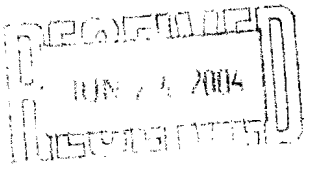
4500 NORTH WEST AVE. • P. O. BOX 231 • EL DORADO, AR 71731 • (870) 863-1400

EL DORADO
CHEMICAL COMPANY

June 17, 2004



Ms. Laura Leslie-Stuart, P.G.
Arkansas Department of Environmental Quality
Water Division, State Permits Branch
8001 National Drive
Little Rock, AR 72219

Re: Geologic Investigation Report for El Dorado Chemical Company

Dear Ms Stuart:

I have attached to this letter, two copies of the report detailing the geologic investigation efforts conducted at El Dorado Chemical Company earlier this year. As we discussed in the work plan for this investigation, our goal was to verify the subsurface depth to the top of the Cook Mountain Formation and to install four additional monitoring wells down gradient of the plant processing area. We were able to achieve these goals for the most part but we did run into some difficulties with the drilling technique prescribed in the work plan.

We completed eleven of the twelve borings that were planned for the investigation work. Core samples of the Cook Mountain Formation (Cook Mt. Fm.) were obtained from ten of the eleven borings. These samples are labeled and currently stored in my office. Geophysical logs were run to the terminal depths of seven of the completed borings – partial logs were run on the remaining four borings. Direct-Push drilling equipment (GeoProbe) was used at the start of this investigation work, as described in our work plan. However, the subsurface sediments proved to be too hard for this equipment to penetrate through to the Cook Mt. Fm. at several locations. The GeoProbe equipment provided the geophysical logging capability for this project. We lost this capability once we were forced to switch to rotary-wash drilling equipment in order to complete the borings to the Cook Mt. Fm. The drilling operations required twice the amount of time that was estimated in the work plan due to the difficulty encountered with the direct-push drilling equipment. The last boring was not completed due to the problems with drilling and logging.

The four monitoring wells that were proposed in the work plan were completed at the designated locations. All four were terminated at the top of the Cook Mt. Fm. and screened in the bottom 10 feet of the Cockfield Fm. The wells have been sampled three times since their installation. The results are listed below:

**Ammonia as N (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | 0.64 | <0.5 | <0.5 |
| MW-20 | <0.5 | <0.5 | <0.5 |
| MW-21 | <0.5 | <0.5 | <0.5 |
| MW-22 | 0.61 | <0.5 | <0.5 |

**Nitrate (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | <0.5 | <0.5 | <0.5 |
| MW-20 | <0.5 | <0.5 | <0.5 |
| MW-21 | 1.63 | 0.54 | 2.15 |
| MW-22 | 0.53 | 0.66 | 0.95 |

**Sulfate (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | 8.32 | 6.38 | 9.05 |
| MW-20 | 11.5 | 15.9 | 10.6 |
| MW-21 | 8.17 | 3.62 | 4.59 |
| MW-22 | 6.62 | 2.88 | 3.74 |

**Total Dissolved Solids (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | 1400 | 238 | 220 |
| MW-20 | 730 | 186 | 140 |
| MW-21 | 82 | 130 | 110 |
| MW-22 | 540 | <1.0? | 136 |

**Total Lead (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | 0.122 | 0.019 | <0.015 |
| MW-20 | 0.024 | <0.015 | <0.015 |
| MW-21 | 0.169 | <0.015 | 0.029 |
| MW-22 | 0.021 | <0.015 | <0.015 |

**Total Chromium (ppm)**

| | 1/28/04 | 3/16/04 | 5/18/04 |
|---|---|---|---|
| MW-19 | 0.077 | <0.02 | <0.02 |
| MW-20 | 0.034 | <0.02 | <0.02 |
| MW-21 | 0.837 | 0.028 | 0.07 |
| MW-22 | 0.023 | <0.02 | <0.02 |

The concentrations of tested parameters in these four new monitoring wells are similar to the concentrations found in the up gradient background monitoring wells MW-1, MW-2 and MW-3.

The eleven soil borings completed in this investigation indicate that in the southern part of the plant site the previously installed monitoring wells and soil borings did not extend to a depth sufficient to have contacted the top of the Cook Mt. Fm. The soil borings completed in the northern section of the plant site near the background wells MW-1, MW-2 and MW-3 indicate that these wells are within one or two feet of the Cook Mt. Fm.

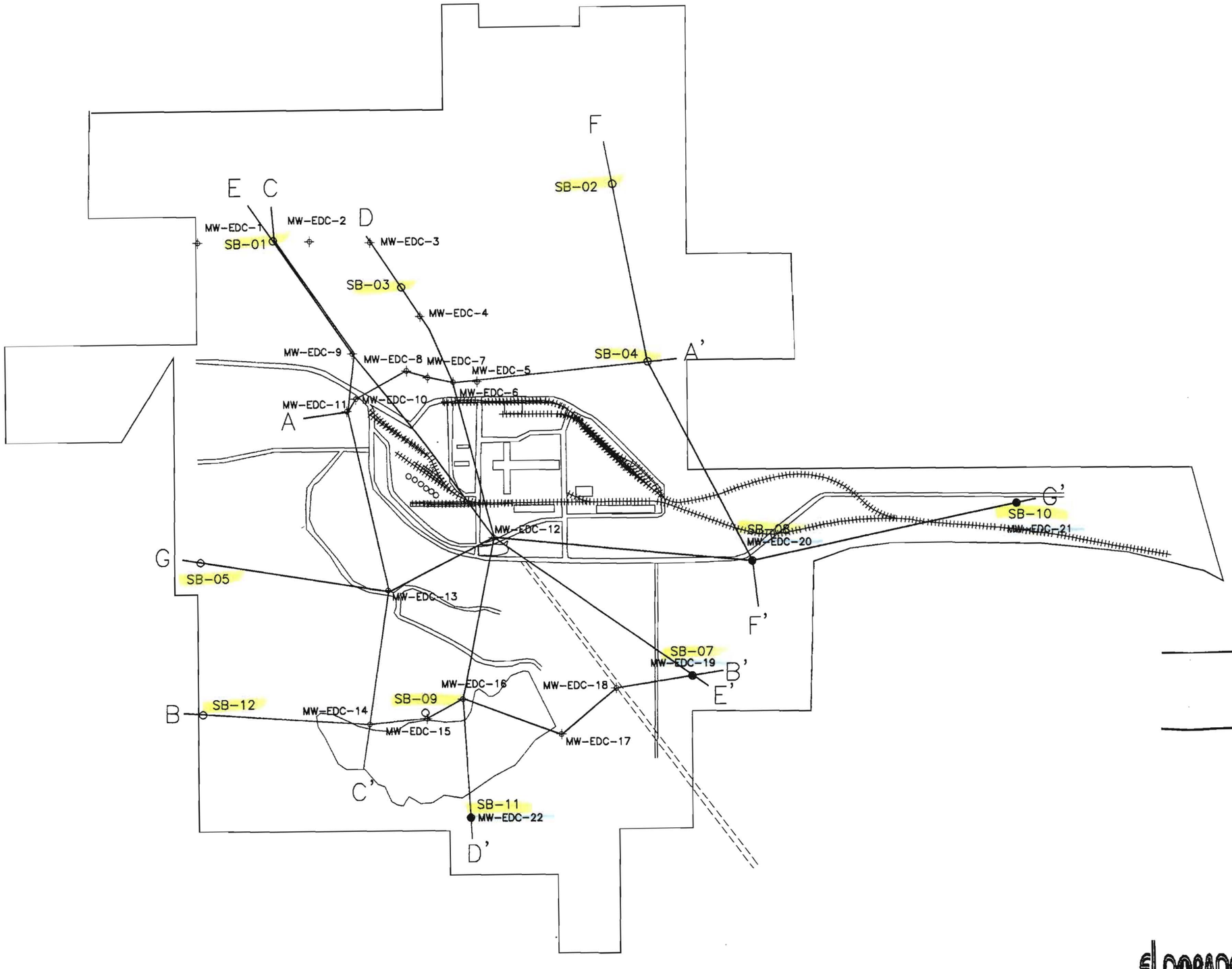
There were difficulties in visual logging of soil boring SB-09 near MW-15 on the north shore of Lake Killdeer. The borehole was logged as 178 feet of sand without contacting any clay. This is very unlikely considering the sediments found in surrounding borings. The cause of this anomaly is likely that the drilling crew did not thicken the drilling mud with bentonite to a viscosity sufficient to prevent sand from filling in the borehole. The sand in the lower part of the Cockfield Fm. can be very fluid when saturated with groundwater and located at the bottom of a slope such as the location of SB-09.

To resolve the problem with boring SB-09 and to have one consistent set of borehole logging data, we propose to conduct slim-hole geophysical logging on all existing monitoring wells at the plant site. This equipment will provide gamma and induction logs through the PVC casing of the monitoring wells. If this equipment proves to work well, we will use it to log any additional monitoring wells that are installed at the site. After we have verified the geology and that the slim-hole geophysical equipment produces adequate results, a work plan will be submitted for the installation of additional soil borings and monitoring wells.

If you have any questions or comments please contact me at 870-863-1498 or rwhitmore@edc-ark.com

Sincerely,

Randall Whitmore
Responsible Care® Manager
El Dorado Chemical Company




CROSS SECTION LOCATION MAP

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

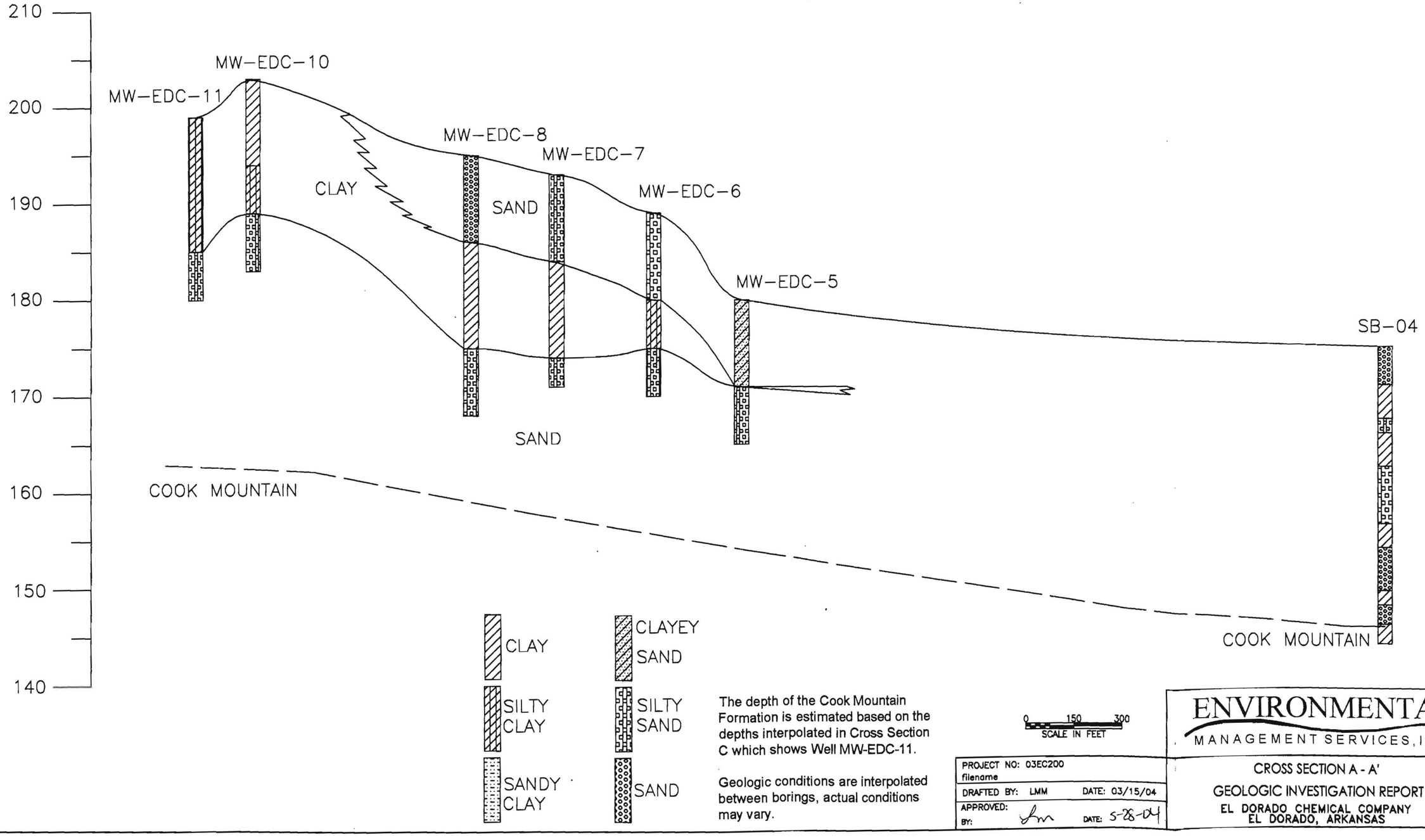
| | | |
|---|---|---|
| DATE: 2-10-04 | APPROVED: BY: DATE: 2-25-04 | DRAWN BY: LMM |
| SCALE: see above | | CAD NO. 03EC200 |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

FIGURE 2

A
WEST

A'
EAST




The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section C which shows Well MW-EDC-11.

Geologic conditions are interpolated between borings, actual conditions may vary.

0 150 300
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

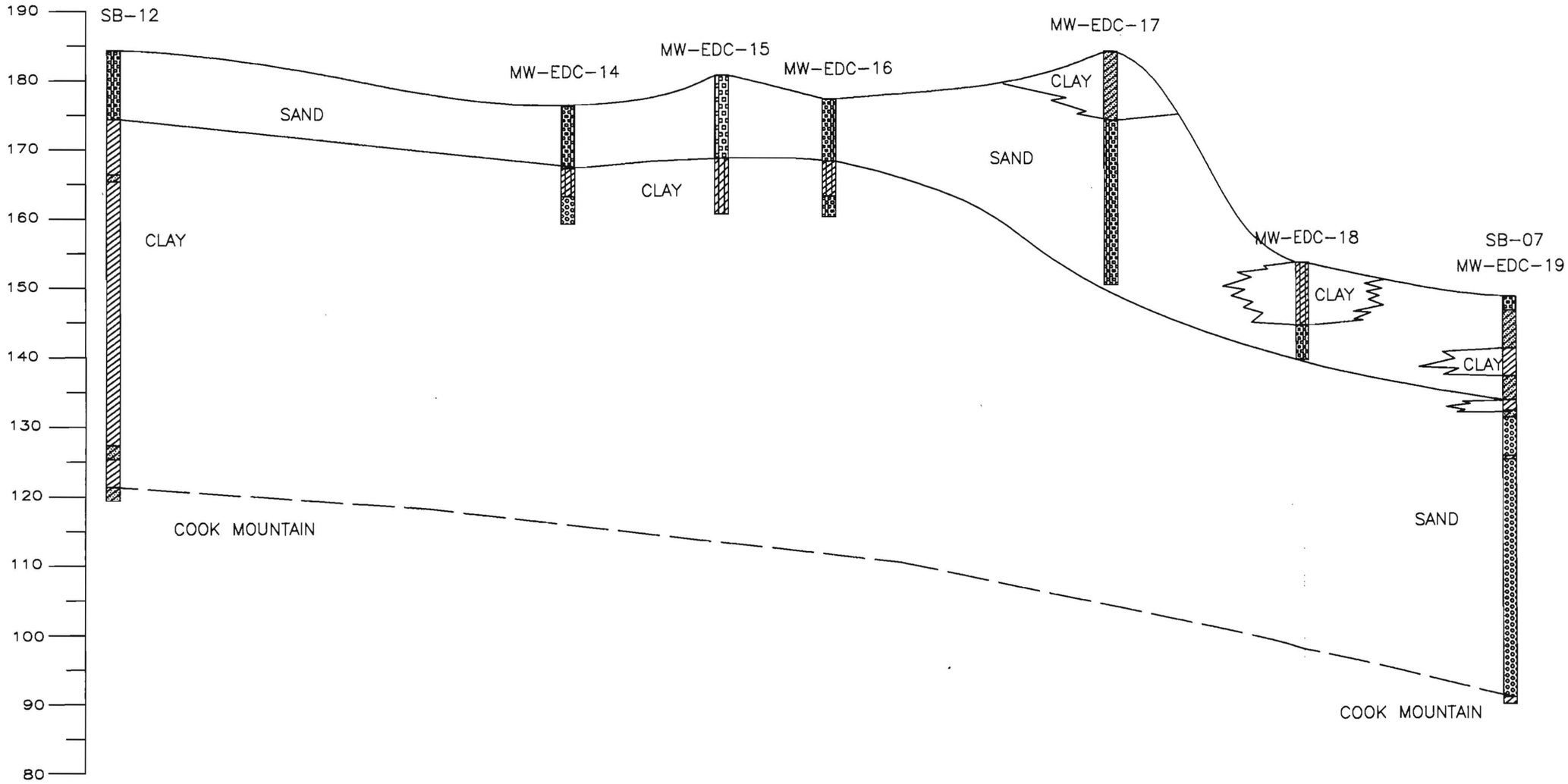
| | |
|---|---|
| PROJECT NO: 03EC200 filename | |
| DRAFTED BY: LMM | DATE: 03/15/04 |
| APPROVED: BY: | DATE: 5-28-04 |

CROSS SECTION A - A'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

3

B
WEST

B'
EAST




CLAY
CLAYEY SAND
SILTY CLAY
SILTY SAND
SANDY CLAY
SAND

Geologic conditions are interpolated between borings, actual conditions may vary.

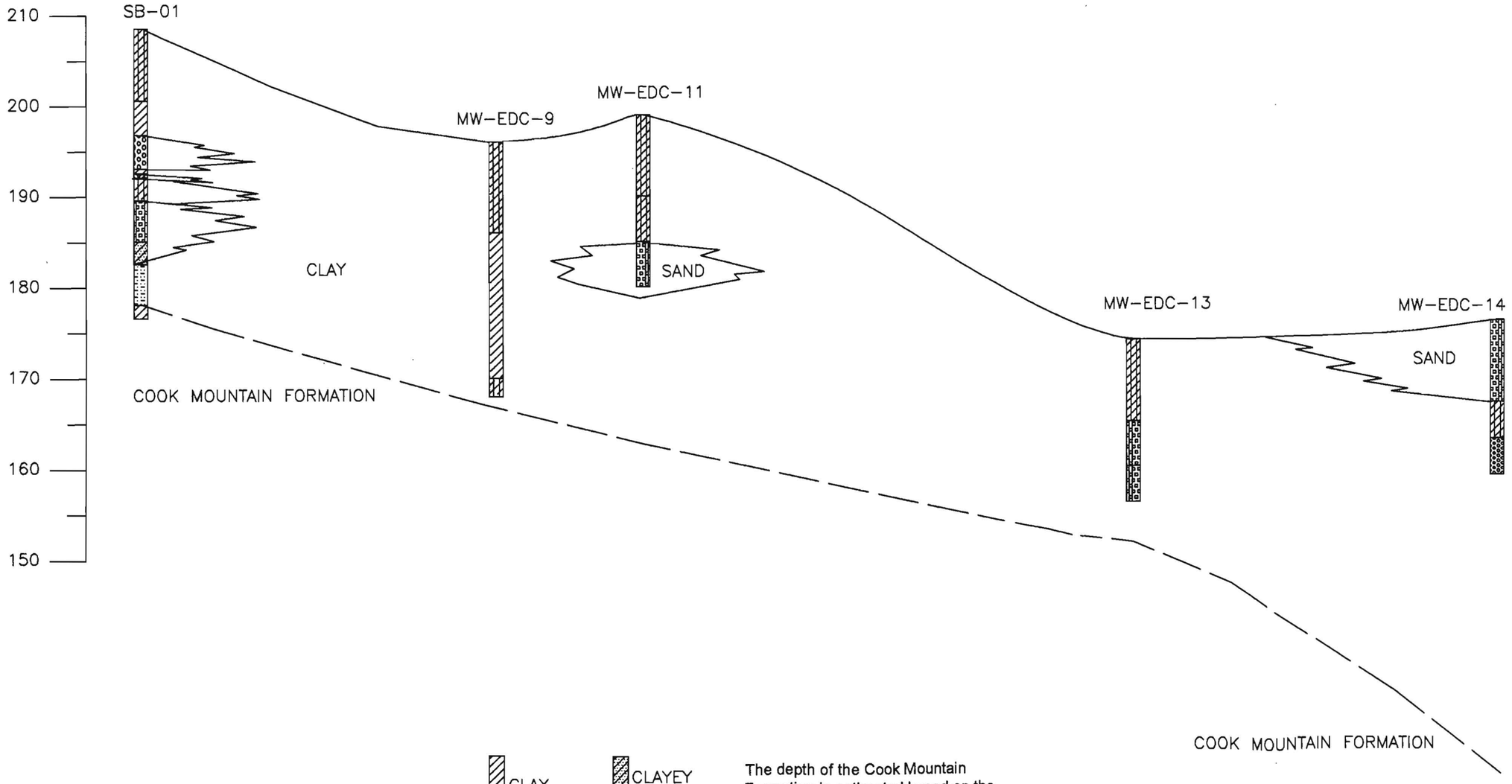
0 250 500
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 03EC200 filename | CROSS SECTION B - B' |
| DRAFTED BY: LMM DATE: 03/15/04 | GEOLOGIC INVESTIGATION REPORT |
| APPROVED: BY: DATE: 5-28-04 | EL DORADO CHEMICAL COMPANY EL DORADO, ARKANSAS |

C
NORTH

C'
SOUTH




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section G which shows Well MW-EDC-13 and Cross Section B which shows MW-EDC-14.

Geologic conditions are interpolated between borings, actual conditions may vary.

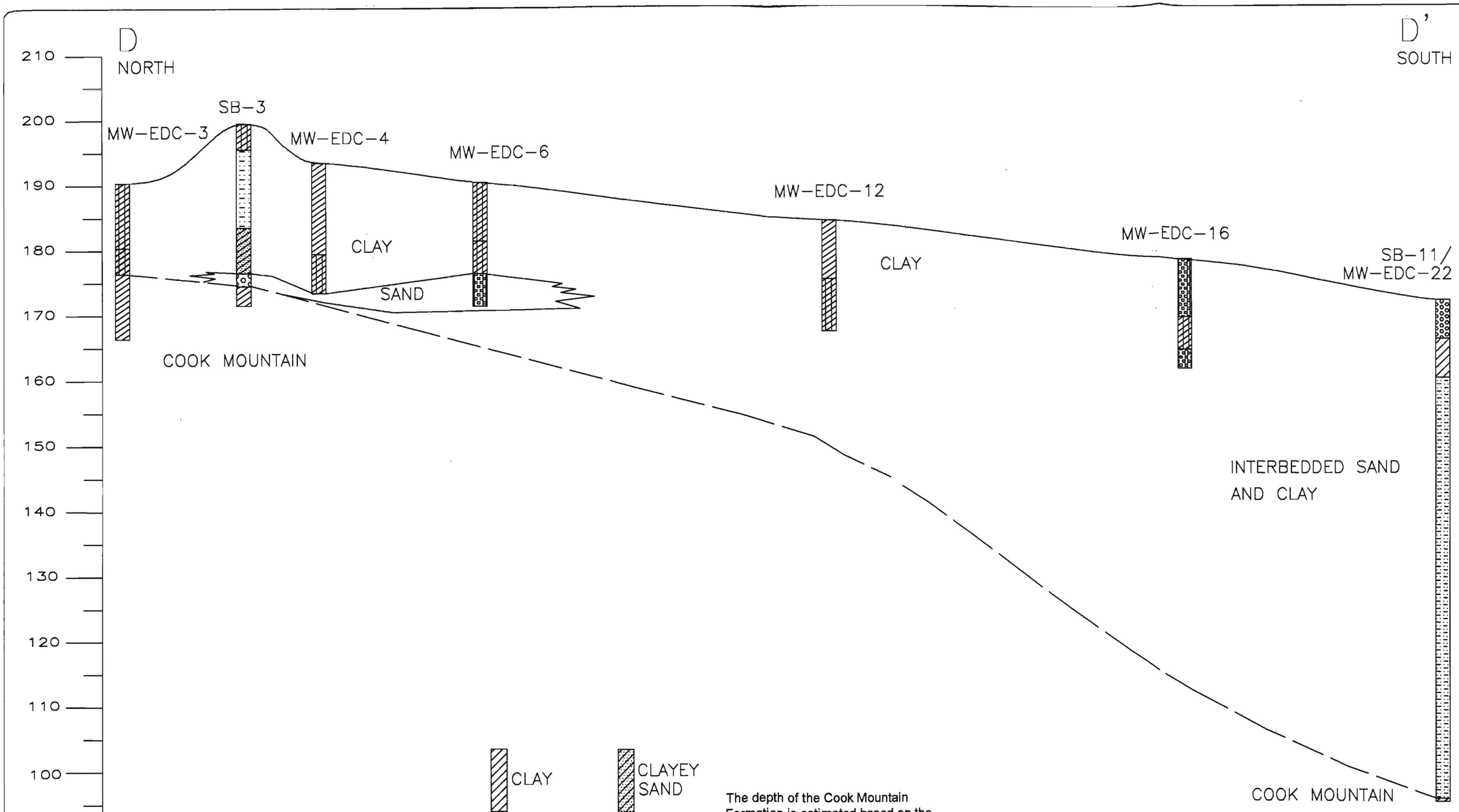
0 250 500
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 2EC0100 C.DWG | |
| DRAFTED BY: KK/LM | DATE: 03/21/04 |
| APPROVED: BY: | DATE: 5-28-04 |

CROSS SECTION C - C'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

5




The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section G which shows Well MW-EDC-12 and Cross Section B which shows MW-EDC-16.

Geologic conditions are interpolated between borings, actual conditions may vary.

0 250 500
SCALE IN FEET

PROJECT NO: 03EC200
revised CROSS SECTION MW-3 TO MW-16 LMM.DWG
DRAFTED BY: LMM DATE: 03/12/04
APPROVED:
BY: DATE: 5-28-04

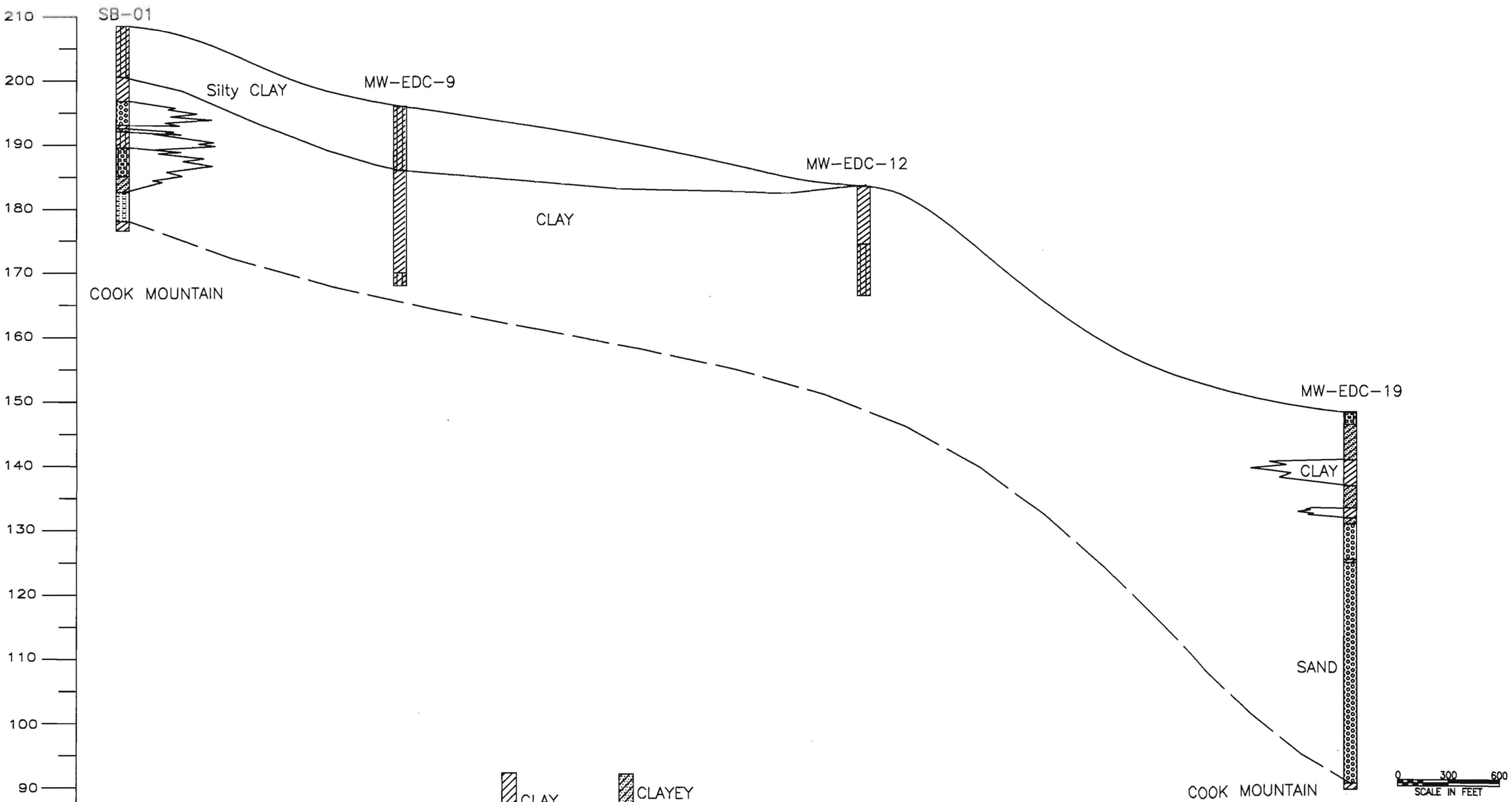
ENVIRONMENTAL MANAGEMENT SERVICES, INC.

CROSS SECTION D - D'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

6

E
NORTHWEST

E'
SOUTHEAST




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

The depth of the Cook Mountain Formation is estimated based on the depth interpolated in Cross Section G which shows Well MW-EDC-12.

Geologic conditions are interpolated between borings, actual conditions may vary.

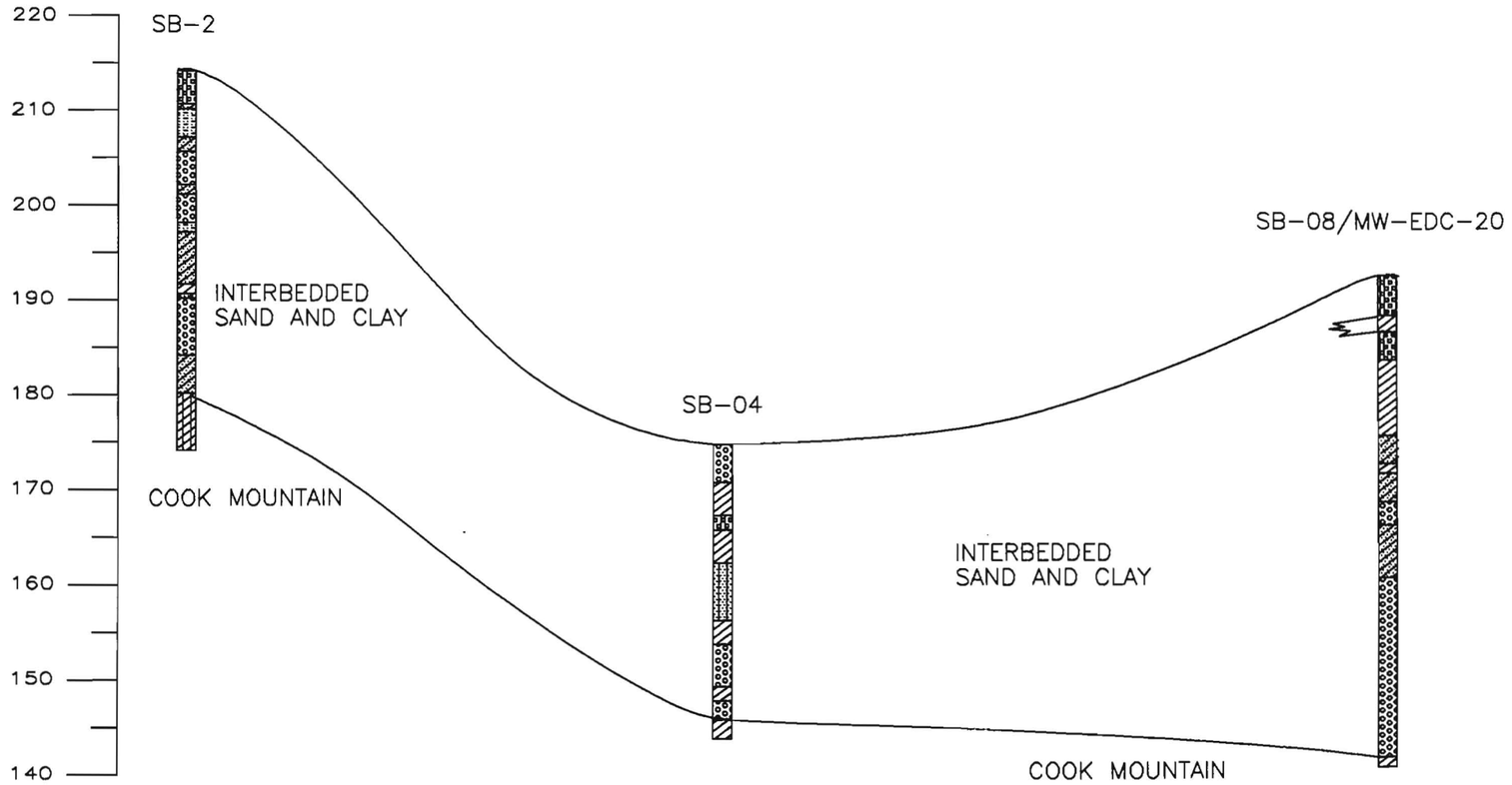
| | | |
|---|---|---|
| PROJECT NO: 03EC200 filename | | |
| DRAFTED BY: LMM | DATE: 03/15/04 | |
| APPROVED: BY: | DATE: 5-28-04 | |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

CROSS SECTION E - E'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

F
NORTH

F'
SOUTH




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

Geologic conditions are interpolated between borings, actual conditions may vary.

0 300 600
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

PROJECT NO: 03EC200
filename
DRAFTED BY: LMM DATE: 03/15/04
APPROVED: BY: DATE: 5-28-04

CROSS SECTION F - F'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

8

G

WEST

SB-5

G'

EAST

220

210

200

190

180

170

160

150

140

CLAY

clayey SAND

CLAY

SAND

COOK MOUNTAIN

MW-EDC-13

SILTY SAND

MW-EDC-12

SB-08/MW-EDC-20

CLAY

SB-10/MW-EDC-21

INTERBEDDED
SAND, SILT AND CLAY

COOK MOUNTAIN

COOK MOUNTAIN

CLAY

SILTY CLAY

SANDY CLAY

CLAYEY SAND

SILTY SAND

SAND

Geologic conditions are interpolated between borings, actual conditions may vary.

0 400 800
SCALE IN FEET

PROJECT NO: 03EC200
SB-5 TO MW-21.DWG
DRAFTED BY: LMM DATE: 03/23/04
APPROVED:
BY: DATE: 5-28-04

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

CROSS SECTION G - G'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

9

# GEOLOGIC INVESTIGATION REPORT

Prepared For:

EL DORADO

**El Dorado Chemical Company**

Prepared By:

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

12241 Industriplex Blvd, Suite B
Baton Rouge, Louisiana
(225) 751-5386

May 2004

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### TABLES



### FIGURES



### APPENDICES

## 1.0 INTRODUCTION

This Report documents the approach used to conduct an investigation to further characterize the geology and hydrogeology of the El Dorado Chemical Company (EDC) facility in El Dorado Arkansas. The field activities included advancement and logging of eleven (11) borings and the installation of four (4) monitor wells. A map of the site is presented as Figure 1.

### 1.1 OBJECTIVES

The objectives of this investigation were to:

- Further characterize the shallow site stratigraphy with borings that penetrate through to the confining clay unit (Cook Mountain Clay); and
- Install additional wells to further define ground water flow and quality.

### 1.2 SCOPE

This report includes the following:

- Short description of drilling activities;
- Soil boring and well construction logs;
- Maps illustrating surveyed locations of new borings and wells;
- Geologic cross-sections; and
- An updated discussion on site geologic and ground water conditions.

## 2.0 FIELD ACTIVITIES

The field investigation procedures are described in the following sections. Field activities included soil sampling and logging; monitor well installation and sampling; and plugging and abandonment of soil borings.

## 2.1 SOIL SAMPLING

Techniques used to characterize the soil conditions during this investigation included soil conductivity profiling; and soil collection for physical description and conductivity profile correlation. The field operation consisted of drilling and logging eleven (11) soil borings. The methodology used for soil sample collection consisted of Geoprobe collection devices and probes operated by EMS and an ATV Mud Rotary Drilling Rig operated by Diversified Drilling Services, Inc. (Diversified) of El Dorado, Arkansas. Figure 1 depicts the location of the borings. A summary of soil boring information is provided in Table 1.

### 2.1.1 Geoprobe Sampling Equipment and Procedures

The Geoprobe portion of the investigation was conducted from January 6, 2004 through January 14, 2004. A soil conductivity log was obtained at all boring locations using the Geoprobe® developed Direct Image Soil Conductivity Logging System. Logging was accomplished by driving a rugged conductivity probe containing an isolated electrical array. As the probe is advanced, the array gathers electrical data and transmits the data through a communication cable that is fed from the probe through 1.25-inch drive rods into a microprocessor. A laptop computer operating the Direct Image software and connected to the microprocessor displays the changes in soil conductivity with depth in the form of an onscreen graph as the probe is advanced. At the conclusion of logging, the data was stored as a .DAT file in the computer and can be imported to existing spreadsheet software for processing and presentation. The soil conductivity logs were used to determine the depth of the Cook Mountain Formation and assist in the correlation of geologic units. The soil conductivity logs are presented on the boring logs in Appendix A.

As shown on Table 1, Soil Borings SB-01, SB-02, SB-03 and SB-10 were completed using the Geoprobe rig. Borings SB-04 and SB-07 were drilled and sampled until refusal and were completed using Diversified's ATV Rig. The Geoprobe® Model 66 DT (posi-track mounted) direct-push sampling system was used to collect soil samples for site characterization. All sampling equipment was thoroughly cleaned prior to mobilization to the site.

Soil samples were collected using a Geoprobe Macro-core 48-inch long, 2-inch diameter soil sampling probe equipped with a disposable 1.5-inch diameter clear PVC sample collection tube within the probe. Soil samples were collected continuously, from ground surface to the termination depth of each boring. Upon completion of each 4-foot soil "push", the sample collection tube was retrieved and split open, and the soil visually described and logged by the field geologist in accordance with the Unified Soil Classification System. All soil descriptions and other pertinent observations were recorded on dedicated soil boring logs for each location. The soil boring logs are presented in Appendix A. The soil cores collected were not discarded and are stored on site.

### 2.1.2 Mud Rotary Sampling Procedures

Soil Borings SB-04, SB-05, SB-07 SB-08, SB-09, SB-11 and SB-12 were completed using Diversified's ATV Mud Rotary Drilling Rig. Because these borings were conductivity logged, samples were only collected at the termination depth of these borings. Cuttings were logged during drilling. Soil samples were obtained by either Shelby tube or split-spoon sampling devices in accordance with ASTM Methods D1587 and D1586. Soil samples were visually classified in accordance with the Unified Soil Classification System as provided in ASTM D2488 and descriptions recorded on boring logs (see Appendix B).

## 2.2 WELL INSTALLATION

Monitor wells MW-19, MW-20, MW-21 and MW-22 were installed during this investigation. MW-21 was installed using the Geoprobe, the others using Mud Rotary drilling. The field procedures for the well installations are provided in the following sections.

### 2.2.1 Geoprobe

Monitor Well MW-21 was installed using the Geoprobe's direct-push capability driving 1.5-inch inside-diameter probe rod equipped with an expendable stainless-steel drive point. Once the desired depth was reached, the well was installed within the probe rod and the rod extracted,

leaving the temporary well and expendable drive point in place. Pre-packed screens were used for this well. Additional filter pack was placed above the pre-pack screens to ensure that there was at least two feet above the top of the screen. Above the filter pack, a grout seal was installed. The grout mixture consists of a mixture of bentonite, Portland cement and water in accordance with applicable Arkansas (Arkansas Water Well Construction Commission Rules and Regulations) and U.S. Environmental Protection Agency (*Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, USEPA, Region IV, Science and Ecosystem Support Division, November 2001) guidelines. A rubber well plug was placed in the well and the PVC casing placed in a locked protective casing. Well construction details are presented in Appendix B. MW-21 was developed by pumping it with a submersible pump.

### 2.2.2 Mud Rotary

A hollow stem auger was used to set 2-inch monitor well MW-20. Mud rotary procedures were used to install MW-19, MW-21 and MW-22. Monitor wells were constructed of 2-inch PVC well materials. Prior to well installation, the borings were enlarged with an 8-inch nominal diameter drill. Well materials consisted of 2-inch PVC slotted well screen with a slot opening of 0.01 inches. Total well depths, screen lengths and other specifications for each well are provided on Table 2. Above the well screen, PVC flush threaded well casing was installed such that approximately 2 feet of casing extends above ground surface.

A filter pack composed of 20/40 graded silica sand was emplaced from the bottom up using the tremie method. The quantity of sand used was documented. The filter pack extended from the base of the borehole to 4 to 6 feet above the top of the well screen. The depth of the filter pack was measured and recorded on a well construction diagram. After measuring the filter pack depth, bentonite pellets were manually placed in the borehole to a thickness of 3 to 5 feet and allowed to hydrate overnight to provide a seal above the filter pack.

Subsequent to bentonite hydration, a cement/bentonite grout slurry was trimmed into the remaining borehole annulus, from the bottom up to minimize voids and bridging. Subsequent to grout curing and settling, additional grout mixture was emplaced to fill the annular space to the

ground surface. A rubber well plug was placed in the well and the well placed in a locked protective casing.

A well construction diagram was prepared by the supervising geologist for each well which includes pertinent information on well construction materials (quantities and depths). The wells were developed by pumping them with a submersible pump.

## 2.3 MONITOR WELL SAMPLING

MW-19, MW-20, MW-21 and MW-22 were sampled in January 2004. Depth-to-water measurements were collected from each well using an electronic water level indicator. Depth-to-water measurements were subtracted from their respective top-of-casing elevations to calculate ground water elevations referenced to Mean Sea Level (MSL) at each well.

The depth-to-water measurements were used to calculate the volume of water within each well and determine the amount to be purged prior to sampling. Three well volumes were removed from each well or until the well became dry using either a disposable bailer or a Redi-Flo electric pump. When a pump was used, dedicated polyethylene tubing was used for each well to minimize the potential for cross-contamination. Field indicator parameters (pH, conductivity and temperature) were recorded after removal of each well volume. Field meters used to measure field data were calibrated each day during sampling. Purge water was containerized for proper disposal.

Ground water samples were collected using new, clean, dedicated, disposable polyethylene bailers. Ground water samples were placed into laboratory-provided containers with the appropriate preservatives. The containers were packed in ice-chests and shipped to the laboratory under chain-of-custody. Analytical results indicate that no constituents of concern for this site (ammonia, nitrate, chromium and lead) were detected in the samples.

## 2.4 BORING ABANDONMENT

Borehole abandonment was accomplished in accordance with applicable Arkansas (Arkansas Water Well Construction Commission Rules and Regulations) and U.S. Environmental Protection Agency (*Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, USEPA, Region IV, Science and Ecosystem Support Division, November 2001) guidelines. Borings were abandoned by pumping grout down the open borehole using a tremie pipe from the bottom up. The solution used to abandon each borehole consisted of Portland Type I cement in 80lb. bags mixed with not more than 5-8% sodium bentonite powder by weight, and not more than 5 gallons of water per bag of cement.

## 2.5 SURVEYING

The location and ground elevation and/or top of casing of each boring or well installed were surveyed to provide accurate location data. Surveying was accomplished throughout the project to establish a surveyed location of other borings, wells, site topography, and other points of interest as necessary.

# 3.0 GEOLOGIC INVESTIGATION RESULTS

## 3.1 REGIONAL GEOLOGY

The regional shallow geology consists of the Claiborne Group, with two units that crop out in Union County: the Cockfield Formation and the Cook Mountain Formation. The Cockfield Formation, locally referred to as the "lignite sand", is generally characterized by fine sand, interbedded silty clay and lignite becoming more massive and containing less silt and clay with depth. Beneath the Cockfield Formation lies the Cook Mountain Formation. The Cook Mountain is 50 to 200 feet thick and is composed of clay and silty clay containing minor amounts of localized very fine to silty sand. These clays serve as a confining unit between the more permeable overlying Cockfield Formation and the underlying aquifer. The Cook Mountain is uniformly underlain by the Sparta Formation. Most of the borings drilled at the site do not

extend into the upper part of the Cook Mountain Formation; therefore, the Cockfield Formation is not fully defined. The purpose of this additional investigation was to further define this unit. ✓

## 3.2 SITE GEOLOGY

Site boring logs indicate the subsurface geology consists of interbedded sands, silts and clays of the Cockfield Formation which is underlain by the interbedded clays and fine sands of the Cook Mountain Formation. The sediments of the Cockfield are characterized as grey to orange sands silts and clays. The sediments of the Cook Mountain Formation consist of very hard, dark gray clays with some interbedded sands. Seven Cross Sections (locations shown on Figure 2) are presented on Figures 3 through 9. Sections A through D were presented in the 2001 Annual Ground Water Report and have been modified to add borings logged during this investigation.

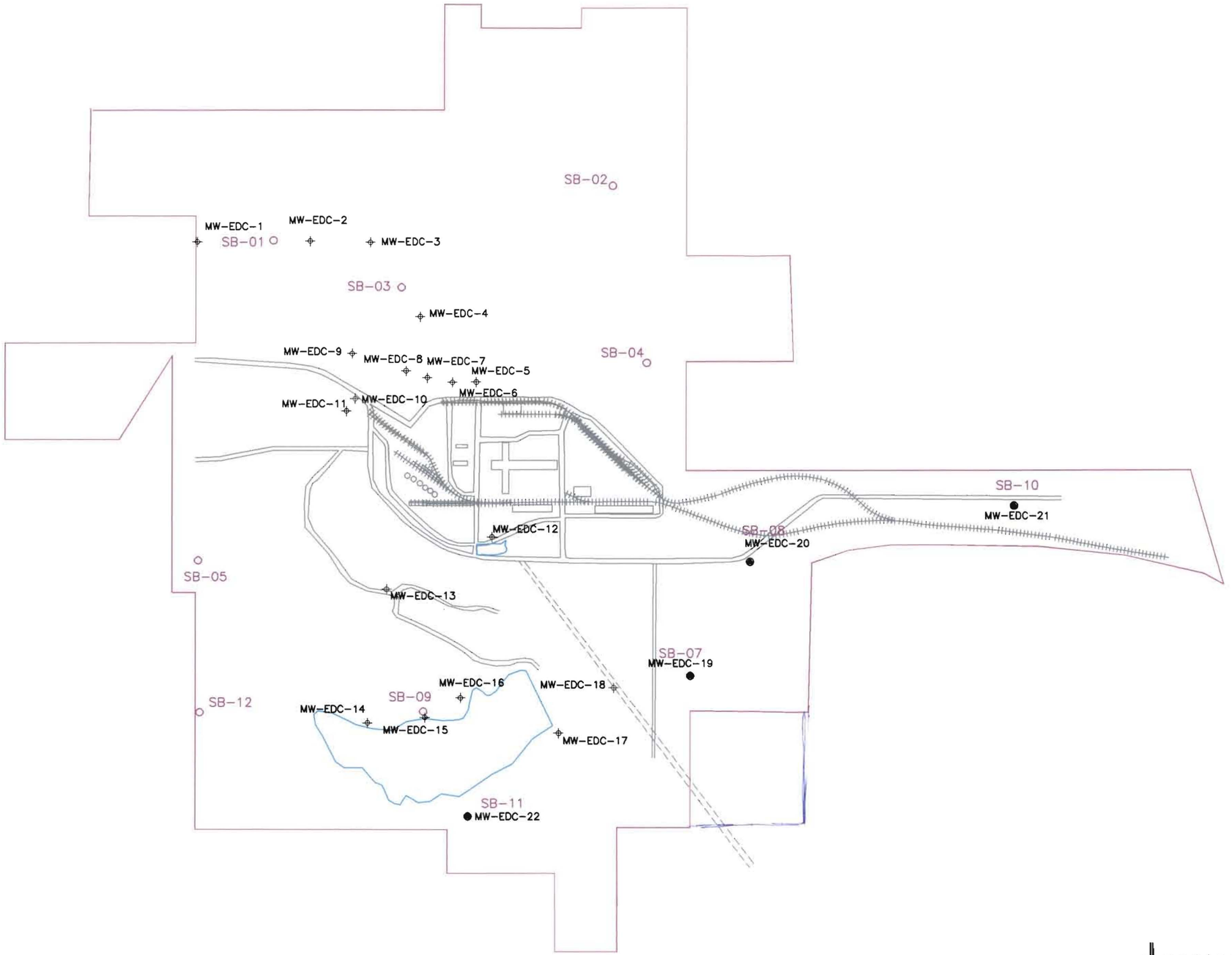
The Cook Mountain is defined on all cross sections. The top of the Cook Mountain Formation exists across the site at elevations ranging from 180 to 90 MSL, dipping from North to South (see Sections C, D and E).

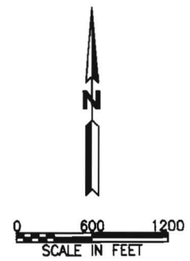
**TABLE 1**
**SOIL BORING DETAILS**
**GEOLOGIC INVESTIGATION REPORT**
**EL DORADO CHEMICAL COMPANY**
**EL DORADO ARKANSAS**

| Boring ID | Date | East | North | Ground Surface Elevation | Conductivity Depth | Drilling and Sampling Depth | Drilling Method |
|---|---|---|---|---|---|---|---|
| | | | | feet MSL | feet below ground surface | | |
| SB-01 | 1/11/2004 | 1846.897 | 10915.590 | 208.57 | 30 | 32 | Geoprobe |
| SB-02 | 1/10/2004 | 5829.665 | 11562.880 | 214.41 | 40 | 40 | Geoprobe |
| SB-03 | 1/11/2004 | 3353.219 | 10364.750 | 198.39 | 30 | 28 | Geoprobe |
| SB-04 | 1/11/2004 | 6232.138 | 9480.964 | 174.99 | 34 | 31 | Mud Rotary |
| SB-05 | 1/20/2004 | 968.180 | 7157.142 | 219.47 | 58 | 60 | Mud Rotary |
| SB-07/ MW-19 | 1/11/2004 | 6741.293 | 5800.273 | 147.92 | 34 | 59 | Mud Rotary |
| SB-08 /MW-20 | 1/7/2004 | 7446.361 | 7138.067 | 190.39 | 52 | 52 | Mud Rotary |
| SB-09 | 1/22/2004 | 3610.846 | 5385.754 | 180.48 | 33 | 173 | Mud Rotary |
| SB-10 /MW-21 | 1/6/2004 | 10545.773 | 7797.167 | 173.40 | 32 | 32 | Geoprobe |
| SB-11 /MW-22 | 1/21/2004 | 4134.481 | 4154.273 | 170.79 | 30 | 77 | Mud Rotary |
| SB-12 | 1/20/2004 | 987.621 | 5373.757 | 184.33 | 38 | 65 | Mud Rotary |

**TABLE 2**
**WELL CONSTRUCTION DETAILS**
**GEOLOGIC INVESTIGATION REPORT**
**EL DORADO CHEMICAL COMPANY**
**EL DORADO ARKANSAS**

| Well | Date | Top of Casing Elevation | Depth | Sceen Length | Slot Size | Diameter | Materials |
|---|---|---|---|---|---|---|---|
| | | feet msl | below ground | feet | inches | inches | |
| MW-19 | 1/20/2004 | 150.41 | 59 | 10 | 0.01 | 2 | PVC |
| MW-20 | 1/19/2004 | 192.77 | 52 | 10 | 0.01 | 2 | PVC |
| MW-21 | 1/6/2004 | 176.29 | 32 | 10 | 0.01 | 1 | PVC |
| MW-22 | 1/22/2004 | 173.55 | 77 | 10 | 0.01 | 2 | PVC |




SECTIONS PREVIOUSLY PRESENTED IN 2001 GROUND WATER REPORT. SECTIONS A, B AND D HAVE ADDITIONAL BORINGS.

SECTIONS DEVELOPED IN 2004

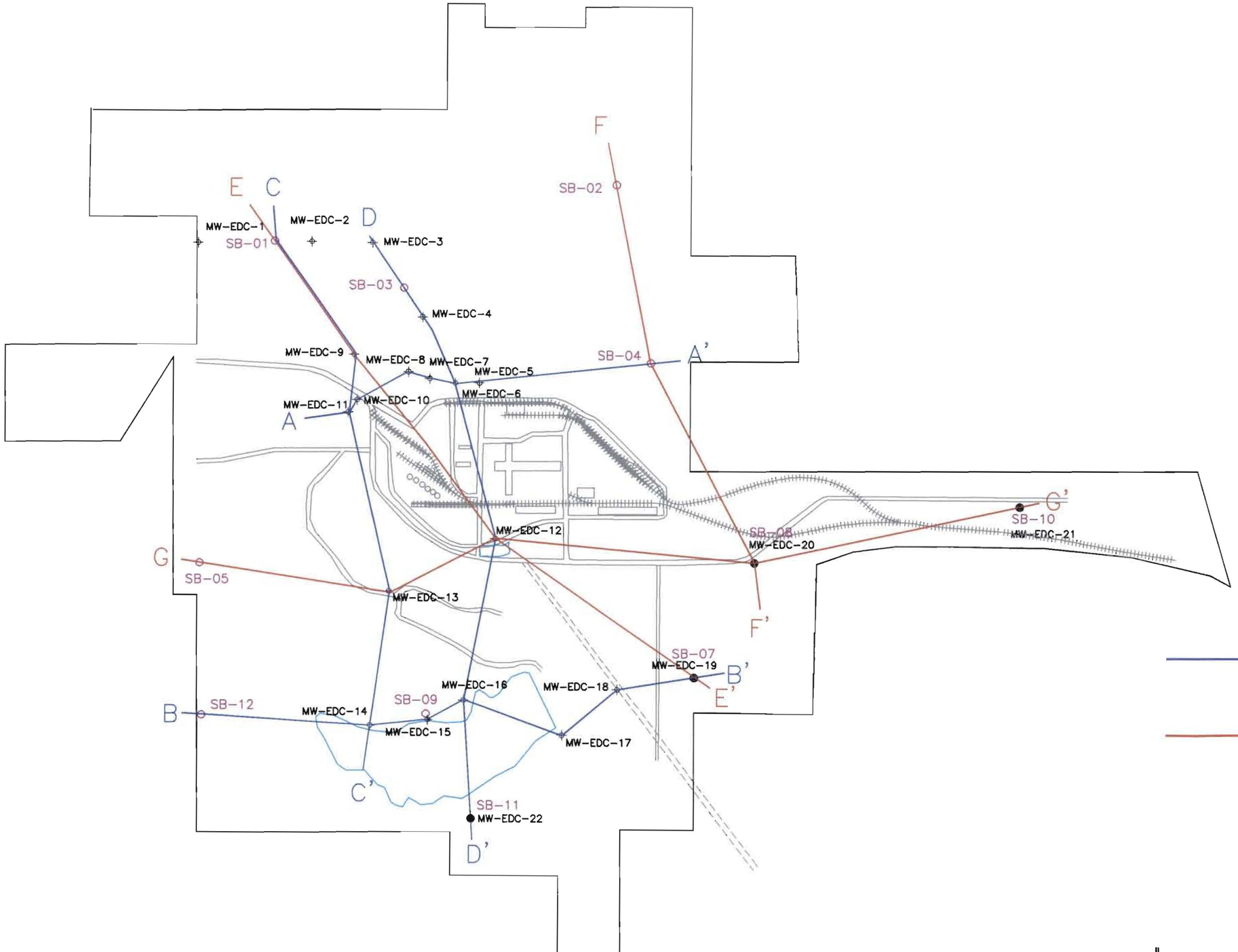
SITE MAP

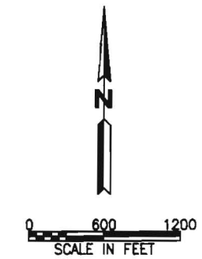
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

| | | | |
|---|---|---|---|
| DATE: 2-10-04 | APPROVED: BY: DATE: 2-10-04 | DRAWN BY: LMM | |
| SCALE: see above | | CAD NO. 03EC200 | |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

FIGURE 1




SECTIONS PREVIOUSLY PRESENTED IN 2001 GROUND WATER REPORT. ADDITIONAL BORINGS HAVE BEEN ADDED.

SECTIONS DEVELOPED IN 2004

CROSS SECTION LOCATION MAP

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

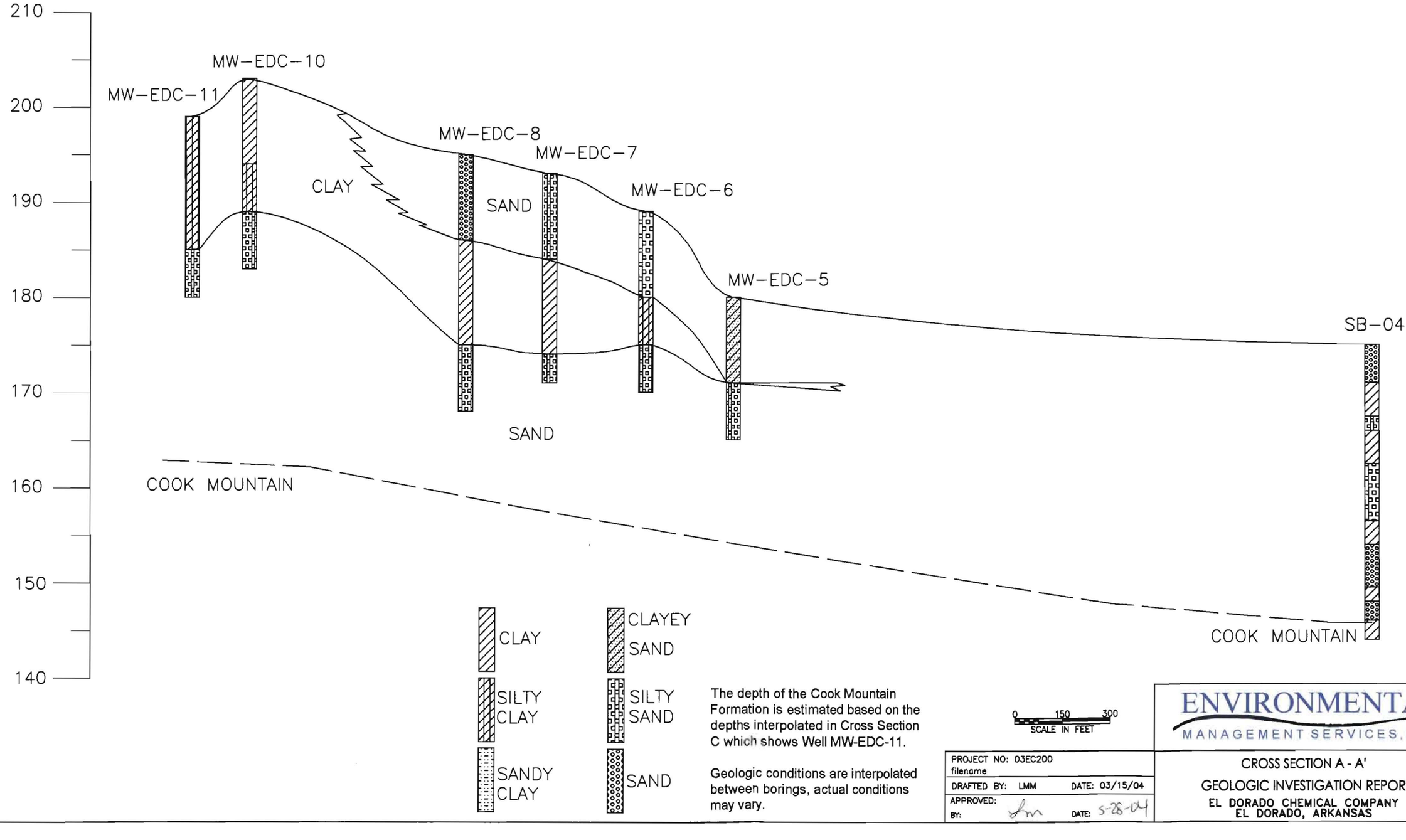
| | | |
|---|---|---|
| DATE: 2-10-04 | APPROVED: BY: DATE: 5-26-04 | DRAWN BY: LMM |
| SCALE: see above | | CAD NO. 03EC200 |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

FIGURE 2

A
WEST

A'
EAST




CLAY

SILTY CLAY

SANDY CLAY

CLAYEY SAND

SILTY SAND

SAND

The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section C which shows Well MW-EDC-11.

Geologic conditions are interpolated between borings, actual conditions may vary.

0 150 300
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

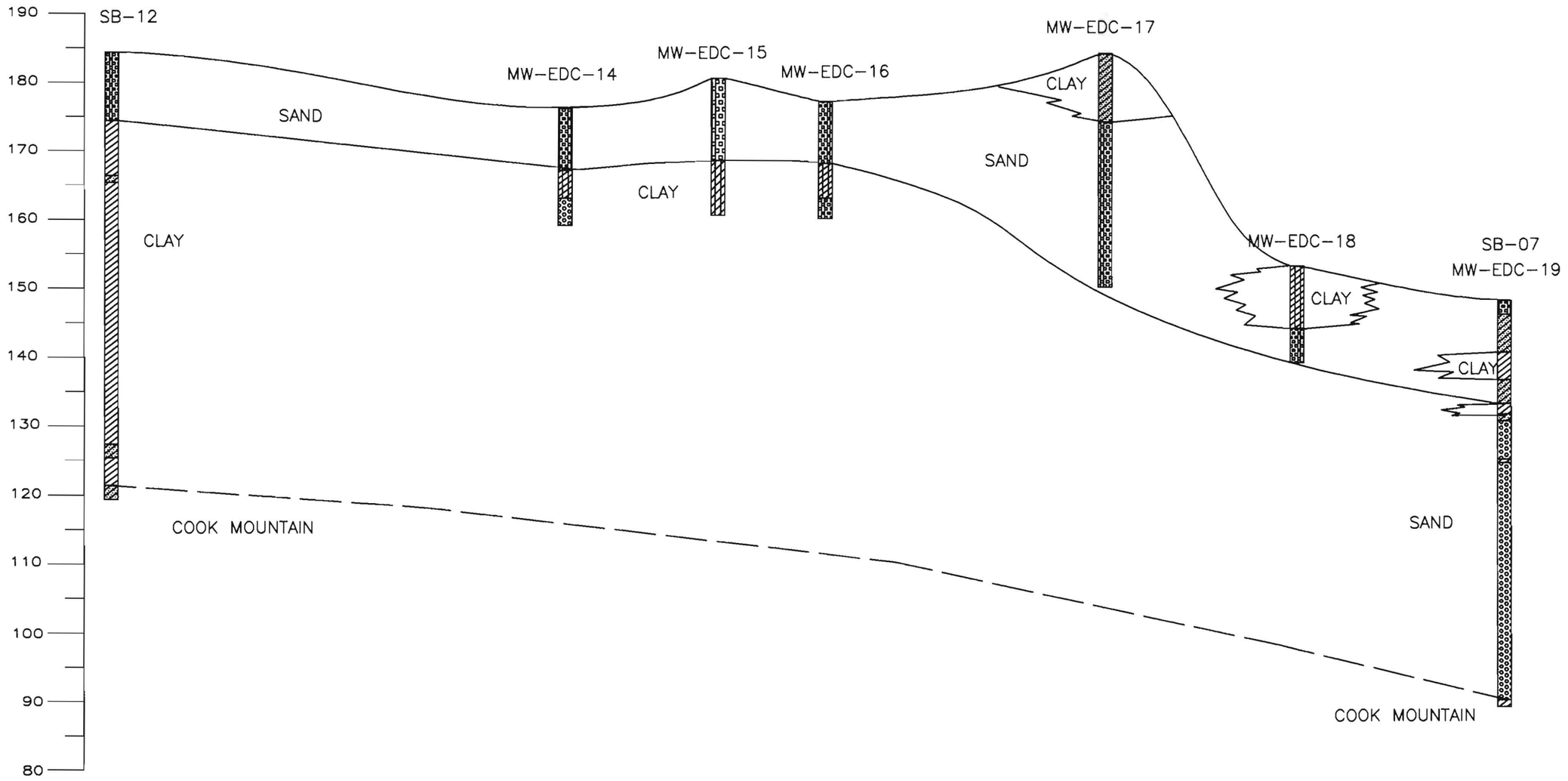
| | |
|---|---|
| PROJECT NO: 03EC200 filename | |
| DRAFTED BY: LMM | DATE: 03/15/04 |
| APPROVED: BY: | DATE: 5-28-04 |

CROSS SECTION A - A'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

3

B
WEST

B'
EAST




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

Geologic conditions are interpolated between borings, actual conditions may vary.

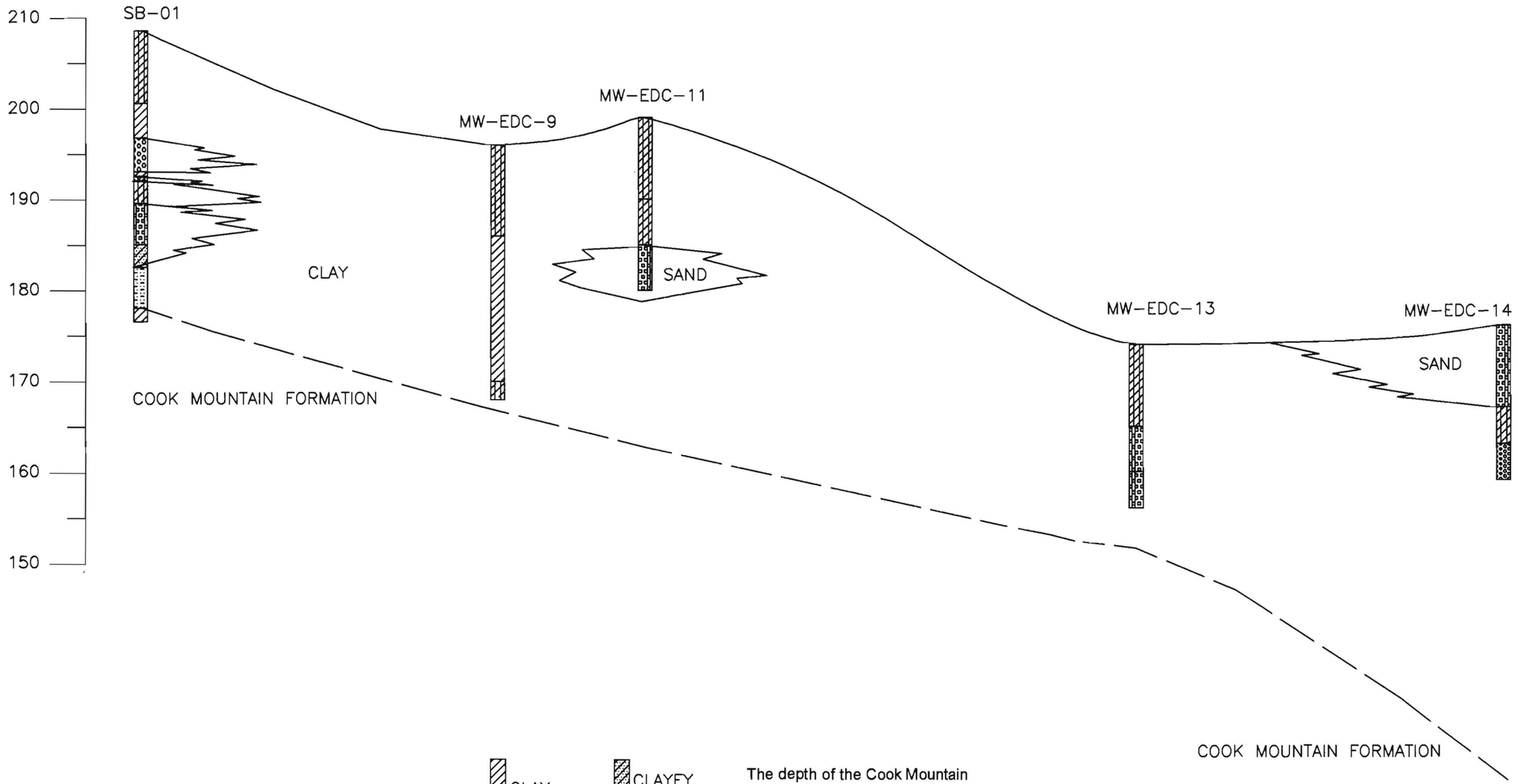
0 250 500
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 03EC200 filename | CROSS SECTION B - B' |
| DRAFTED BY: LMM DATE: 03/15/04 | GEOLOGIC INVESTIGATION REPORT |
| APPROVED: BY: DATE: 5-28-04 | EL DORADO CHEMICAL COMPANY EL DORADO, ARKANSAS |

C
NORTH

C'
SOUTH




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section G which shows Well MW-EDC-13 and Cross Section B which shows MW-EDC-14.

Geologic conditions are interpolated between borings, actual conditions may vary.

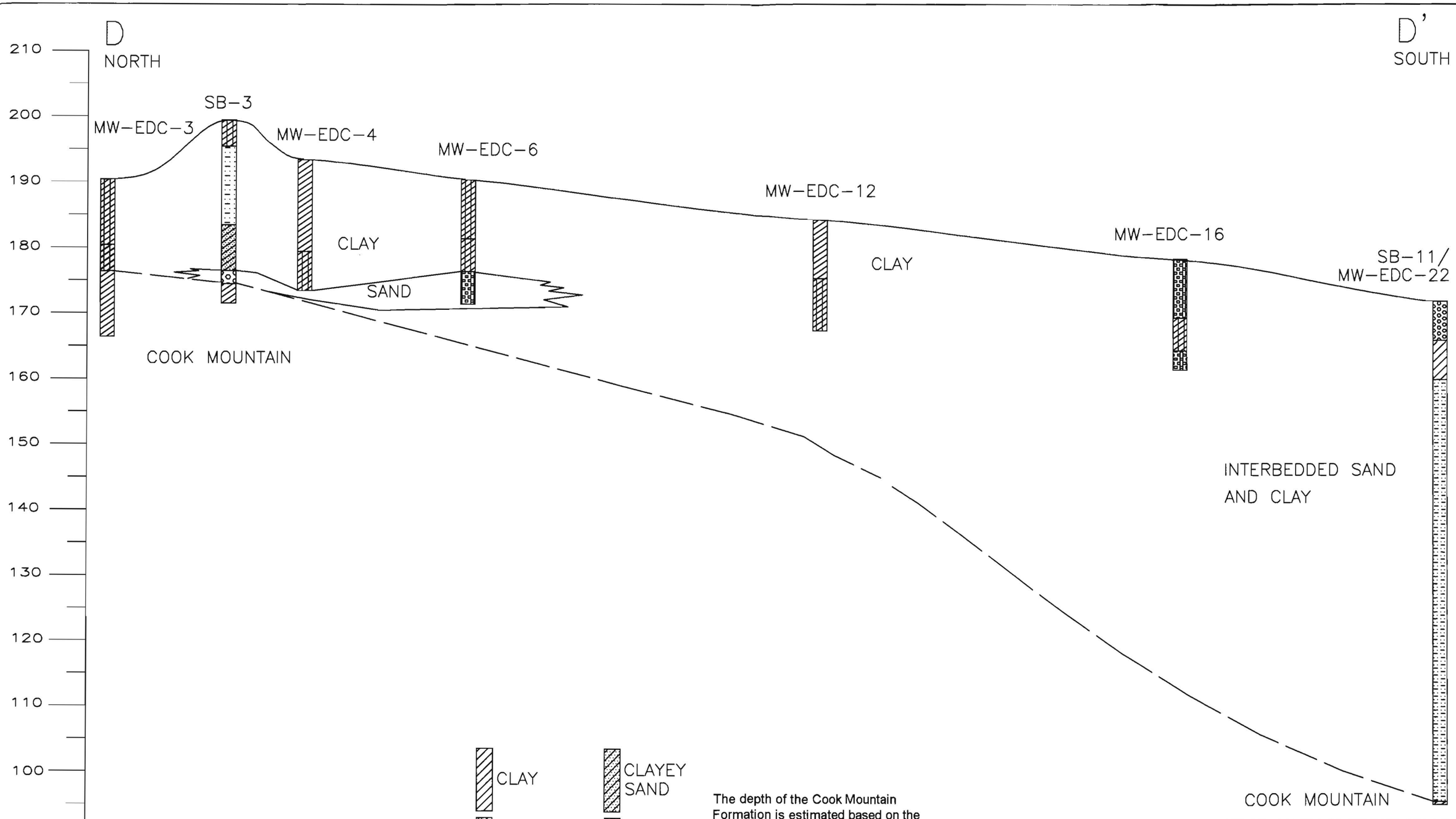
0 250 500
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 2EC0100 C.DWG | |
| DRAFTED BY: KK/LM | DATE: 03/21/04 |
| APPROVED: BY: | DATE: 5-28-04 |

CROSS SECTION C - C'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

5




The depth of the Cook Mountain Formation is estimated based on the depths interpolated in Cross Section G which shows Well MW-EDC-12 and Cross Section B which shows MW-EDC-16.

Geologic conditions are interpolated between borings, actual conditions may vary.

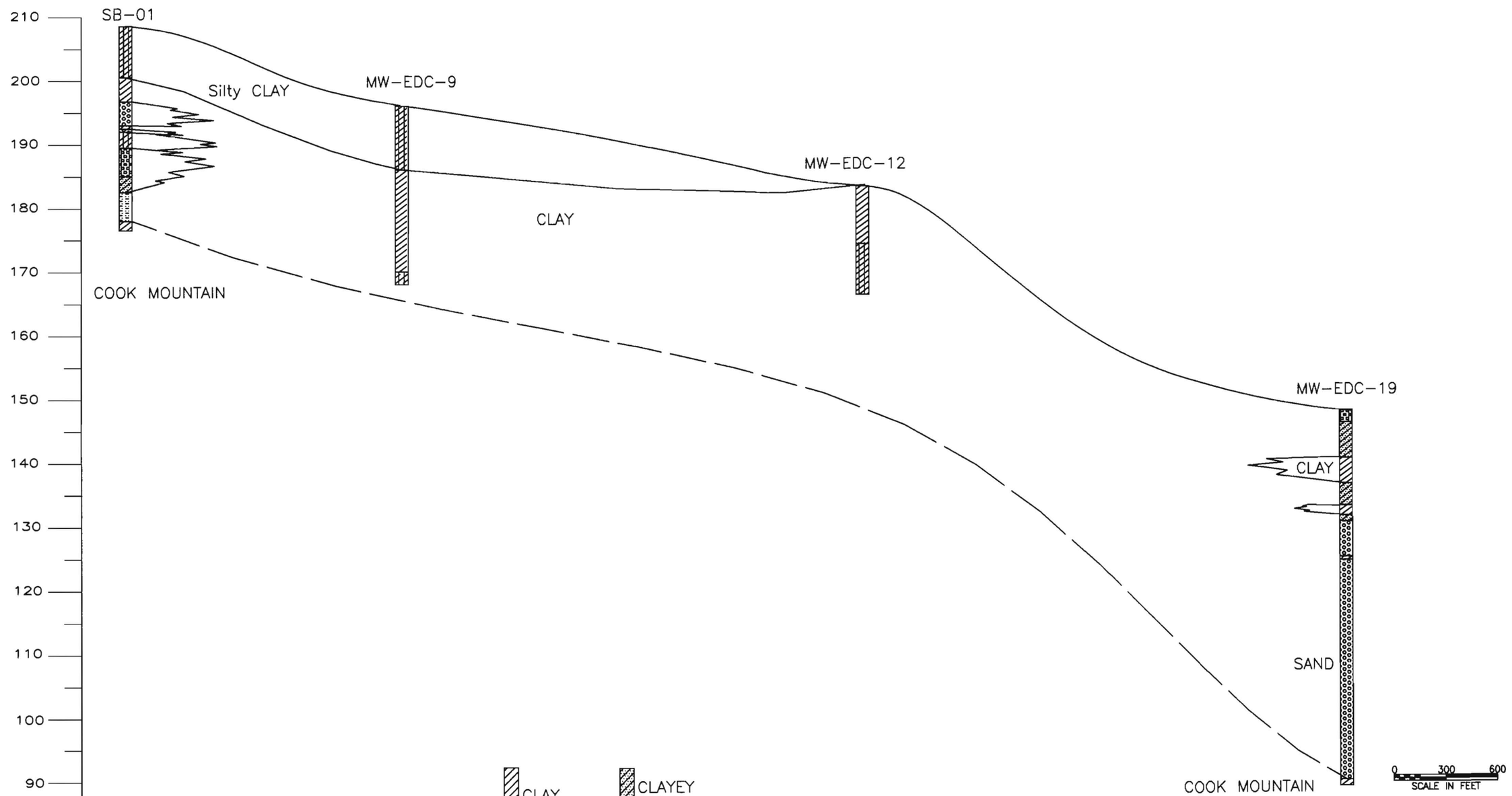
0 250 500
SCALE IN FEET

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 03EC200<br>revised CROSS SECTION MW-3 TO MW-16 LMM.DWG | CROSS SECTION D - D'<br>GEOLOGIC INVESTIGATION REPORT<br>EL DORADO CHEMICAL COMPANY<br>EL DORADO, ARKANSAS |
| DRAFTED BY: LMM DATE: 03/12/04 | 6 |
| APPROVED: BY: DATE: 5-28-04 | |

E
NORTHWEST

E'
SOUTHEAST




CLAY
SILTY CLAY
SANDY CLAY
CLAYEY SAND
SILTY SAND
SAND

The depth of the Cook Mountain Formation is estimated based on the depth interpolated in Cross Section G which shows Well MW-EDC-12.

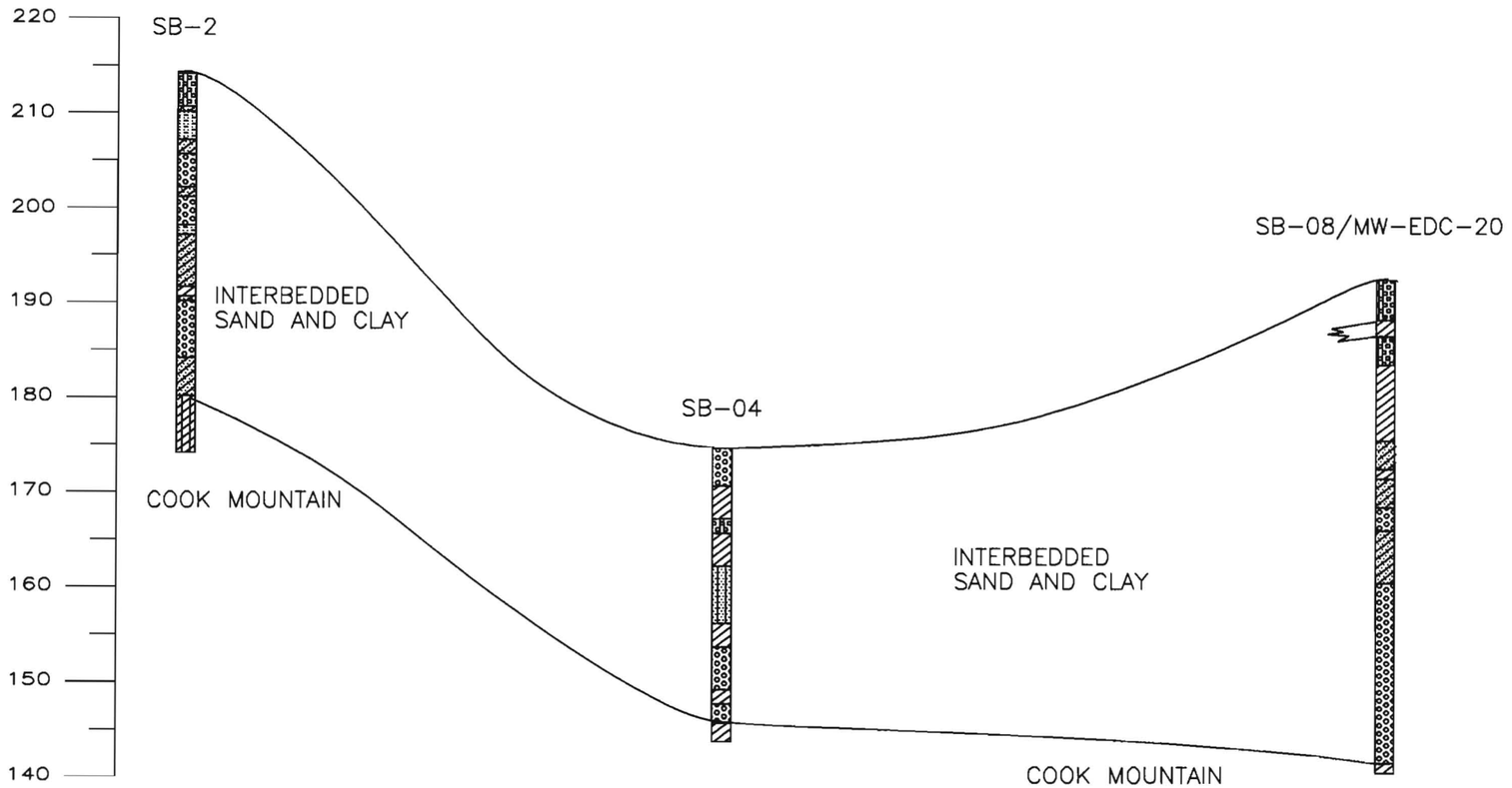
Geologic conditions are interpolated between borings, actual conditions may vary.

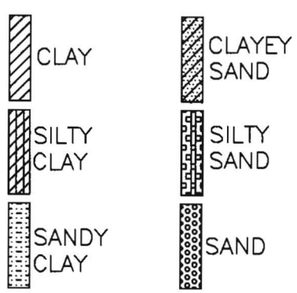
ENVIRONMENTAL MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 03EC200 filename | CROSS SECTION E - E' |
| DRAFTED BY: LMM DATE: 03/15/04 | GEOLOGIC INVESTIGATION REPORT |
| APPROVED: BY: DATE: 5-28-04 | EL DORADO CHEMICAL COMPANY EL DORADO, ARKANSAS |

F
NORTH

F'
SOUTH



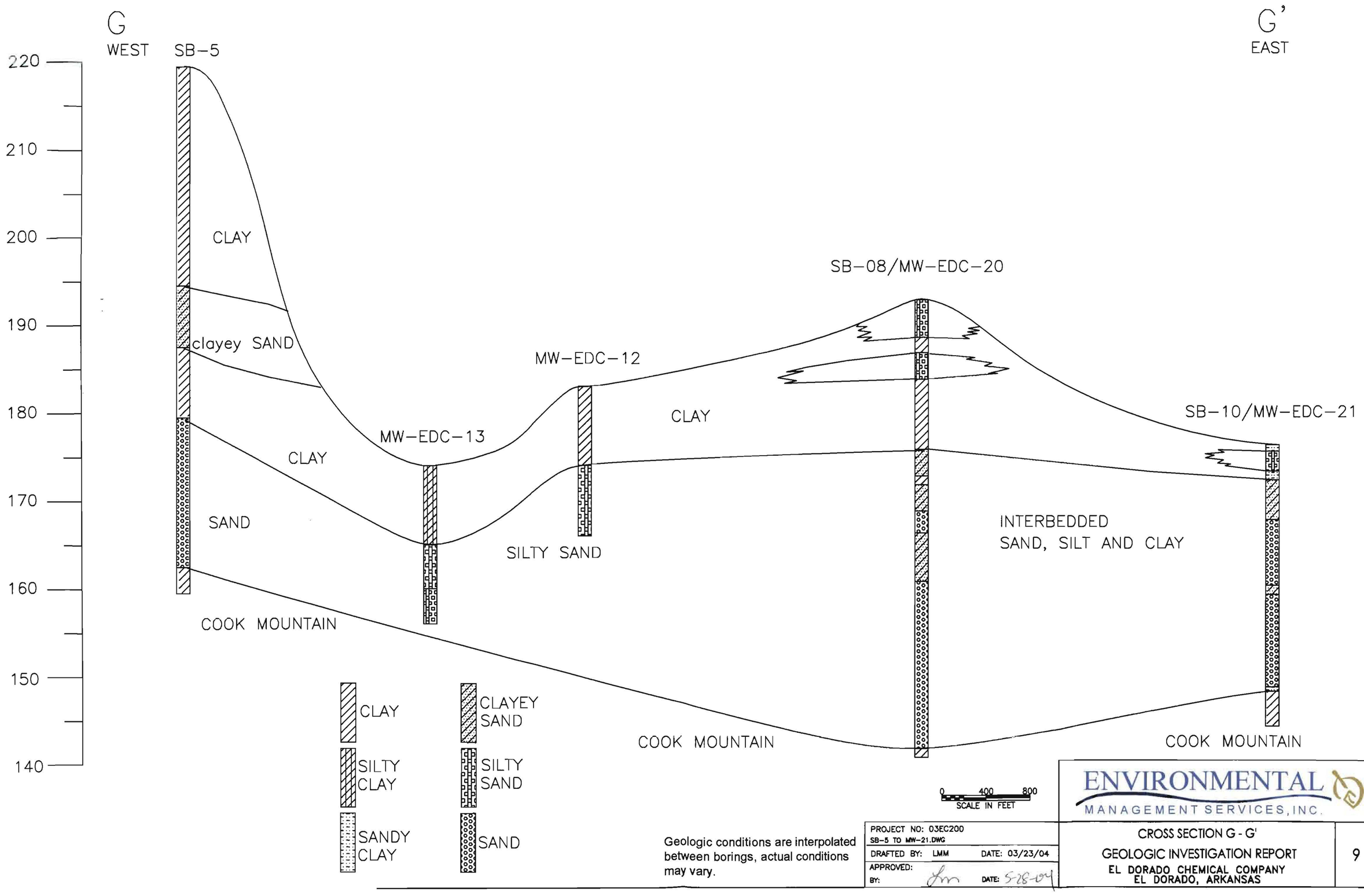




Geologic conditions are interpolated between borings, actual conditions may vary.

0 300 600
SCALE IN FEET

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.

| | |
|---|---|
| PROJECT NO: 03EC200<br>filename | CROSS SECTION F - F'<br>GEOLOGIC INVESTIGATION REPORT<br>EL DORADO CHEMICAL COMPANY<br>EL DORADO, ARKANSAS |
| DRAFTED BY: LMM DATE: 03/15/04 | |
| APPROVED:<br>BY: DATE: 5-28-04 | |




Geologic conditions are interpolated between borings, actual conditions may vary.

| | |
|---|---|
| PROJECT NO: 03EC200 SB-5 TO MW-21.DWG | |
| DRAFTED BY: LMM | DATE: 03/23/04 |
| APPROVED: BY: | DATE: 5-28-04 |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

CROSS SECTION G - G'
GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

# APPENDIX A

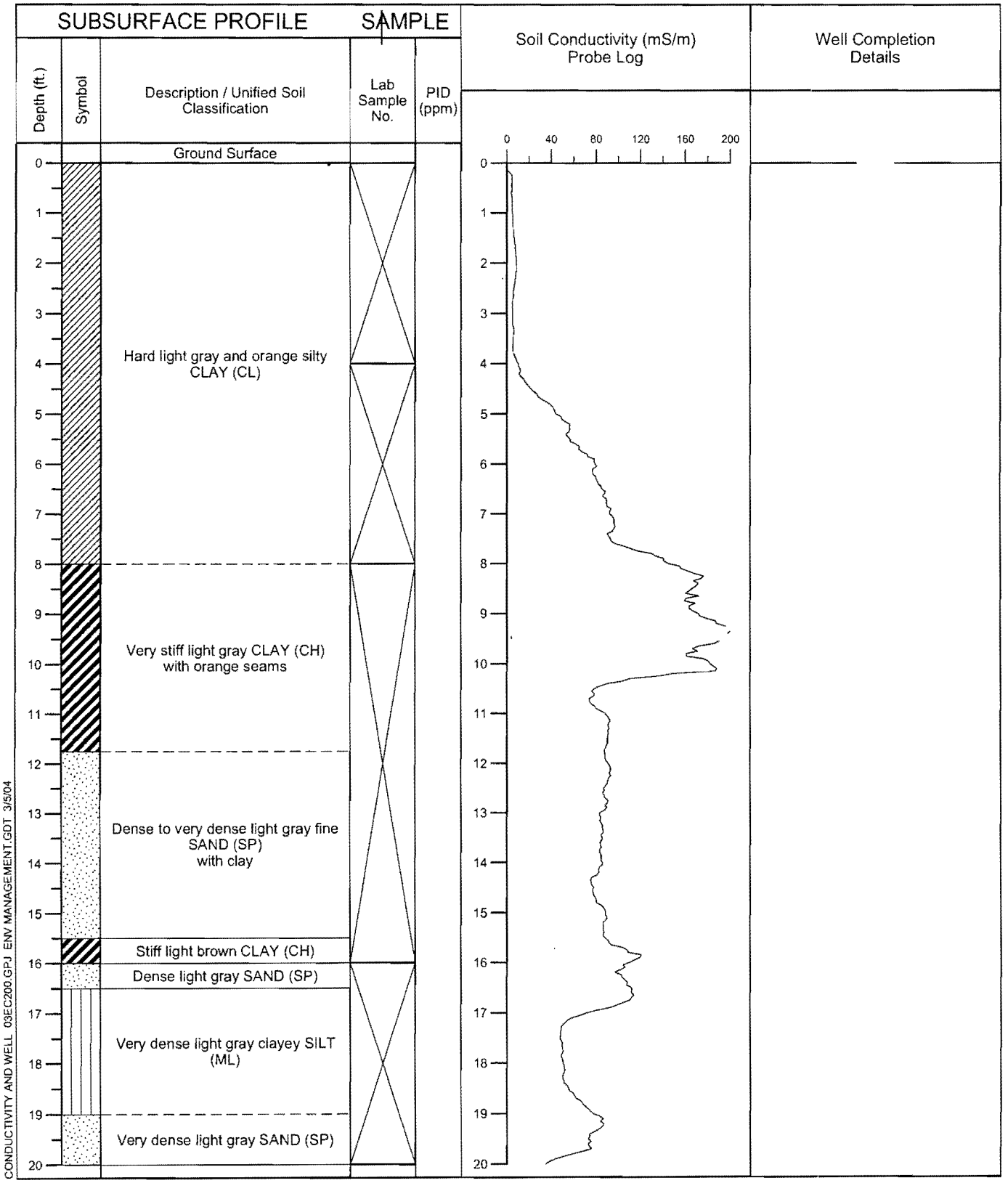
# BORING AND CONDUCTIVITY LOGS

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 10915.59 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 1846.90 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 208.57 | Driller: | JG |
| Date: | 1-11-04 | Total Depth (ft. bls) | 32.0 | Checked By: | |

Page: 1 of 2

**Boring No.: SB-01**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 10915.59 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 1846.90 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 208.57 | Driller: | JG |
| Date: | 1-11-04 | Total Depth (ft. bls) | 32.0 | Checked By: | |

Page: 2 of 2

**Boring No.: SB-01**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE | SAMPLE | Soil Conductivity (mS/m) Probe Log | Well Completion Details

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20–23 | | Dense light gray silty SAND (SM) with some black grains | | |
| 24–25 | | Firm to dense light gray and light brown clayey SAND (SC) | | |
| 26–30 | | Medium light gray and orange fine sandy CLAY (CL) | | |
| 31–32 | | Cook Mountian Formation<br>Very stiff to hard dark gray CLAY (CH)<br>with light gray silt seams<br>Total Depth 32' | | |

Soil Conductivity (mS/m) Probe Log: 0, 40, 80, 120, 160, 200

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 11562.88 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 5829.66 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 214.41 | Driller: | JG |
| Date: | 1-10-04 | Total Depth (ft. bls) | 40.0 | Checked By: | |

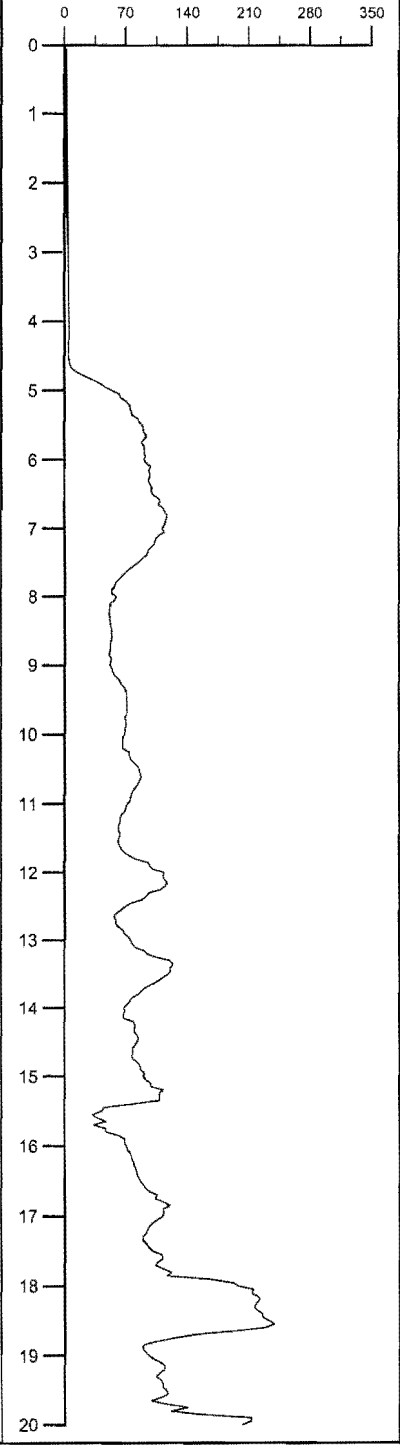


**Boring No.: SB-02**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE | SAMPLE | Soil Conductivity (mS/m) Probe Log | Well Completion Details

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0–4 | | Loose brown silty SAND (SM) | | |
| 4–5 | | Dense brown clayey SAND (SC) | | |
| 5–8 | | Very stiff dark gray and orange sandy CLAY (CL) | | |
| 8–9 | | Very dense orange and light brown clayey SAND (SC) | | |
| 9–12 | | Very dense light brown fine SAND (SP) with clay | | |
| 12–13 | | Very dense light gray and orange clayey SAND (SC) | | |
| 13–16 | | Very dense light gray SAND (SP) with clay | | |
| 16–17 | | Very stiff dark gray sandy CLAY (CL) | | |
| 17–18 | | Very dense orange and light gray clayey SAND (SC) | | |
| 18–19 | | Stiff light gray sandy CLAY (CL) | | |
| 19–20 | | Very dense orange and light gray clayey SAND (SC) | | |



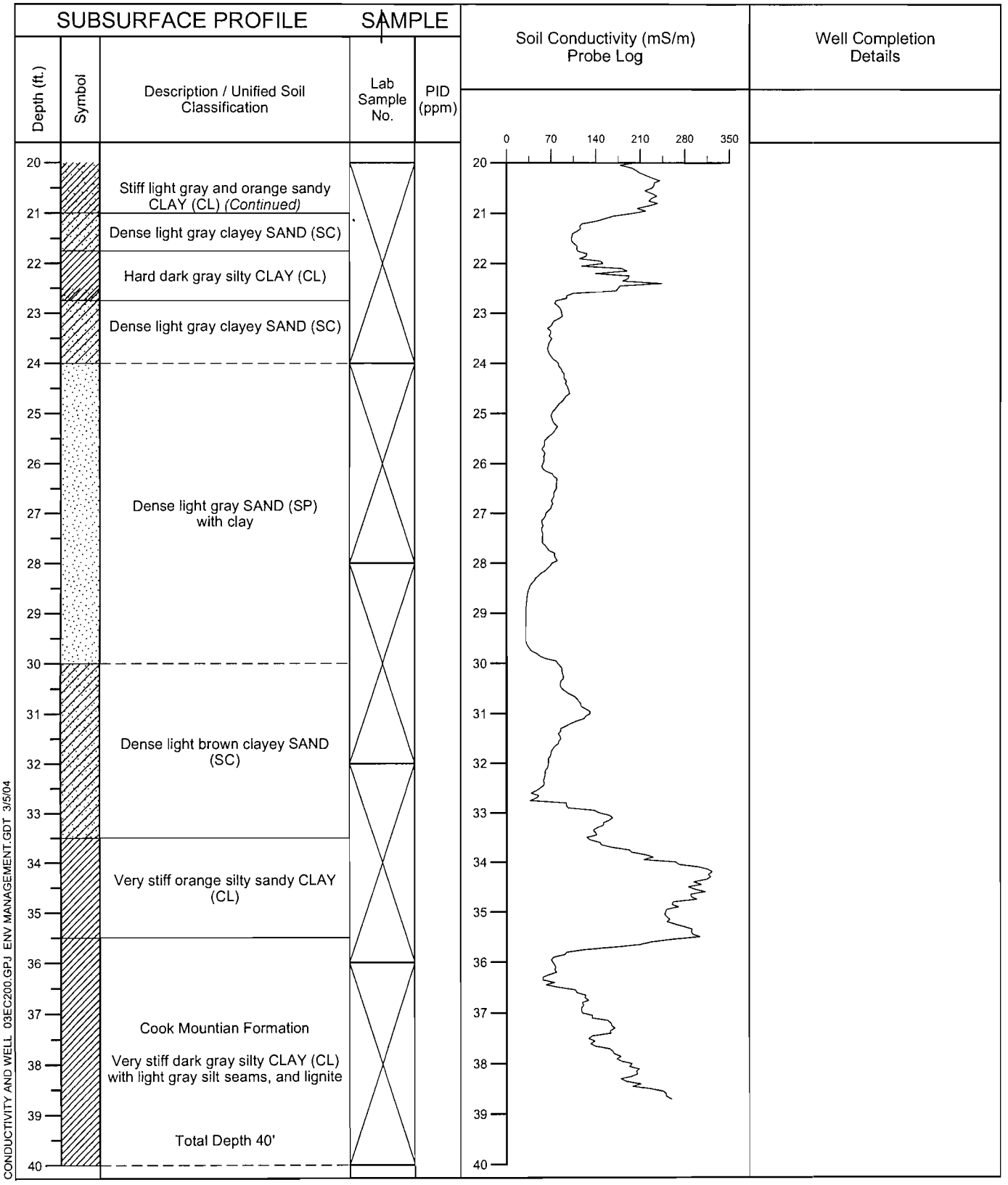

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 11562.88 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 5829.66 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 214.41 | Driller: | JG |
| Date: | 1-10-04 | Total Depth (ft. bls) | 40.0 | Checked By: | |

Page: 2 of 2

**Boring No.: SB-02**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 10364.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3353.22 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 198.39 | Driller: | JG |
| Date: | 1-11-04 | Total Depth (ft. bls) | 28.0 | Checked By: | |

Page: 1 of 2

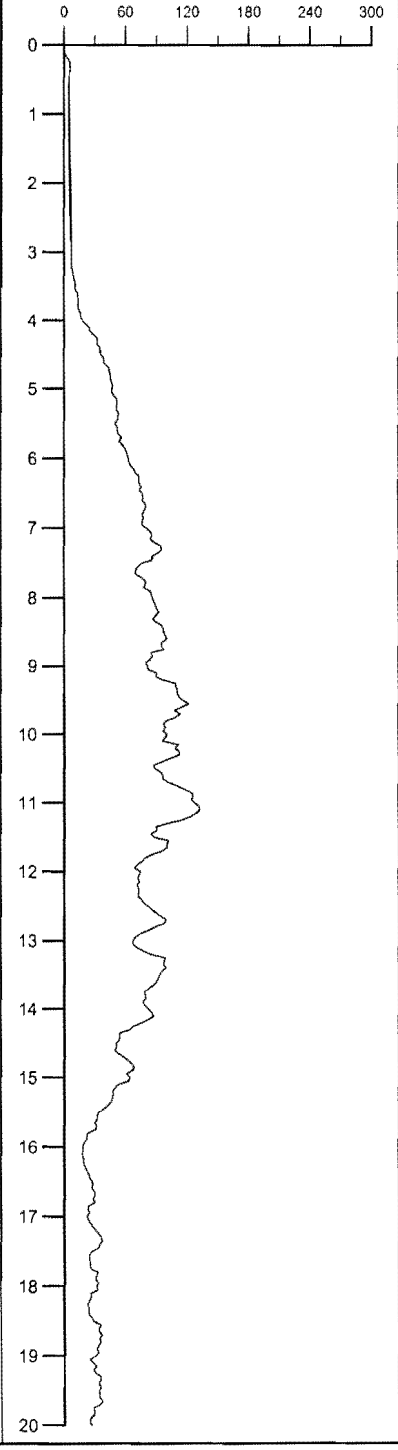
**Boring No.: SB-03**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE | SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0–4 | | Very soft light gray and orange silty CLAY (CL) | | |
| 4–12 | | Very stiff light gray fine sandy CLAY (CL-CH) with light gray silt seams | | |
| 12–16 | | Very stiff light gray fine sandy CLAY (CL) with light gray silt seams | | |
| 16–20 | | Loose light gray clayey SAND (SC) with 1" clay seams | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 10364.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3353.22 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 198.39 | Driller: | JG |
| Date: | 1-11-04 | Total Depth (ft. bls) | 28.0 | Checked By: | |

Page: 2 of 2

**Boring No.: SB-03**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 20–22 | | Loose light gray clayey SAND (SC) with 1" clay seams *(Continued)* | | | | |
| 23–24 | | Loose light gray SAND (SP) | | | | |
| 25–27 | | Cook Mountian Formation<br>Very stiff dark brown CLAY (CH) with sand and silt seams | | | | |
| 28 | | Total Depth 28' | | | | |

0 60 120 180 240 300

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

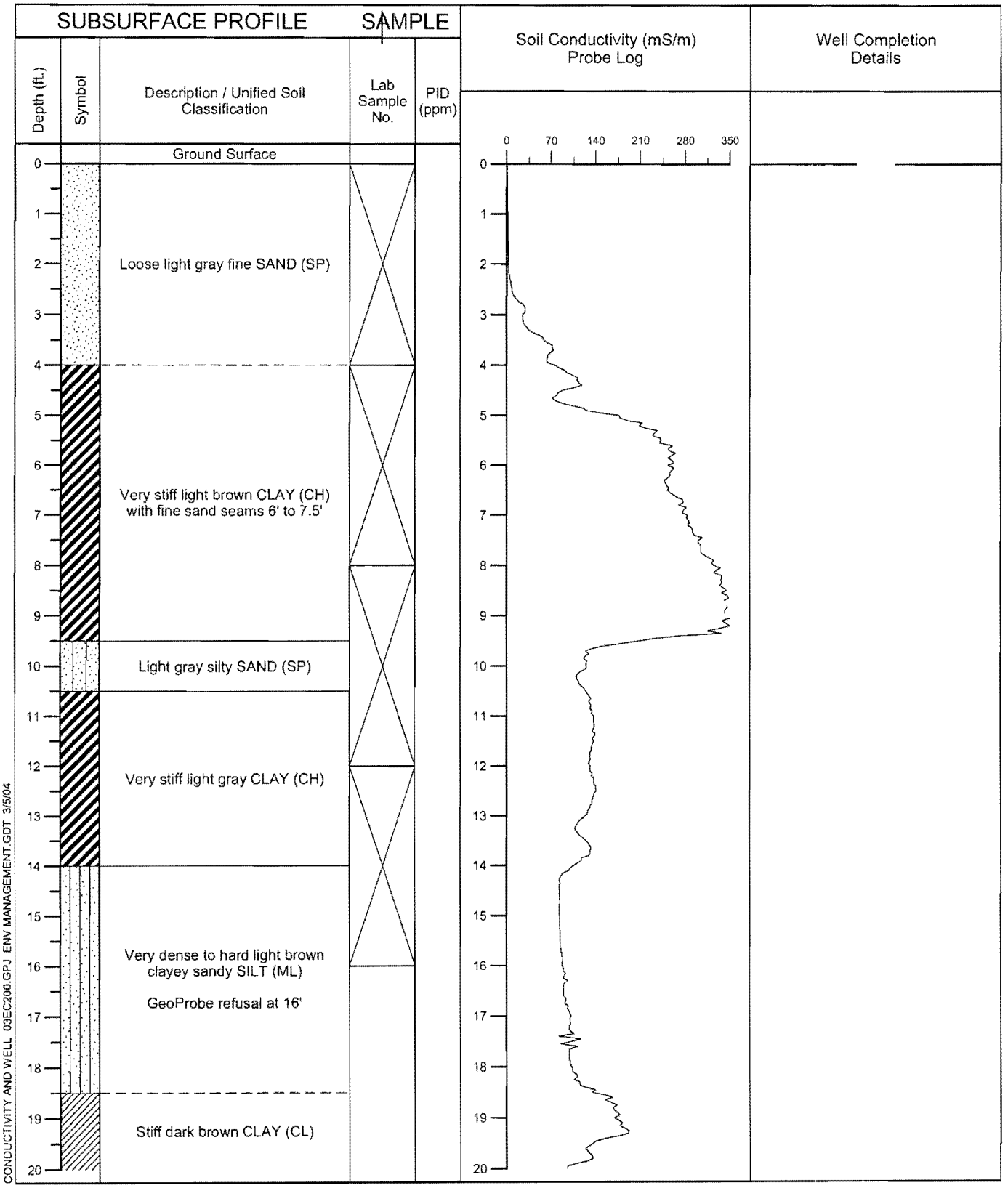
CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 9480.96 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 6232.14 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 174.99 | Driller: | Diversified |
| Date: | 1-11-04 | Total Depth (ft. bls) | 31.0 | Checked By: | |

Page: 1 of 2

**Boring No.: SB-04**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 9480.96 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 6232.14 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 174.99 | Driller: | Diversified |
| Date: | 1-11-04 | Total Depth (ft. bls) | 31.0 | Checked By: | |

Page: 2 of 2

**Boring No.: SB-04**

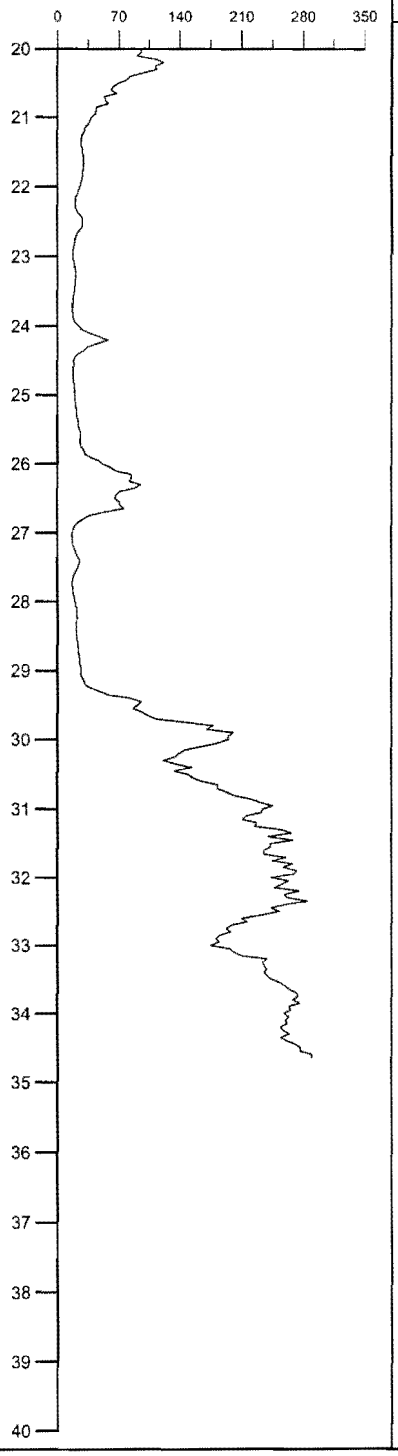
ENVIRONMENTAL MANAGEMENT SERVICES, INC.

600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20 | | Stiff dark brown CLAY (CL) *(Continued)* | | |
| 21 | | | | |
| 22 | | Dense dark gray SAND (SP) | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | Light gray and brown sandy CLAY (CL) laminated | | |
| 27 | | | | |
| 28 | | Dark gray SAND (SP) | | |
| 29 | | | | |
| 30 | | Cook Mountain Formation<br>Very stiff dark brown clay (CL) with light gray sand laminations | X | |
| 31 | | Total Depth 31' | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |

SAMPLE

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7157.14 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 968.18 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 219.47 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 60.0 | Checked By: | |

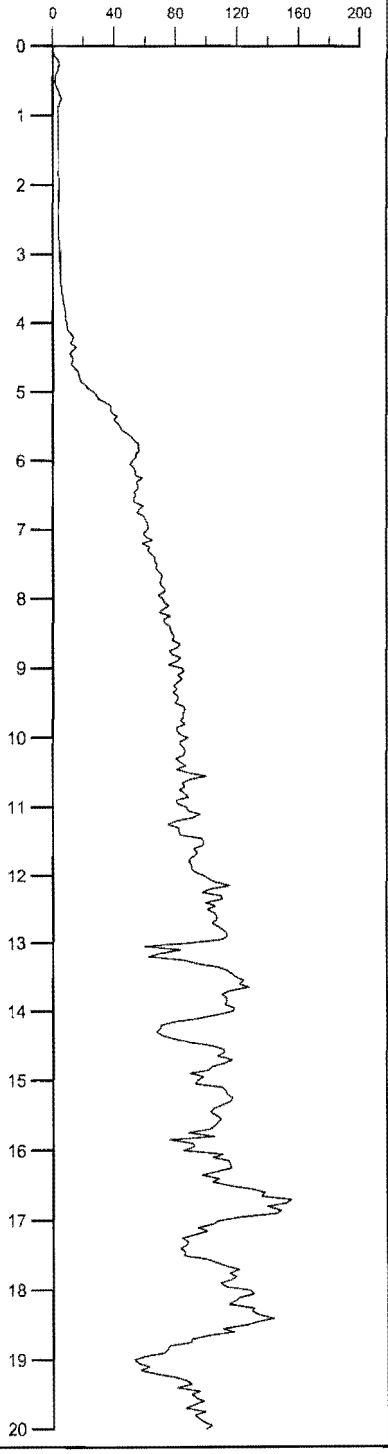
Page: 1 of 4

**Boring No.: SB-05**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0 – 8 | | Stiff light gray silty CLAY (CL) with orange stains | | |
| 8 – 19 | | Very stiff brown CLAY (CH) with light gray fine sand seams | | |
| 19 – 20 | | Very stiff brown clay (CL-CH) interbedded with light gray and orange fine sand | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7157.14 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 968.18 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 219.47 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 60.0 | Checked By: | |



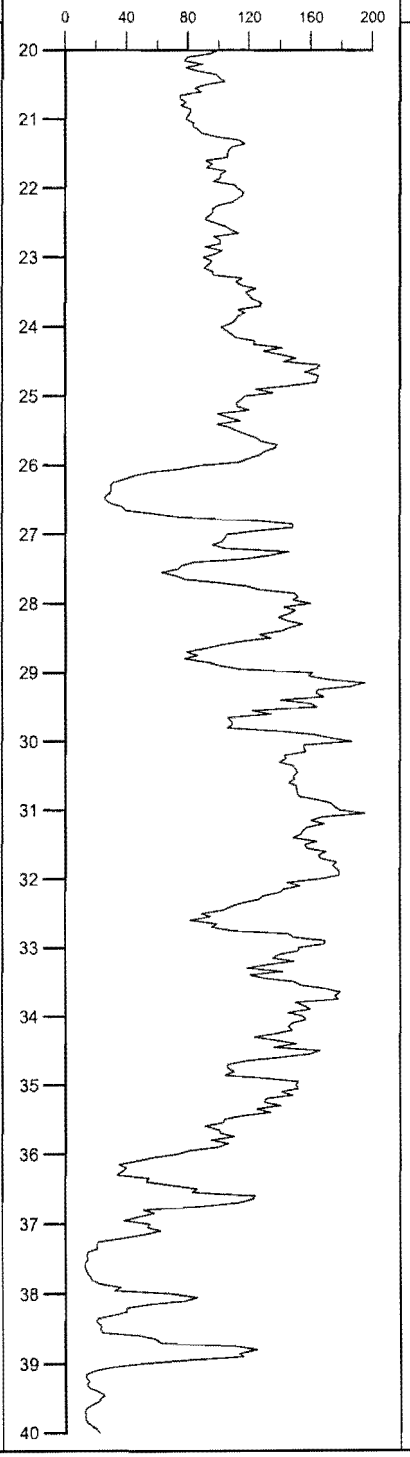
**Boring No.: SB-05**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE | SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20–25 | | Very stiff dark gray CLAY (CH) with fine sand seams | | |
| 25–32 | | Very stiff dark gray clayey fine sandy CLAY (CL) | | |
| 32–38 | | Very stiff dark gray CLAY (CH) with light gray fine sand seams | | |
| 38–40 | | Very dense dark gray fine SAND | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7157.14 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 968.18 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 219.47 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 60.0 | Checked By: | |

Page: 3 of 4

**Boring No.: SB-05**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 40 | | (SP)<br>with clay seams | | | 0 40 80 120 160 200 | |
| 41 | | | | | | |
| 42 | | | | | | |
| 43 | | | | | | |
| 44 | | | | | | |
| 45 | | Very dense dark gray fine SAND<br>(SP)<br>with clay seams | | | | |
| 46 | | | | | | |
| 47 | | | | | | |
| 48 | | | | | | |
| 49 | | | | | | |
| 50 | | Very dense dark gray fine SAND<br>(SP)<br>with clay seams, and lignite | | | | |
| 51 | | | | | | |
| 52 | | | | | | |
| 53 | | | | | | |
| 54 | | | | | | |
| 55 | | Very dense dark gray fine SAND<br>(SP)<br>with clay seams | | | | |
| 56 | | | | | | |
| 57 | | | | | | |
| 58 | | Cook Mountian Formation<br>Very stiff interbedded light gray fine sand (SP), and dark brown CLAY (CL)<br>Total Depth 60' | | | | |
| 59 | | | | | | |
| 60 | | | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7157.14 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 968.18 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 219.47 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 60.0 | Checked By: | |

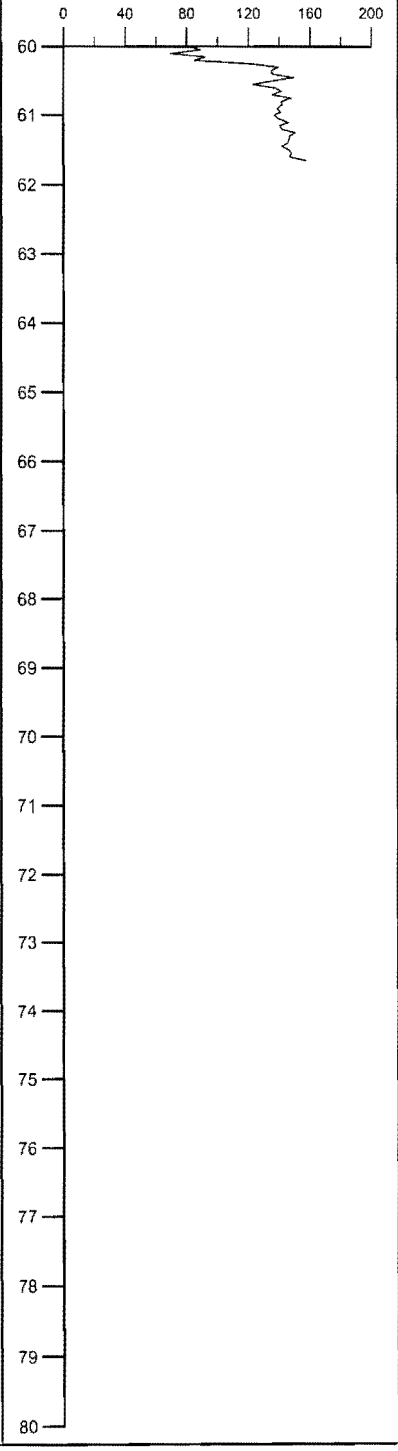
Page: 4 of 4

**Boring No.: SB-05**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |



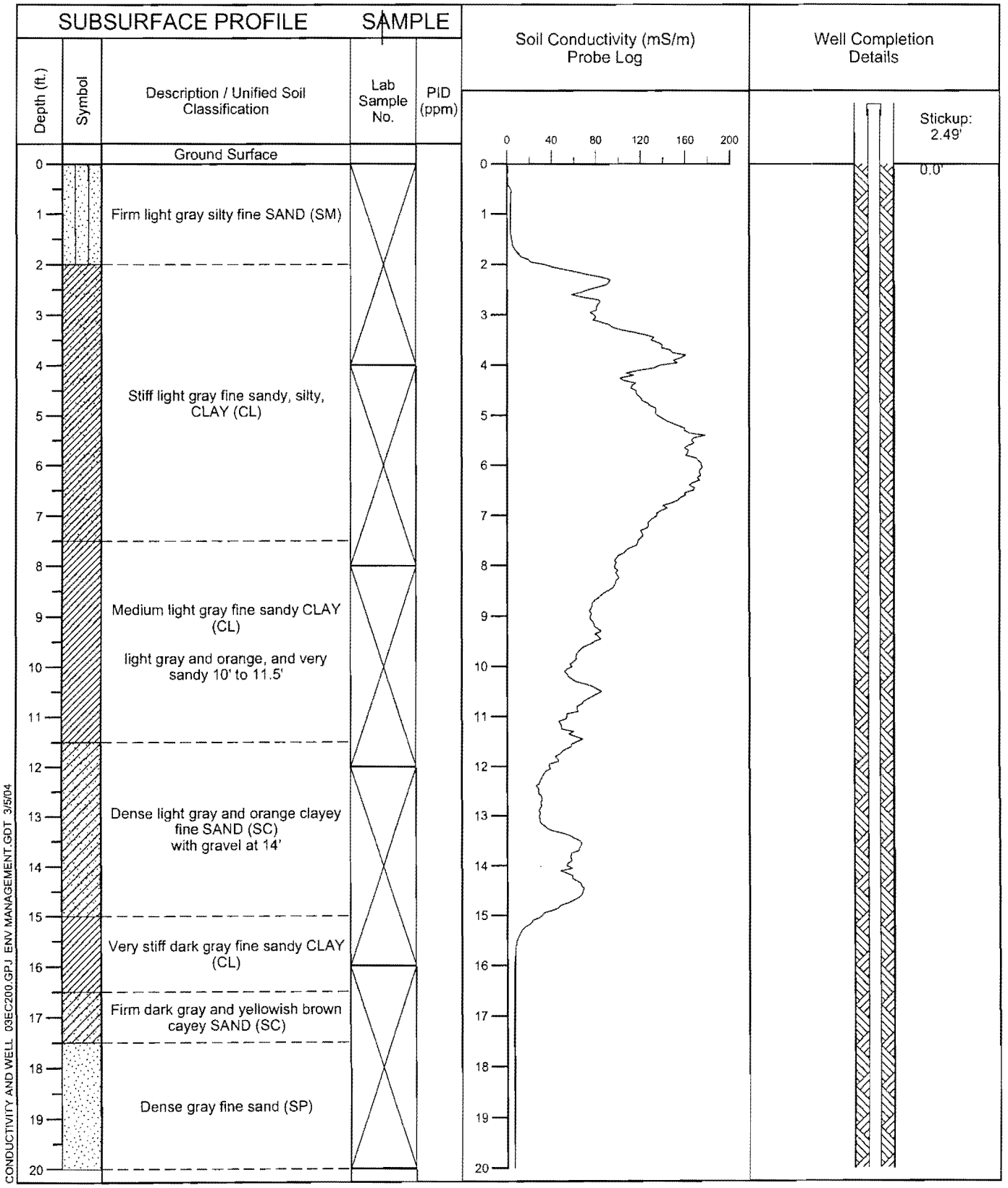

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5800.30 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 6741.46 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 147.92 | Driller: | Diversified |
| Date: | 1-11-04 | Total Depth (ft. bls) | 59.0 | Checked By: | |



**Boring No.: SB-07/MW-19**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401



| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5800.30 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 6741.46 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 147.92 | Driller: | Diversified |
| Date: | 1-11-04 | Total Depth (ft. bls) | 59.0 | Checked By: | |



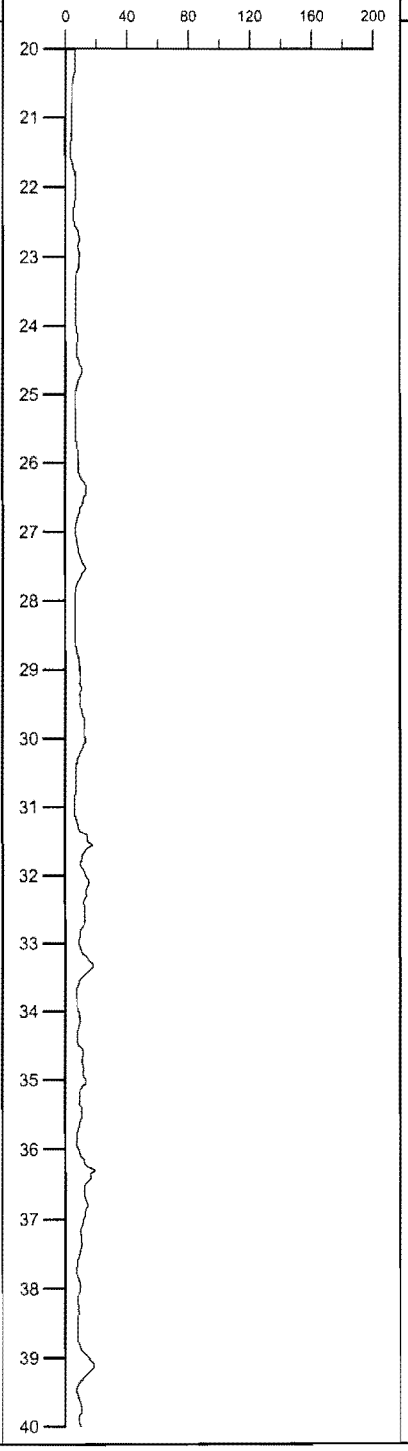
**Boring No.: SB-07/MW-19**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

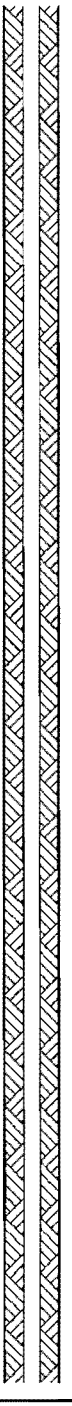
SUBSURFACE PROFILE | SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20–23 | | Very dense light gray and orange clayey fine SAND (SC) | | |
| 23 | | Very stiff dark gray CLAY (CH) | | |
| 24–30 | | Very dense light gray fine to medium SAND (SP) | | |
| 31–39 | | Very dense light gray fine to medium SAND (SP) with 1/4" clay seams | | |
| 40 | | Very dense light gray fine to | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details



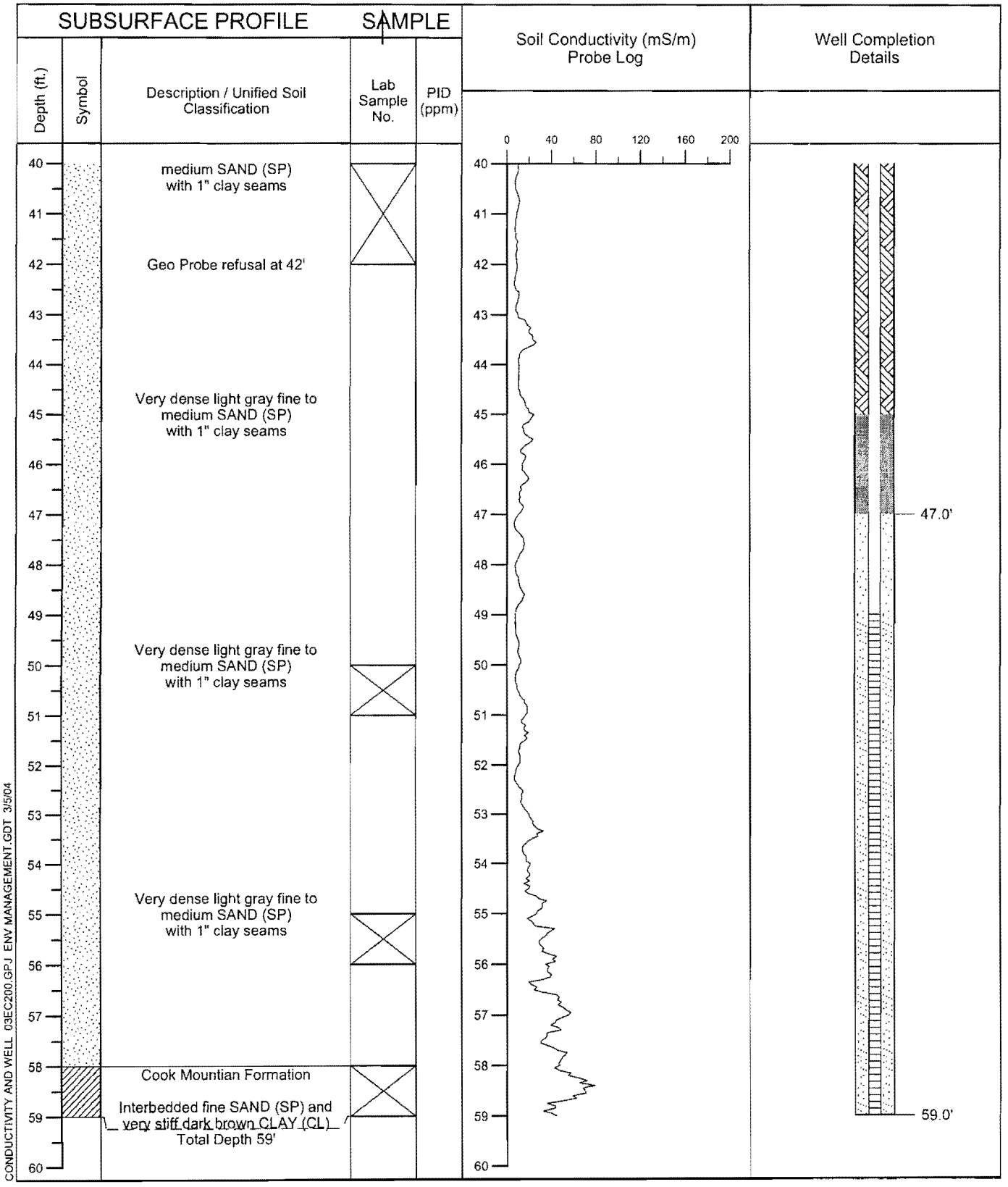
CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5800.30 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 6741.46 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 147.92 | Driller: | Diversified |
| Date: | 1-11-04 | Total Depth (ft. bls) | 59.0 | Checked By: | |

Page: 3 of 3

**Boring No.: SB-07/MW-19**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401



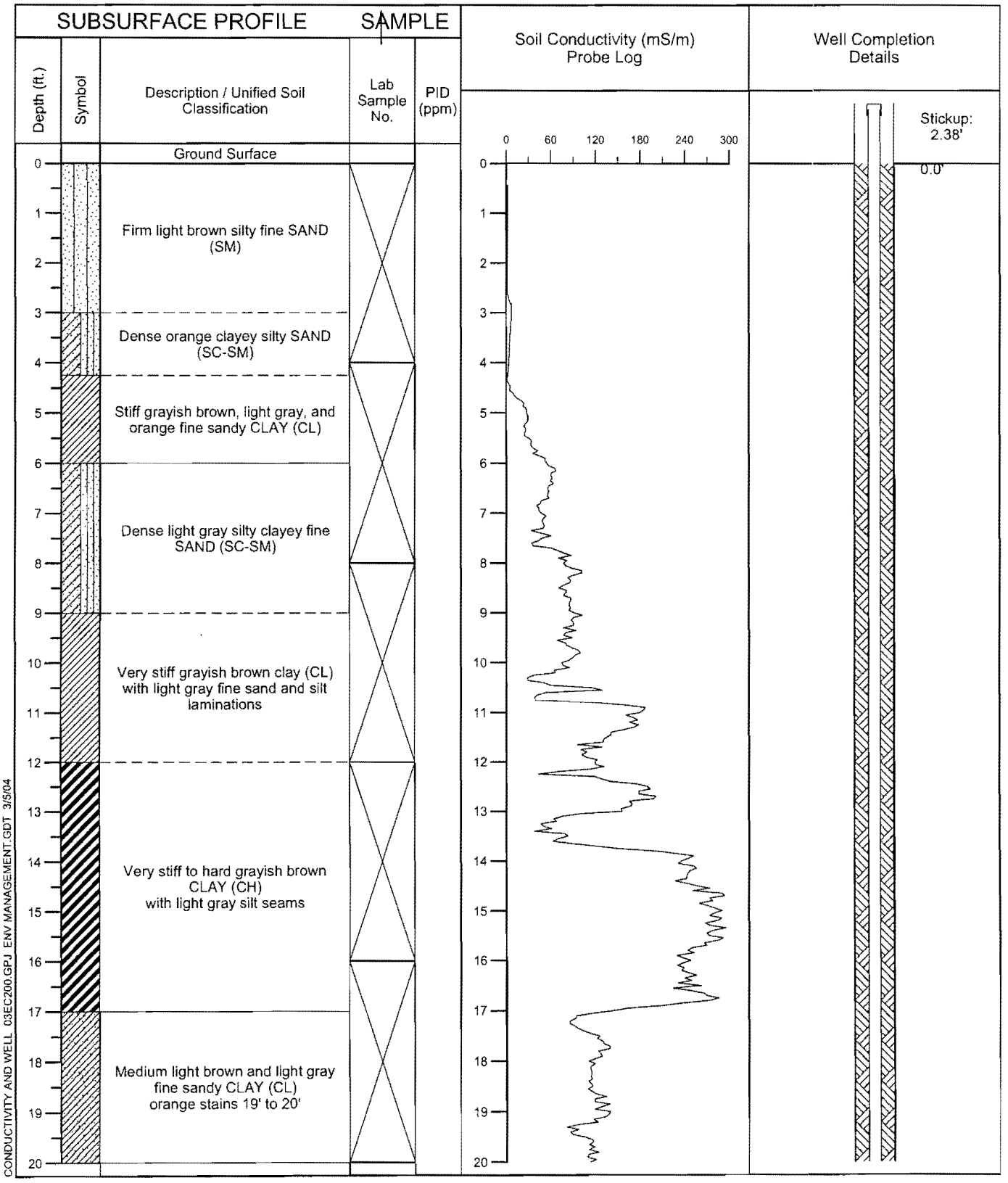

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7137.84 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 7446.47 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 192.77 | Driller: | JG |
| Date: | 1-07-04 | Total Depth (ft. bls) | 52.0 | Checked By: | |

Page: 1 of 3

**Boring No.: SB-08/MW-20**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401



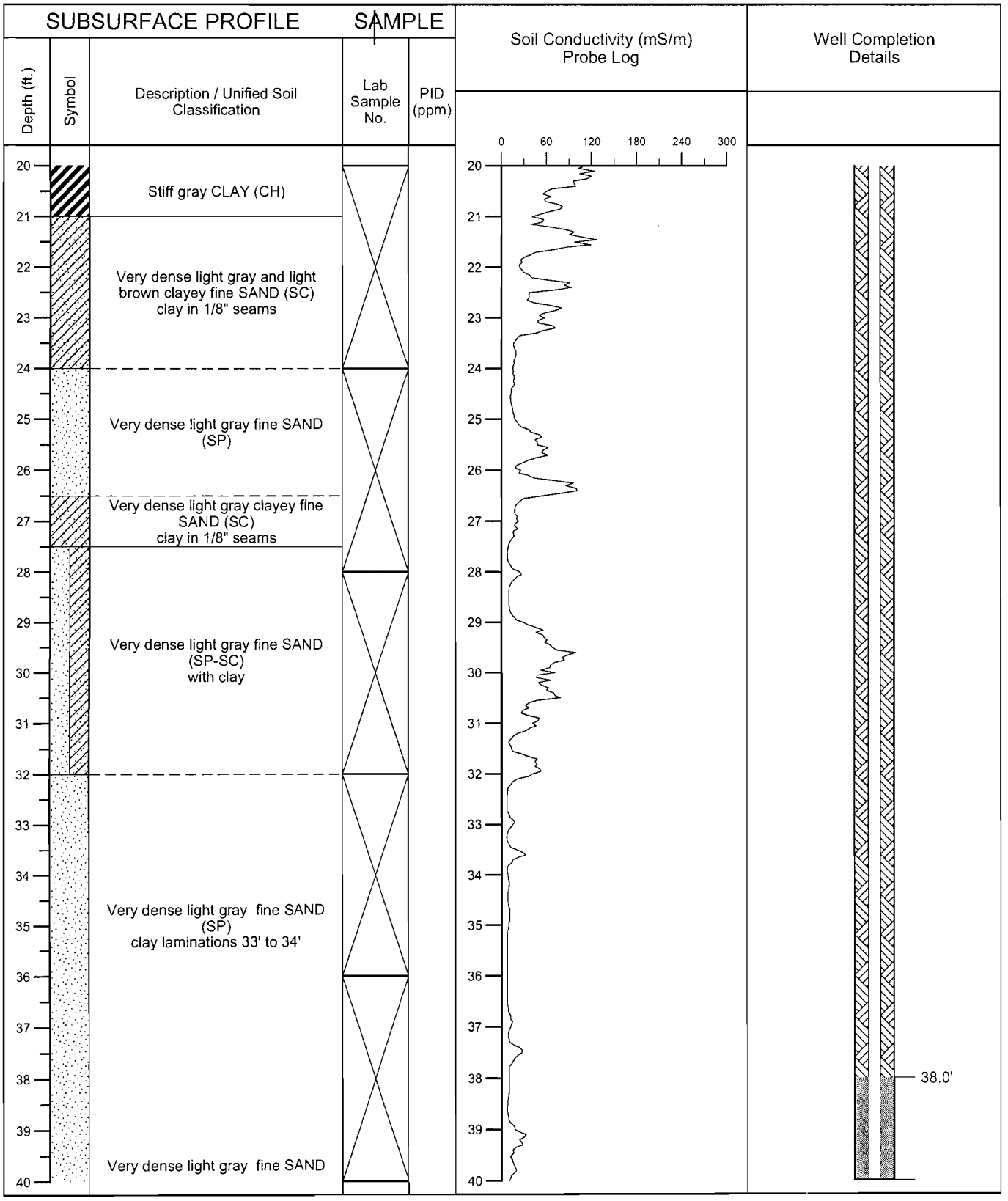

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7137.84 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 7446.47 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 192.77 | Driller: | JG |
| Date: | 1-07-04 | Total Depth (ft. bls) | 52.0 | Checked By: | |

Page: 2 of 3

**Boring No.: SB-08/MW-20**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401



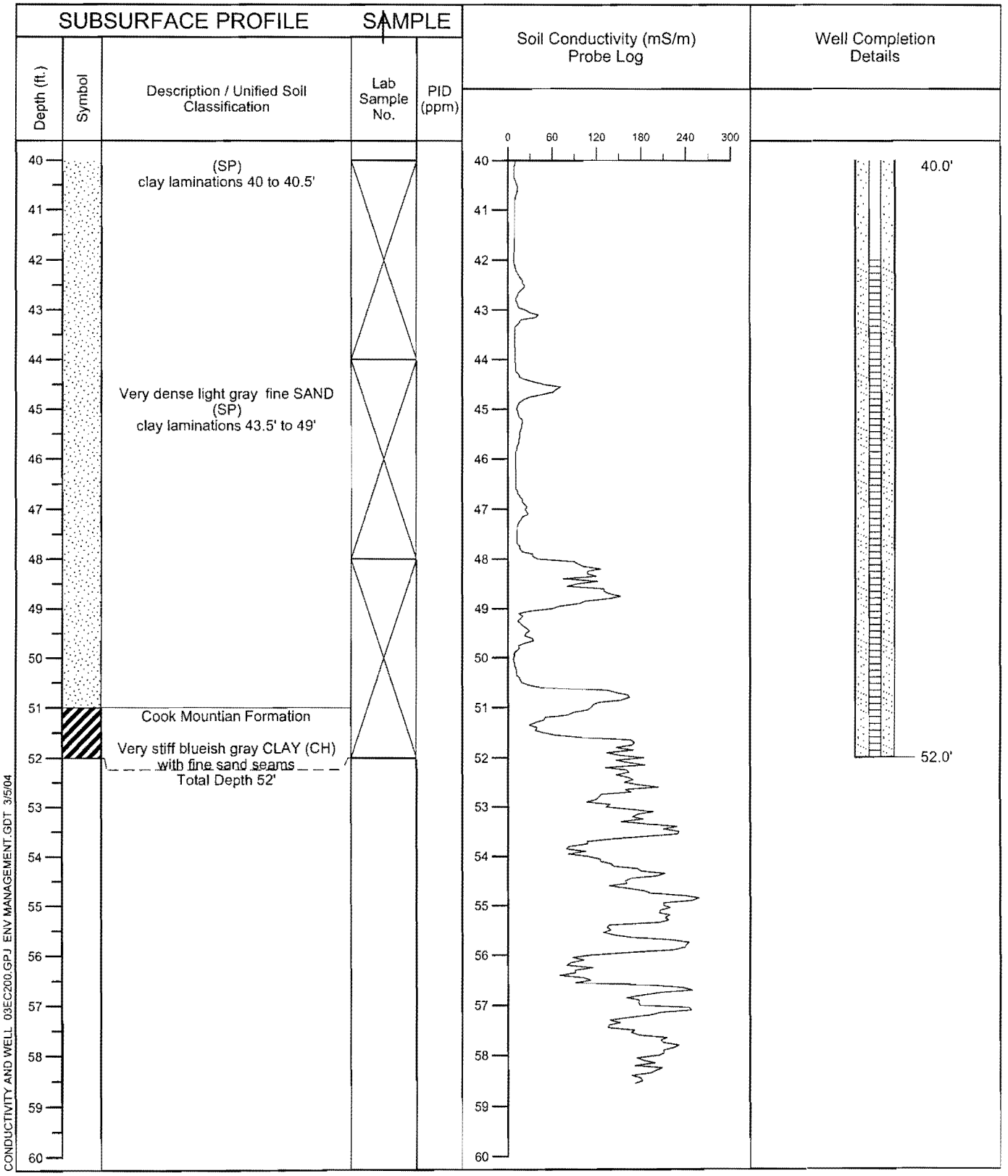

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7137.84 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 7446.47 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 192.77 | Driller: | JG |
| Date: | 1-07-04 | Total Depth (ft. bls) | 52.0 | Checked By: | |

Page: 3 of 3

**Boring No.: SB-08/MW-20**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |

Page: 1 of 9

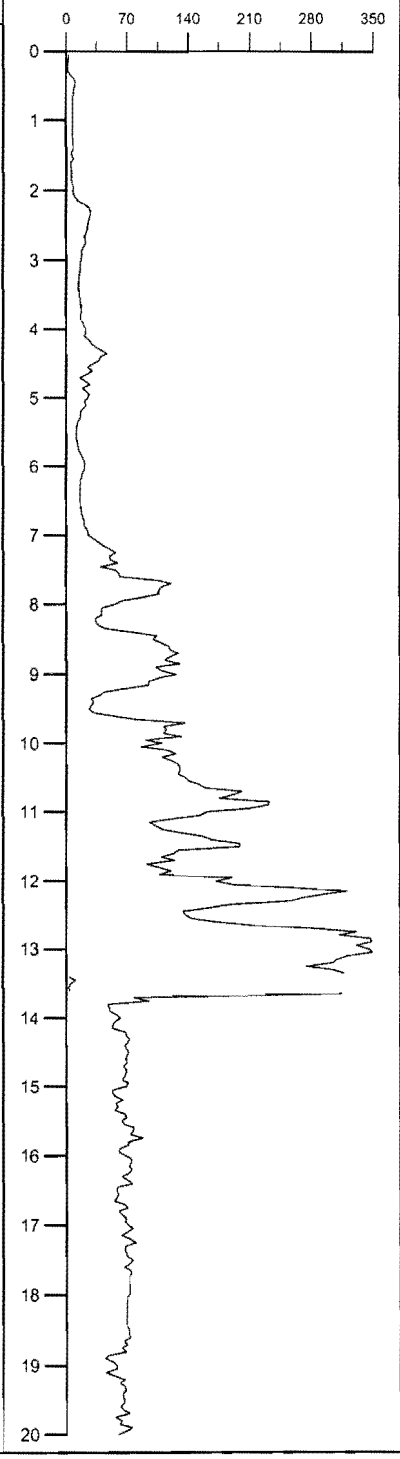
**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0 – 7.5 | | Dense light gray SAND (SP) | | |
| 7.5 – 8 | | Very stiff dark gray silty CLAY (CL) | | |
| 8 – 9 | | Dense light gray SAND (SP) | | |
| 9 – 9.5 | | Very stiff dark gray silty CLAY (CL) | | |
| 9.5 – 14 | | Very stiff dark gray CLAY (CH) | | |
| 14 – 20 | | Light gray and orange sandy CLAY (CL) | | |

SUBSURFACE PROFILE — SAMPLE

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



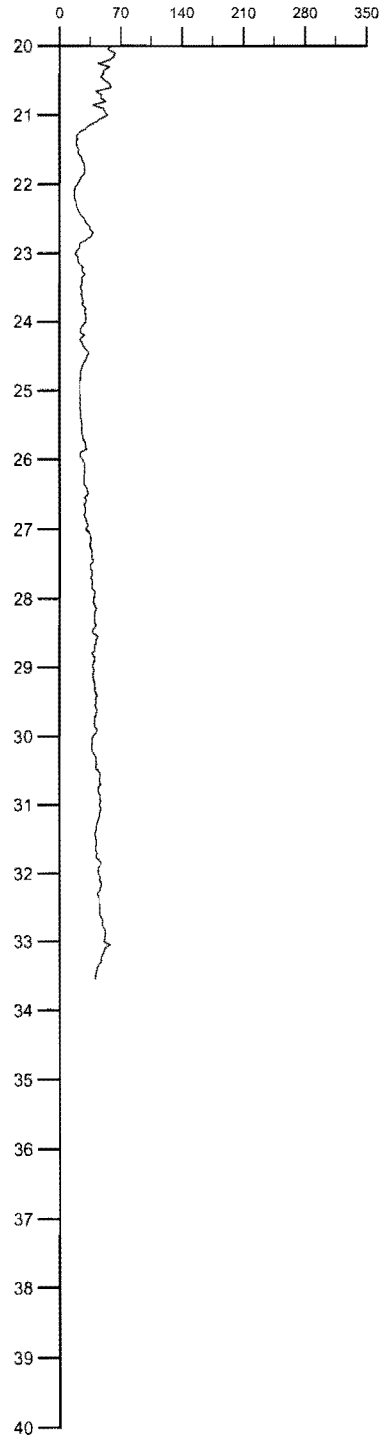
**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20–24 | | Light gray and orange sandy CLAY (CL) *(Continued)* | | |
| 25–29 | | Very dense light gray Sand (SP) with 1" clay seams | | |
| 30–34 | | Very dense light gray Sand (SP) with 1" clay seams | | |
| 35–40 | | Very dense light gray Sand (SP) | | |

SUBSURFACE PROFILE — SAMPLE

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | 0 70 140 210 280 350 | |
| 40 | | with 1" clay seams | | | | |
| 41 | | | | | | |
| 42 | | | | | | |
| 43 | | | | | | |
| 44 | | | | | | |
| 45 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 46 | | | | | | |
| 47 | | | | | | |
| 48 | | | | | | |
| 49 | | | | | | |
| 50 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 51 | | | | | | |
| 52 | | | | | | |
| 53 | | | | | | |
| 54 | | | | | | |
| 55 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 56 | | | | | | |
| 57 | | | | | | |
| 58 | | | | | | |
| 59 | | | | | | |
| 60 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 60 | | with 1" clay seams | | | 0 70 140 210 280 350 | |
| 61 | | | | | | |
| 62 | | | | | | |
| 63 | | | | | | |
| 64 | | | | | | |
| 65 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 66 | | | | | | |
| 67 | | | | | | |
| 68 | | | | | | |
| 69 | | | | | | |
| 70 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 71 | | | | | | |
| 72 | | | | | | |
| 73 | | | | | | |
| 74 | | | | | | |
| 75 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 76 | | | | | | |
| 77 | | | | | | |
| 78 | | | | | | |
| 79 | | | | | | |
| 80 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 80 | | with 1" clay seams | | | 0 70 140 210 280 350 | |
| 81 | | | | | | |
| 82 | | | | | | |
| 83 | | | | | | |
| 84 | | | | | | |
| 85 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 86 | | | | | | |
| 87 | | | | | | |
| 88 | | | | | | |
| 89 | | | | | | |
| 90 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 91 | | | | | | |
| 92 | | | | | | |
| 93 | | | | | | |
| 94 | | | | | | |
| 95 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 96 | | | | | | |
| 97 | | | | | | |
| 98 | | | | | | |
| 99 | | | | | | |
| 100 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | 0 70 140 210 280 350 | |
| 100 | | with 1" clay seams | | | | |
| 101 | | | | | | |
| 102 | | | | | | |
| 103 | | | | | | |
| 104 | | | | | | |
| 105 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 106 | | | | | | |
| 107 | | | | | | |
| 108 | | | | | | |
| 109 | | | | | | |
| 110 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 111 | | | | | | |
| 112 | | | | | | |
| 113 | | | | | | |
| 114 | | | | | | |
| 115 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 116 | | | | | | |
| 117 | | | | | | |
| 118 | | | | | | |
| 119 | | | | | | |
| 120 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | 0 70 140 210 280 350 | |
| 120 | | with 1" clay seams | | | | |
| 121 | | | | | | |
| 122 | | | | | | |
| 123 | | | | | | |
| 124 | | | | | | |
| 125 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 126 | | | | | | |
| 127 | | | | | | |
| 128 | | | | | | |
| 129 | | | | | | |
| 130 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 131 | | | | | | |
| 132 | | | | | | |
| 133 | | | | | | |
| 134 | | | | | | |
| 135 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 136 | | | | | | |
| 137 | | | | | | |
| 138 | | | | | | |
| 139 | | | | | | |
| 140 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |



**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 140 | | with 1" clay seams | | | 0 70 140 210 280 350 | |
| 141 | | | | | | |
| 142 | | | | | | |
| 143 | | | | | | |
| 144 | | | | | | |
| 145 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 146 | | | | | | |
| 147 | | | | | | |
| 148 | | | | | | |
| 149 | | | | | | |
| 150 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 151 | | | | | | |
| 152 | | | | | | |
| 153 | | | | | | |
| 154 | | | | | | |
| 155 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 156 | | | | | | |
| 157 | | | | | | |
| 158 | | | | | | |
| 159 | | | | | | |
| 160 | | Very dense light gray Sand (SP) | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5385.75 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 3610.85 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 180.48 | Driller: | Diversified |
| Date: | 1-22-04 | Total Depth (ft. bls) | 173.0 | Checked By: | |

Page: 9 of 9

**Boring No.: SB-09**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 160 | | with 1" clay seams | | | 0 70 140 210 280 350 | |
| 161 | | | | | | |
| 162 | | | | | | |
| 163 | | | | | | |
| 164 | | | | | | |
| 165 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 166 | | | | | | |
| 167 | | | | | | |
| 168 | | | | | | |
| 169 | | | | | | |
| 170 | | Very dense light gray Sand (SP) with 1" clay seams | | | | |
| 171 | | | | | | |
| 172 | | | | | | |
| 173 | | Total Depth 173' | | | | |
| 174 | | | | | | |
| 175 | | | | | | |
| 176 | | | | | | |
| 177 | | | | | | |
| 178 | | | | | | |
| 179 | | | | | | |
| 180 | | | | | | |

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7797.15 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 10546.00 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 176.29 | Driller: | JG |
| Date: | 1-06-04 | Total Depth (ft. bls) | 32.0 | Checked By: | |



**Boring No.: SB-10/MW-21**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

## SUBSURFACE PROFILE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0 | | Stiff light gray sandy CLAY (CL) | | |
| 1–3 | | Loose light gray silty SAND (SM) | | |
| 3–4 | | Very stiff yellowish brown sandy CLAY (CL) | | |
| 4–8 | | Dense orange and light gray clayey SAND (SC) with light gray clay lenses | | |
| 8–16 | | Firm light brown medium SAND (SP) | | |
| 16–17 | | Dense light brown and light gray clayey SAND (SC) | | |
| 17–20 | | Frim light gray and orange SAND | | |

SAMPLE

Soil Conductivity (mS/m) Probe Log

0 60 120 180 240 300

Well Completion Details

Stickup: 2.89'

0.0'

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 7797.15 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 10546.00 | Drill Method: | GeoProbe |
| Location: | ElDorado, AR | Grd. Elev: | 176.29 | Driller: | JG |
| Date: | 1-06-04 | Total Depth (ft. bls) | 32.0 | Checked By: | |

Page: 2 of 2

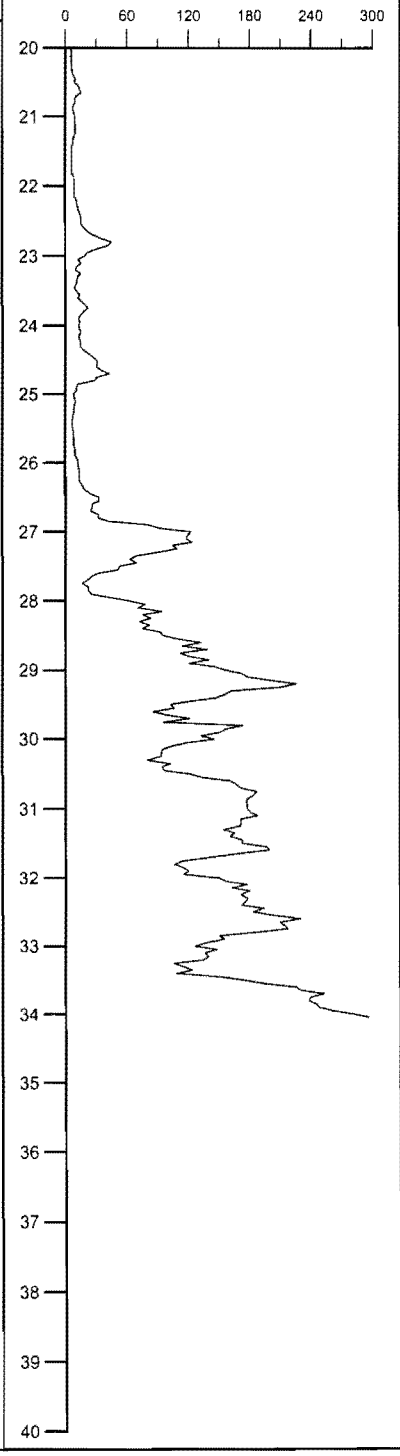
**Boring No.: SB-10/MW-21**

ENVIRONMENTAL MANAGEMENT SERVICES, INC
600 N. 26TH AVE
HATTIESBURG, MS 39401

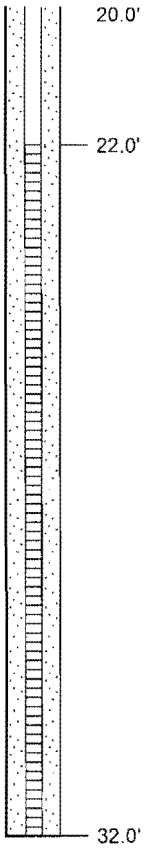
SUBSURFACE PROFILE — SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20 | | (SP) | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | Frim light gray and orange SAND (SP) | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | Very stiff light gray sandy CLAY (CL) with orange sand | | |
| 29 | | Cook Mountian Formation | | |
| 30 | | Very stiff dark gray CLAY (CL) with light gray sand seams | | |
| 31 | | | | |
| 32 | | Total Depth 32' | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 4154.50 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 4135.10 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 170.79 | Driller: | Diversified |
| Date: | 1-21-04 | Total Depth (ft. bls) | 77.0 | Checked By: | |



# Boring No.: SB-11/MW-22

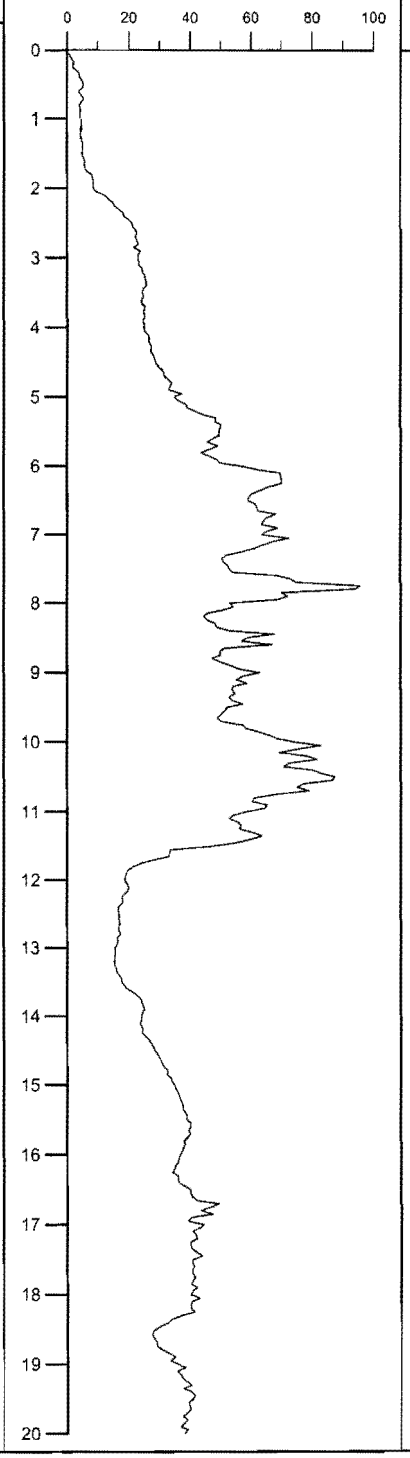
ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

## SUBSURFACE PROFILE

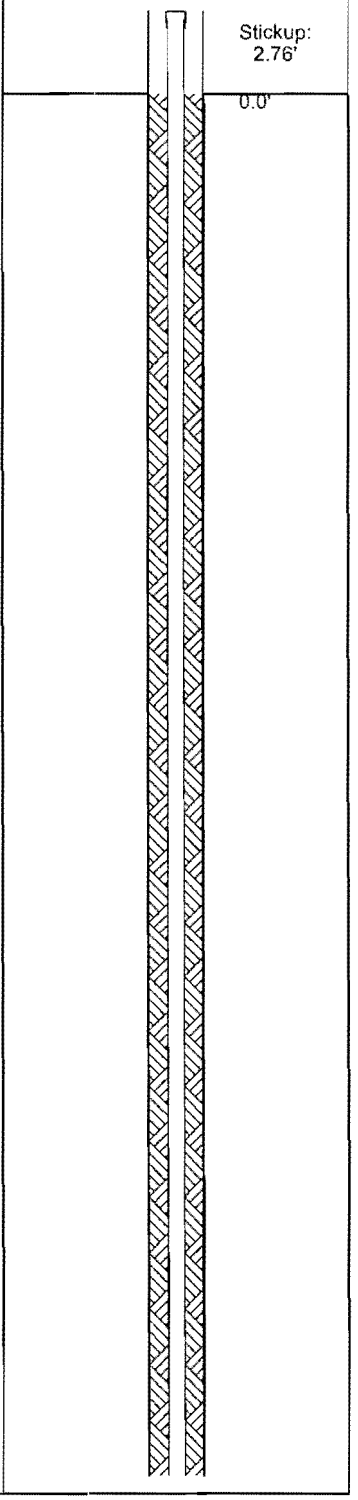
SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0–6 | | Very dense light gray fine SAND (SP) with 1" clay seams | | |
| 6–20 | | Interbedded light gray SAND (SP), and gray stiff CLAY (CL) | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 4154.50 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 4135.10 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 170.79 | Driller: | Diversified |
| Date: | 1-21-04 | Total Depth (ft. bls) | 77.0 | Checked By: | |

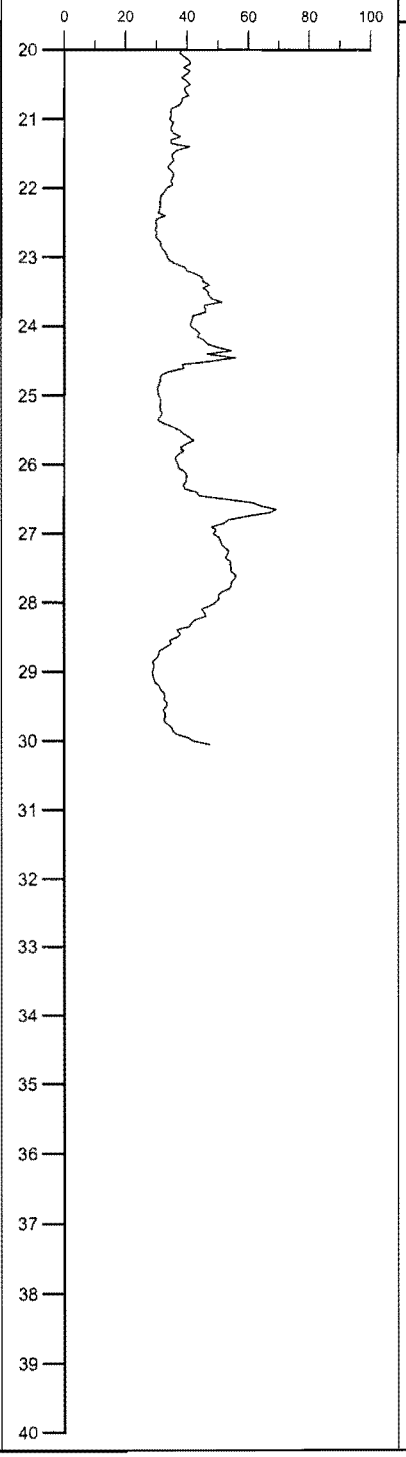


**Boring No.: SB-11/MW-22**

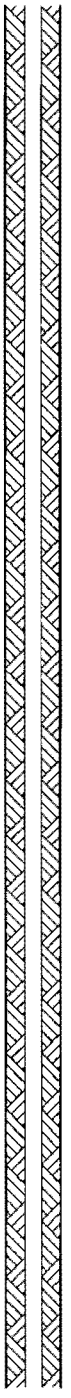
ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 20–40 | | Interbedded light gray SAND (SP), and gray stiff CLAY (CL) *(Continued)* | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details



CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 4154.50 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 4135.10 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 170.79 | Driller: | Diversified |
| Date: | 1-21-04 | Total Depth (ft. bls) | 77.0 | Checked By: | |



**Boring No.: SB-11/MW-22**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

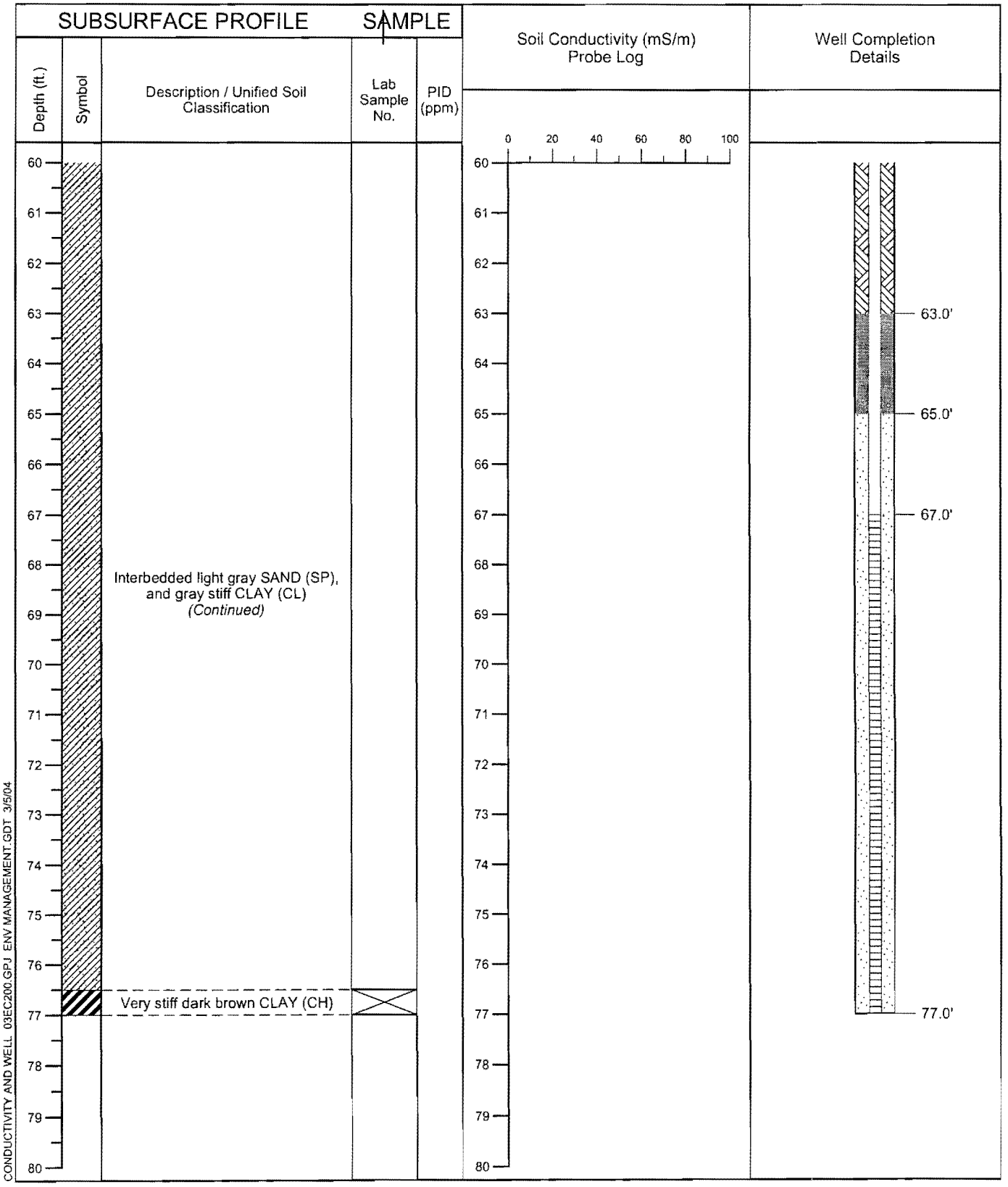
| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 40–60 | | Interbedded light gray SAND (SP), and gray stiff CLAY (CL) *(Continued)* | | | 0 20 40 60 80 100 | |

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 4154.50 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 4135.10 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 170.79 | Driller: | Diversified |
| Date: | 1-21-04 | Total Depth (ft. bls) | 77.0 | Checked By: | |

Page: 4 of 4

**Boring No.: SB-11/MW-22**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401




CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5373.76 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 987.62 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 184.33 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 65.0 | Checked By: | |

Page: 1 of 4

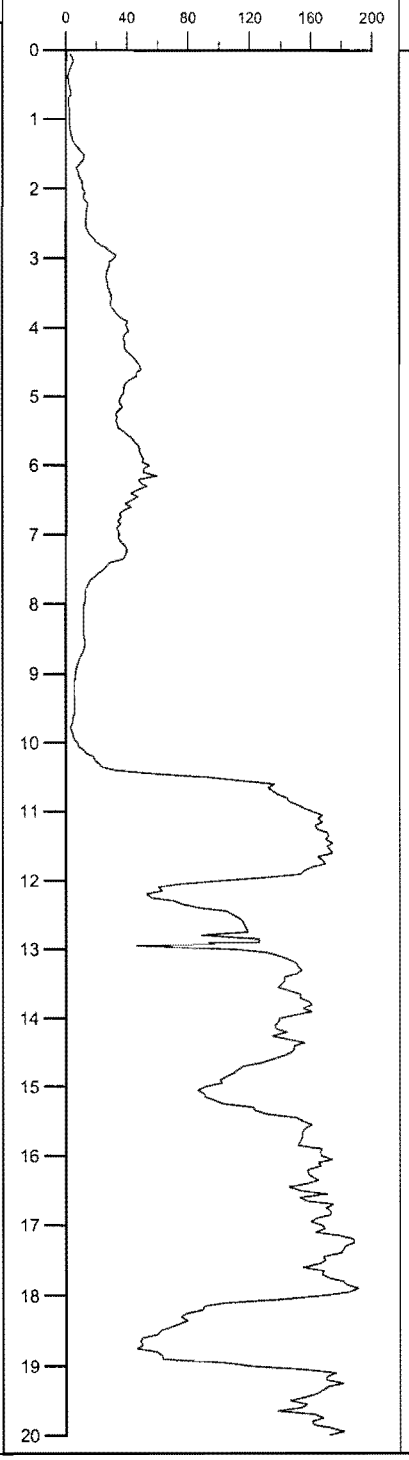
**Boring No.: SB-12**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE — SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 0 | | Ground Surface | | |
| 0–10 | | Dense light gray silty SAND (SP) | | |
| 10–18 | | Very stiff dark gray CLAY (CH) | | |
| 18–19 | | Gray clayey SAND (SC) | | |
| 19–20 | | Very stiff dark gray CLAY (CH) | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5373.76 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 987.62 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 184.33 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 65.0 | Checked By: | |



**Boring No.: SB-12**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| SUBSURFACE PROFILE | | | SAMPLE | | Soil Conductivity (mS/m) Probe Log | Well Completion Details |
|---|---|---|---|---|---|---|
| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) | | |
| 20–40 | | Very stiff dark gray CLAY (CH) *(Continued)* | | | 0 40 80 120 160 200 | |

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5373.76 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 987.62 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 184.33 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 65.0 | Checked By: | |



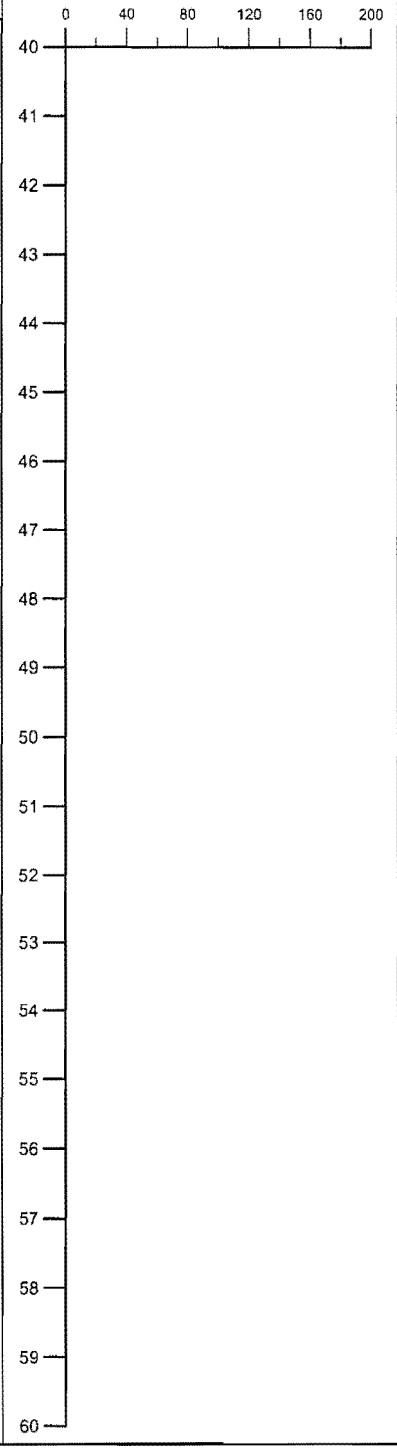
**Boring No.: SB-12**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

SUBSURFACE PROFILE | SAMPLE

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 40–48 | | Very stiff dark gray CLAY (CH) *(Continued)* | | |
| 48–57 | | Very stiff dark gray CLAY (CH) *(Continued)* | | |
| 57–59 | | Gray fine SAND (SC) with clay lenses | | |
| 59–60 | | Very stiff dark gray CLAY (CH) | | |

Soil Conductivity (mS/m) Probe Log




Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

| | | | | | |
|---|---|---|---|---|---|
| Project No.: | 03EC200 | Northing: | 5373.76 | Geologist: | SMF |
| Project: | El Dorado Chem | Easting: | 987.62 | Drill Method: | Mud Rotary |
| Location: | ElDorado, AR | Grd. Elev: | 184.33 | Driller: | Diversified |
| Date: | 1-20-04 | Total Depth (ft. bls) | 65.0 | Checked By: | |



**Boring No.: SB-12**

ENVIRONMENTAL MANAGEMENT SERVICES, INC.
600 N. 26TH AVE
HATTIESBURG, MS 39401

| Depth (ft.) | Symbol | Description / Unified Soil Classification | Lab Sample No. | PID (ppm) |
|---|---|---|---|---|
| 60–62 | | Very stiff dark gray CLAY (CH) *(Continued)* | | |
| 63–65 | | Cook Mountian Formation<br>Interbedded fine SAND (SP) and very stiff CLAY (CL) | | |
| 65 | | Total Depth 65' | | |

SUBSURFACE PROFILE — SAMPLE

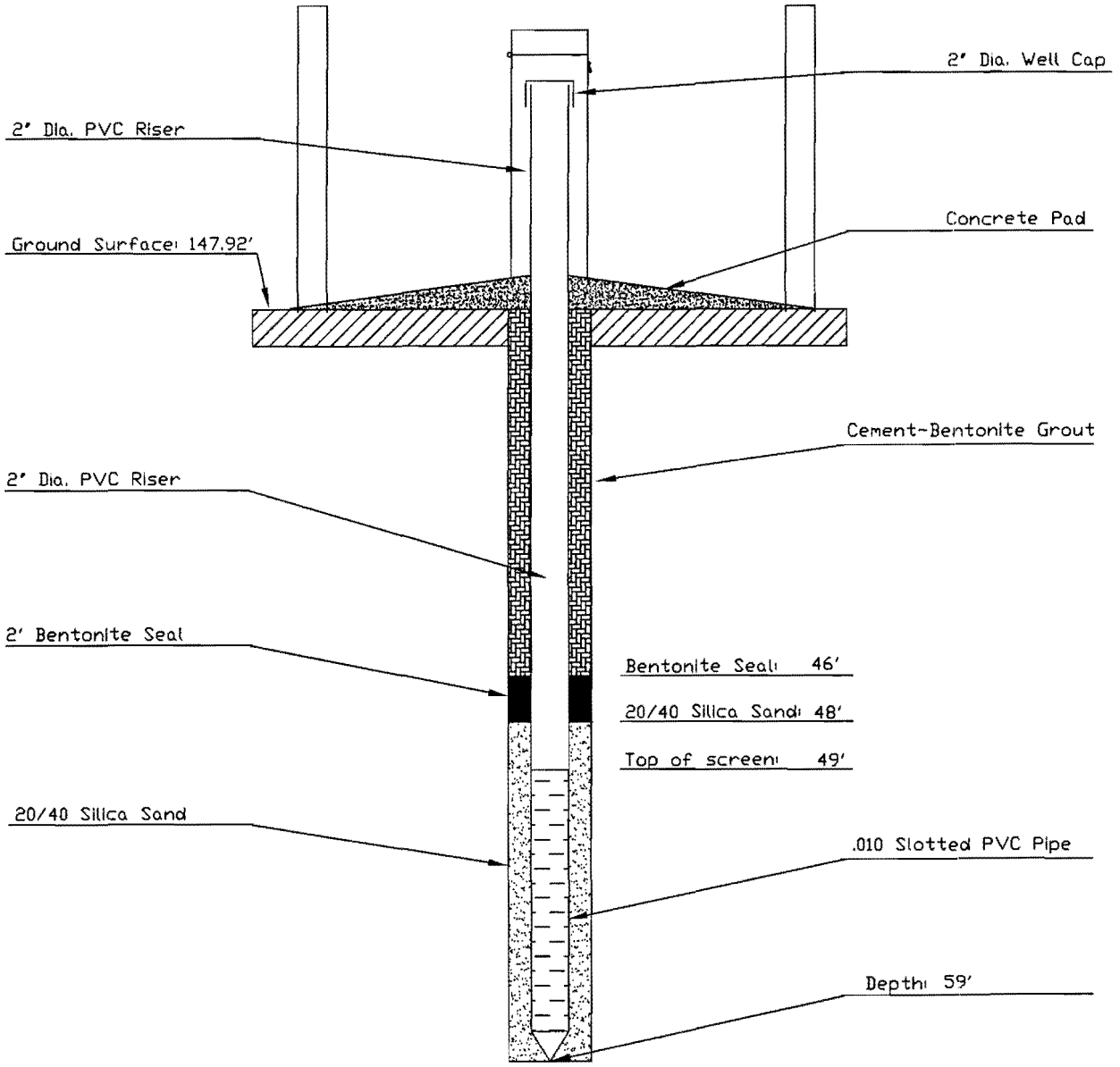
Soil Conductivity (mS/m) Probe Log: 0, 40, 80, 120, 160, 200

Well Completion Details

CONDUCTIVITY AND WELL 03EC200.GPJ ENV MANAGEMENT.GDT 3/5/04

# APPENDIX B

# WELL CONSTRUCTION LOGS

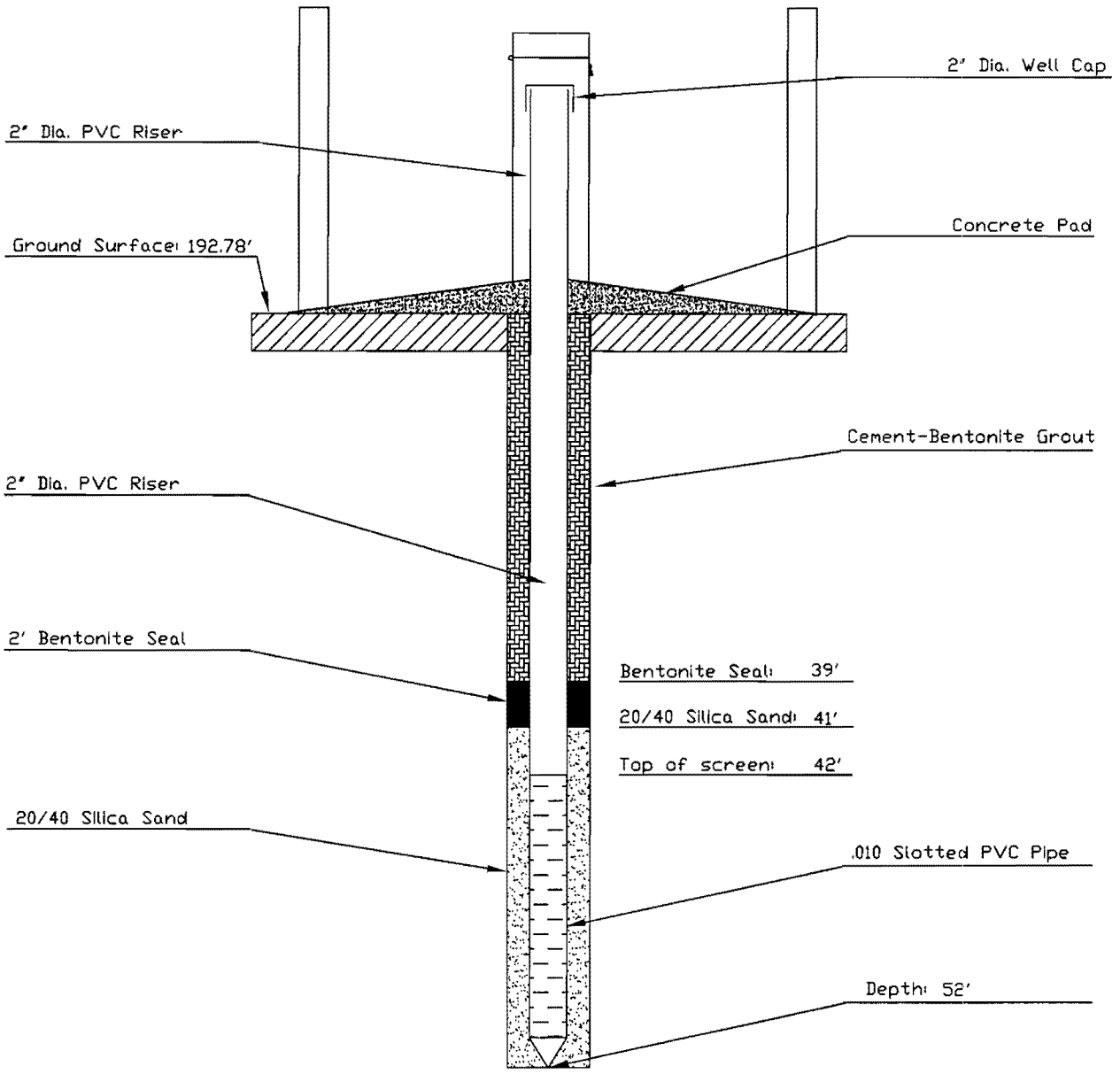



# WELL DETAIL EDC-MW-19

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
03EC0200

| | | |
|---|---|---|
| DATE: | APPROVED: BY: DATE: | DRAWN BY: SMF |
| SCALE: NTS | | CAD NO. |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

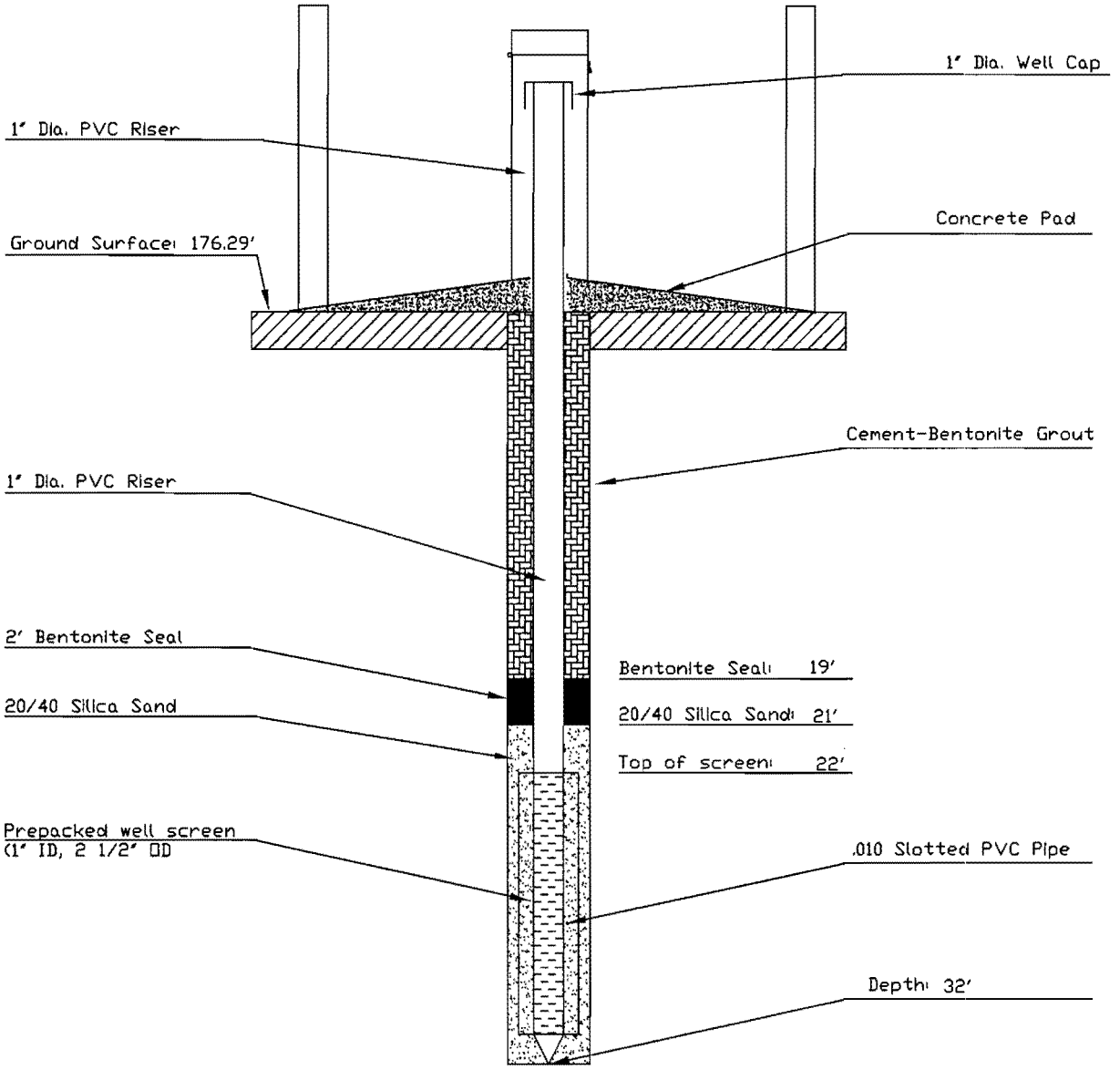



# WELL DETAIL EDC-MW-20

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
03EC0200

| DATE: | APPROVED: | DRAWN BY: |
|---|---|---|
| | BY: _____ | |
| SCALE: | DATE: _____ | CAD NO. |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

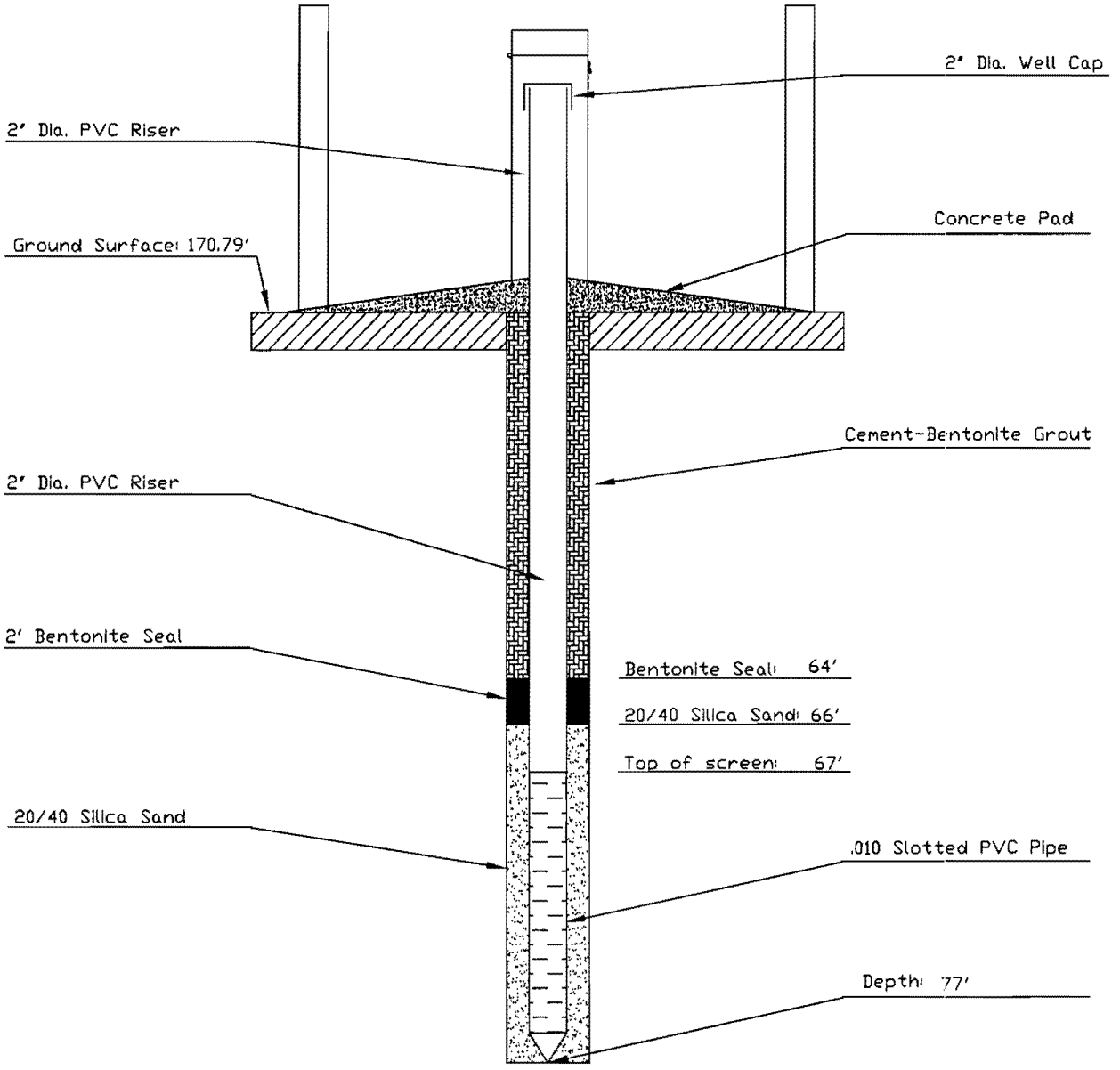



# WELL DETAIL EDC-MW-21

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
03EC0200

| DATE: | APPROVED: | DRAWN BY: |
|---|---|---|
| | BY: _____ | |
| SCALE: | DATE: _____ | CAD NO. |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.




# WELL DETAIL EDC-MW-22

GEOLOGIC INVESTIGATION REPORT
EL DORADO CHEMICAL COMPANY
03EC0200

| DATE: | APPROVED: | DRAWN BY: |
|---|---|---|
| SCALE: | BY: _____ DATE: _____ | CAD NO. |

ENVIRONMENTAL MANAGEMENT SERVICES, INC.