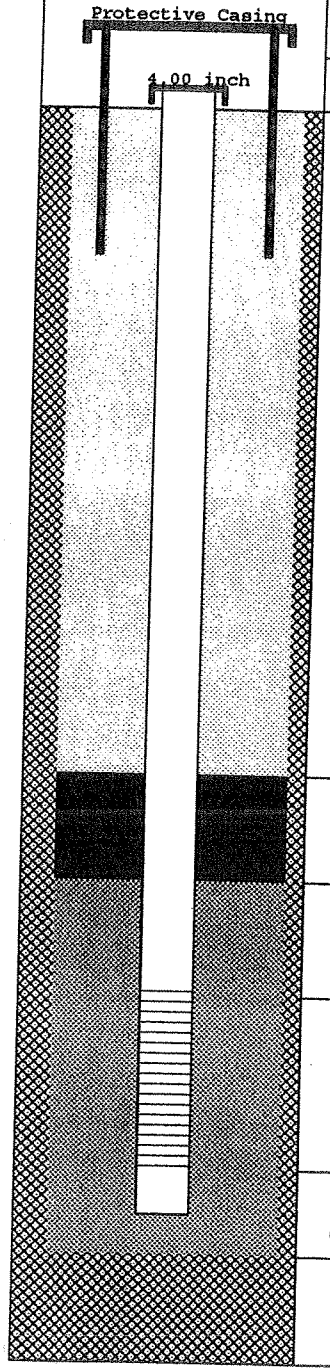
Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	E.MACKEY

WELL ID	MW-17
START DATE	02/01/96
COMPLETION DATE	02/01/96

WATER LEVELS

38.06 FT (TOC) ON 01/31/96



DEPTH		ELEV.
0.00	TC	0.00
0.00	GS	0.00
38.00	BN	-38.00
41.00	SP	-41.00
43.00	SC	-43.00
63.00	BS	-63.00
63.00	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	AIR
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 43.00 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 0.00 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 38.00 ft.

Seal Type: BENTONITE MED.CHIPS Interval: 38.00 to 41.00 ft.

Sand Pack Type: #1 SAND Interval: 41.00 to 63.00 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 43.00 to 63.00 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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03/28/96

Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 63.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-17	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/25/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Sandy silt, ML	YELLOWISH RED	FRM	MST	3 9 10 12		
-1	1									
-2	2			No Sample Recovered						
			65	Sandy elastic silt, MH	LIGHT BROWN	FRM	MST	12 18 32 35		FILL.VERY MICACEOUS,MORE CLAY.
-3	3									
				No Sample Recovered						
-4	4		60	Sandy silt, ML	RED	FRM	MST	14 38 33 34		HIGHLY MICACEOUS SAPROLITIC SOIL.
-5	5									
				No Sample Recovered						
-6	6		65	Sandy silt, ML	DK.RED BROWN	FRM	MST	8 18 33 49		SAPROLITE,BANDING AND FOLIATION PRESENT, MICACEOUS.
-7	7									
				No Sample Recovered						
-8	8		100	Silty sand, SM	DARK BROWN	FRM	MST	18 98 50 0		SAPROLITE.
-9	9									
				Interval Not Sampled						AUGERED INTERVAL.
-10	10									
				No Sample Recovered				50		SPOON REFUSAL AT 10.2'.
				Interval Not Sampled				0 0 0		SAPROLITE,WELL CEMENTED. AUGERED INTERVAL. SAPROLITE.
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 63.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-17	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/25/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-21	21									AUGERED INTERVAL. SAPROLITE.
-22	22									
-23	23									
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39			Gneiss		MOD				BIOTITE GNEISS.FRACTURE @ 58-59'.TD AT 63 FT.BGS.
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 63.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-17	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/25/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS.FRACTURE @ 58-59'.TD AT 63 FT.BGS.
-41	41									
-42	42									
-43	43									
-44	44									
-45	45									
-46	46									
-47	47									
-48	48									
-49	49									
-50	50									
-51	51									
-52	52									
-53	53									
-54	54									
-55	55									
-56	56									
-57	57									
-58	58									
-59	59									
-60	60									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 63.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-17	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/25/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/01/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS.FRACTURE @ 58-59'.TD AT 63 FT.BGS.
-61	61									
-62	62									
-63	63									
-64	64									
-65	65									
-66	66									
-67	67									
-68	68									
-69	69									
-70	70									
-71	71									
-72	72									
-73	73									
-74	74									
-75	75									
-76	76									
-77	77									
-78	78									
-79	79									
-80	80									

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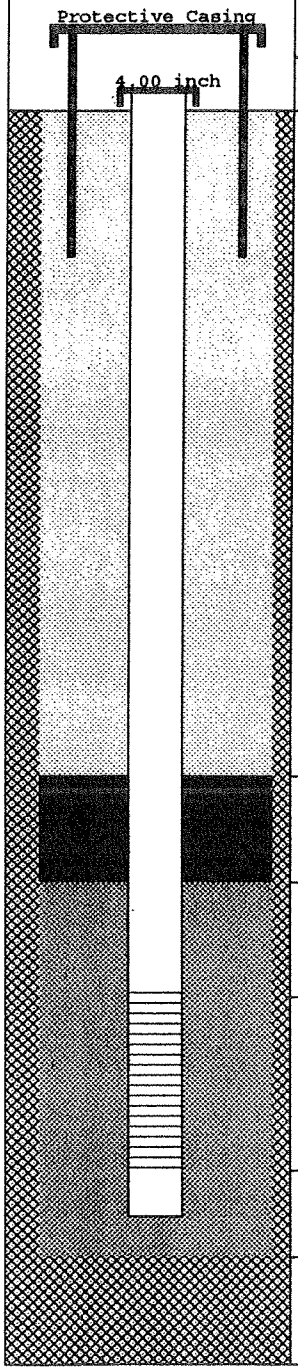
Well Completion Summary

Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	E.MACKEY

WELL ID	MW-18
START DATE	01/22/96
COMPLETION DATE	01/22/96

WATER LEVELS



DEPTH		ELEV.
0.00	TC	0.00
0.00	GS	0.00
96.00	BN	-96.00
98.00	SP	-98.00
100.00	SC	-100.00
110.00	BS	-110.00
110.00	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	AIR
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 98.00 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 0.00 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 96.00 ft.

Seal Type: BENTONITE MED.CHIPS Interval: 96.00 to 98.00 ft.

Sand Pack Type: #1 SAND Interval: 98.00 to 110.00 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 100.00 to 110.00 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-1	1		60	Elastic silt with sand, MH	RED	FRM	MST	3 4 4 3		
				No Sample Recovered						
-2	2		60	Sandy silt, ML	RED	FRM	MST	2 4 4 6		SLIGHTLY MICACEOUS.
-3	3			No Sample Recovered						
-4	4		70	Sandy silt, ML	RED	FRM	MST	8 9 12 13		SLIGHTLY MICACEOUS, LESS CLAY.
-5	5			No Sample Recovered						
-6	6		70	Silty sand, SM	REDDISH YELLOW	FRM	MST	23 20 25 30		SAPROLITIC SOIL.
-7	7			No Sample Recovered						
-8	8		85	Silty sand, SM	YELLOWISH RED	FRM	MST	23 50 50 52		SAPROLITIC SOIL.
-9	9			No Sample Recovered						
-10	10		60	Silty sand, SM	DARK BROWN	FRM	MST	16 30 32 33		SAPROLITIC SOIL, NO STRUCTURE OBSERVED.
-11	11			No Sample Recovered						
-12	12		65	Sandy silt, ML	RED	SFT	MST	9 14 14 14		SAME SAPROLITIC SOIL, LESS CEMENTED, SOME BANDING STRUCTURE VISIBLE.
-13	13			No Sample Recovered						
-14	14		75	Silty sand, SM	RED	FRM	MST	12 13 27 31		WELL FOLIATED, CEMENTED GNEISSIC BANDING.
-15	15			No Sample Recovered						
-16	16		40	Silty sand, SM	YELLOWISH RED	FRM	MST	20 24 25 25		
-17	17			No Sample Recovered						
-18	18		85	Silty sand, SM	REDDISH YELLOW	FRM	MST	13 40 52 33		SAPROLITIC SOIL, SOME FOLIATION.
-19	19			No Sample Recovered						
-20	20		65	Silty sand, SM	LIGHT BROWN	FRM	MST	18 21 28 29		WELL FOLIATED, BETTER CEMENTATION NEAR BOTTOM.

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	LIGHT BROWN	FRM	MST			WELL FOLIATED,BETTER CEMENTATION NEAR BOTTOM.
-21	21									
				No Sample Recovered						
-22	22		58	Silty sand, SM	LIGHT BROWN	STF	MST	18 24 34 50		MORE CEMENTED AT BOTTOM. GNEISSIC SAPROLITE.
-23	23									
				No Sample Recovered						
-24	24			Interval Not Sampled						AUGERED INTERVAL.
			70	Silty sand, SM	YELLOW	SFT	MST			LESS CEMENTED ZONE. SOME BANDING PRESENT.
-25	25							16 19 21 28		
				No Sample Recovered						
-26	26		75	Silty sand, SM	STRONG BROWN	FRM	MST	12 16 24 28		BANDED LAYERS W/CHANGING CEMENTATION.
-27	27									
				No Sample Recovered						
-28	28		75	Silty sand, SM	STRONG BROWN	FRM	MST	9 10 50 78		SAPROLITIC GNEISS.
-29	29									
				No Sample Recovered						
-30	30		83	Silty sand, SM	BROWN	FRM	WET	57 50		SAPROLITIC GNEISS.
				No Sample Recovered				0		
-31	31			Interval Not Sampled				0		AUGERED INTERVAL.
-32	32			Silty sand, SM	BROWN	FRM	WET			SPOON REFUSAL AT 32'. AUGER REFUSAL AT 33'.
-33	33			Silty sand, SM	BROWN	FRM	WET			SAPROLITE.
-34	34									
-35	35			Gneiss		MOD				BIOTITE GNEISS. TD AT 110 FT.BGS.
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS. TD AT 110 FT.BGS.
-41	41									
-42	42									
-43	43									
-44	44									
-45	45									
-46	46									
-47	47									
-48	48									
-49	49									
-50	50									
-51	51									
-52	52									
-53	53									
-54	54									
-55	55									
-56	56									
-57	57									
-58	58									
-59	59									
-60	60									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS. TD AT 110 FT.BGS.
-61	61									
-62	62									
-63	63									
-64	64									
-65	65									
-66	66									
-67	67									
-68	68									
-69	69									
-70	70									
-71	71									
-72	72									
-73	73									
-74	74									
-75	75									
-76	76									
-77	77									
-78	78									
-79	79									
-80	80									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS. TD AT 110 FT.BGS.
-81	81									
-82	82									
-83	83									
-84	84									
-85	85									
-86	86									
-87	87									
-88	88									
-89	89									
-90	90									
-91	91									
-92	92									
-93	93									
-94	94									
-95	95									
-96	96									
-97	97									
-98	98									
-99	99									
-100	100									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 110.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-18	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/19/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/22/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss		MOD				BIOTITE GNEISS. TD AT 110 FT.BGS.
-101	101									
-102	102									
-103	103									
-104	104									
-105	105									
-106	106									
-107	107									
-108	108									
-109	109									
-110	110									
-111	111									
-112	112									
-113	113									
-114	114									
-115	115									
-116	116									
-117	117									
-118	118									
-119	119									
-120	120									

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Well Completion Summary

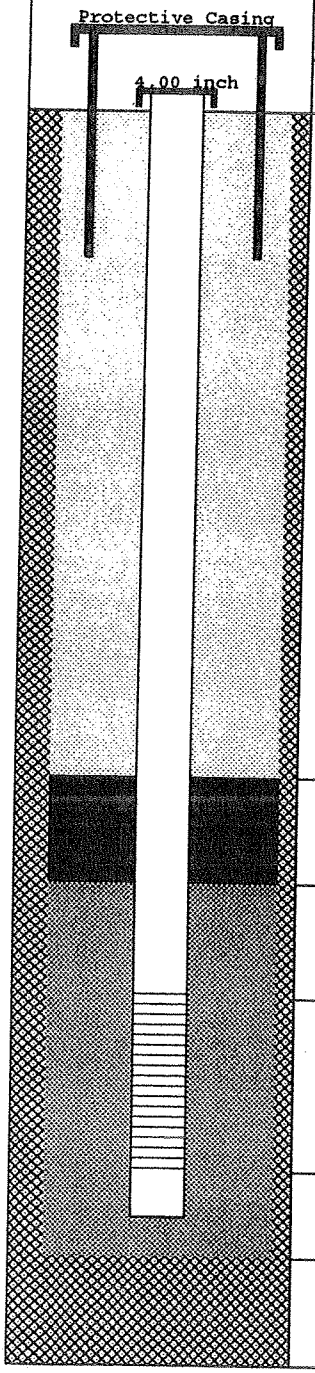
Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	E.MACKEY

WELL ID	MW-20
START DATE	01/18/96
COMPLETION DATE	01/18/96

WATER LEVELS

46.04 FT (TOC) ON 01/18/96



DEPTH		ELEV.
2.00	TC	2.00
0.00	GS	0.00
45.50	BN	-45.50
47.50	SP	-47.50
49.50	SC	-49.50
59.50	BS	-59.50
59.50	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	AIR
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 49.50 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 2.00 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 45.50 ft.

Seal Type: BENTONITE MED.CHIPS Interval: 45.50 to 47.50 ft.

Sand Pack Type: #1 SAND Interval: 47.50 to 59.50 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 49.50 to 59.50 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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03/28/96

Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 59.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-20	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/18/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/18/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	Sandy silt, ML	RED	SFT	MST	4 3 2 2		
-1	1									
				No Sample Recovered						
-2	2		60	Elastic silt with sand, MH	DK.RED BROWN	FRM	MST	4 5 5 5		SLIGHTLY MICACEOUS.MORE CLAY.
-3	3									
				No Sample Recovered						
-4	4		65	Sandy silt, ML	DUSKY RED	FRM	MST	5 13 13 21		IRON STAINING.
-5	5									
				No Sample Recovered						
-6	6		100	Silty sand with gravel, SM	DARK RED	FRM	MST	25 56 50 0		SLIGHTLY MICACEOUS.IRON STAINING.
-7	7									
				Interval Not Sampled						AUGERED INTERVAL.
-8	8		60	Silty sand, SM	DARK BROWN	FRM	MST	20 40 30 22		VERY MICACEOUS SAPROLITE WITH YELLOWISH WHITE BANDING.
-9	9									
				No Sample Recovered						
-10	10		50	Silty sand, SM	DARK BROWN	FRM	MST	7 10 10 14		
-11	11									
				No Sample Recovered						
-12	12		55	Silty sand, SM	DARK BROWN	FRM	MST	5 9 13 20		SAME SAPROLITE.BIOTITE GNEISS.
-13	13									
				No Sample Recovered						
-14	14		100	Silty sand, SM	DARK BROWN	FRM	MST	10 14 19 23		SAPROLITIC BIOTITE GNEISS
-15	15									
-16	16		65	Silty sand, SM	DK.YELLOW BROWN	FRM	MST	11 24 26 16		SAPROLITIC BIOTITE GNEISS
-17	17									
				No Sample Recovered						
-18	18		100	Silty sand, SM	DK.YELLOW BROWN	FRM	MST	20 42 50 0		SPOON REFUSAL AT 19.3'. SAPROLITIC BIOTITE GNEISS
-19	19									
				Interval Not Sampled						AUGERED INTERVAL.
-20	20			Interval Not Sampled						AUGERED INTERVAL.CUTTINGS INDICATE SAPROLITE. TEXTURE CHANGE AT 35'. STILL DRY.

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 59.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-20	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/18/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/18/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						AUGERED INTERVAL.CUTTINGS INDICATE SAPROLITE. TEXTURE CHANGE AT 35'. STILL DRY.
-21	21									
-22	22									
-23	23									
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35			Gneiss	WHITE	STR				FRACTURE AT 54-55'.
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 59.50
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-20	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/18/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/18/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss	WHITE	STR				FRACTURE AT 54-55'.
-41	41									
-42	42									
-43	43									
-44	44									
-45	45									
-46	46									
-47	47									
-48	48									
-49	49									
-50	50									
-51	51									
-52	52									
-53	53									
-54	54			Gneiss	WHITE	STR				TD AT 59.5 FT.BGS.
-55	55									
-56	56									
-57	57									
-58	58									
-59	59									
-60	60									

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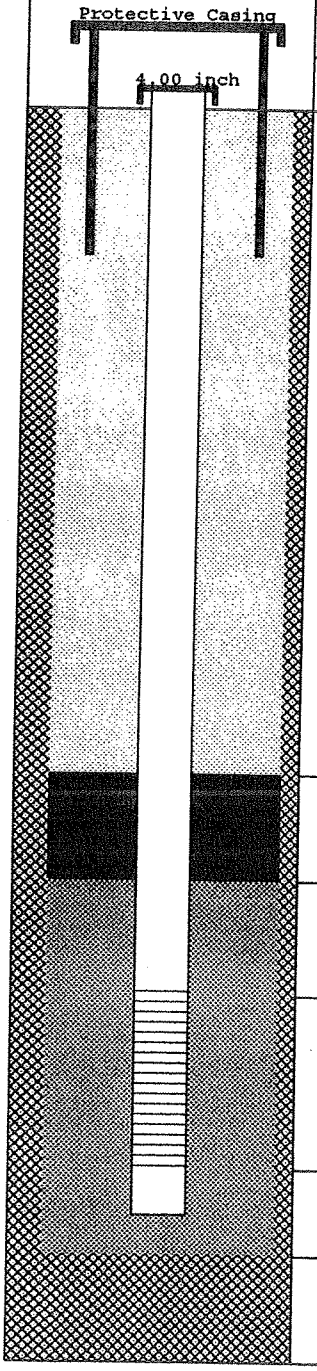
Well Completion Summary

Roy F. WESTON, Inc.

CLIENT	CHAMPION	DRILLING FIRM	GROUNDWATER PROTECTION INC.
SITE NAME	CHAMPION/LF-6	INSPECTOR	E.MACKEY

WELL ID	MW-21
START DATE	01/18/96
COMPLETION DATE	01/18/96

WATER LEVELS



DEPTH		ELEV.
0.00	TC	0.00
0.00	GS	0.00
12.00	BN	-12.00
14.00	SP	-14.00
16.00	SC	-16.00
26.00	BS	-26.00
26.00	TD	0.00

DRILLING SUMMARY

Driller	M.SEILER
Drilling Fluid	AIR
Well Type	SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 16.00 ft.
Type : PVC SCH 40

Stick Up Inner Casing: 0.00 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 12.00 ft.

Seal Type: BENTONITE MED.CHIPS Interval: 12.00 to 14.00 ft.

Sand Pack Type: #1 SAND Interval: 14.00 to 26.00 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 16.00 to 26.00 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

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03/28/96

Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 26.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-21	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/18/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/18/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			70	Silty sand with gravel, SM	RED	LSE	WET	8 23 30 50		PROBABLE COBBLE ZONE AS DRILLING IS NEXT TO STREAM CHANNEL.
-1	1									
				No Sample Recovered						
-2	2			Interval Not Sampled						AUGERED INTERVAL.
			100	Silty sand with gravel, SM	RED	LSE	MST			COBBLE LAYER.RIG BOUNCING ON COBBLE.
-3	3			Interval Not Sampled				33 50 0 0		AUGERED INTERVAL.
-4	4		40	Silty gravel with sand, GM	DARK BROWN	SFT	WET	35 22 30 35		COBBLE LAYER WITH SOIL BETWEEN COBBLES.
-5	5			No Sample Recovered						
-6	6		66	Silty sand with gravel, SM	DARK BROWN	SFT	WET	47 35 13 50		COBBLE LAYER.SOME POCKETS OF MOIST-WET SOIL,BUT ALSO DRY-MOIST POCKETS. AUGER REFUSAL AT 7.5'.
-7	7			No Sample Recovered						
				Interval Not Sampled						DRILLED INTERVAL.
-8	8			Gneiss	WHITE	STR				BIOTITE GNEISS.FRACTURE AT 21-21.5'.GROUNDWATER AT 21'.
-9	9									
-10	10									
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: CHAMPION	TOTAL DEPTH	: 26.00
SITE NAME	: CHAMPION/LF-6	LOGGER	: E.MACKEY
BORING ID	: MW-21	DRILLING COMPANY	: GROUNDWATER PROTECTION INC.
NORTHING	: 0.0000 estimated	DRILLING RIG	: SPEEDSTAR 300
EASTING	: 0.0000 estimated	DATE STARTED	: 01/18/96
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 01/18/96

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Gneiss	WHITE	STR				BIOTITE GNEISS.FRACTURE AT 21-21.5'.GROUNDWATER AT 21'.
-21	21			Gneiss	WHITE	STR				BIOTITE GNEISS. TD AT 26 FT.BGS.
-22	22									
-23	23									
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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evergreen™ packaging

Blue Ridge Paper Products Inc. - Canton Mill

Certified # 7007 0710 0003 7311 4146

May 5, 2009

Ms. Christine Ritter
NCDENR
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

RECEIVED MAY - 8 2009 DIVISION OF SOLID WASTE SECTION

Subject: Design Hydrogeologic Report – Permit to Construct
Blue Ridge Paper Products Inc, Landfill Number 6D-South
Haywood County, Permit #44-06, DIN # 7199

Dear Ms. Ritter:

Thank you for completing the technical review of the Design Hydrogeologic Report in Volume I of the application for the Permit to Construct Landfill Number 6D South. In response to your letter of April 6, 2009, attached is the site water quality monitoring plan for Landfill 6, in compliance with Sections 15A NCAC 13B .0601 and .0602 of the Solid Waste Rules. Included is a description of the groundwater and surface water monitoring system, sample collection and analysis, and detection monitoring at the landfill. Two copies are enclosed.

Thank you again for your time and consideration regarding this project. Please let me know if you have questions or desire further information at this time.

James A. Giauque
Waste Compliance & Landfill Supervisor
Blue Ridge Paper Products Inc.
giauqj@blueridgepaper.com
828-646-2028 Fax 828-646-6892

Michael Gustafson
Manager Environmental Affairs
Blue Ridge Paper Products Inc.
gustam@blueridgepaper.com
828-646-2381 Fax 828-646-6892

Attachment
Copy: Paul Dickens (Letter only)
Bill vonVitzthume (Letter only)
Mike Rector (Letter only)
Mike Elmore (Letter Only)
Guy Cote (SME) (Letter only)
Allen Gaither (DWM)
File: ritter6ds042909