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RF/ER-95-0119 UN, Rev 0

FINAL PHASE I RFI/RI REPORT
WALNUT CREEK
PRIORITY DRAINAGE
OPERABLE UNIT 6

VOLUME 4

APPENDIX A
APPENDIX B
APPENDIX C (C1-C3 3)

DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

U S Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado

February 1996

RF/ER-95-0119.UN, Rev. 0

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APPENDIX A
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U.S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado

February 1996

APPENDIX A

(Not included in this report)

Appendix B
OU6 Phase I Field Survey Data

TABLE OF CONTENTS

B1 OU6 PHASE I GROUND-BASED RADIATION SURVEY DATA

B1 1 OU6 PHASE I HPGe GAMMA-RAY SURVEY DATA

B1 2 OU6 PHASE I HPGe RADIOISOTOPE AND EXPOSURE ISOCONCENTRATION MAPS

B2 OU6 PHASE I FIDLER SURVEY DATA

B3 OU6 PHASE I SOIL GAS SURVEY DATA

B4 OU6 PHASE I GEOPHYSICAL SURVEY (IHSSs 166 1, 166 2, and 166 3)

B4 1 OU6 PHASE I EM SURVEY METHOD AND FIELD PROGRAM

B4 2 OU6 PHASE I EM-31 CONDUCTIVITY CONTOUR MAPS

B5 OU6 PHASE I POND SEDIMENT SAMPLE GAMMA RADIATION SCREENING RESULTS

ABBREVIATIONS, ACRONYMS, AND INITIALISMS

AGL	above the ground level
Am-241	Americium 241
Bi-214	Bismith 214
CI	contour interval
cm	centimeter
CPM	counts per minute
Cs-137	Cesium 137
EM	electromagnetic
EPA	Environmental Protection Agency
FIDLER	field instrument for the detection of low-energy radiation
GPS	Global Positioning System
HPGe	high purity germanium
IHSS	Individual Hazardous Substance Site
K-40	Potassium 40
KeV	kiloelectron Volts
m	meter
MDA	minimum detectable activity
NOAA	National Oceanic and Atmospheric Administration
NuMAI	Nuclear Material Analysis Program
OU6	Operable Unit No 6
Pb-214	Lead 214
pCi/g	picocuries per gram
Ra-226	Radium 226
SGS	soil gas site
Th-232	Thorium 232
μg/l	microgram per liter
μR/h	microremms per hour
U-235	Uranium 235
U-238	Uranium 238

APPENDIX B - OU6 PHASE I FIELD SURVEY DATA

Appendix B1 contains the results of the OU6 Phase I ground-based radiation surveys A high-purity germanium (HPGe) gamma-ray detector was utilized to evaluate whether gamma-emitting radionuclides are present in surface soils Appendix B1 1 contains the results for each survey station in tabular form Information listed includes northings and eastings for each station based on the Colorado Grid Coordinate System, results of individual radionuclide measurements in picocuries per gram (pCi/g), and an exposure estimate at each station in microremms per hour (μR\h) Brief text describing the survey equipment and procedures, natural background radiation assessment, data analysis, and results is also provided Appendix B1 2 contains radioisotope and exposure isoconcentration maps The distributions of radionuclide measurements and exposure estimates are graphically illustrated using grid displays and SURFER contour software

Appendix B2 contains the results of the OU6 Phase I FIDLER surveys Radiation screening by FIDLER survey was performed at each sample site in OU6 prior to sampling, with the exception of pond water and wet sediment sample locations The survey data is presented in tabular form and the information listed includes IHSS number, sample site designation, survey date, background reading, and highest and lowest measurements at each site All measurements are recorded in counts per minute (CPM)

Appendix B3 contains the OU6 Phase I soil gas survey data in tabular form The survey data are grouped by collection dates For each collection date, concentrations of each analyte sampled are listed for each soil gas site (SGS), in micrograms per liter (μg/l) Daily background ambient air results are also shown along with surrogate recoveries, in percent (%), for each sample

Appendix B4 contains the OU6 Phase I geophysical survey information This geophysical survey utilized a Geonics EM-31 ground conductivity meter Appendix B4 1 contains a description of the geophysical method and field survey activities Appendix B4 2 contains colored contour maps of the distribution of conductivity values across the survey area

Appendix B5 contains the results of the OU6 Phase I pond sediment sample gamma radiation screening Radiological screening was performed on extracted pond sediment cores in 5 cm intervals utilizing a FIDLER Screening results, recorded in CPM, are listed by IHSS designation and depth interval

Appendix B1

OU6 Phase I Ground-Based Radiation Survey Data

Appendix B1.1
OU6 Phase I HPGe Gamma-Ray Survey Data

Appendix B1.2

OU6 Phase I HPGe Radioisotope and Exposure Isoconcentration Maps

MEMO

Date 3 June, 1993

To Pete Laurin OU-6 Manager

From R T Reiman

Subject OU-6 HPGe GAMMA-RAY SURVEY RESULTS

Inclosed are the results of the OU-6 high purity germanium detector gamma ray survey

Introduction

A radiological survey was conducted at the Rocky Flats Plant Operable Unit 6 (OU-6), during the period 22 April through 3 June, 1993 The survey employed an array of 5, 75%, N-type, high purity germanium (HPGe) gamma ray detectors suspended 6 5 meters above the ground level (AGL)

The processed data from OU-6 indicated that detected radioisotopes were generally consistent with those expected from normal background emitters At OU-6 there was clear evidence of soil disturbance and there were areas of elevated concentrations of americium 241 (Am-241)

1 0 Survey Procedures and Equipment

OU-6 was sampled using a 100 foot (~30 5m) grid pattern The grid was laid out using a Global Positioning System (GPS) in the real time differential mode. The GPS was tested twice daily at ENERGY a reference station installed by the National Oceanic and Atmospheric Administration (NOAA) Typically the accuracy of the GPS was better than two meters. Sampling nodes were tied to Colorado State Planar Coordinate System (State Plane Zone 502) by converting NAD-27 coordinates (latitude and longitude) using Corpsecon version 2 1

An array of 5 nominally 75% N-type coaxial detectors was used to perform the *in situ* measurements The array was suspended 6.5 meters above the ground by a pneumatic telescoping mast which was mounted to the rear of a four wheel drive vehicle. Gamma ray data were collected over a 3600 second interval and analyzed with NUclear Material AnaLysis program (NuMAl) running in a PC compatible computer The raw data were archived on floppy disks and magnetic tape. The analysis continued on the results from NuMAl using SURFER, a contouring package from Golden Software, Inc

2.0 Natural Background Radiation

Natural background radiation originates from the decay of radioactive elements present in the earth and from cosmic rays entering the earth's atmosphere from space. The radioactive elements present in the earth are uranium and its decay products, thorium and its decay products, and radioactive potassium Natural terrestrial gamma radiation originates from the decay of these elements Local concentrations of these nuclides typically produce radiation levels ranging from 1 to 15 uR/h within the United States[1] The natural terrestrial radiation levels are dependent upon the geologic character immediately surrounding the point of interest.

One member of each of the uranium and thorium decay chains is a noble gas (radon) which can both diffuse through the soil and be transported in the air to othe locations. Therefore, the level of airborne radiation depends on the meteorological conditions, the mineral content of the soil, and soil permeability etc , existing at each location at a particular time Typically, the airborne radiation contributes from 1 to 10% of the natural background radiation levels

Cosmic rays, the space component, interact in a complex manner with the elements of the earth's atmosphere and soil These interactions and the cosmic rays themselves produce an additional natural source of radiation. Radiation levels due to cosmic rays vary with elevation and geomagnetic latitude Typical levels in the United States range from 3 3uR/h in Key West, Florida to 7 2uR/h in Flagstaff, Arizona.[1]

3 0 Analysis and Results

Gamma-ray spectra collected by the sampling systems represented an energy range of 20 to 3000 keV All photopeaks present in the spectra were analyzed and corresponding radionuclides were identified Those nuclides found present were quantified Radionuclides resulting from an established decay chain or subchain have been reported as the parent Lead 214 (Pb-214) and bismuth 214 (Bi-214) are offspring of radium 226 (Ra-226) and hence are reported as concentrations of Ra 226

While it is true that the parent of the chain that Ra 226 is a member is uranium 238 (U-238) and it is often assumed that for undisturbed soils secular equilibrium exists however in most surface soils secular equilibrium has been disturbed This phenomenon is due to migration rates of each species being significantly different Uranium and radium migrate within the soil matrix at different rates due to chemical processes within the matrix Since they both have long half lives the migration can be observed radiometrically (ie even if the rate of transport is extremely slow there is ample time for the phenomenon to become apparent, >10E3 years) In populated areas man has also distrubed the equilibrium through his day to day activities of landscaping construction, agriculture etc Therefore it should not be suprising that surface soils exhibit disequilibrium

As stated above all detectable photopeaks within the measured spectrum were analyzed It is useful to know the detectability of the measuring system That is how much activity of a radionuclide must be present before it can be sensed with any certainty This often referred to as the minimum detectable activity MDA The MDA for radionuclides present in the soil is a function of gamma ray energy distribution in the soil matrix, other present gamma emitting radionuclides sensor and its geometry count time analysis methodology in short there are many factors that can affect MDA

The analysis software NuMAI looks for a photopeak (signal) and then removes the continuum (background) resulting in net photopeak counts Or

$$N = T - B$$

where N = net photopeak counts

T = total counts

B = background counts

It follows then that

since $T = N + B$

and $N = T - B$

so $N = N + B - B$

then $\sigma = (SQR (N + (2 * B))) / S$

where σ = standard deviation

S = count time

The MDA then is defined as

$$MDA = 3 * \sigma * C$$

where C = conversion factor normally in units of [(pCi/g)/cps] for distrubed sources.

In the case where there are multiple photopeaks for a single radionuclide the result can be expressed as a weighted average. The photopeak signal is weighted by one over the square of its standard deviation or

$$AVERAGE = \Sigma(N_1/\sigma_1^2)/(\Sigma(1/\sigma_1^2) \pm SQR(1/\Sigma(1/\sigma_1^2))$$

and $$MDA = 3*C*SQR(1/\Sigma(1/\sigma_1^2))$$

Typical values of MDA for the survey area are given below for selected radionuclides. These values would apply for sources uniformly distributed over the field of view of the survey system and averaged over the top 3cm (~1 inch)

Table I

Typical MDAs for Operable Unit 6

Am-241	0 14 pCi/g
Cs-137	0 01 pCi/g
U-235	0 02 pCi/g
U-238	0 64 pCi/g
Ra-226	0 02 pCi/g
Th-232	0 02 pCi/g
K-40	0 15 pCi/g

4 0 Survey Results

The data presented in Table II are the results of the survey conducted at OU-6 As the table indicates there is a location assignment based on the 100 foot (~30 5m) grid and based on Colorado Grid Coordinate System. The results of the measurements are given in units of pCi/g. These results are based on a homogeneous three dimensional distribution of the species within the soil matrix and averaged over the top 3 cm (~1.2") of soil The Am-241 concentration values reported are two sigma values or greater A zero for Am-241 concentration represents a value less than 0 095 pCi/g.

The data reported in Table II were then processed using SURFER in a effort to display the data as isoconcentration contours for trend analysis Inclosed are the results of that effort. It is interesting to note that the Am-241 contamination in IHSS 156 2 was more prevalent along the edges of the IHSS as opposed to the interior of the IHSS The edges of the IHSS sloped away from the center and there was some debris visible

Table II also includes the raw data file name for each of the spectra collected in OU-6 The raw data as well as the summary data (Table II) are provided on magnetic tape The raw data follows the EG&G Instruments ADCAM format and included in the header are the measurement specific data (Detector Number, Count Time, Detector Height, Operable Unit, Station, Colorado Grid Coordinate (NAD-27 State Zone 502) N&E and Date)

References

1 Lindeken, C L Peterson, K R. Jones D E and McMillen, R. E 1972 "Geographical Variations in Environmental Radiation Background in the United States" Proceedings of the Second International Symposium on the Natural Radiation Environment, (Houston, Texas USA 1972) Vol 1 pp 317-332

OU 6, 6 5m Detector Ht , 3600s Cnt Time, Detector 1A66F, 1A62F6F

File Name	Station	North	East	K 40	Ra 226	Th-232	U 238	U 235	Cs 137	Am 241	Exposure
		feet	feet	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	uR/h
274 chn	C14	751300	2087100	10 8	0 769	1 15	1 52	0 1	0 295	0 136	6 39
265 chn	C15	751300	2087200	10 2	0 699	1 16	1 16	0 08	0 462	0 19	6 7
275 chn	D11	751200	2086800	11 4	0 793	1 1	1 67	0 08	0 213	0 11	6 71
256 chn	D12	751200	2086900	10 7	0 92	0 911	1 34	0 06	0 0946	0	8 03
255 chn	D13	751200	2087000	11 5	0 984	1 03	1 36	0 07	0 0869	0	8 34
6 chn	D14	751200	2087100	11 8	0 984	1 1	1 29	0 07	0 114	0	6 79
263 chn	D15	751200	2087200	12 1	0 951	1 14	1 55	0 08	0 178	0	7 14
264 chn	D16	751200	2087300	10 1	0 846	1 1	1 34	0 08	0 354	0 197	6 58
270 chn	E08	751100	2086500	10 8	0 754	1 21	1 37	0 08	0 37	0 245	6 87
271 chn	E09	751100	2086600	11	0 796	1 19	1 74	0 08	0 237	0	6 82
259 chn	E10	751100	2086700	10 3	0 648	0 947	1 31	0 06	0 111	0 151	5 84
258 chn	E11	751100	2086800	10 4	0 809	1 01	1 41	0 09	0 0905	0	6 04
257 chn	E12	751100	2086900	11 9	0 915	1 09	1 62	0 08	0 0602	0	6 76
262 chn	E13	751100	2087000	13 3	0 944	1 1	1 31	0 07	0 0693	0	7 26
276 chn	E14	751100	2087100	11 7	0 802	1 08	1 52	0 08	0 202	0 128	6 63
277 chn	E15	751100	2087200	10 4	0 745	1 18	1 39	0 08	0 44	0 158	6 7
268 chn	F04	751000	2086100	17 3	0 921	1 27	1 68	0 08	0 0493	0	8 3
269 chn	F05	751000	2086200	11 6	0 716	1 05	1 3	0 07	0 0794	0	6 34
252 chn	F06	751000	2086300	11	0 679	1 05	1 42	0 07	0 111	0 16	6 12
251 chn	F07	751000	2086400	12	0 733	1 11	1 39	0 08	0 115	0	6 66
9 chn	F08	751000	2086500	11 9	0 89	1 16	1 37	0 09	0 0756	0 16	6 81
8 chn	F09	751000	2086600	11 9	0 931	1 13	1 47	0 09	0 0659	0	6 8
7 chn	F10	751000	2086700	12 1	0 943	1 1	1 64	0 07	0 0473	0	6 78
3 chn	F11	751000	2086800	12 6	0 744	0 92	1 25	0 07	0 0291	0	6 14
1 chn	F12	751000	2086900	14 9	0 853	1 21	1 42	0 08	0 0442	0	7 53
2 chn	F13	751000	2087000	11 1	0 772	1 07	1 38	0 08	0 105	0	6 24
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323 chn	G05	750900	2086200	17 6	1 06	1 32	1 76	0 09	0 0202	0	8 66
282 chn	G06	750900	2086300	17	0 795	1 21	1 67	0 05	0 0113	0	7 77
224 chn	G07	750900	2086400	11 7	0 807	1 04	1 64	0 06	0 0222	0 139	8 18
223 chn	G08	750900	2086500	13 5	0 96	1	1 5	0 06	0 0106	0	7 27
280 chn	G09	750900	2086600	14 7	0 898	1 13	1 59	0 08	0 0245	0	7 24

OU 6, 6 5m Detector Ht 3600s C[illegible]ime Detector 1A66F 1A62F6F

File Name	Station	North	East	K 40	Ra 226	Th 232	U 238	U 235	Cs 137	Am 241	Exposure
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227 chn	G10	750900	2086700	12 2	0 758	0 94	1 58	0 05	0 0248	0	6 26
228 chn	G11	750900	2086800	13 1	1 02	1 19	1 49	0 07	0 0402	0	7 43
229 chn	G12	750900	2086900	11 6	0 888	1 09	1 54	0 07	0 0843	0	6 71
317 chn	H04	750800	2086100	13	0 76	1 19	1 55	0 09	0 0966	0 329	7 15
318 chn	H05	750800	2086200	12 5	0 798	1 15	1 51	0 09	0 09	0 376	7 05
324 chn	H06	750800	2086300	16 3	0 972	1 21	1 93	0 08	0 0126	0	8 01
283 chn	H07	750800	2086400	17 3	0 865	1 25	1 8	0 08	0 0102	0	8 04
242 chn	H08	750800	2086500	14	0 786	1 09	1 62	0 09	0 0227	0	6 87
241 chn	H09	750800	2086600	17 2	0 749	1 16	1 31	0 06	0 0301	0	8
231 chn	H10	750800	2086700	12 6	0 788	1 15	1 53	0 06	0 0789	0 218	6 79
230 chn	H11	750800	2086800	11	0 786	1 1	1 37	0 08	0 17	0 186	6 42
307 chn	I03 + 25	750700	2086025	14 8	0 821	1 04	1 59	0 07	0 0466	0 363	7 09
303 chn	I04	750700	2086100	12 5	0 788	1 13	1 5	0 07	0 247	1 03	6 94
304 chn	I05	750700	2086200	18 1	0 86	1 46	1 66	0 08	0 114	0 406	9 11
321 chn	I06	750700	2086300	14 5	0 723	1 19	1 43	0 07	0 09	0 268	7 37
325 chn	I07	750700	2086400	16 8	0 885	1 22	1 48	0 08	0 0162	0	7 94
242 chn	I08	750700	2086500	12 1	0 667	0 966	1 17	0 06	0 0223	0	6 12
237 chn	I09	750700	2086600	13	0 757	1 13	1 46	0 08	0 0555	0 244	7
308 chn	J03 + 25	750600	2086025	14 3	0 851	0 91	1 59	0 07	0 0364	0 397	6 7
302 chn	J04	750600	2086100	11 7	0 814	1 11	1 3	0 07	0 276	1 54	6 76
301 chn	J05	750600	2086200	14 9	0 748	0 966	1 43	0 08	0 0705	0 376	6 91
322 chn	J07	750600	2086400	16 6	0 752	1 15	1 63	0 06	0 086	0 303	7 62
284 chn	J08	750600	2086500	17 6	0 859	1 29	1 69	0 06	0 0252	0 169	8 27
294 chn	J09	750600	2086600	11 6	0 753	1 14	1 49	0 08	0 113	0 375	6 61
309 chn	K03 + 25	750500	2086025	14 2	0 877	0 816	1 79	0 06	0 0301	0 466	6 4
295 chn	K08	750500	2086500	17 8	0 849	1 3	1 68	0 11	0 0553	0 281	8 46
290 chn	K09	750500	2086600	12 5	0 767	1 25	1 59	0 1	0 158	0 322	7 22
296 chn	L08	750400	2086500	19 4	0 804	1 27	2 04	0 09	0 0567	0 347	8 48
289 chn	L09	750400	2086600	13 5	0 802	1 3	1 71	0 09	0 24	0 805	7 71
300 chn	M07	750300	2086400	18 6	0 771	1 09	1 58	0 07	0 0331	0 303	8
297 chn	M08	750300	2086500	20 3	0 779	1 35	1 62	0 09	0 0507	0 236	8 88
288 chn	M09	750320	2086555	17 6	0 883	1 29	1 66	0 09	0 0824	0 493	8 35
287 chn	N09	750204	2086586	15 8	0 882	1 27	1 74	0 07	0 127	0 653	8 07

OU 6, 6 5m Detector Ht , 3600s Cnt Time, Detector 1A66F, 1A62F6F

File Name	Station	North	East	K 40	Ra-226	Th-232	U-238	U-235	Cs-137	Am 241	Exposure
		feet	feet	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	uR/h
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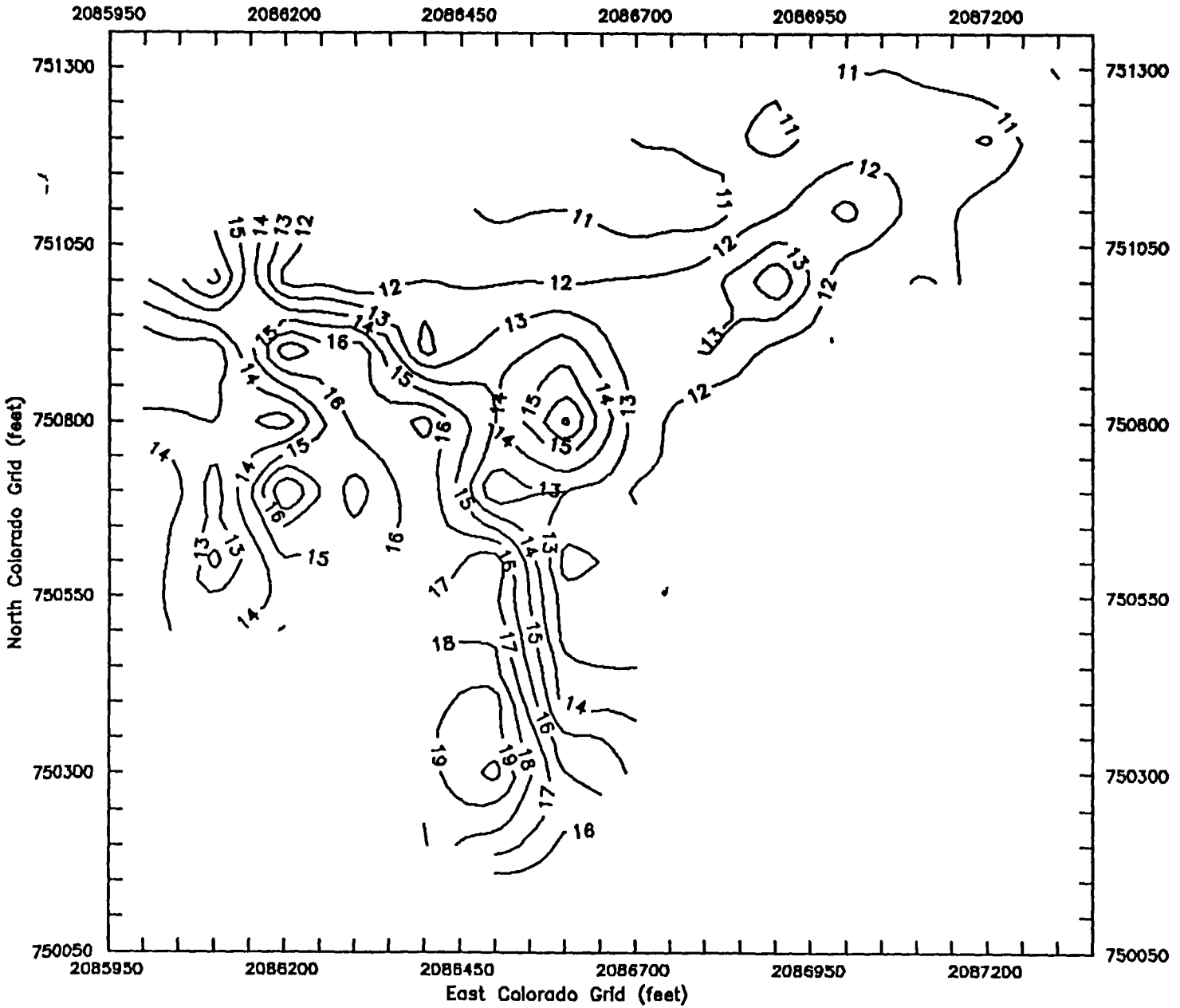
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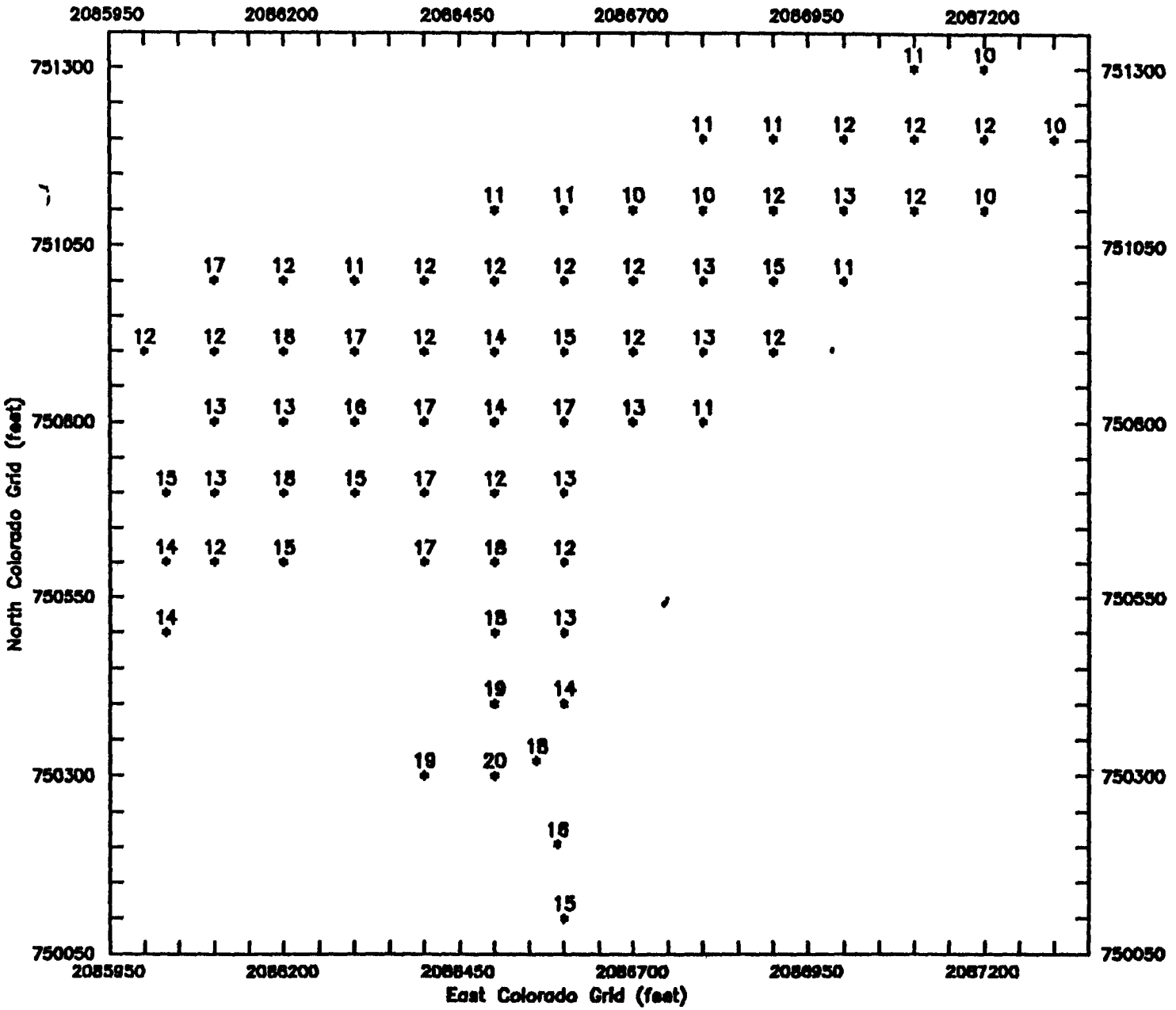
North Colorado Grid (feet)
East Colorado Grid (feet)

OU-6 K-40 (pCi/g)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East Colorado Grid (feet)
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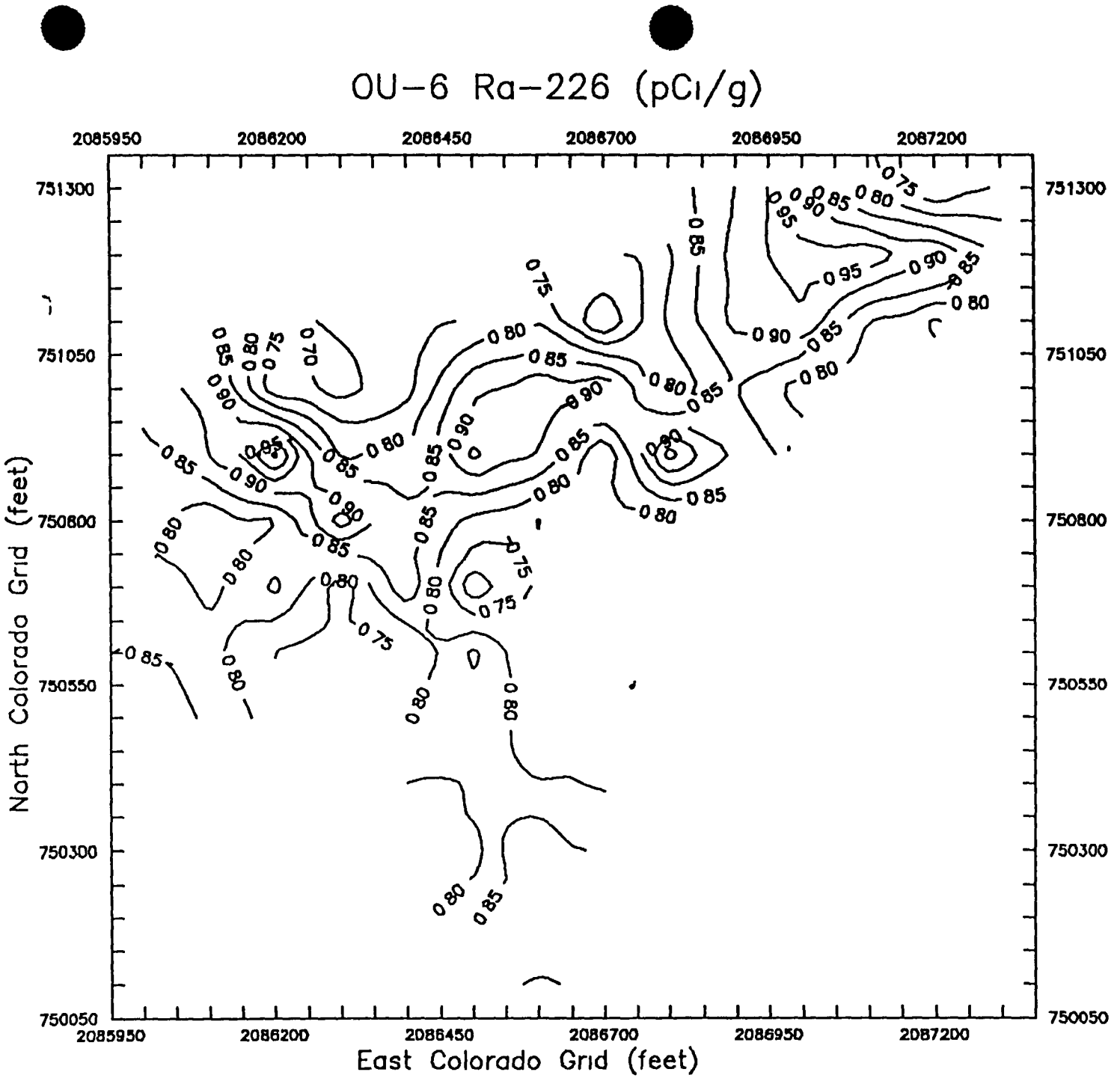
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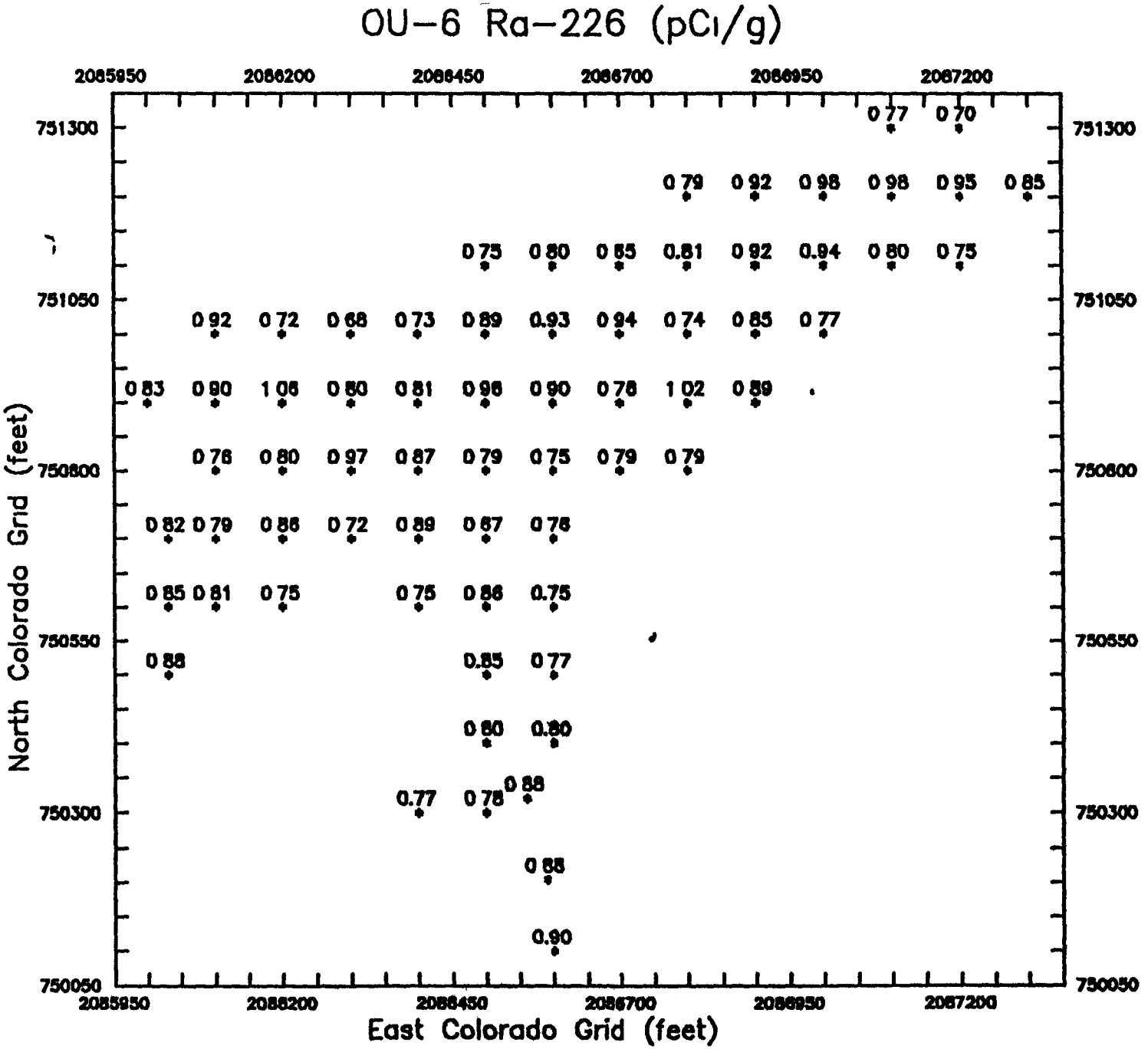
East Colorado Grid (feet)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North Colorado Grid (feet)
East Colorado Grid (feet)
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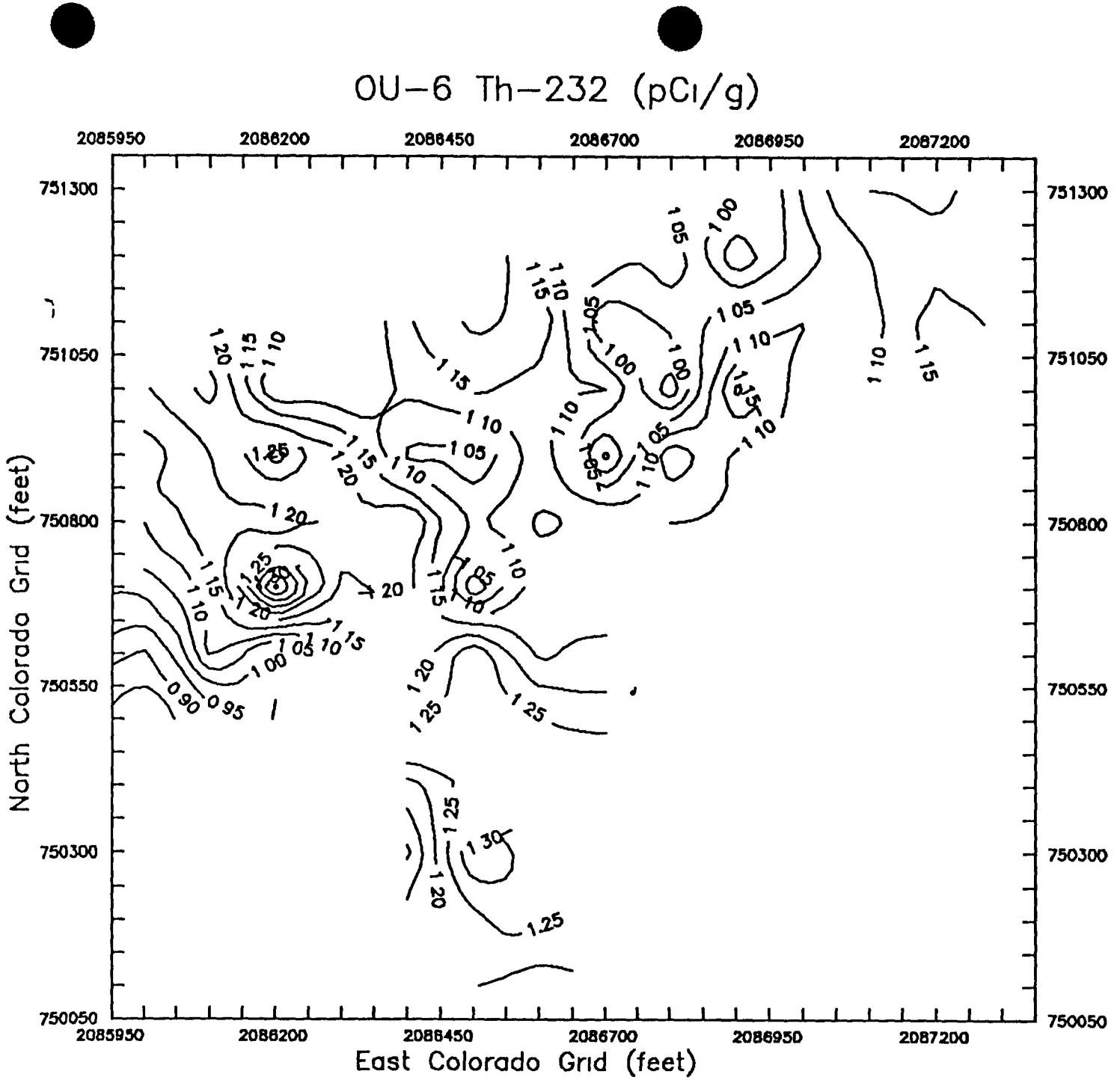
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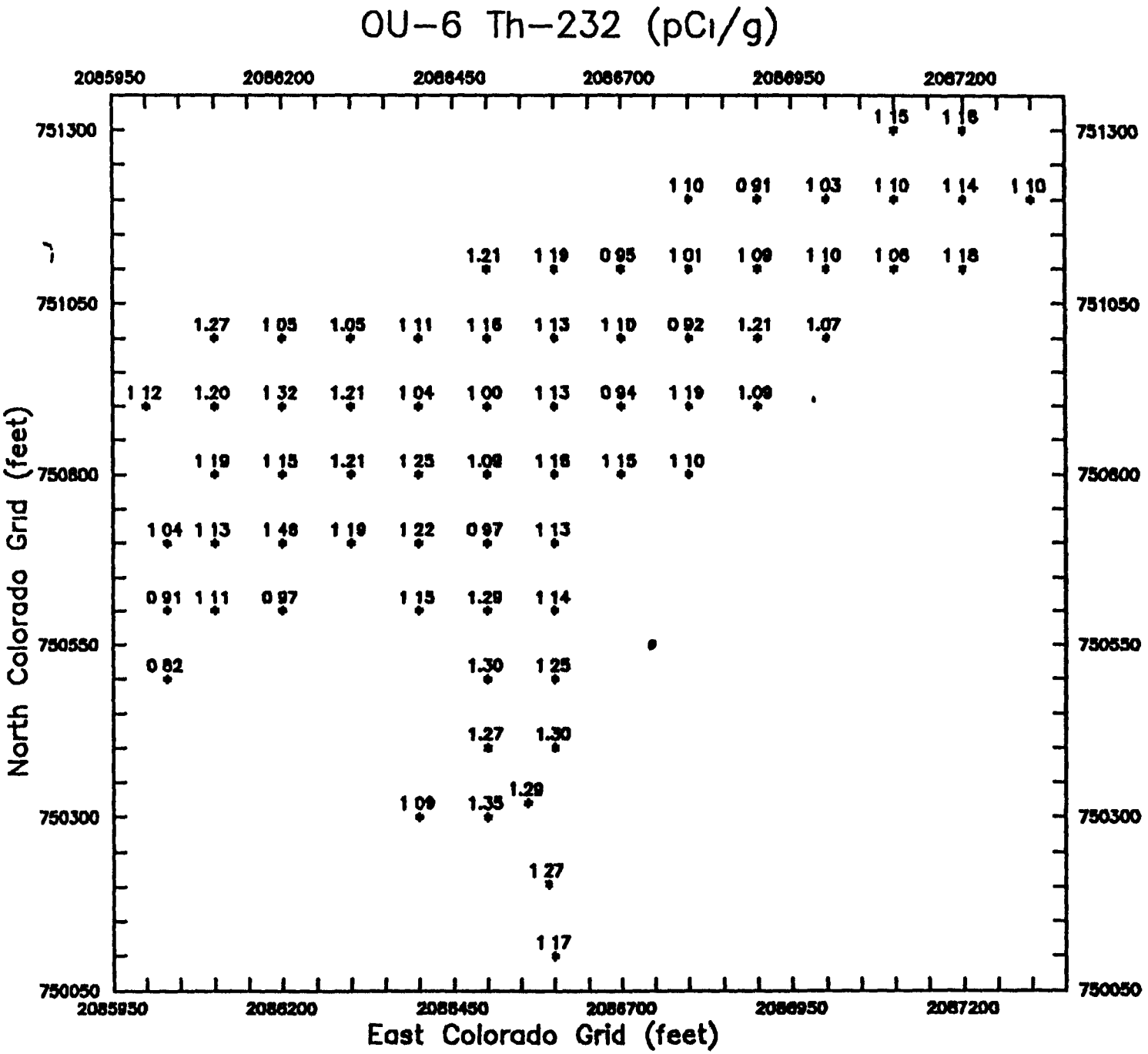
North Colorado Grid (feet)
East Colorado Grid (feet)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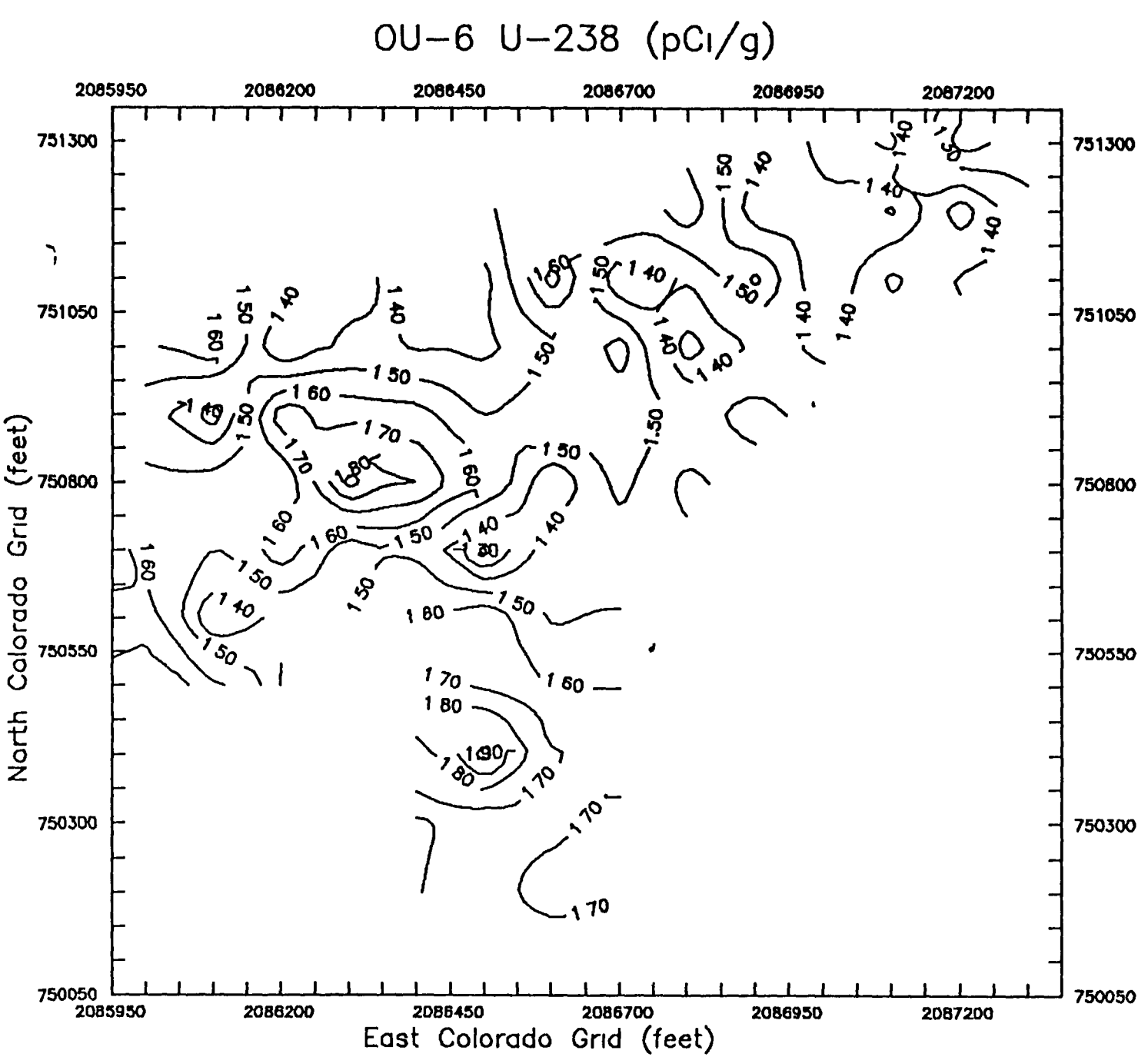
1.21
1.04
1.00
1.13
0.94
1.19
1.09
1.19
1.15
1.21
1.25
1.09
1.16
1.15
1.10
1.04
1.13
1.48
1.19
1.22
0.97
1.13
0.91
1.11
0.97
1.15
1.29
1.14
0.82
1.30
1.25
1.27
1.30
1.09
1.35
1.29
1.27
1.17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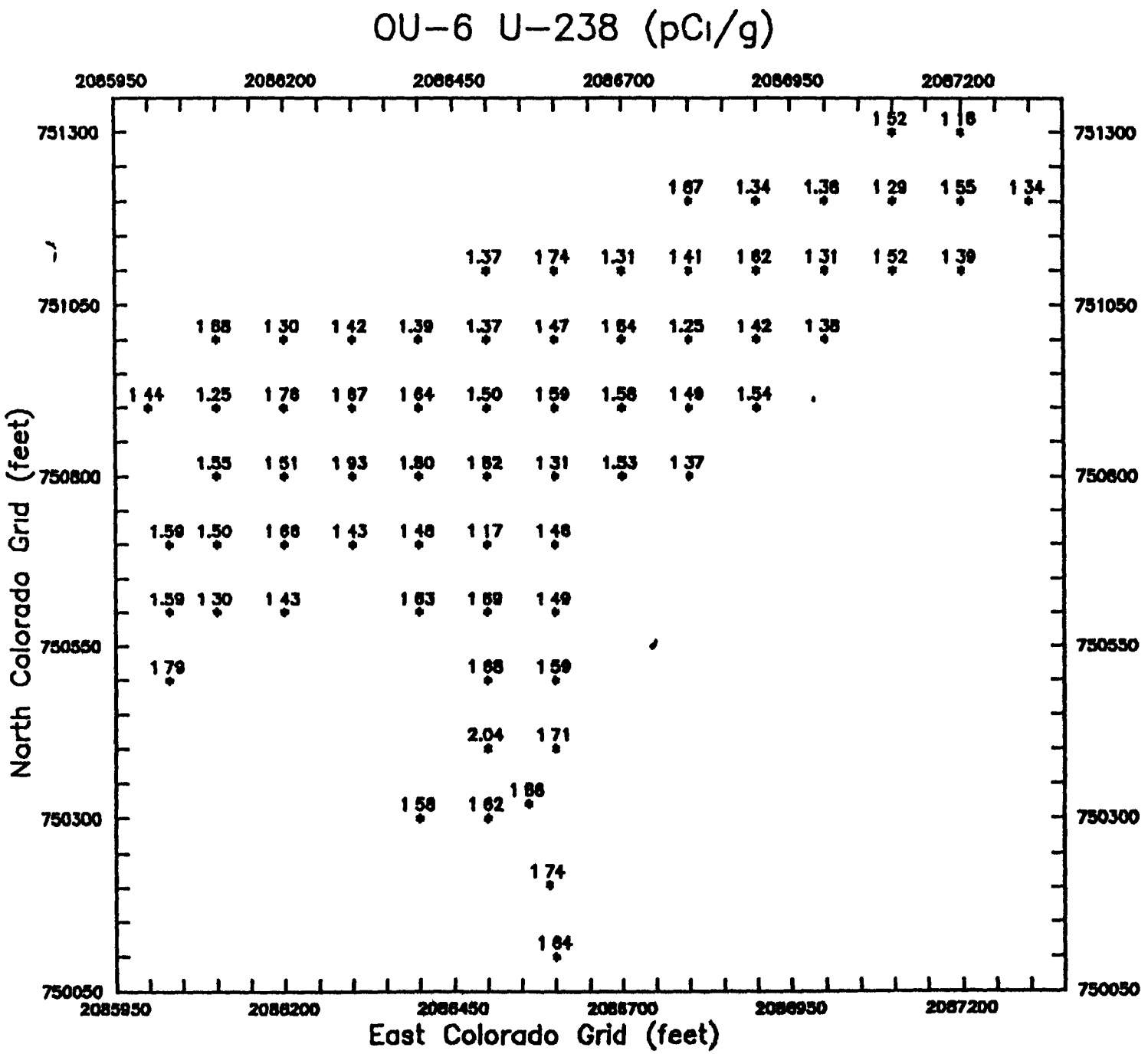
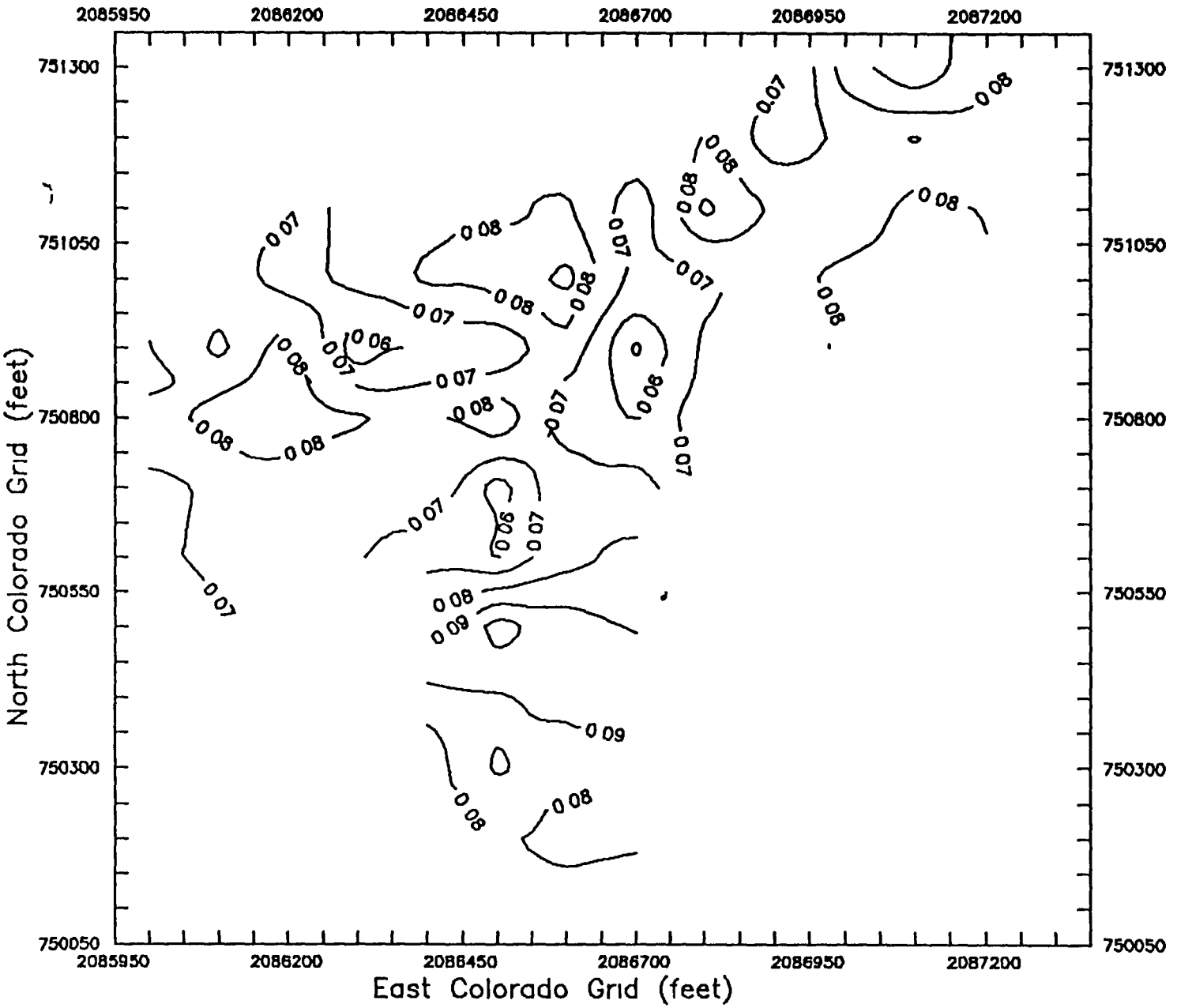
2085950
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)


OU-6 U-238 (pCi/g)
2085950
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
1.52
1.16
1.67
1.34
1.38
1.29
1.55
1.34
1.37
1.74
1.31
1.41
1.62
1.31
1.52
1.39
1.68
1.30
1.42
1.39
1.37
1.47
1.64
1.25
1.42
1.38
1.44
1.25
1.76
1.67
1.64
1.50
1.59
1.58
1.49
1.54
1.55
1.51
1.93
1.80
1.82
1.31
1.53
1.37
1.59
1.50
1.66
1.43
1.46
1.17
1.48
1.59
1.30
1.43
1.63
1.69
1.49
1.79
1.68
1.59
2.04
1.71
1.58
1.62
1.86
1.74
1.64


OU-6 U-235 (pCi/g)
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2086700
2086950
2087200
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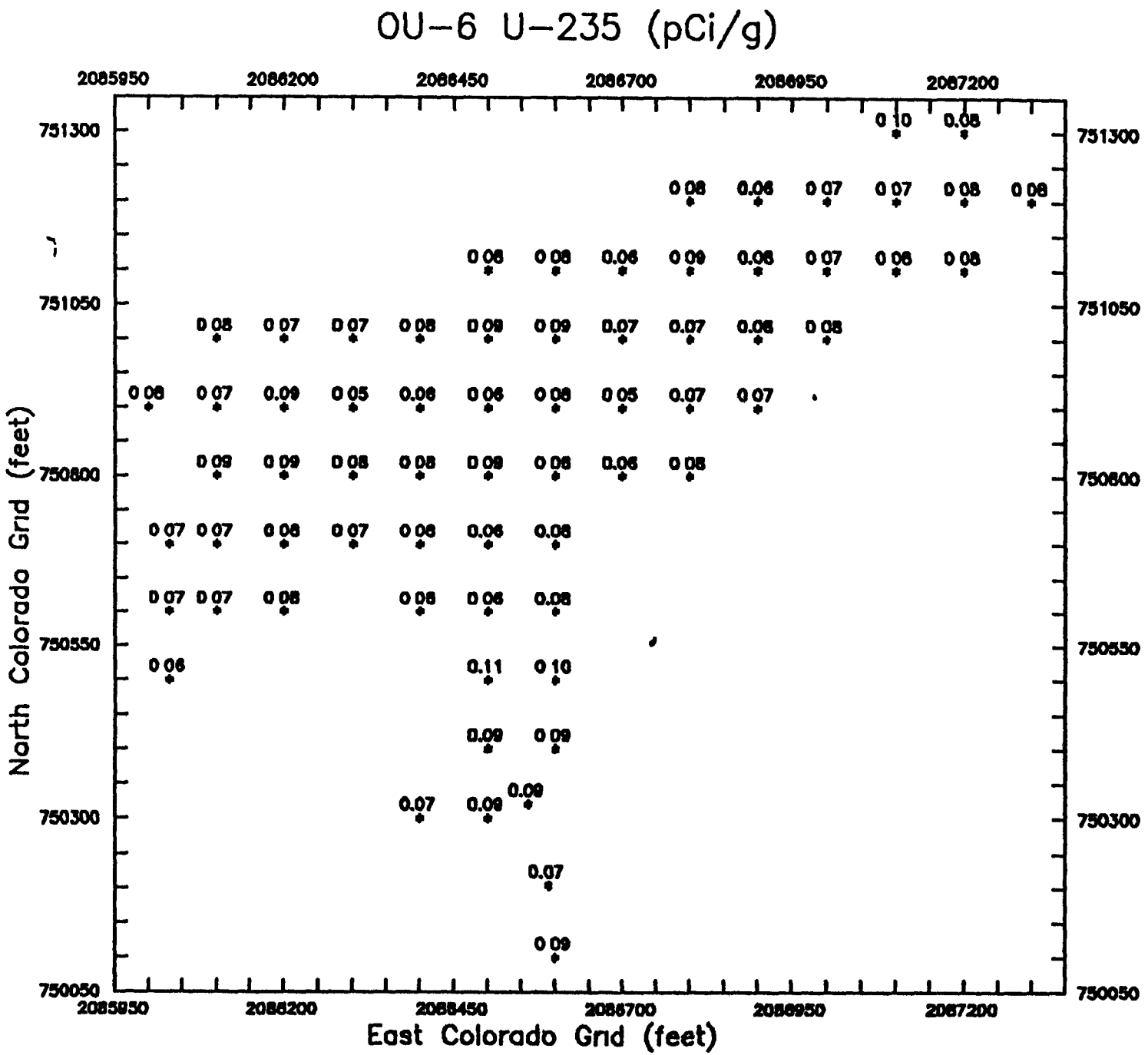
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
0.07
0.08
0.09


OU-6 U-235 (pCi/g)
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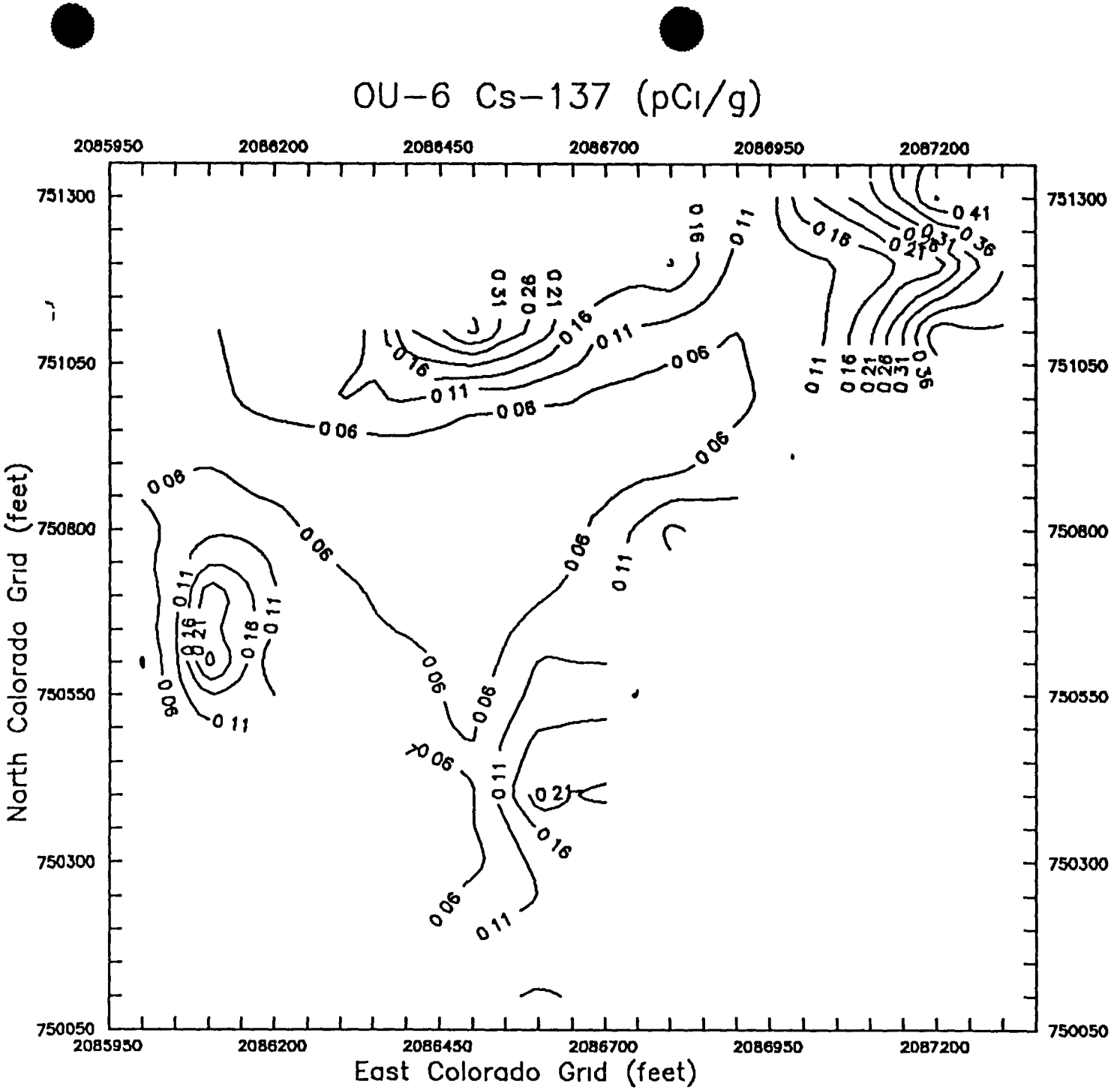
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)


OU-6 Cs-137 (pCi/g)
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2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
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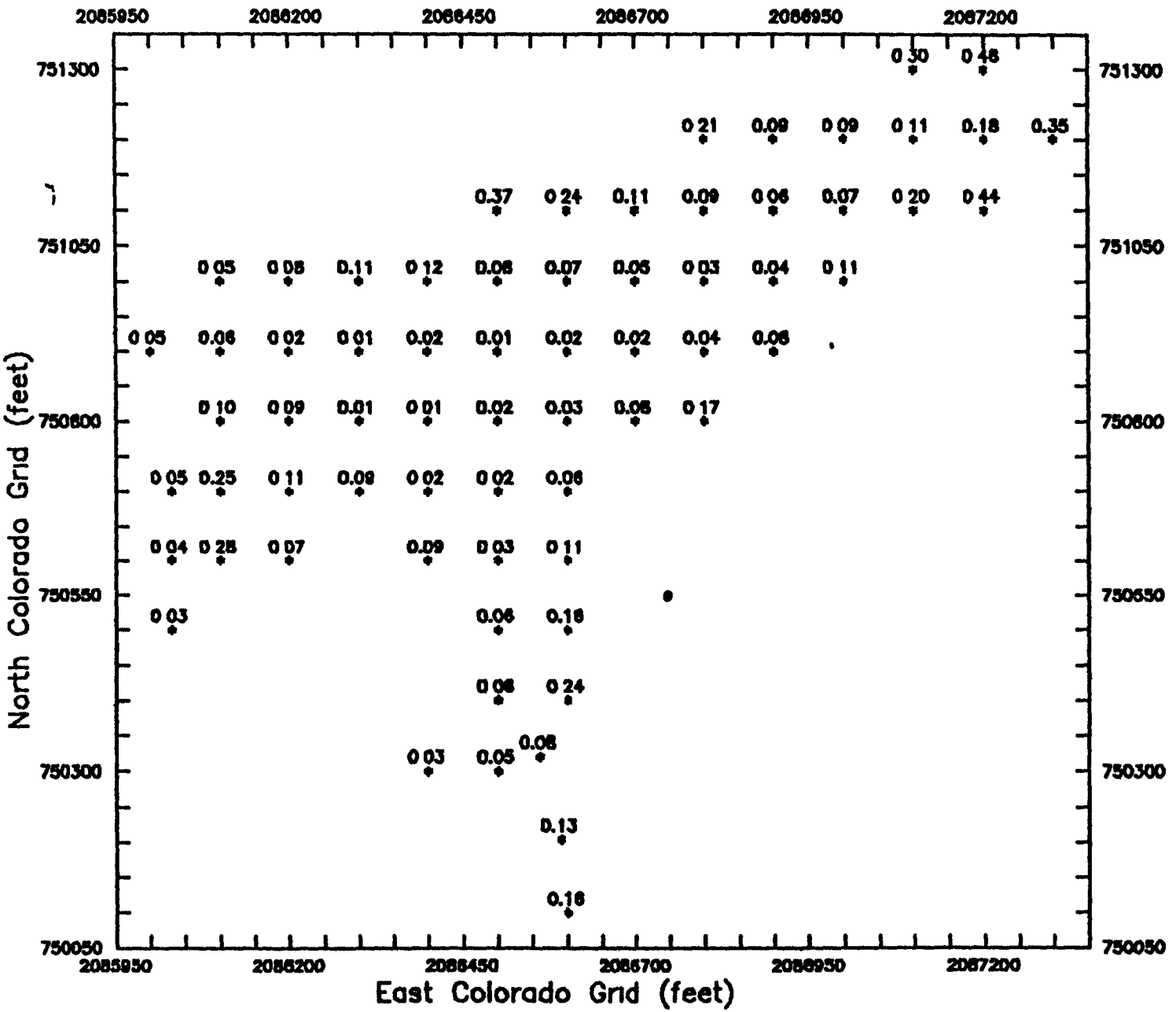
0.11
0.16
0.21
0.26
0.31
0.36
0.41


OU-6 Cs-137 (pCi/g)
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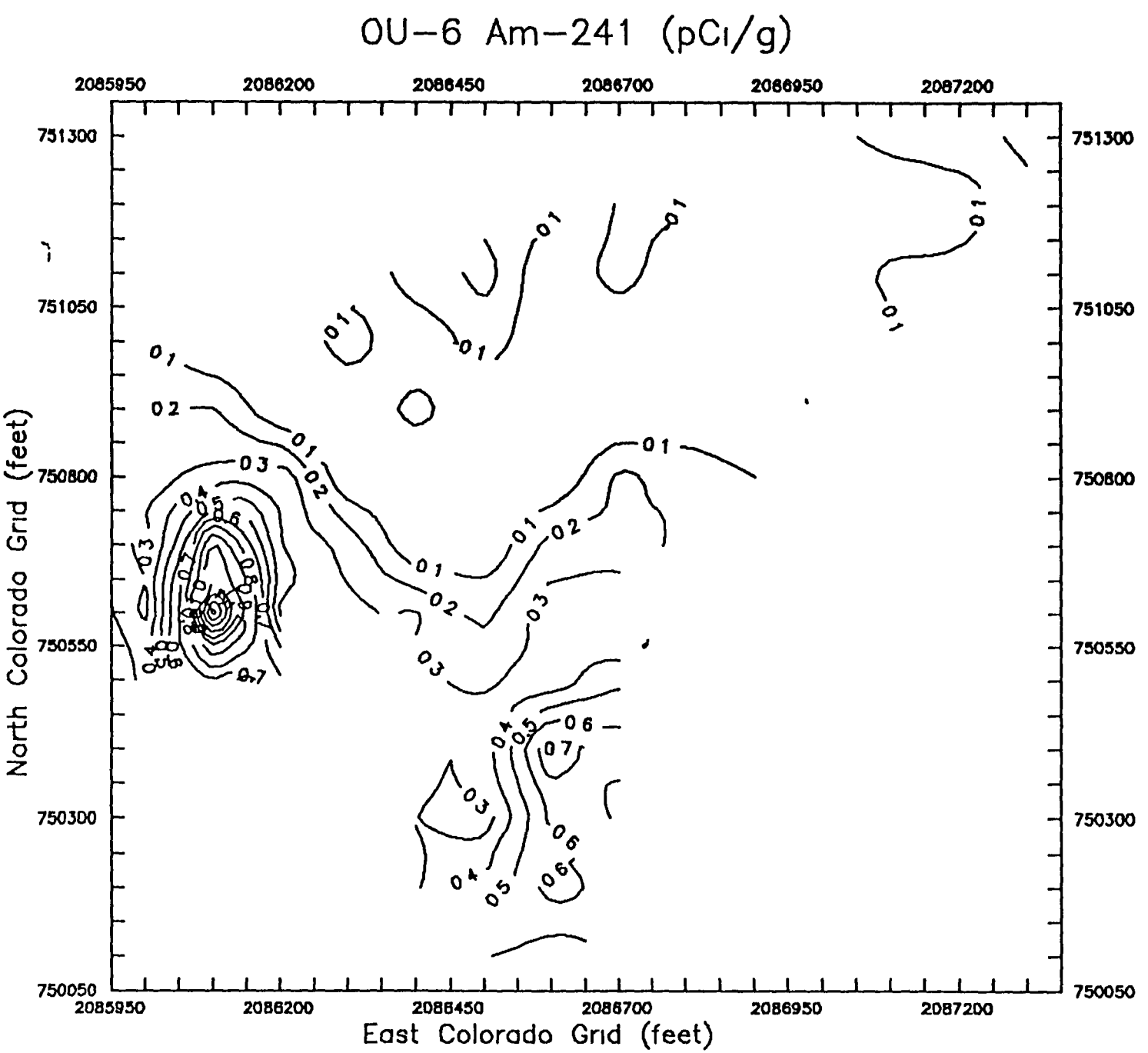
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
0.30
0.48
0.21
0.09
0.09
0.11
0.18
0.35
0.37
0.24
0.11
0.09
0.06
0.07
0.20
0.44
0.05
0.08
0.11
0.12
0.08
0.07
0.05
0.03
0.04
0.11
0.05
0.06
0.02
0.01
0.02
0.01
0.02
0.02
0.04
0.06
0.10
0.09
0.01
0.01
0.02
0.03
0.05
0.17
0.05
0.25
0.11
0.09
0.02
0.02
0.06
0.04
0.28
0.07
0.09
0.03
0.11
0.03
0.06
0.18
0.06
0.24
0.03
0.05
0.08
0.13
0.16


OU-6 Am-241 (pCi/g)
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2086200
2086450
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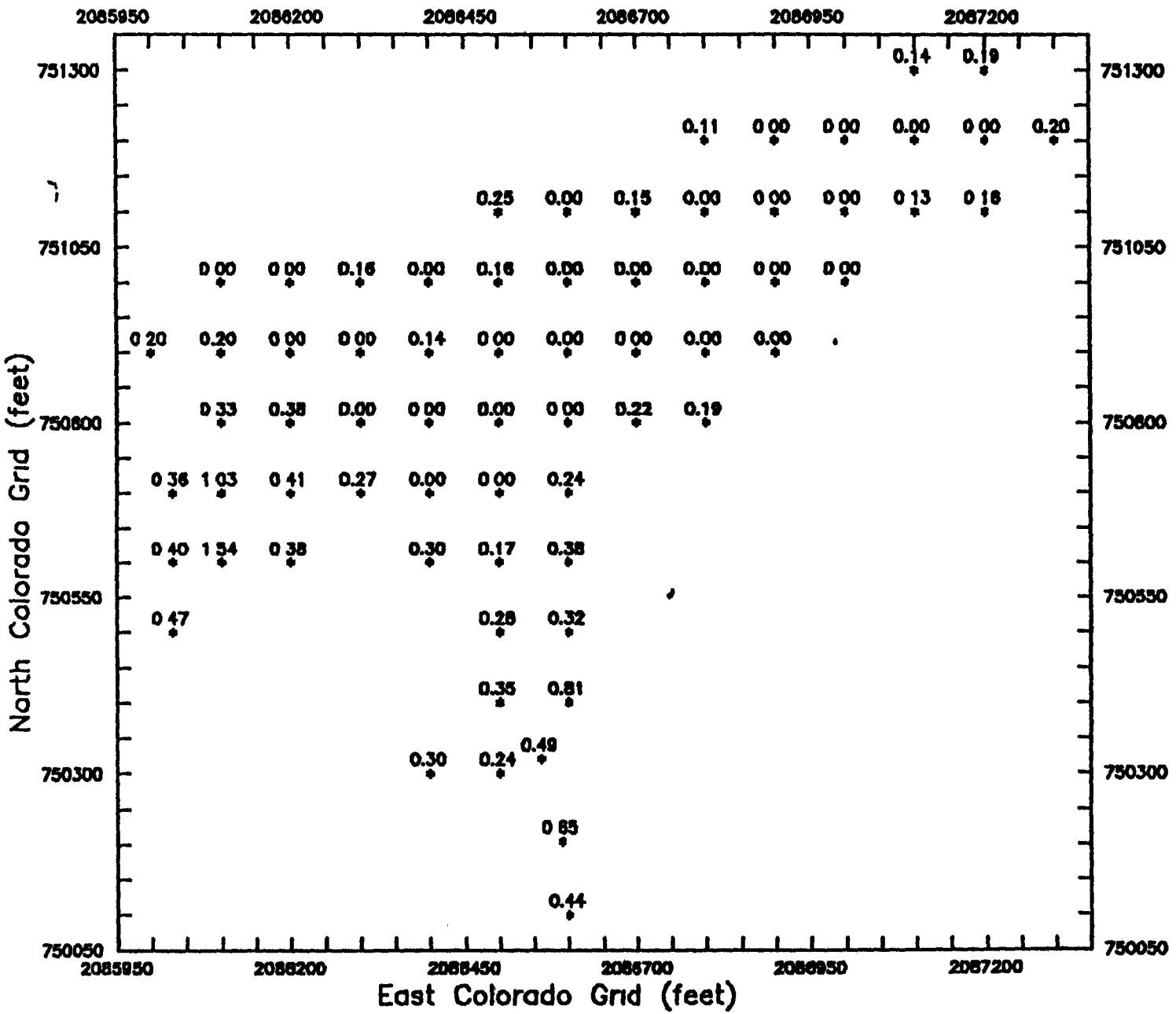
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)


OU-6 Am-241 (pCi/g)
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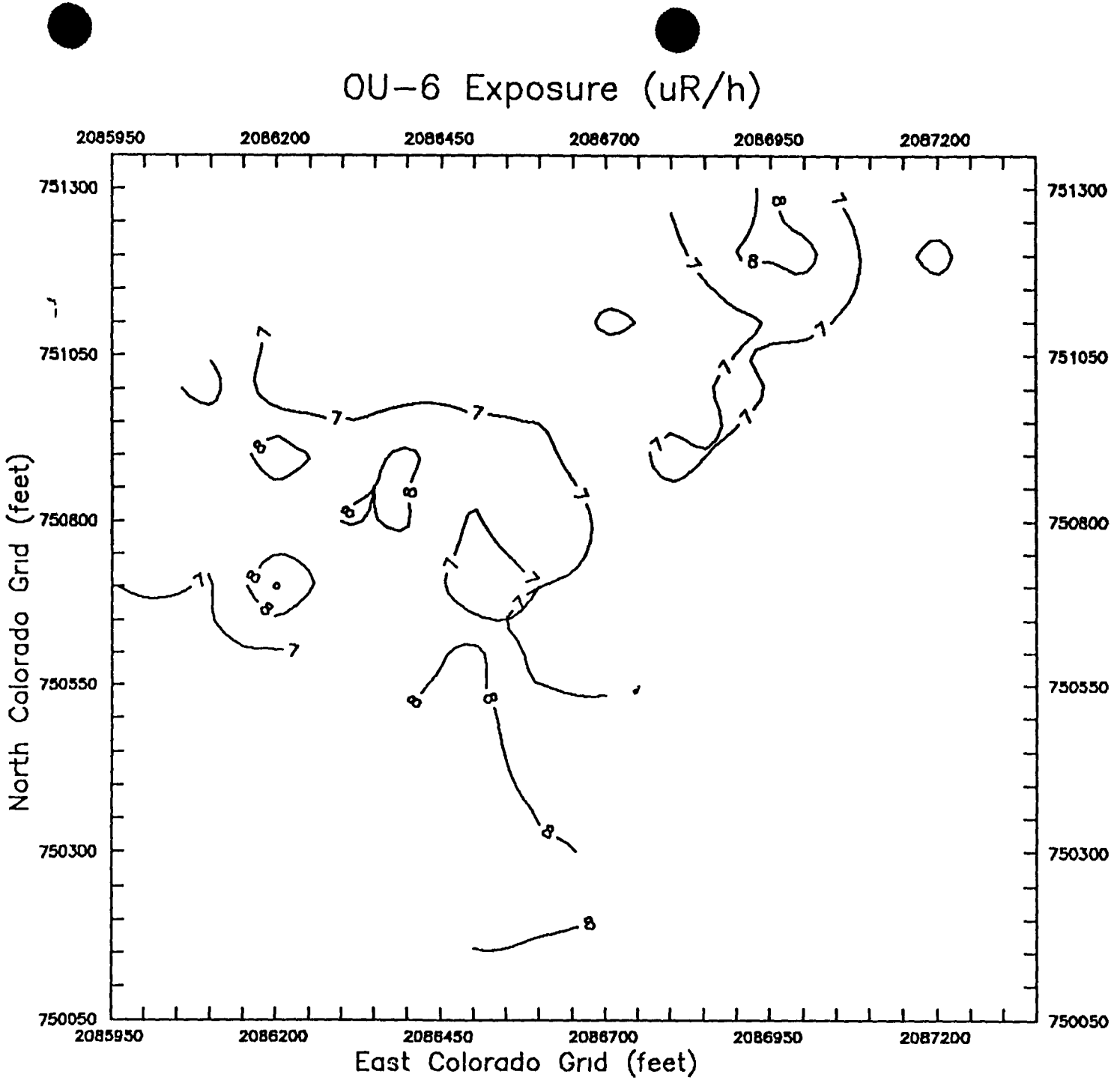
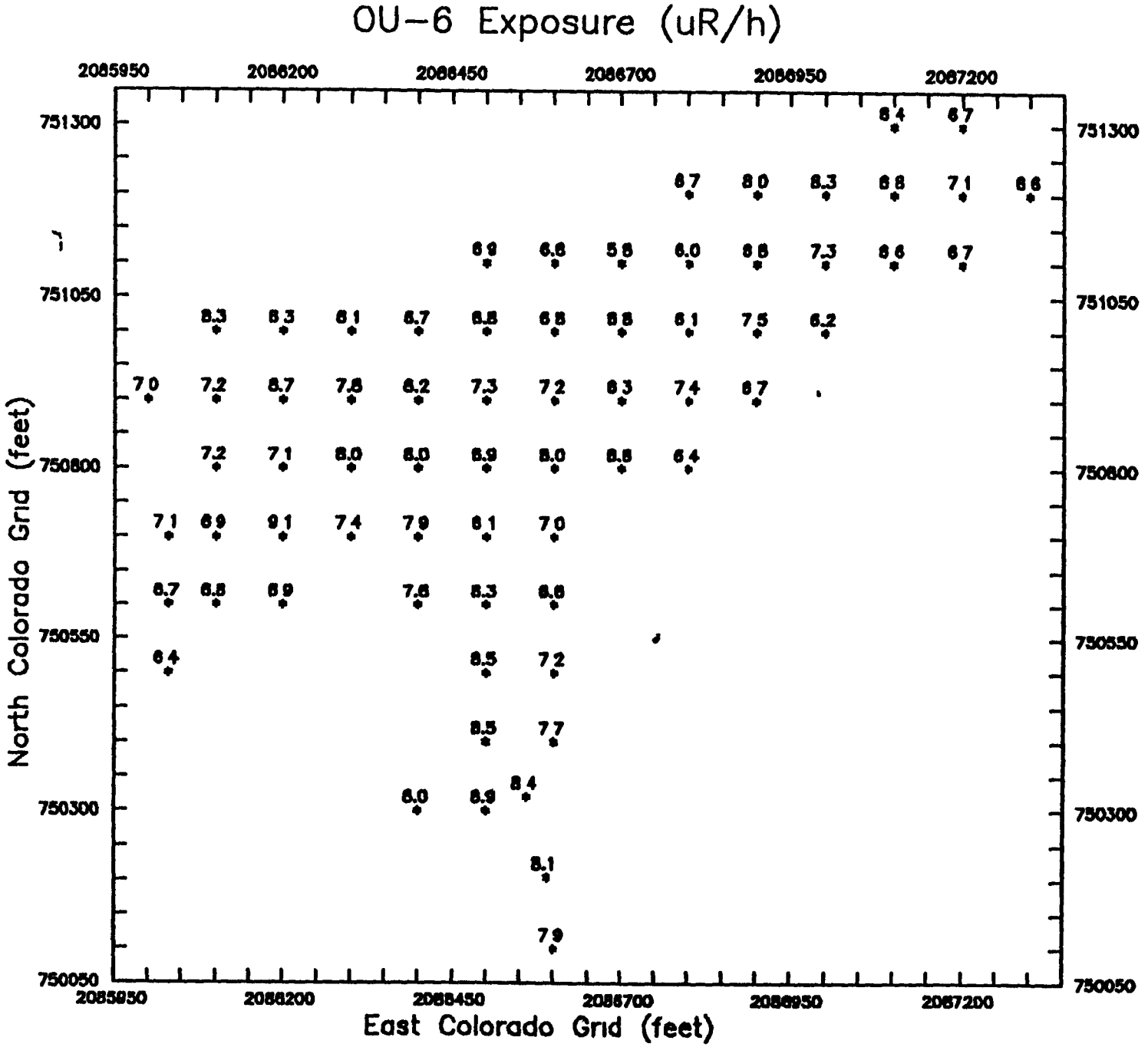
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
0.14
0.19
0.11
0.00
0.00
0.00
0.00
0.20
0.25
0.00
0.15
0.00
0.00
0.00
0.13
0.18
0.00
0.00
0.16
0.00
0.16
0.00
0.00
0.00
0.00
0.00
0.20
0.20
0.00
0.00
0.14
0.00
0.00
0.00
0.00
0.00
0.33
0.38
0.00
0.00
0.00
0.00
0.22
0.19
0.36
1.03
0.41
0.27
0.00
0.00
0.24
0.40
1.54
0.38
0.30
0.17
0.38
0.47
0.28
0.32
0.35
0.81
0.30
0.24
0.49
0.65
0.44


OU-6 Exposure (uR/h)
2085950
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
7
8


OU-6 Exposure (uR/h)
2085950
2086200
2086450
2086700
2086950
2087200
751300
751050
750800
750550
750300
750050
North Colorado Grid (feet)
East Colorado Grid (feet)
8.4 8.7
8.7 8.0 8.3 8.8 7.1 8.6
6.9 6.8 5.8 6.0 6.8 7.3 6.6 6.7
8.3 8.3 8.1 8.7 8.8 8.8 8.8 8.1 7.5 6.2
7.0 7.2 8.7 7.8 8.2 7.3 7.2 8.3 7.4 8.7
7.2 7.1 8.0 8.0 8.9 8.0 8.8 8.4
7.1 8.9 9.1 7.4 7.9 8.1 7.0
8.7 8.8 8.9 7.8 8.3 8.8
8.4 8.5 7.2
8.5 7.7
8.0 8.9 8.4
8.1
7.9

Appendix B2
OU6 Phase I Fidler Survey Data

APPENDIX B2
OU6 PHASE I FIDLER SURVEY DATA
(RECORDED IN COUNTS PER MINUTE)

IHSS NUMBER	SITE NUMBERS	SURVEY DATE	BACKGROUND	HIGHEST	LOWEST
SLUDGE DISPERSAL AREA					
141	75992	11/2/92	1619	SS9	203
POND A-4					
142 4	75092	11/9/92	1405	208	190
POND B 5					
142 9	75292	11/9/92	1433	33	230
OLD OUTFALL AREA					
143	60092/SS600092	2/4/93	1933	301	501
143	60192/SS600192	2/4/93	1933	258	472
143	60292/SS600292	2/2/93	1703	1	230
143	60392/SS600392	2/2/93	1703	191	329
143	60492	2/2/93	1703	193	238
143	60592/77492	2/2/93	1703	389	240
143	60692	2/8/93	1621	89	64
SOIL DUMP AREA					
156 2	63592/SS602892	1/7/93	1173	288	68
156 2	63692/SS602992	1/7/93	1173	483	25
156 2	73592/SS606792	10/28/92	1291	433	26
156 2	73692/SS606892	10/28/92	1219	326	103
156 2	73792/SS606992	10/29/92	1391	111	88
156 2	73892/SS607092	12/4/92	1847	431	429
156 2	73992/SS607192	10/28/92	1219	439	68
156 2	74092/SS607292	12/8/92	1473	327	80
156 2	74192/SS607392	10/26/92	1353	199	60
156 2	74292/SS607492	10/26/92	1353	252	41
156 2	74392/SS607592	10/26/92	1353	168	8
156 2	74492/SS607692	11/9/92	1240	140	133
156 2	74592/SS607792	10/26/92	1326	6	214
156 2	74692/SS607892	12/7/92	1668	284	145
156 2	74792/SS607992	10/28/92	1219	304	33
156 2	74892/SS608092	12/8/92	1857	54	359
156 2	74992/SS608192	10/26/92	1573		
156 2	77592/SS608292	10/28/92	1219	249	84
156 2	77692/SS608392	10/28/92	1433	154	128
156 2	77792/SS608492	10/28/92	1433	57	117
156 2	77892/SS608592	10/27/92	1316	465	41
156 2	77992/SS608692	10/27/92	1316	368	66

APPENDIX B2
OU6 PHASE I FIDLER SURVEY DATA
(RECORDED IN COUNTS PER MINUTE)

IHSS NUMBER	SITE NUMBERS	SURVEY DATE	BACKGROUND	HIGHEST	LOWEST
156 2	75892	10/29/92	1391	150	-250
TRIANGLE AREA					
165	63792/SS620592	10/15/92	1422	358	-121
165	63892	10/21/92	1761	309	-SS9
165	63992/73392	10/21/92	1761	393	-4SS
165	69492/SS606192	10/6/92	1889	665	-232
165	69592/SS620192	10/6/92	1806	119	-210
165	69692	10/7/92	1392	454	-97
165	69792	10/8/92	1883	-88	-341
165	69892	10/7/92	1511	-42	-414
165	69992/SS606292	10/7/92	1353	76	-199
165	70092/SS620292	10/7/92	1299	72	-173
165	70192/72292	10/7/92	1540	201	-187
165	70292/72592	10/7/92	1717	472	-481
165	70392	10/9/92	2302	160	-893
165	70492	10/9/92	2302	5651	22
165	70592	10/9/92	2302	127	-396
165	70692/SS620392	10/9/92	2302	-210	-772
165	70792/73092/SS603192	10/10/92	2069	318	-574
165	70892/72992	10/10/92	2069	-84	-660
165	70992/72692	10/10/92	2069	64	-508
165	71092	10/13/92	2273	-4	-868
165	71192/72392/SS606392	10/13/92	2273	70	-668
165	71292/72792/SS606492	10/13/92	2273	-348	-740
165	71392	10/13/92	2273	-626	-966
165	71492	10/13/92	1336	259	-100
165	71592	10/13/92	1335	718	135
165	71692	10/13/92	1336	915	295
165	71792/73492	10/14/92	1348	409	-5
165	71892/73292/SS606692	10/14/92	1348	469	-75
165	71992	10/14/92	1348	958	100
165	72092/72892	10/14/92	1348	230	-225
165	72192/72492	10/14/92	1348	673	3
165	73192	10/13/92	1336	259	-100
165	76192	9/23/92	1585	446	-226
165	76292	11/9/92	1433	305	-154

APPENDIX B2
OU6 PHASE I FIDLER SURVEY DATA
(RECORDED IN COUNTS PER MINUTE)

IHSS NUMBER	SITE NUMBERS	SURVEY DATE	BACKGROUND	HIGHEST	LOWEST
TRENCH A					
166 1	66892	12/3/92	1292	796	50
166 1	66992	12/3/92	1292	832	113
166 1	67092	11/30/92	1148	144	162
166 1	67192	12/2/92	1045	187	110
166 1	67292	11/30/92	1148	56	193
166 1	67392	12/2/92	1407	384	37
166 1	67492	12/2/92	1407	418	46
166 1	68292	12/7/92	1500	865	40
TRENCH B					
166 2	67592	1/6/93	1204	273	165
166 2	67692	1/6/93	1204	296	-112
166 2	67792	1/6/93	1204	150	264
166 2	67892	1/6/93	1204	71	207
166 2	67992	1/6/93	1204	328	258
166 2	68092	1/6/93	1204	216	238
166 2	68192	1/6/93	1311	137	244
166 2	77392	11/20/92	13SS	356	77
TRENCH C					
166 3	68392	12/8/92	1545	232	233
166 3	68492	12/8/92	1545	169	3SS
166 3	68592	12/9/92	1229	109	326
166 3	68692	12/9/92	1229	109	324
166 3	68792	12/9/92	1201	SS	150
166 3	68892	12/9/92	1229	104	201
166 3	68992	12/15/92	1310	634	58
166 3	69092	12/15/92	1310	277	82
166 3	69192	12/15/92	1310	314	40
166 3	69292	12/15/92	1310	305	70
166 3	69392	12/15/92	1310	493	110
166 3	76992	11/16/92	1591	290	675
NORTH SPRAY FIELD AREA					
167 1	61192/SS600492	10/23/92	1314	19	231
167 1	61292/SS600592	10/23/92	1129	346	53
167 1	61392/SS600692	10/20/92	1230	501	0
167 1	61492/SS600792	10/20/92	1230	191	110
167 1	61592/SS600892	10/22/92	1128	382	148
167 1	61692/SS600992	10/19/92	1168	299	22

APPENDIX B2
OU6 PHASE I FIDLER SURVEY DATA
(RECORDED IN COUNTS PER MINUTE)

IHSS NUMBER	SITE NUMBERS	SURVEY DATE	BACKGROUND	HIGHEST	LOWEST
167 1	61792/SS601092	10/20/92	1230	248	-137
167 1	61892/SS601192	10/22/92	1128	461	-144
167 1	61992/SS601292	10/22/92	1323	191	-18
167 1	62092/SS601392	11/12/92	1072	323	135
167 1	62192/SS601492	10/19/92	1168	692	-48
167 1	62292/SS601592	10/19/92	1145	215	-145
167 1	62392/SS601692	10/23/92	1314	59	280
167 1	62492/SS601792	10/19/92	1145	112	-63
167 1	62592/SS601892	10/19/92	1168	272	23
167 1	62692/SS601992	10/20/92	1296	91	-234
167 1	62792/SS602092	10/22/92	1128	436	65
167 1	62892/SS602192	9/9/92	1568	338	4
167 1	62992/SS602292	10/19/92	1168	231	20
167 1	63092/SS602392	10/19/92	1145	176	-25
167 1	63192/SS602492	10/19/92	1145	158	-31
167 1	63292/SS602592	10/22/92	1128	716	136
167 1	63392/SS602692	10/20/92	1296	408	-69
167 1	77192	9/22/92	1628	247	-84
SOUTH SPRAY FIELD AREA					
167 3	66092/SS605392	11/6/92	962	389	169
167 3	66192/SS605492	11/6/92	962	280	88
167 3	66292/SS60SS92	11/6/92	962	384	72
167 3	66392/SS605692	11/6/92	962	264	53
167 3	66492/SS605792	11/6/92	962	284	47
167 3	66592/SS605892	11/6/92	962	393	88
167 3	66692/SS605992	11/6/92	958	300	-45
167 3	66792/SS606092	11/6/92	962	340	99
167 3	76792	9/22/92	1SS8	367	-106
EAST SPRAY FIELD AREA					
216 1	78092/SS608792	10/29/92	1500	117	-104
216 1	78192/SS608892	10/30/92	1519	78	-357
216 1	78292/SS608992	10/29/92	1500	98	-287
216 1	78392/SS609092	1029/92	1500	106	-279
216 1	78492/SS609192	10/29/92	1519	-75	-419
216 1	78592/SS609292	10/29/92	1519	-114	-409

Appendix B3
OU6 Phase I Soil Gas Survey Data

		SOIL GAS SITE (SGS) NUMBER (2)					
ANALYTE(1)	AMBIENT AIR	SGS69492	SGS69592	SGS69692	SGS69992	SGS70092	SGS70092D
Acetone	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	<5	<5	<5	<5	<5	<5	<5
2 Butanone	<6	<6	<5	<6	<6	<6	<5
Chloroform	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2
1 2 Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Trichloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Toluene	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Surrogate Recoveries							
Fluorobenzene (%)	96	106	110	75	90	102	120

(1) Analysis Modified EPA Methods 8010/8020

(2) Values following < are reporting limits reported in micrograms per liter (µg/l) except for surrogate recoveries

	SOIL GAS SITE (SGS) NUMBER (2)		
ANALYTE(1)	AMBIENT AIR	SGS69792	SGS69892
Acetone	<5	<5	<5
Methylene Chloride	<5	<5	<5
2-Butanone	<6	<6	<5
Chloroform	<1	<1	<1
Carbon Tetrachloride	<0 2	<0 2	<0 2
1,2-Dichloroethane	<5	<5	<5
Trichloroethylene	<0 5	<0 5	<0 5
Toluene	<5	<5	<5
Tetrachloroethylene	<0 5	<0 5	<0 5
Surrogate Recoveries			
Fluorobenzene (%)	164	108	131

(1) Analysis Modified EPA Methods 8010/8020
(2) Values following '<' are reporting limits, reported in micrograms per liter (µg/l) except for surrogate recoveries

	SOIL GAS SITE (SGS) NUMBER (2)									
ANALYTE(1)	AMBIENT AIR	SGS70192	SGS70992	SGS71092	SGS71192	SGS71292	SGS71292D	SGS71992	SGS72092	SGS72192
Acetone	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2 Butanone	<6	<5	<6	<6	<6	<5	<6	<6	<6	<5
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2
1 2 Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Surrogate Recoveries										
Fluorobenzene (%)	260	299	85	98	83	120	54	98	84	141

(1) Analysis Modified EPA Methods 8010/8020

(2) Values following < are reporting limits reported in micrograms per liter (µg/l) except for surrogate recoveries

		SOIL GAS SITE (SGS) NUMBER (2)							
ANALYTE(1)	AMBIENT AIR	SGS70292	SGS70392	SGS70492	SGS70592	SGS70692	SGS70792	SGS70892	SGS71392
Acetone	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5
2 Butanone	<5	<6	<6	<5	<6	<6	<5	<6	<6
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<0 2	<0 2	1 6	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2
1 2 Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Surrogate Recoveries									
Fluorobenzene (%)	78	124	162	59	252	87	72	84	69

(1) Analysis Modified EPA Methods 8010/8020
(2) Values following ' < ' are reporting limits, reported in micrograms per liter (µg/l) except for surrogate recoveries

		SOIL GAS SITE (SGS) NUMBER (2)								
ANALYTE(1)	AMBIENT AIR	SGS71492	SGS71592	SGS71692	SGS71792	SGS71892	SGS71892D	SGS63792	SGS63892	SGS63992
Acetone	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2 Butanone	<5	<5	<6	<6	<5	<6	<6	<6	<6	<5
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2
1 2 Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
Surrogate Recoveries										
Fluorobenzene (%)	88	68	216	53	131	93	171	91	97	590

(1) Analysis Modified EPA Methods 8010/8020

(2) Values following < are reporting limits reported in micrograms per liter (µg/l) except for surrogate recoveries

Appendix B4

OU6 Phase I Geophysical Survey (IHSSs 166.1, 166.2 and 166.3)

Appendix B4.1

OU6 Phase I EM Survey Method and Field Program

1 0 INTRODUCTION

Geophysical techniques were used to support the investigation of IHSS s 166 1 166 2 and 166 3 The primary objective of the geophysical survey was to help delineate the location(s) of suspected burial trenches identified during areal photograph review Additional objectives included the characterization of any identified trenches with regard to orientation and size and provide additional subsurface information to help plan intrusive activities Electromagnetic (EM) methods were used to accomplish the above objectives Specifically terrain conductivity was the EM technique used because it is a cost-effective tool in which landfill hardfill and trench materials are usually identifiable as electrical conductivity anomalies The following sections provide a description of the EM method a discussion of the field program and results of the geophysical program

2 0 ELECTROMAGNETIC METHOD

The EM methods provide a rapid means of measuring the electrical conductivity of subsurface and soil and rock EM data can aid the characterization of

- depth and thickness of subsurface soil and rock units
- lateral variations within the subsurface units
- lateral extent of landfill and/or trench materials
- lateral extent of paleochannels

The EM method involves the induction of an electrical current into the earth A small alternating current is generated by a transmitter coil that produces a primary time-varying magnetic field into the ground Through inductive coupling the primary magnetic field produces small eddy currents in the subsurface which in turn create their own secondary magnetic field A receiver coil measures both the primary and secondary fields Changes in magnitude and phase of the individual currents are output as voltages and are related to the subsurface electrical conductivity Electrical conductivity is a function of the soil or rock type, the porosity and permeability of the rock units and the fluids and fluid constituents filling pore spaces

Depth of investigation is related to the separation between the transmitter and receiver coils Bv using multiple coil spacings several penetration depths can be achieved allowing vertical variations of conductivity to be assessed However wider coil spacings also reduce the resolution of small shallow features because of the increased volume of material sampled In addition to the coil spacing the depth of investigation is dependent on the instrument mode of operation Shallow EM instruments can be operated in two different modes which allow different penetration depths

For this investigation EM data were collected with a Geonics EM 31 In addition to the coil spacing the depth of investigation is dependent on the instrument mode of operation At a given coil spacing the EM 31 can be operated in two modes or coil orientations These are the horizontal dipole mode

(coils are vertical coplanar) and the vertical dipole mode (coils are horizontal coplanar) The EM-31, which has a fixed coil spacing of 3 66 meters, has an effective penetration depth of approximately 8 to 9 feet in the horizontal dipole mode, and 15 to 18 feet in the vertical dipole mode

Individual conductivity values are not necessary diagnostic in themselves, but the variations in conductivity, both laterally and vertically, are significant. As an example, trench materials can sometimes produce a conductivity low (depending on the trench fill properties) However, if metallic objects are introduced as part of the trench materials, a conductivity high will be measured. In some cases, the anomaly will appear as a dipole characterized by both high and low values in close proximity to each other This is because the EM response can be affected by the interaction between the anomaly-producing body in the subsurface and the receiver and transmitter orientation of the instrument

Conductivity values for each mode of operation are plotted and contoured to determine conductivity variations both laterally and vertically Variations in the subsurface conductivity due to buried metallic materials are generally manifested by relatively large (greater than 10 or 20 mmhos/meter) anomalies These anomalies, as well as smaller ones however, can be masked by the interfering effects of surface debris, buried utilities, overhead utilities and communications apparatus, or any large metal structures in close proximity to the survey area.

Interpretation of an EM contour map requires that the basic characteristics and causes of conductivity anomalies be kept in mind. Most types of soil and rock are electrical insulators of high resistivity The electrical conduction that takes place in the subsurface is primarily electrolytic and occurs through the moisture-filled pores and fractures contained in the matrix. If a conductive body, such as a metal drum, is placed in the matrix, ion flow and conduction occurs preferentially through the metal, producing an anomalously high conductivity value Conversely, if non-conductive materials such as unreinforced concrete are placed in the matrix, ion flow and conduction occur around the resistor, thus reducing the bulk conductivity Buried trenches, which may have metallic objects, sludges, or leachate, will generally be manifested by conductivity highs Landfill or hardfill trenches, which may have buried concrete, asphalt, wood, or dry backfill soil materials, can be manifested by conductivity lows All of these facets are superimposed on the geologic framework of the site

3 0 FIELD PROGRAM

Two EM survey grids were established in two areas to include the suspected trench locations within the three IHSSs The larger, westernmost grid (denoted Grid A) included all of the suspected trench locations except the easternmost trench in IHSS 166 3 That trench was covered by a smaller grid to the east (denoted Grid B)

The vicinity of the trench areas targeted by the geophysical surveys was located by plotting bearings and distances from identifiable landmarks observed on aerial photographs and available maps After locating these landmarks in the field traverses were made using a Brunton compass and measuring

tape to stake out baselines for the geophysical survey grids The identified baselines were then used to establish grid perimeters and were marked with survey pins The interiors of the grids were then marked at 10 foot intervals in an alternating pattern using survey pins Data collection points within the grids were identified by either the presence of a survey pin or the intersection of two perpendicular lines defined by the survey pins

Data were collected using a 10-foot station spacing for both grid areas The EM data were collected in both the horizontal and vertical dipole modes providing penetration to depths of 9 and 18 feet respectively The EM data were recorded with a data logger which allowed input of the line numbers and station coordinates as well as recording the two EM measurements Approximately 1 110 stations were occupied in Grid A and approximately 260 stations were completed in Grid B

4 0 RESULTS

All of the EM data were plotted in their correct locations and contoured using the computer software GEOSOFT, which allows for color-enhanced contouring Inputs to the contouring include the station coordinates and values a selected spacing for gridding the raw data (generally 9 feet for these data) and a contour interval Color enhancing is accomplished based on the gridded values from the raw data Results for the horizontal and vertical mode in the Grid A area are shown in Figures B4-1 and B4-2 and similar data for the Grid B area are shown in Figures B4 3 and B4-4 These figures also depict the original location of each IHSS surveyed

In interpreting the geophysical results the likely causative contributors to an anomaly must be kept in mind For Figures B4-1 through B4-4 the EM anomalies can be due to buried metallic objects or variations in conductivity due to differing soil constituents varying geology or the addition of landfill or hardfill materials Several anomalous zones on the figures could be interpreted to define areas of suspected past trench activity The anomaly that is displayed as an east west conductivity high in Figures B4-3 and B4-4 corresponds to a surface drainage ditch trending across the survey area

Appendix B4.2
OU6 Phase I EM-31 Conductivity Contour Maps

Appendix B5
OU6 Phase I Pond Sediment Sample Gamma Radiation Screening Results

APPENDIX B5
OU6 PHASE I POND SEDIMENT SAMPLE GAMMA RADIATION SCREENING RESULTS

IHSS	SAMPLE INTERVAL (cm)	NET RATE COUNT (CPM)
142 1	0-5	22
142 1	5-10	11
142 1	10-15	-12
142 1	15-20	2
142 1	20-25	17
142 1	25-30	65
142 1	30-35	20
142 1	35-40	20
142 1	40-45	-16
142 2	0-5	-14
142 2	5-10	-16
142 2	10-15	-25
142 2	15-20	0
142 2	20-25	2
142 2	25-30	-13
142 2	30-35	-17
142 2	35-40	-15
142 3	0-5	17
142 3	5-10	-31
142 3	10-15	-8
142 3	15-20	-6
142 3	20-25	-1
142 3	25-30	-8
142 3	30-35	28
142 3	35-40	25
142 4	0-5	-11
142 5	0-5	13
142 5	5-10	34
142 5	10-15	25
142 5	15-20	24
142 5	20-25	29
142 5	25-30	84
142 5	30-35	72
142 5	35-40	125
142 5	40-45	397
142 5	45-50	925
142 5	50-55	518
142 5	55-60	211
142 5	60-65	44
142 6	0-5	55
142 6	5-10	11
142 6	10-15	34
142 6	15-20	24
142 6	20-25	11
142 6	25-30	55

APPENDIX B5
OU6 PHASE I POND SEDIMENT SAMPLE GAMMA RADIATION SCREENING RESULTS

IHSS	SAMPLE INTERVAL (cm)	NET RATE COUNT (CPM)
142 6	30-35	44
142 6	35-40	46
142 6	40-45	1
142 6	45-50	22
142 6	50-55	11
142 7	0-5	-42
142 7	5-10	-34
142 7	10-15	-13
142 7	15-20	-12
142 7	20-25	16
142 7	25-30	-16
142 7	30-35	60
142 7	35-40	-23
142 7	40-45	48
142 7	45-50	-34
142 7	50-55	-34
142 7	55-60	12
142 7	60-65	-40
142 7	65-70	8
142 7	70-75	-31
142 8	0-5	37
142 8	5-10	-1
142 8	10-15	19
142 8	15-20	-12
142 8	20-25	28
142 8	25-30	68
142 8	30-35	12
142 8	35-40	33
142 8	40-45	24
142 8	45-50	5
142 8	50-55	37
142 8	55-60	17
142 8	60-65	43
142 8	65-70	59
142 8	70-75	49
142 8	75-80	51
142 8	80-85	35
142 8	85-90	21
142 9	0-5	20
142 9	5-10	23
142 9	10-15	30
142 9	15-20	9
142 12	0-5	-6
142 12	5-10	-2
142 12	10-15	1

APPENDIX C
OU6 SITE CHARACTERIZATION DATA AND DATA FROM OU2, OU4, AND OU7

APPENDIX C
TABLE OF CONTENTS

APPENDIX C1 OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

APPENDIX C2 OU6 PHASE I BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

- C2 1 IHSS 141 - MONITORING WELL CONSTRUCTION LOG
- C2 2 IHSS 142 4 - MONITORING WELL CONSTRUCTION LOG
- C2 3 IHSS 142 9 - MONITORING WELL CONSTRUCTION LOG
- C2 4 IHSS 143 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 5 IHSS 156 2 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 6 IHSS 165 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 7 IHSS 166 1 - BORING LITHOLOGY LOGS
- C2 8 IHSS 166 2 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 9 IHSS 166 3 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 10 IHSS 167 1 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 11 IHSS 167 2 - BORING LITHOLOGY LOGS
- C2 12 IHSS 167 3 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
- C2 13 IHSS 216 1 - BORING LITHOLOGY LOGS

APPENDIX C3 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS, AND IHSS 141 VADOSE ZONE DATA

- C3 1 OU2 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

APPENDIX C
TABLE OF CONTENTS

C3 2 OU4 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
C3 3 OU6 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
C3 4 LANDFILL/OU7 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
C3 5 IHSS 141 VADOSE ZONE DATA
C3 6 PROTECTED AREA (PA) AND SOUTH OF PA HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS
C3 7 DAM BORING LITHOLOGY AND PIEZOMETER CONSTRUCTION LOGS

APPENDIX C4 OU6 PHASE I POND SEDIMENT CORE LITHOLOGIC DATA

APPENDIX C5 OU6 AND OTHER INVESTIGATIONS GROUNDWATER ELEVATION DATA

APPENDIX C6 OU6 AND OTHER INVESTIGATIONS GROUNDWATER HYDROGRAPHS

APPENDIX C
TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

BTOC	below top of casing
ft	feet
IHSS	Individual Hazardous Substance Site
LHSU	Lower Hydrostratigraphic Unit
MSL	mean sea level
NA	not available
OU	Operable Unit
PA	Protected Area
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
SED	sediment
SGS	Soil Gas Survey
SS	Surface Soil
SW	Surface Water
UHSU	Upper Hydrostratigraphic Unit

APPENDIX C1
OU6 PHASE I SITE LOCATION SURVEY DATA
AND ARC/INFO COVERAGE DATA

APPE[illegible]X C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
141	2086363	750458								SS620792				
141	2086388	750457								SS620892				
141	2086413	750458								SS620992				
141	2086434	750458								SS621092				
141	2086390	750302								SS609792				
141	2086414	750302								SS610492				
141	2086440	750303								SS611192				
141	2086390	750276								SS609892				
141	2086414	750277								SS610592				
141	2086440	750278								SS611292				
141	2086391	750251								SS609992				
141	2086415	750252								SS610692				
141	2086440	750252								SS611392				
141	2086506	750429								SS612092				
141	2086524	750430								SS612892				
141	2086550	750430								SS613692				
141	2086575	750430								SS613792				
141	2086600	750430								SS614592				
141	2086507	750404								SS612192				
141	2086525	750404								SS612992				
141	2086574	750405								SS613892				
141	2086600	750405								SS614692				
141	2086527	750379								SS613092				
141	2086575	750380								SS613992				
141	2086600	750379								SS614792				
141	2086527	750353								SS613192				
141	2086574	750355								SS614092				
141	2086600	750355								SS614892				
141	2086527	750328								SS613292				
141	2086575	750329								SS614192				
141	2086600	750330								SS614992				
141	2086527	750303								SS613392				
141	2086574	750304								SS614292				
141	2086600	750304								SS615092				
141	2086528	750278								SS613492				
141	2086574	750279								SS614392				

APPE[illegible]X C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
141	2086600	750279								SS615192				
141	2086528	750253								SS613592				
141	2086575	750254								SS614492				
141	2086600	750253								SS615292				
141*	2086628	750290										75992	5897 10	
142	2086091	751876		SW67393	SW69393			SED68492						
142	2085005	751722		SW67193	SW69293			SED68592						
142	2088575	752632		SW68093				SED68692						
142	2089964	753270		SW67893				SED68792						
142	2090269	753441						SED68892						
142	2090219	753616						SED68992						
142	2091343	754080		SW68293				SED69292						
142	2093618	753646		SW67993				SED69392						
142	2081072	750875		SW67093	SW68593			SED69492						
142	2083514	751533		SW67493	SW68793			SED69692						
142	2088380	751055		SW67693	SW68693			SED69792						
142	2088786	750848						SED69992						
142	2086438	749759			SW68993			SED70092						
142	2086301	751610		SW68193	SW69093			SED68192						
142	2086289	750227		SW67593	SW68893			SED69892						
142 1	2086553	752020	SW60092				SED60092							
142 1	2086270	751966	SW60192				SED60192							
142 1	2086426	751947					SED60292							
142 1	2086505	752010	SW60392				SED60392							
142 1	2086292	751931	SW60492				SED60492							
142 1	2086164	751861				SED65092								
142 1	2086258	751888				SED65192								
142 1	2086587	751980	SW60292											
142 12	2093510	753694					SED64592							
142 12	2093554	753636	SW64692				SED64692							
142 12	2093513	753756					SED64792							
142 12	2093563	753684	SW64892				SED64892							
142 12	2093452	753746	SW64992				SED64992							
142 12	2093580	753726	SW64592											
142 12	2093603	753665	SW64792											
142 2	2086993	752094	SW60592				SED60592							

APPE X C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
142 2	2087179	752087	SW60692				SED60692							
142 2	2087253	752165					SED60792							
142 2	2087310	752174	SW60892				SED60892							
142 2	2086964	752116					SED60992							
142 2	2086751	751994				SED65292								
142 2	2086909	752121				SED65392								
142 2	2087387	752118	SW60792											
142 2	2086686	751961	SW60992											
142 3	2088256	752395	SW61092				SED61092							
142 3	2088168	752356	SW61192				SED61192							
142 3	2087986	752260					SED61292							
142 3	2088323	752536	SW61392				SED61392							
142 3	2087818	752311					SED61492							
142 3	2087711	752246				SED65492								
142 3	2087782	752246				SED65592								
142 3	2088431	752397	SW61292											
142 3	2087700	752172	SW61492											
142 4	2089497	752865	SW61592				SED61592							
142 4	2089723	752971	SW61692				SED61692							
142 4	2089448	752924					SED61792							
142 4	2089674	753022	SW61892				SED61892							
142 4	2089294	752953	SW61992				SED61992							
142 4	2088529	752609				SED65692								
142 4	2088819	752664				SED65792								
142 4	2089678	753084	SW61792											
142 4*	2089870	753228										75092	5723 40	
142 5	2087052	750536	SW62092				SED62092							
142 5	2087119	750520	SW62192				SED62192							
142 5	2087102	750523					SED62292							
142 5	2087083	750556	SW62392				SED62392							
142 5	2086983	750455	SW62492				SED62492							
142 5	2086774	750318				SED65892								
142 5	2086652	750321				SED65992								
142 5	2087106	750556	SW62292											
142 6	2087378	750642	SW62592				SED62592							
142 6	2087281	750604	SW62692				SED62692							

APPENDIX C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
142 6	2087495	750623					SED62792							
142 6	2087456	750609	SW62892				SED62892							
142 6	2087217	750618	SW62992				SED62992							
142 6	2087182	750653				SED66092								
142 6	2087197	750681				SED66192								
142 6	2087499	750699	SW62792											
142 7	2087848	750765	SW63092				SED63092							
142 7	2087815	750837	SW63192				SED63192							
142 7	2087796	750757	SW63292				SED63292							
142 7	2087793	750792	SW63392				SED63392							
142 7	2087698	750786	SW63492				SED63492							
142 7	2087623	750744				SED66292								
142 7	2087651	750778				SED66392								
142 8	2088169	750869					SED63592							
142 8	2088194	750929	SW63692				SED63692							
142 8	2088256	750872					SED63792							
142 8	2088233	750898	SW63892				SED63892							
142 8	2088119	750912	SW63992				SED63992							
142 8	2087932	750802				SED66492								
142 8	2088030	750871				SED66592								
142 8	2088148	750906	SW63592											
142 8	2088251	750960	SW63792											
142 9	2089080	751734	SW64092				SED64092							
142 9	2089540	751924	SW64192				SED64192							
142 9	2089466	752081	SW64292				SED64292							
142 9	2089521	751994	SW64392				SED64392							
142 9	2088356	750990				SED66692								
142 9	2088612	751309				SED66792								
142 9*	2089809	752305										75292	5754 90	
142 9	2088990	751706	SW64492				SED64492							
143*	2083494	751231								SS600092	60092		5941 90	
143*	2083520	751228								SS600192	60192		5942 20	
143*	2083496	751241								SS600292	60292		5942 10	
143*	2083508	751237								SS600392	60392		5941 90	
143*	2083496	751246									60492		5942 00	
143*	2083307	750924									60692		5941 40	

APPE X C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
143*	2083508	751246										77492	5942 00	
156 2*	2086336	750971								SS602892	63592		5952 80	
156 2*	2086252	751032								SS602992	63692		5937 00	
156 2*	2086447	751004								SS606792	73592		5954 60	
156 2*	2086514	750889								SS606892	73692		5953 50	
156 2*	2086591	750761								SS606992	73792		5953 30	
156 2*	2086588	751059								SS607092	73892		5952 80	
156 2*	2086658	750935								SS607192	73992		5955 50	
156 2*	2086734	750803								SS607292	74092		5954 40	
156 2*	2086671	751026								SS607392	74192		5953 20	
156 2*	2086716	751116								SS607492	74292		5954 10	
156 2*	2086798	750991								SS607592	74392		5953 10	
156 2*	2086872	750860								SS607692	74492		5949 40	
156 2*	2086832	751088								SS607792	74592		5954 50	
156 2*	2086910	750960								SS607892	74692		5951 10	
156 2*	2086861	751175								SS607992	74792		5952 00	
156 2*	2086925	751062								SS608092	74892		5951 30	
156 2*	2086952	751152								SS608192	74992		5951 80	
156 2*	2087016	751049								SS608292	77592		5949 60	
156 2*	2087055	751148								SS608392	77692		5952 10	
156 2*	2087076	751255								SS608492	77792		5947 50	
156 2*	2087132	751155								SS608592	77892		5950 30	
156 2*	2087177	751233								SS608692	77992		5946 00	
156 2*	2086558	750915										75892	5956 20	
165*	2085420	750421							70192		72292		5963 50	
165*	2085651	750432							71192	SS606392	72392		5959 40	
165*	2085770	750475							72192		72492		5958 20	
165*	2085417	750523							70292	SS603092	72592		5963 30	
165*	2085541	750523							70992		72692		5961 50	
165*	2085640	750520							71292	SS606492	72792		5959 90	
165*	2085772	750540							72092		72892		5959 30	
165*	2085530	750625							70892	SS603292	72992		5961 50	
165*	2085508	750720							70792	SS603192	73092		5960 10	
165*	2085764	750733							71892	SS606692	73292		5957 40	
165*	2085856	750738							63992		73392		5954 90	
165*	2085758	750840							71792		73492		5954 40	

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
165*	2086169	750699							69492	SS606192				
165*	2085987	750608							69992	SS606292				
165*	2085645	750838							71592	SS606592				
165*	2085531	750418							71092	SS620092				
165*	2086084	750685							69592	SS620192				
165*	2085987	750538							70092	SS620292				
165*	2085416	750943							70692	SS620392				
165*	2085766	750627							71992	SS620492				
165*	2085864	750530							63792	SS620592				
165*	2085415	750839							70592					
165*	2085417	750620							70392					
165*	2085419	750721							70492					
165*	2085642	750621							71392					
165*	2085642	750934							71692					
165*	2085681	750769							71492			76292	5957 00	
165*	2085858	750631							63892					
165*	2085989	750684							69892					
165*	2085990	750766							69792					
165*	2086089	750613							69692					
165*	2086122	750660										76192	5960 00	
165*	2086098	750658												TR60092
166 1*	2083922	752425									66892		5971 20	
166 1*	2083945	752429									66992		5971 50	
166 1*	2083971	752434									67092		5968 90	
166 1*	2083998	752439									67192		5967 70	
166 1*	2084020	752443									67292		5967 60	
166 1*	2084046	752448									67392		5968 00	
166 1*	2084068	752451									67492		5968 10	
166 1*	2083903	752403									68292		5971 00	
166 2*	2083853	752201									67592		5972 30	
166 2*	2083876	752207									67692		5971 30	
166 2*	2083904	752212									67792		5970 40	
166 2*	2083928	752216									67892		5970 40	
166 2*	2083953	752220									67992		5970 40	
166 2*	2083979	752225									68092		5969 80	
166 2*	2084001	752228									68192		5971 40	

APPEN X C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
166 2*	2084299	752243										77392	5962 50	
166 3*	2083872	752302									68392		5972 80	
166 3*	2083898	752308									68492		5971 50	
166 3*	2083924	752315									68592		5970 60	
166 3*	2083946	752319									68692		5970 40	
166 3*	2083973	752324									68792		5970 80	
166 3*	2083999	752327									68892		5970 40	
166 3*	2084328	752532									68992		5964 90	
166 3*	2084352	752533									69092		5964 40	
166 3*	2084380	752536									69192		5963 60	
166 3*	2084402	752537									69292		5962 80	
166 3*	2084427	752540									69392		5962 40	
166 3*	2084500	752561										76992	5955 00	
167 1*	2083890	753838								SS600492	61192		5965 90	
167 1*	2083779	753780								SS600592	61292		5964 40	
167 1*	2083892	753784								SS600692	61392		5961 80	
167 1*	2083996	753789								SS600792	61492		5958 90	
167 1*	2083891	753681								SS600992	61692		5966 50	
167 1*	2083996	753678								SS601092	61792		5961 10	
167 1*	2084116	753666								SS601192	61892		5949 90	
167 1*	2084192	753653								SS601292	61992		5944 30	
167 1*	2084280	753636								SS601392	62092		5926 70	
167 1*	2083782	753577								SS601492	62192		5968 00	
167 1*	2083593	753691								SS601592	62292		5970 20	
167 1*	2083671	753690								SS601692	62392		5968 80	
167 1*	2083781	753686								SS601792	62492		5967 80	
167 1*	2083892	753574								SS601892	62592		5967 10	
167 1*	2083997	753568								SS601992	62692		5963 90	
167 1	2084103	753564								SS602092	62792		5953 20	
167 1*	2084201	753565								SS602192	62892		5940 40	
167 1*	2083890	753519								SS602292	62992		5967 00	
167 1*	2083673	753626								SS602392	63092		5969 70	
167 1*	2083776	753626								SS602492	63192		5968 30	
167 1*	2084098	753519								SS602592	63292		5951 20	
167 1*	2083998	753464								SS602692	63392		5960 70	
167 1	2084103	753777								SS600892				

APPENDIX C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE
167 1*	2084381	753646										77192	5913 90	
167 2*	2084079	752800								SS604092	64792		5930 70	
167 2*	2084181	752795								SS604192	64892		5930 40	
167 2*	2084281	752803								SS604292	64992		5932 30	
167 2*	2084133	752780								SS604392	65092		5934 00	
167 2*	2084231	752776								SS604492	65192		5935 80	
167 2*	2084082	752741								SS604592	65292		5935 90	
167 2*	2084181	752747								SS604692	65392		5938 60	
167 2*	2084281	752754								SS604792	65492		5937 70	
167 2*	2084131	752728								SS604892	65592		5938 60	
167 2*	2084234	752727								SS604992	65692		5942 20	
167 2*	2084082	752695								SS605092	65792		5937 80	
167 2*	2084182	752701								SS605192	65892		5941 90	
167 2*	2084282	752705								SS605292	65992		5944 80	
167 3*	2084470	752482								SS605392	66092		5960 20	
167 3*	2084618	752455								SS605492	66192		5958 90	
167 3*	2084538	752409								SS605592	66292		5961 20	
167 3*	2084671	752434								SS605692	66392		5958 50	
167 3*	2084467	752364								SS605792	66492		5963 20	
167 3*	2084603	752366								SS605892	66592		5961 60	
167 3*	2084536	752323								SS605992	66692		5962 90	
167 3*	2084674	752333								SS606092	66792		5961 20	
167 3*	2084618	752546										76792	5943 50	
167 3*	2084570	752377												TR60192
216 1*	2087565	751384								SS608792	78092		5924 80	
216 1*	2087768	751238								SS608892	78192		5919 90	
216 1*	2087756	751444								SS608992	78292		5917 60	
216 1*	2087573	751187								SS609092	78392		5923 20	
216 1*	2087970	751472								SS609192	78492		5912 30	
216 1*	2087963	751287								SS609292	78592		5911 30	
216 1*	2087681	751432												TR60292

Notes

IHSS - Individual Hazardous Substance Site
SW - Surface Water

APPENDIX C1
OU6 PHASE I SITE LOCATION SURVEY DATA AND ARC/INFO COVERAGE DATA

IHSS	EASTING	NORTHING	SW POND SITE	SW SITE (BASE)	SW SITE (STORM)	DRY SED SITE	POND SED SITE	STREAM SED SITE	SGS SITE	SS SITE	BORING	WELL	GROUND ELEVATION	SOIL PROFILE PIT SITE

SED - Sediment
SGS - Soil Gas Survey
SS - Surface Soil

* Surface soil, borings, wells, and soil profile locations have state plane survey coordinates
All other site locations were approximately located using ARC/Info

APPENDIX C2
OU6 PHASE I BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

APPENDIX C2.1
IHSS 141 - MONITORING WELL CONSTRUCTION LOG

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 5	GROUND ELEVATION (FT)	5897 10	PROJECT NUMBER	006 AFI/RI	LOG OF BORING NUMBER
NORTH	750290	AREA DISS 141	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIROD	75992
EAST	2086628	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/11/93	

REMARKS SEVERE COLD COULD HAVE PREVENTED GROUND WATER FLOW

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%						SC	0 0-0 2 ft Clayey Sand as described below
	BH60566AC									0 2-0 4 ft VOA sample obtained from this interval
										0 4-2 1 ft No recovery for this interval
				0 40 /2 10	5896	1			SC	2 1-3 1 ft Clayey Sand with some gravel and trace silt, brown-dark brown (10YR4/3), grayish brown (10YR5/2), gravel maximum size 0 1', average size 0 02', angular, consisting of quartzite, sand is fine- to medium-grained (with trace amount of coarse sand), poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, abundant grass and grass roots at 0 0-0 2 ft (top soil), CaCO3 in voids, local iron oxide staining, slightly moist 22 3% gravel, 33 5% sand, 4 4% silt, 39 4% clay
				1 00 /2 00	5894	3				3 1-4 1 ft No recovery for this interval
					5893	4			SC	4 1-5 8 ft Clayey Sand as described above
				2 10 /2 10	5892	5				
	BH60567AC									5 8-6 0 ft VOA sample obtained from this interval
	BH60572AC				5891	6				6 0-6 2 ft VOA sample obtained from this interval
									SC	6 2-6 7 ft Clayey Sand as described above
										6 7-8 2 ft No recovery for this interval
				0 50 /2 00	5890	7				
					5889	8				
									SC	8 2-8 9 ft Clayey Sand as described above
										8 9-9 1 ft VOA sample obtained from this interval
	BH60568AC			0 90 /1 80	5888	9				9 1-10 0 ft No recovery for this interval Top of bedrock at 10 0 ft Determined by rig geologist and driller, large cobble caught by auger pushed through section to 12 0 ft, 0 2' gravel from broken up cobble at 12 0 ft
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 5	GROUND ELEVATION (FT)	5897 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750290	AREA TASS 141	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIROD	75992
EAST	2086628	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/11/93	

REMARKS SEVERE COLD COULD HAVE PREVENTED GROUND WATER FLOW

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	0 00 /2 00	5887 5886	10 11				10 0-12 0 ft No recovery for this interval
				2 20 /2 20	5885 5884	12 13			SANDY CLAYSTONE	12 0-14 0 ft Sandy Claystone with some silt, grayish brown (2 5Y5/2), very dark grayish brown (2 5Y3/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, less than 5% porosity, moderately to slightly friable, local iron oxide staining, slightly moist 22 5% sand, 11 6% silt, 65 9% clay
	BH6059MC				5883	14				14 0-14 2 ft VOA sample obtained from this interval
				1 30 /1 30	5882	15			SANDY CLAYSTONE	14 2-15 5 ft Sandy Claystone as described above
					5881 5880 5879 5878	16 17 18 19 20				Total depth at 15 5 ft

APPENDIX C2.2
IHSS 142.4 - MONITORING WELL CONSTRUCTION LOG

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	16 7	GROUND ELEVATION (FT)	5723 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753228	AREA	IHSS 142 1	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIROD	75092
EAST	2089870	LOCATOR NUMBER	013	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/06/93	

REMARKS BOTTOM OF WELL CASING WAS SET AT TOTAL DEPTH

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5723	0			CL	0 0-0 9 ft Sandy Clay with some silt, dark grayish brown (10YR4/2), sand is fine-grained, well sorted, sub-angular, consists of quartz, fines exhibit moderate plasticity, plant roots at 0 0-0 9 ft , local iron oxide staining, dry 0% gravel, 28 6% sand, 17 9% silt, 53 5% clay
				1 70 /2 00	5722	1			SM	0 9-1 3 ft Silty Sand with trace clay and gravel, brown-dark brown (10YR4/3), gravel maximum size 0 1', average size 0 02', angular, consists of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consists of quartz and quartzite, fines exhibit low plasticity, local iron oxide staining, dry 2 4% gravel, 88 1% sand, 5 7% silt, 3 8% clay
	BH0527AC					2			CL	1 3-1 5 ft Sandy Clay as described above
				1 20 /1 80	5721					1 5-1 7 ft VOA sample obtained from this interval 1 7-2 0 ft No recovery for this interval
						3			CL	2 0-2 9 ft Sandy Clay as described above
					5720				GM	2 9-3 2 ft Sandy Gravel as described below 3 2-3 8 ft No recovery for this interval
						4				3 8-5 1 ft Sandy Gravel with some silt and trace clay, dark brown (10YR3/3), gravel maximum size 0 1', average size 0 02', angular to sub-angular, consists of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consists of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining at 5 0-5 1 ft, dry 45 5% gravel, 41 1% sand, 8% silt, 5 4% clay
				1 50 /2 30	5719	5				5 1-5 3 ft VOA sample obtained from this interval 5 3-6 1 ft No recovery for this interval
	BH0528AC				5718				SC	6 1-6 3 ft Clayey Sand with some silt, trace gravel, brown-dark brown (10YR4/3), gravel maximum and average size 0 2', sub-angular, consists of quartzite, sand is fine- to coarse-grained, well graded, sub-angular, consists of quartz and quartzite, fines exhibit low plasticity, CaCO3 present, dry 3 8% gravel, 79 9% sand, 7 1% silt, 14 7% clay Top of bedrock at 6 3 ft
					5717	6			SANDY SILTSTONE	6 3-7 7 ft Sandy Siltstone with trace clay, dark grayish brown (2 5Y4/2), olive brown (2 5Y4/4), gray (10YR5/1), reddish brown (5YR4/3), grayish brown (2 5Y5/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit low to moderate plasticity, less than 20% porosity, argillaceous and silica cement, moderately friable, extensive iron oxide staining at 6 3-6 5 ft , CaCO3 in voids, 60 degree fracture at 6 3-6 5 ft , dry 44 5% sand, 50% silt, 5 5% clay
				1 90 /1 90	5716	7				
					5715	8				
				1 40 /2 00		9			SILTY CLAYSTONE	7 7-9 2 ft Silty Claystone as described below 9 2-9 4 ft VOA sample obtained from this interval 9 4-10 0 ft No recovery for this interval
	BH0529AC				5714	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 7	GROUND ELEVATION (FT)	5723 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753228	AREA 1HSS 142 4	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIRDO	75092
EAST	2089870	LOCATOR NUMBER 013	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/06/93	

REMARKS BOTTOM OF WELL CASING WAS SET AT TOTAL DEPTH

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5713	10			SILTY CLAYSTONE	10 0-11 8 ft Silty Claystone with some sand, dark grayish brown (2 5Y4/2) olive brown (2 5Y4/4), gray (10YR5/1), reddish brown (5YR4/3), grayish brown (2 5Y5/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 5% porosity, slightly friable, local iron oxide staining, horizontal bedding, iron oxide and manganese oxide along bedding planes, carbonaceous material present, dry, section becomes more siltier with depth 22 7% sand, 23 2% silt, 54 1% clay
				1 80 /2 00	5712	11				
					5711	12				11 8-12 0 ft No recovery for this interval
				1 20 /1 80	5710	13			SILTY CLAYSTONE	12 0-13 0 ft Silty Claystone as described above
	960530AC									13 0-13 2 ft VOA sample obtained from this interval
					5709	14				13 2-13 8 ft No recovery for this interval
				0 00 /2 90	5708	15				13 8-16 7 ft No recovery for this interval Boring sampled to 13 8 ft but was reamed to 16 7 ft
					5707	16				
					5706	17				Total depth at 16 7 ft
					5705	18				
					5704	19				
						20				

APPENDIX C2.3
IHSS 142.9 - MONITORING WELL CONSTRUCTION LOG

APPENDIX C2.4
IHSS 143 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

APPENDIX C2.5
IHSS 156.2 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 6	GROUND ELEVATION (FT)	5754 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752305	AREA (HSS 142 9	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	75292
EAST	2089809	LOCATOR NUMBER K16	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/20/92	
REMARKS	WELL SET 12/03/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			CL	0 0-1 0 ft Sandy Clay as described below
	BH0127AC			1 0 / 2 00	5754	1				1 0-1 2 ft VOA sample obtained from this interval
									CL	1 2-1 4 ft Sandy Clay as described below
										1 4-2 0 ft No recovery for this interval
					5753	2			CL	2 0-3 4 ft Sandy Clay with some silt and trace clay, brown to very dark grayish brown (10YR4/3-3/2), gravel is rare, angular to sub-angular quartz and quartzite clasts to 0 17 ft , sand is poorly graded, fine-grained, angular to sub-rounded, fines show medium plasticity, damp 7% gravel, 29% sand, 15% silt, 49% clay
				1 0 / 2 00	5752	3				3 4-4 0 ft No recovery for this interval
					5751	4			GC	4 0-5 1 ft Clayey Sand as described below
	BH0128AC			2 00 / 2 00	5750	5				5 1-5 3 ft VOA sample obtained from this interval
									GC	5 3-7 6 ft Clayey Sand with abundant gravel, dark brown (10YR3/3), gravel is well graded, sub-angular to sub-rounded, sand is well graded, fine- to coarse-grained, with angular to sub-angular quartzite and quartz making up coarse fraction, finer material is sub-angular to sub-rounded, clear quartz clasts with 5% dark mafics, fines show medium plasticity, water at 6 4 ft , saturated 45% gravel, 37% sand, 4% silt, 14% clay Top of bedrock at 7 6 ft
					5749	6	11/20/92			
				2 00 / 2 00	5748	7			CLAYSTONE	7 6-7 8 ft Claystone as described below
	BH0129AC									7 8-8 0 ft VOA sample obtained from this interval
					5747	8			CLAYSTONE	8 0-13 6 ft Claystone, grayish brown (10YR5/2), very dense, moist to damp clay, with iron oxide and manganese oxide on fractures, trace fine sand and silt, dark gray layer (10YR4/1) at 12 3-13 1 ft , shows relatively heavy concentration of carbonized leaves and twigs, also trace caliche development beginning on fractures in this zone, local pods of heavily oxidized clay in fresh rock, medium plasticity 2% sand, 2% silt, 96% clay
				2 00 / 2 00	5746	9				
					5745	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 6	GROUND ELEVATION (FT)	5754 90	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752305	AREA TKSS 142 9	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	75292
EAST	2089809	LOCATOR NUMBER K16	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/20/92	
REMARKS	WELL SET 12/03/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 20 /2 20	5744	10 11				
				1 20 /1 10	5743	12				
					5742	13				Total depth at 13 6 ft
					5741	14				
					5740	15				
					5739	16				
					5738	17				
					5737	18				
					5736	19				
					5735	20				

APPENDIX C2.4
IHSS 143 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2	GROUND ELEVATION (FT)	594 1 90	PROJECT NUMBER	006 REI/RI	LOG OF BORING NUMBER
NORTH	751231	AREA 1HSS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60092
EAST	2083494	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/04/93	
REMARKS	SURFACE SEALED 02/09/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0%			0			CL	0 0-1 2 ft Sandy Clay as described below
		50%	100% 0% 100%	1 50 / 1 50	5941	1				
	BH60768C									1 2-1 5 ft VOA sample obtained from this interval
										1 5-1 9 ft No recovery for this interval
					5940	2			CL	1 9-5 3 ft Sandy Clay with some gravel and silt, light olive brown (2 5Y5/4), olive brown (2 5Y4/4), dark brown (10YR3/3), reddish yellow (7 5YR6/8), gravel maximum size 0 2', average size 0 15', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 in voids, mottled texture appears to be reworked fill material, extensive iron oxide staining at 5 0-5 3 ft, iron oxide staining throughout section, asphalt at 3 5-4 0 ft, moist to very moist at 0 0-4 0 ft, moist at 4 0-6 6 ft 20% gravel, 21 6% sand, 8 8% silt 49 6% clay
				2 10 / 2 10	5939	3				
	BH60772C									
					5938	4				
				1 60 / 2 10	5937	5				
	BH60769C									5 3-5 6 ft VOA sample obtained from this interval
										5 6-6 1 ft No recovery for this interval
					5936	6			CL	6 1-6 6 ft Sandy Clay as described above Top of Rocky Flats alluvium at 6 5 ft 0 2' thick layer of fine to coarse sand, black (10YR2/1)
				1 50 / 1 50	5935	7			GC	6 6-7 6 ft Clayey Gravel with some sand and silt, white (10YR8/1), reddish yellow (7 5YR6/8), brown (10YR5/3), gravel maximum size 0 2', average size 0 15', angular to sub-angular, consisting of quartzite, sand is medium- to fine-grained (with trace coarse sand), poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, iron oxide staining, gravel coated with CaCO3, mottled texture, appears to be native Rocky Flats alluvium, moist 40% gravel, 13 9% sand, 9 2% silt, 36 9% clay
					5934	8				
	BH60785C									7 6-8 0 ft No recovery for this interval
	BH60773C			1 20 / 2 20	5933	9			GC	8 0-8 0 ft Clayey Gravel as described above
										8 9-9 2 ft VOA sample obtained from this interval
					5932	10				9 2-10 2 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2		GROUND ELEVATION (FT)	5941 90	PROJECT NUMBER	006 RFI/RI
NORTH	751231	AREA IHSS 143		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2083494	LOCATOR NUMBER	K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/04/93
REMARKS	SURFACE SEALED 02/09/93						

LOG OF BORING NUMBER 60092

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5931	10				Total depth at 10 2 ft
		50%			5930	11				
					5929	12				
					5928	13				
					5927	14				
					5926	15				
					5925	16				
					5924	17				
					5923	18				
					5922	19				
						20				

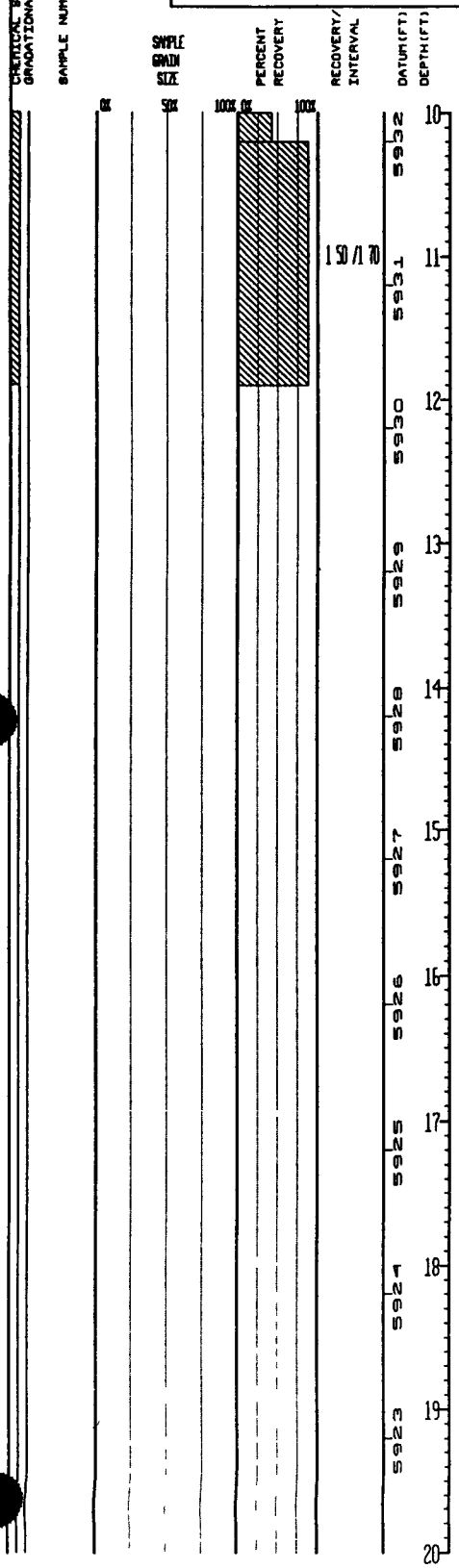
STATE PLANE COORDINATE		TOTAL DEPTH (FT)	11 9	GROUND ELEVATION (FT)	5942 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751228	AREA	DISS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60192
EAST	2083520	LOCATOR NUMBER	K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/04/93	

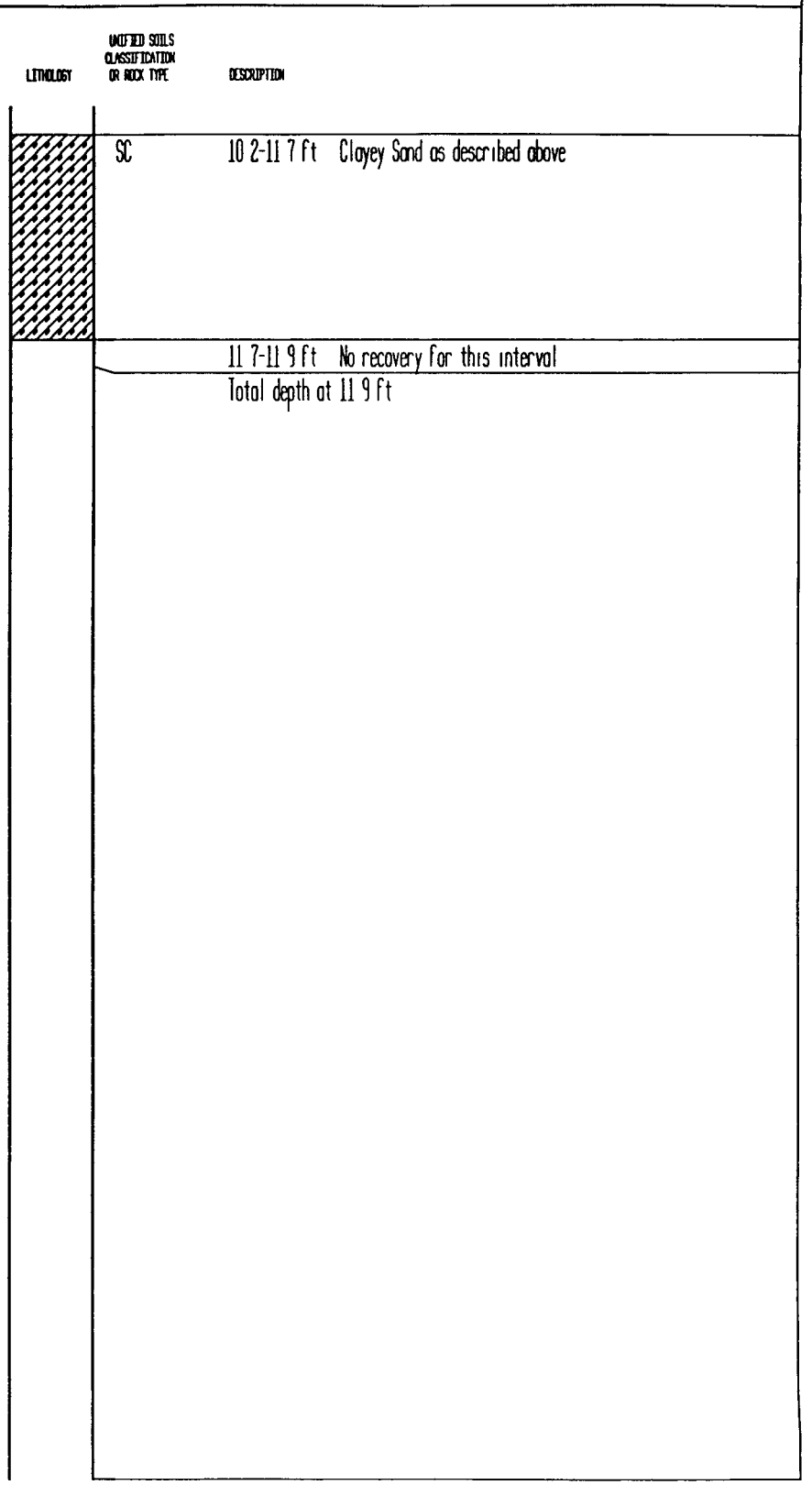
REMARKS SURFACE SEALED 02/09/93

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5942	0			SC	0 0-0 4 ft Clayey Sand as described below
	B60780C									0 4-0 7 ft VOA sample obtained from this interval
				0 70 /2 00	5941	1				0 7-2 0 ft No recovery for this interval
					5940	2			SC	2 0-5 2 ft Fill (?), Clayey Sand with some gravel and silt, brown (10YR5/3), brown-dark brown (10YR4/3), dark reddish brown (2 5YR2 5/4), gravel maximum and average size 0 1", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, fines exhibit moderate plasticity, iron oxide staining, CaCO3 in voids at 3 4-4 0 ft , mottled texture, appears to be fill material, moist to very moist 15% gravel, 44 5% sand, 8 1% silt, 32 4% clay
				2 00 /2 00	5939	3				
					5938	4				
				1 50 /2 00	5937	5				
	B60779C									5 2-5 5 ft VOA sample obtained from this interval
										5 5-6 0 ft No recovery for this interval
					5936	6			SC	6 0-6 6 ft Clayey Sand as described above Top of bedrock at 6 6 ft — Top of Qrf !
				0 60 /1 00	5935	7				6 6-7 8 ft No recovery for this interval
					5934	8			SC	7 8-8 2 ft Clayey Sand with some gravel, trace silt, rig geologist determined bottom fill contained fine to coarse silty sand 0 2' thick, black (10YR2/1), brown-dark brown (10YR3/3), yellowish brown (10YR5/8), light brownish gray (10YR6/2), dusky red (2 5Y3/2), gravel maximum and average size 0 1", angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, iron oxide staining, appears to be reworked bedrock at 10 2-10 5 ft , moist to very moist 10% gravel, 43 2% sand, 4 7% silt, 42 1% clay
	B60784C									
	B60780C									8 2-8 5 ft VOA sample obtained from this interval
				1 00 /2 00	5933	9				8 5-8 8 ft VOA sample obtained from this interval
	B60777AC									8 8-10 2 ft No recovery for this interval
						10				

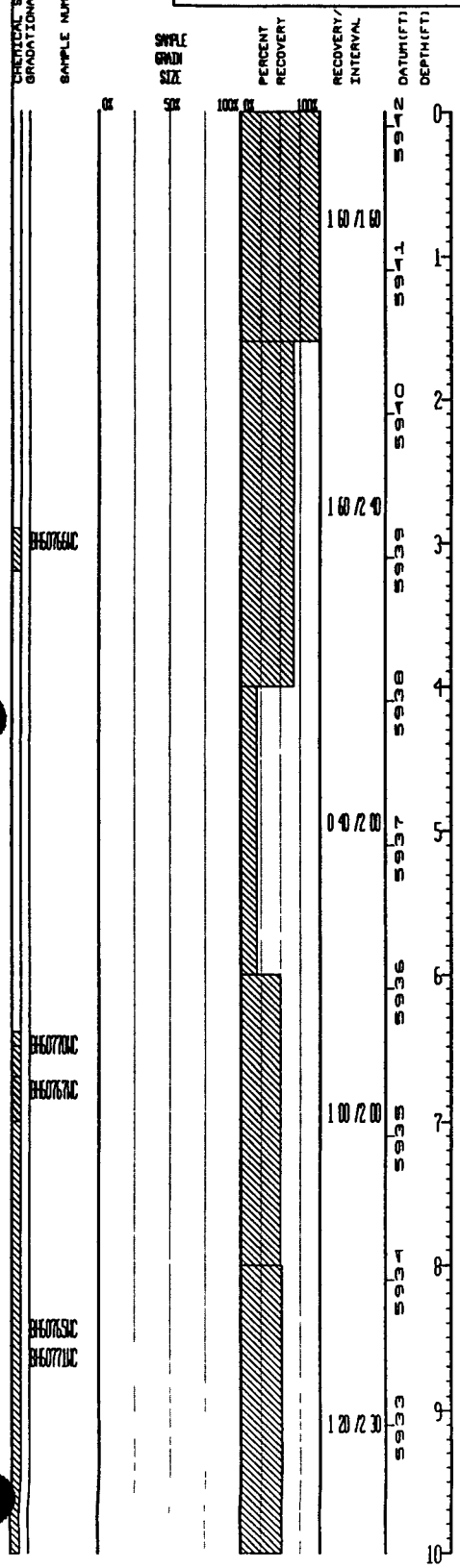
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 9	GROUND ELEVATION (FT)	5992 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751228	AREA DISS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60192
EAST	2083520	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/04/93	

REMARKS SURFACE SEALED 02/09/93





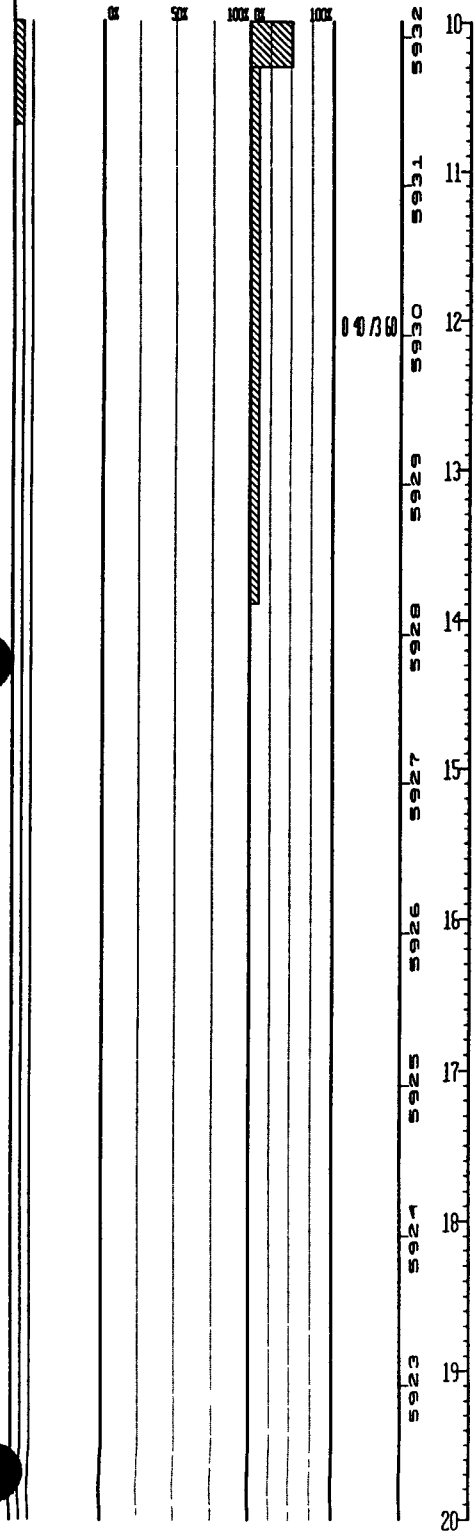
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 9	GROUND ELEVATION (FT)	5942 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751241	AREA THSS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60292
EAST	2083496	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/03/93	
REMARKS	SURFACE SEALED 02/09/93						



WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		SC	0 0-2 0 ft Clayey Sand with some gravel, trace silt, brown-dark brown (10YR4/3), dark brown (10YR3/3), gravel maximum and average size 0 2", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, iron oxide staining, gravel coated with CaCO3, mottled texture, appears to be fill material, moist to very moist 20% gravel, 45 4% sand, 5 2% silt, 29 4% clay
		CL	2 0-2 6 ft Sandy Clay with some silt, brown-dark brown (10YR4/3), dark yellowish brown (10YR4/4), dark brown (10YR3/3), yellowish brown (10YR5/8), sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, fines moderate to high plasticity, iron oxide staining, mottled texture, moist to very moist 0% gravel, 35% sand, 6 5% silt, 58 5% clay
		SC	2 6-2 9 ft Clayey Sand as described above
			2 9-3 2 ft VOA sample obtained from this interval
			3 2-4 0 ft No recovery for this interval
		SC	4 0-4 4 ft Clayey Sand as described above Dusky red (2 5YR3/2), dark brown (10YR3/3), yellowish brown (10YR5/4), iron oxide staining, CaCO3 at 6 2-6 4 ft, mottled texture, appears to be fill material, moist to very moist 20% gravel, 45 4% sand, 5 2% silt, 29 4% clay
			4 4-6 0 ft No recovery for this interval
		SC	6 0-6 4 ft Clayey Sand as described above
			6 4-6 7 ft VOA sample obtained from this interval
			6 7-7 0 ft VOA sample obtained from this interval
			7 0-8 0 ft No recovery for this interval
		SC	8 0-9 2 ft Clayey Sand as described above Top of alluvium, determined by rig geologist 0 2' thick layer of fine- to coarse-grained sand, black (10YR2/1), brown-dark brown (10YR4/3), yellow (10YR7/6) Cuttings placed in core box, entire core from 6 5-9 2 ft used for composite sample, moist to very moist 20% gravel, 45 4% sand, 5 2% silt, 29 4% clay
			9 2-10 3 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 9	GROUND ELEVATION (FT)	5992 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751241	AREA DISS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60292
EAST	2083496	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/03/93	

REMARKS SURFACE SEALED 02/09/93

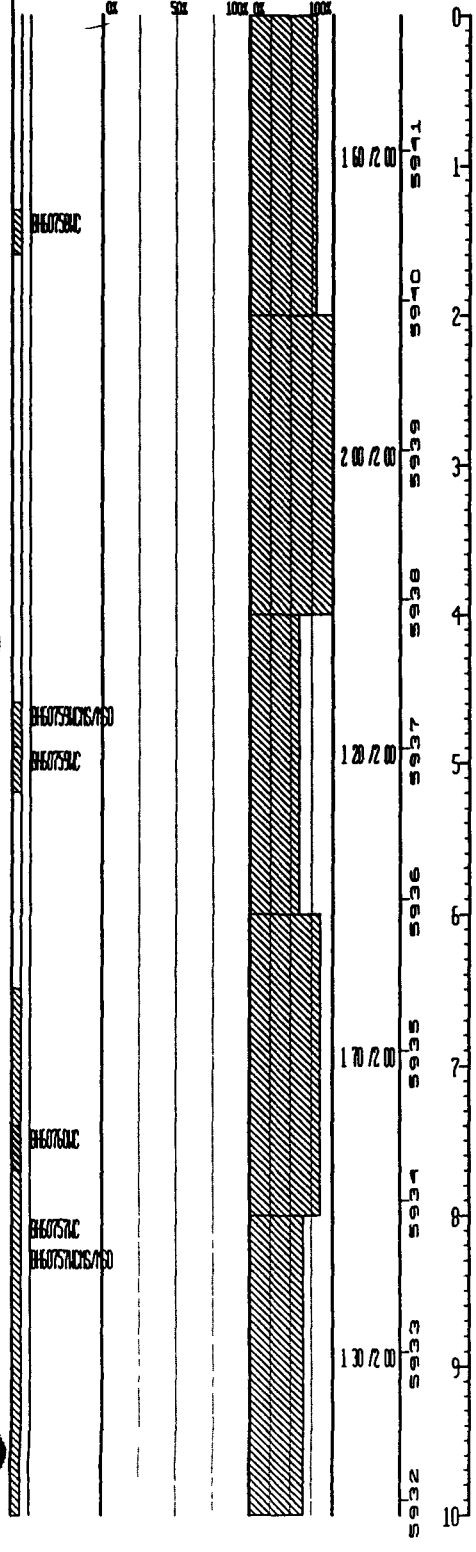


WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	SC	10 3-10 7 ft Clayey Sand as described above
		10 7-13 9 ft No recovery for this interval
		Total depth at 13 9 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 0	GROUND ELEVATION (FT) 5941 90	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751237	AREA DISS 143	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	60392
EAST	2083508	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 02/03/93	

REMARKS SURFACE SEALED 02/09/93



LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CL	0 0-0 6 ft Sandy Clay with some silt, trace gravel, brown-dark brown (10YR4/3), gravel maximum and average size 0 15', angular, consisting of quartzite, sand is coarse-grained with trace amounts of fine- to medium-grained sand, poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, moist to very moist 5% gravel, 17 2% sand, 7 8% silt, 70% clay
	SC	0 6-1 3 ft Clayey Sand as described below
		1 3-1 6 ft VOA sample obtained from this interval
		1 6-2 0 ft No recovery for this interval
	SC	2 0-4 6 ft Clayey Sand with some gravel and silt, brown-dark brown (10YR4/3), yellowish brown (10YR5/4), pink (7 5YR7/4), black (10YR2/1), gravel maximum size 0 1', average size 0 02', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, silty sand layer (pink) at 1 5-1 8 ft, asphalt at 3 3-3 6 ft, mottled texture, iron oxide staining, CaCO3 present, appears to be fill material, moist to very moist at 2 0-4 0 ft, moist at 4 0-6 5 ft 10% gravel, 42 7% sand, 9 5% silt, 37 8% clay
		4 6-4 9 ft VOA sample obtained from this interval
		4 9-5 2 ft VOA sample obtained from this interval
		5 2-6 0 ft No recovery for this interval
	SC	6 0-6 5 ft Clayey Sand as described above Top of Rocky Flats alluvium at 6 5 ft
	GC	6 5-7 4 ft (Top Qrf @ 6 5') Sandy Gravel with some clay and trace silt, brown-dark brown (10YR4/3), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 in voids, iron oxide staining, black (10YR2/1) sand at 6 5 ft, mottled texture, moist 50% gravel, 24% sand, 5 2% silt, 20 8% clay
		7 4-7 7 ft VOA sample obtained from this interval
		7 7-8 0 ft No recovery for this interval
	GC	8 0-9 3 ft Sandy Gravel as described above
		9 3-10 0 ft No recovery for this interval
		Total depth at 10 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	11 8	GROUND ELEVATION (FT)	5942 00	PROJECT NUMBER	OU6 RFI/RI
NORTH	751246	AREA	IHSS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2083496	LOCATOR NUMBER	K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/02/93
REMARKS	SURFACE SEALED 02/09/93						

LOG OF BORING NUMBER

60492

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Depth (ft)	Unified Soils Classification or Rock Type	Description
		0	SC	0 0-1 1 ft Clayey Sand with abundant gravel and some silt, dark brown (10YR3/3), gravel maximum size 0 05', average size 0 02', sub-angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, iron oxide staining, mottled texture, appears to be fill material, moist to very moist 25% gravel, 25 8% sand, 9 8% silt, 39 4% clay
BH60736WC	1 40 /2 00	1		1 1-1 4 ft VOA sample obtained from this interval
		2		1 4-2 0 ft No recovery for this interval
			SC	2 0-2 3 ft Clayey Sand as described above
	1 40 /2 00	3	CL	2 3-2 7 ft Sandy Clay with some silt, brown-dark brown (10YR4/3), dark yellowish brown (10YR4/6), sand is fine- to medium-grained, poorly graded, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, iron oxide staining, moist to very moist 0% gravel, 35% sand, 13% silt, 52% clay
		4	SC	2 7-3 4 ft Clayey Sand as described above
				3 4-4 0 ft No recovery for this interval
	2 00 /2 00	5	SC	4 0-5 7 ft Clayey Sand as described above Brown-dark brown (10YR4/3), dark yellow brown (10YR4/6), extensive iron oxide staining, CaCO3 in voids, moist to very moist
BH60737WC				5 7-6 0 ft VOA sample obtained from this interval
		6	CL	6 0-6 7 ft Sandy Clay as described above Brown-dark brown (10YR4/3), dark yellowish brown (10YR4/6), moist to very moist Top of Rocky Flats alluvium at 6 7 ft
BH60753WC	1 50 /2 30	7	GW	6 7-7 0 ft Sandy Gravel with trace silt and clay, brown-dark brown (10YR4/3), gravel maximum and average size 0 05', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, iron oxide staining, moist to very moist 51 1% gravel, 43 8% sand, 1% silt, 4 1% clay
		8	GC	7 0-7 2 ft Sandy Gravel as described below
				7 2-7 5 ft VOA sample obtained from this interval
				7 5-8 3 ft No recovery for this interval
BH60752WC	1 50 /2 00	9	GC	8 3-9 8 ft Sandy Gravel as described below
		10		9 8-10 3 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 8	GROUND ELEVATION (FT)	5992 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751246	AREA DISS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60492
EAST	2083496	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/02/93	

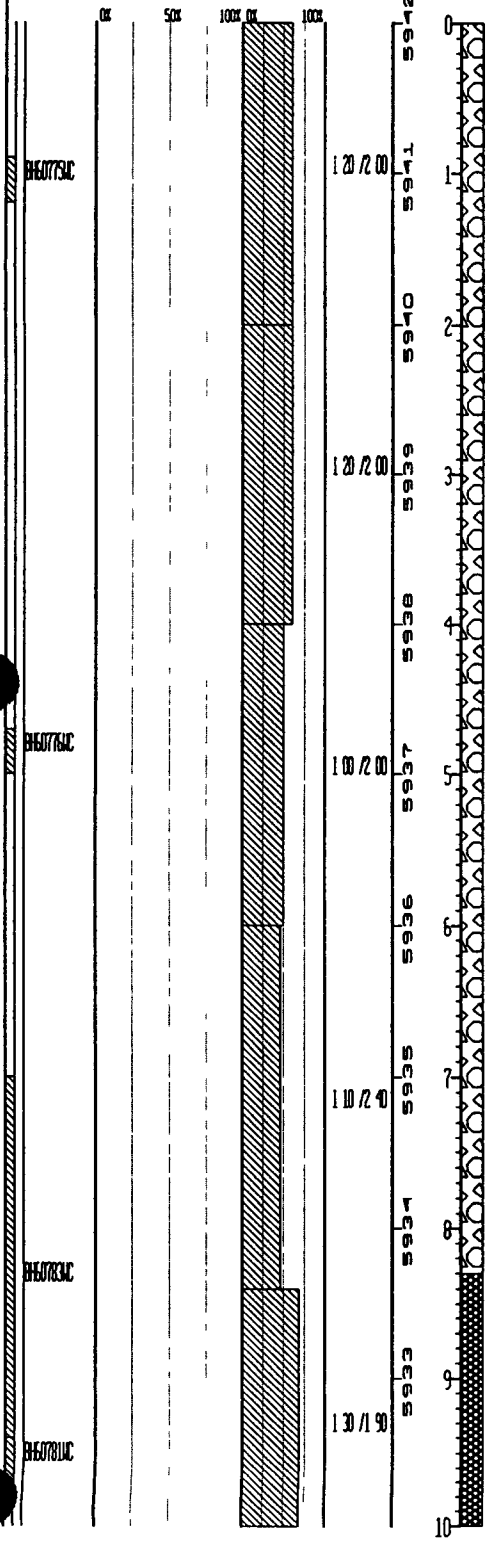
REMARKS SURFACE SEALED 02/09/93

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5992	10			GC	10 3-10 7 ft Sandy Gravel with some clay and silt, white (10YR8/1), light gray (10YR7/2), dark yellowish brown (10YR3/4), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 coating on gravel and sand grains, iron oxide staining, caliche, most of core taken for composite sample, moist 47% gravel 32 3% sand, 7 2% silt, 13 5% clay
	960754C			0 70 / 1 50	5991	11				10 7-11 0 ft VOA sample obtained from this interval
					5990	12				11 0-11 8 ft No recovery for this interval
					5989	13				Total depth at 11 8 ft
					5988	14				
					5987	15				
					5986	16				
					5985	17				
					5984	18				
					5983	19				
						20				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 10 0	GROUND ELEVATION (FT)	5941 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH 750924	AREA DISS 143	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	60692
EAST 2083307	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	02/09/93	
REMARKS SURFACE SEALED 02/10/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR	100% GR	100%					SC	0 0-0 8 ft Clayey Sand with some gravel and silt, very dark brown (10YR2/2), black (10YR2/1), gravel maximum size 0 1', average size 0 02', angular to sub-angular, consisting of quartzite, sand is medium- to coarse-grained (with trace fine sand), poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, plant roots and plant stems at 0 0-2 4', (extensive roots at 0 0-0 4'), CaCO3 in voids, moist to very moist 23 5% gravel, 29 6% sand, 9 4% silt, 37 5% clay
	BH607850C			1 10 /2 00	5941	0				0 8-1 1 ft VOA sample obtained from this interval
						1				1 1-2 0 ft No recovery for this interval
					5940				SC	2 0-2 4 ft Clayey Sand as described above
				1 40 /2 00	5939	2			SC	2 4-3 4 ft Clayey Sand with some gravel and silt, dark grayish brown (10YR4/2), very dark grayish brown (10YR3/2), gravel maximum size 0 1', average size 0 02', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, mottled texture, local iron oxide staining, appears to be fill material, caliche present, moist to very moist 22% gravel, 32% sand, 9 2% silt, 36 8% clay
					5938	3				3 4-4 0 ft No recovery for this interval
				2 00 /2 00	5937	4			SC	4 0-5 3 ft Clayey Sand as described above Top of bedrock at 5 3 ft
	BH607870C				5936	5			SILTY CLAYSTONE	5 3-5 7 ft Silty Claystone as described above
										5 7-6 0 ft VOA sample obtained from this interval
					5935	6			SILTY CLAYSTONE	6 0-8 5 ft Silty Claystone with some sand, gray (10YR5/1), olive brown (2 5Y4/4), very dark grayish brown (2 5Y3/2), brownish yellow (10YR6/8), fine-grained sand, well sorted, sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, local iron oxide staining with iron oxide staining along 30 degree fractures at 6 7 ft and 7 0 ft, CaCO3 in voids, carbonaceous material present, moist to very moist 16 2% sand, 17 2% silt, 66 6% clay
	BH607920C			2 00 /2 00	5934	7				
					5933	8				8 5-8 8 ft VOA sample obtained from this interval
	BH607930C			0 80 /2 00	5932	9				8 8-10 0 ft No recovery for this interval
						10				Total depth at 10 0 ft

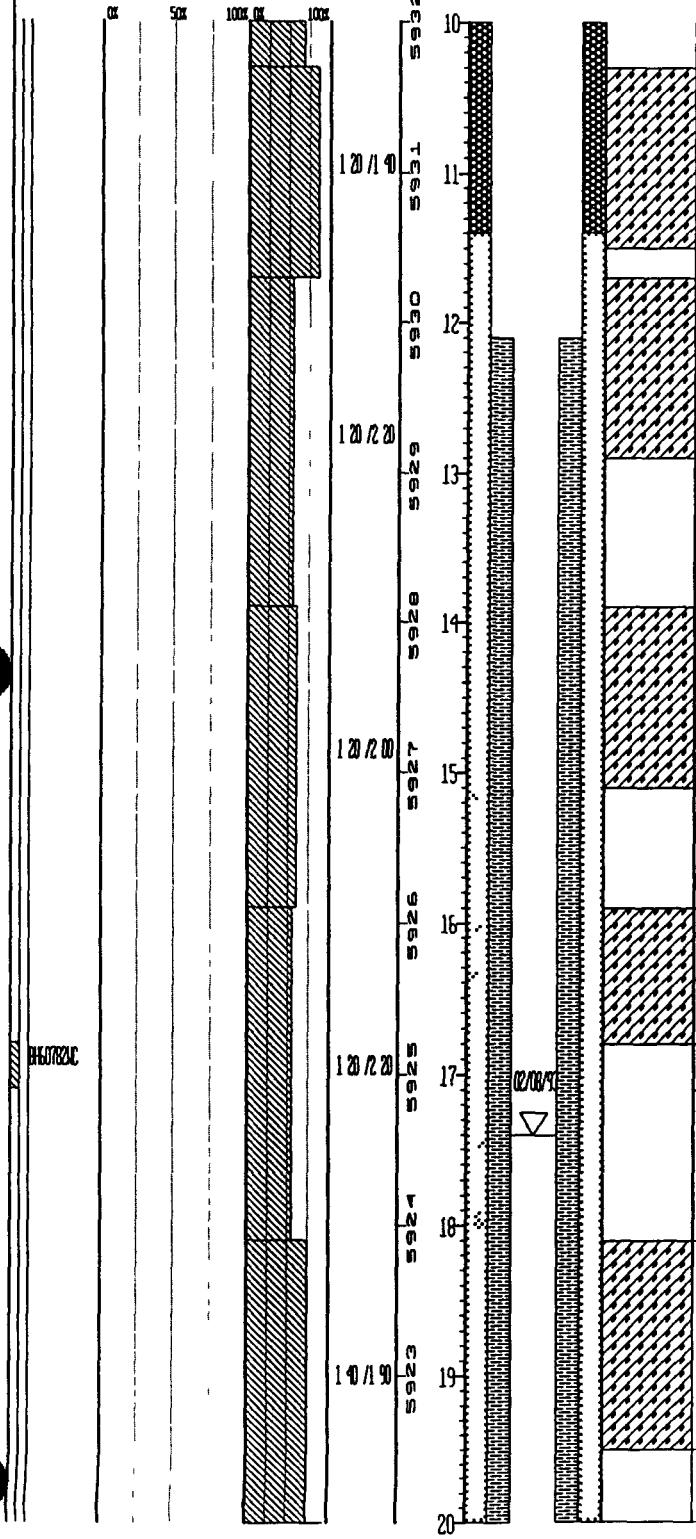
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 1	GROUND ELEVATION (FT)	5942 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751246	AREA DISS 143	CASING DIAMETER (IN)	2 0	GEOLOGIST	MICHAEL MAY	77492
EAST	2083538	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	02/08/93	
REMARKS							



SC	0 0-0 9 ft Clayey Sand with abundant gravel, trace silt, dark brown (10YR3/3), black (10YR2/1), dark yellowish brown (10YR4/6), gravel maximum size 0 15', average size 0 1', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz ant quartzite, fines exhibit moderate plasticity, CaCO3 in voids, asphalt at 4 0-4 4 ft , 6 6 ft , extensive iron oxide staining, moist to very moist, appears to be fill material determined by rig geologist 25 1% gravel, 33 6% sand, 4 1% silt, 37 3% clay
	0 9-1 2 ft VOA sample obtained from this interval
	1 2-2 0 ft No recovery for this interval
SC	2 0-3 2 ft Clayey Sand as described above
	3 2-4 0 ft No recovery for this interval
SC	4 0-4 7 ft Clayey Sand as described above
	4 7-5 0 ft VOA sample obtained from this interval
	5 0-6 0 ft No recovery for this interval
SC	6 0-6 8 ft Clayey Sand as described above
SC	6 8-7 1 ft Gravelly Sand with trace clay and silt, brown (10YR5/3), gravel maximum and average size 0 05', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, sub-angular, consisting of quartz and quartzite fines exhibit low plasticity, localized iron oxide staining CaCO3 present, moist to very moist 42 5% gravel, 48 3% sand, 3 7% silt, 5 5% clay
	7 1-8 4 ft No recovery for this interval
SC	8 4-9 4 ft Clayey Sand as described below
	9 4-9 7 ft VOA sample obtained from this interval
	9 7-10 3 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 1	GROUND ELEVATION (FT)	5942 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751246	AREA IHSS 143	CASING DIAMETER (IN)	2 0	GEOLOGIST	MICHAEL MAY	77492
EAST	2083508	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	02/08/93	
REMARKS							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH — SAMPLE NUMBER — SAMPLE GRAIN SIZE (0% 50% 100%) — PERCENT RECOVERY (0% 100%) — RECOVERY/INTERVAL — DATUM (FT) — DEPTH (FT) — WELL OR PIEZOMETER CONSTRUCTION — LITHOLOGY — UNIFIED SOILS CLASSIFICATION OR ROCK TYPE — DESCRIPTION



Unified Soils Classification or Rock Type	Description
SC	10 3-11 5 ft Clayey Sand as described below
	11 5-11 7 ft No recovery for this interval
SC	11 7-12 9 ft Clayey Sand with some gravel, trace silt, white (10YR8/1), yellowish brown (10YR5/6), dark yellowish brown (10YR4/4), gravel maximum size 0 2', average size 0 05', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, CaCO3 in voids, iron oxide staining on grains, gravel coated with CaCO3, sluff at 18 1-18 6 ft, 20 8-21 2 ft, iron oxide staining dark reddish brown (5YR3/3), caliche present at 11 7-13 9 ft moist to very moist at 8 4-10 3 ft, moist at 10 3-17 4 ft, saturated at 17 4-21 8 ft, caliche present at 15 9-18 1 ft 24 5% gravel, 35 4% sand, 4% silt, 36 1% clay
	12 9-13 9 ft No recovery for this interval
SC	13 9-15 1 ft Clayey Sand as described above
	15 1-15 9 ft No recovery for this interval
SC	15 9-16 8 ft Clayey Sand as described above
	16 8-17 1 ft VOA sample obtained from this interval
	17 1-18 1 ft No recovery for this interval
SC	18 1-19 5 ft Clayey Sand as described above
	19 5-20 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 1	GROUND ELEVATION (FT)	5942 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751246	AREA IHSS 143	CASING DIAMETER (IN)	2 0	GEOLOGIST	MICHAEL MAY	77492
EAST	2083508	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	02/08/93	

REMARKS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) / DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 80 / 1 90	5922 / 20			SC	20 0-21 8 ft Clayey Sand as described above
					5921 / 21				
					5920 / 22				21 8-22 5 ft No recovery for this interval Top of bedrock at 22 5 ft
				0 70 / 1 30	5919 / 23			SANDY CLAYSTONE	22 5-23 2 ft Sandy Claystone with some silt, trace gravel, very dark gray (5YR3/2), brownish yellow (10YR6/8), gray (10YR5/1), gravel maximum size 0 15", average size 0 1", sub-angular, consists of quartzite, sand is fine-grained, well sorted, sub-angular, consists of quartz, gravel appears to be in place, extensive iron oxide staining at 23 6-24 1 ft, CaCO3 in voids, localized iron oxide staining along 30 degree fracture at 23 5 ft, recovery for run 13 2'2 ft possibly due to expansive properties of claystone, very moist 2 3% gravel, 19 2% sand, 15 7% silt, 62 8% clay
	BH60788AC			2 20 / 0 90	5918 / 24				23 2-23 5 ft VOA sample obtained from this interval
					5917 / 25			SANDY CLAYSTONE	23 5-24 1 ft Sandy Claystone as described above
					5916 / 26				Total depth at 24 1 ft
					5915 / 27				
					5914 / 28				
					5913 / 29				
					30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 20 1	GROUND ELEVATION (FT)	5952 80	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750971	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	63592
EAST	2086336	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/07/93	
REMARKS	SURFACE SEALED 01/08/93						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						0			GM	0 0-0 5 ft Sandy Gravel as described below
	BH6053WC				5952					0 5-0 8 ft VOA sample obtained from this interval
				0 80 /2 00		1				0 8-2 0 ft No recovery for this interval
					5951				GM	2 0-3 0 ft Sandy Gravel with some silt and trace clay, dark grayish brown (10YR4/2) at 0 0-0 5 ft, very pale brown (10YR8/3) to (10YR7/3), gravel maximum size 0 15', average size 0 1', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, clay exhibits moderate plasticity 50% gravel, 33 9% sand, 10 5% silt, 5 6% clay
					5950	2				
	BH6052WC			1 00 /2 00		3				3 0-6 0 ft No recovery for this interval
					5949	4				
				0 00 /2 00	5948	5				
					5947	6			GM	6 0-6 6 ft Sandy Gravel as described above
	BH6056WC									6 6-6 9 ft VOA sample obtained from this interval
				0 90 /2 00	5946	7				6 9-8 0 ft No recovery for this interval
					5945	8			GM	8 0-8 7 ft Sandy Gravel as described above
	BH6057WC									8 7-9 0 ft VOA sample obtained from this interval
	[illegible]WC			1 00 /2 00	5944	9				9 0-10 0 ft No recovery for this interval
					5943	10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 20 1	GROUND ELEVATION (FT) 5952 80	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750971	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	63592
EAST	2086336	LOCATOR NUMBER 113	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/07/93	

REMARKS SURFACE SEALED 01/08/93

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SA DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			GM	10 0-11 2 ft Sandy Gravel as described above
				1 20 /2 10	5942	11				11 2-12 1 ft No recovery for this interval
					5941	12			GM	12 1-12 9 ft Sandy Gravel as described above
				1 90 /2 10	5940	13			CH	12 9-13 6 ft Silty Clay as described below
					5939					13 6-13 9 ft VOA sample obtained from this interval
						14				13 9-14 2 ft No recovery for this interval
				1 90 /2 00	5938	15			CH	14 2-16 1 ft Silty Clay with trace sand, light gray to olive gray (5Y6/1-6/2) to olive gray (5Y5/2), sand is fine- to medium-grained, well sorted, sub-angular, consisting of quartz with iron oxide staining, approximately 15% porosity, high plasticity, voids filled with CaCO3 and fine- to medium-grained sand at 14 2-14 8 ft and 16 2-17 0 ft, plant roots at 13 6 ft, fractures 90 degrees at 16 6 ft healed with CaCO3, clasts of clay give appearance of reworked bedrock, moist, fracture healed with CaCO3 1 5% sand, 9 8% silt, 88 7% clay
					5937	16				16 1-16 2 ft No recovery for this interval
				2 00 /2 00	5936	17			CH	16 2-16 6 ft Silty Clay as described above Top of bedrock at 16 6 ft
					5935				CLAYSTONE	16 6-17 9 ft Claystone with trace silt and sand, light gray to olive gray (5Y6/1-6/2), sand is fine- to medium-grained, poorly graded, consisting of quartz with iron oxide staining on grains and along bedding plane (approximately 0 degrees), high plasticity, low friability, moist, fracture 90 degrees at 19 4 ft, local iron oxide and manganese oxide staining, voids filled with CaCO3 and fine- to medium-grained sand 0 4% sand, 2 0% silt, 97 6% clay
					5934	18				17 9-18 2 ft VOA sample obtained from this interval
				1 90 /1 90	5933	19			CLAYSTONE	18 2-20 1 ft Claystone as described above
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5937 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751032	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	63692
EAST	2086252	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/08/93	
REMARKS	SURFACE SEALED 01/12/93						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5937	0			SM	0 0-1 4 ft Silty Sand with some gravel and trace clay, dark brown (7 5YR3/2), gravel maximum size 0 2', average size 0 025', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, very angular to sub-angular, consisting of quartz, quartzite with iron oxide staining, clay exhibited no plasticity, extensive plant roots at 0 0-0 2 ft, moist 15% gravel, 60 8% sand, 19 4% silt, 4 8% clay
			1 60 /2 00	5936	1				1 4-1 6 ft VOA sample obtained from this interval
BH6055WC				5935	2				1 6-2 0 ft No recovery for this interval
								SM	2 0-2 8 ft Silty Sand with trace clay and gravel, pinkish gray (7 5YR7/2) to white (N8) to pink (7 5YR7/4) to reddish yellow (7 5YR7/6-7/8) to light brown (7 5YR6/4) to light gray (2 5Y7/2), gravel maximum size 0 075', average size 0 025', sub-angular to sub-rounded, consisting of quartzite, sand is fine- to medium-grained with trace coarse sand, poorly graded, sub-angular to rounded, consisting of quartz and quartzite, clay exhibits no plasticity with an unconformity at 8 7 ft, extensive iron oxide staining on sand grains, sand become better sorted with no gravel at 6 0-8 7 ft 2 2% gravel, 80 6% sand, 12 0% silt, 5 2% clay
BH6055WC BH6054WC			0 80 /2 00	5934	3				2 8-4 0 ft No recovery for this interval
				5933	4			SM	4 0-5 4 ft Silty Sand as described above
			1 60 /2 00	5932	5				5 4-5 6 ft VOA sample obtained from this interval
BH6054WC									5 6-6 0 ft No recovery for this interval
				5931	6			SM	6 0-7 3 ft Silty Sand as described above
			1 30 /1 90	5930	7				7 3-7 9 ft No recovery for this interval
BH6054WC				5929	8			SM	7 9-8 7 ft Silty Sand as described above, discordant bedding
			1 40 /2 10	5928	9			CH	8 7-9 2 ft Sandy Clay as described below
BH6054WC									9 2-9 4 ft VOA sample obtained from this interval
									9 4-10 0 ft No recovery for this interval
					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0		GROUND ELEVATION (FT)	5937 00	PROJECT NUMBER	006 RFI/RI
NORTH	751032	AREA IHSS 156 2		CASING DIAMETER (IN)		GEOLOGIST	J P GIROD
EAST	2086252	LOCATOR NUMBER	J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/08/93

REMARKS SURFACE SEALED 01/12/93

LOG OF BORING NUMBER 63692

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%		5927	10			CH	10 0-11 4 ft Sandy Clay with trace silt, light olive gray (5Y6/2) at 8 7-9 1 ft , light yellowish brown (10YR6/4) at 9 1-12 0 ft , white (10YR8/2) at 12 0-12 75 ft , sand is fine-grained, well sorted, sub-angular, consisting of quartz, clay exhibits high plasticity, extensive iron oxide staining with manganese oxide staining along fractures, clay clasts and mottled texture suggest reworked bedrock, moist 6 2% sand, 3 7% silt, 90 1% clay
				1 60 /2 00	5926	11				11 4-11 6 ft VOA sample obtained from this interval
					5925	12				11 6-11 8 ft VOA sample obtained from this interval 11 8-12 0 ft No recovery for this interval
				1 20 /2 00	5924	13			CH	12 0-12 75 ft Sandy Clay as described above Top of bedrock at 12 75 ft
					5923	14			CLAYSTONE	12 75-13 2 ft Claystone with trace silt and sand, light olive gray (5Y6/2) sand is fine-grained, well sorted, sub-angular, consisting of quartz with extensive iron oxide staining, clay exhibits high plasticity, moist 0 8% sand, 2 0% silt, 97 2% clay
					5922	15				13 2-14 0 ft No recovery for this interval Total depth at 14 0 ft
					5921	16				
					5920	17				
					5919	18				
					5918	19				
						20				

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STATE PLANE COORDINATE		[illegible] (FT) 22 0	GROUND ELEVATION (FT)	5954 60	PROJECT NUMBER	006 REI/RI	LOG OF BORING NUMBER
NORTH	751004	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	73592
EAST	2086447	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/15/92	

REMARKS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			0			SC	0 0-1 0 ft Gravelly Sand with some clay and trace silt, dark brown (7 5YR4/2) to very pale brown (10YR7/4) to yellow (10YR7/6) to brown (7 5YR4/4) to pinkish white (7 5YR8/2), gravel maximum size 0 2", average size 0 025", angular to sub-rounded, consisting of quartzite, quartz, and schist, sand is fine- to coarse-grained, angular to sub-rounded, consisting of quartz and quartzite with iron oxide staining, clay exhibits low plasticity, top soil 0 0-0 4 ft with extensive roots, dry
	BH60198C			1 20/2 00	5954	1				29 8% gravel, 55 9% sand, 2 9% silt, 11 4% clay
										1 0-1 2 ft VOA sample obtained from this interval
										1 2-2 0 ft No recovery for this interval
	BH60200C			1 60/2 00	5953	2			SC	2 0-3 6 ft Gravelly Sand as described above
					5952	3				
					5951	4				3 6-4 0 ft No recovery for this interval
									SC	4 0-5 2 ft Gravelly Sand as described above
				1 40/2 00	5950	5				
	BH60199C				5949					5 2-5 4 ft VOA sample obtained from this interval
										5 4-6 0 ft No recovery for this interval
						6			SC	6 0-7 5 ft Gravelly Sand as described above
				1 50/2 00	5948	7				
					5947					7 5-8 0 ft No recovery for this interval
						8			SC	8 0-9 0 ft Gravelly Sand as described above
					5946					
	[illegible]			1 20/2 00		9				9 0-9 2 ft VOA sample obtained from this interval
					5945					9 2-10 0 ft No recovery for this interval
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 0	GROUND ELEVATION (FT) 5954 60	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751004	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST KERRY MIYOSHI	73592
EAST	2086447	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/15/92	
REMARKS					

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%			10			SC	10 0-11 6 ft Gravelly Sand as described above
				1 60 /2 00	5944	11				11 6-12 0 ft No recovery for this interval
					5943	12			SC	12 0-13 0 ft Gravelly Sand as described above Top of bedrock at 13 0 ft
				1 70 /2 00	5942	13			CLAYSTONE	13 0-13 5 ft Claystone as described below
	BH60129AC				5941					13 5-13 7 ft VOA sample obtained from this interval
	BC					14				13 7-14 0 ft No recovery for this interval
				1 80 /2 00	5940				CLAYSTONE	14 0-15 8 ft Claystone with trace sand and silt, gray (10YR5/1-6/1) to very pale brown (10YR7/3) to light olive gray (5Y6/2) to white (N9) to strong brown (7 5YR5/8), sand is fine-grained, well sorted, clay exhibits low plasticity, localized iron oxide staining with 0% porosity, caliche zone at 13 0 ft, 14 7-15 0 ft, and 16 3-16 7 ft with a fracture of 40 degrees at 15 0 ft healed with CaCO3, large sandstone gravel at 21 0 ft (approximately 0 1 ft diameter), carbonaceous material is present throughout bedrock interval 1% gravel, 2% sand, 2% silt, 95% clay
					5939	15				15 8-16 0 ft No recovery for this interval
						16			CLAYSTONE	Hole drilled on 12/04/92 to 16 0 ft 16 0-17 1 ft Claystone as described above
	BH60106AC			1 30 /2 00	5938	17				17 1-17 3 ft VOA sample obtained from this interval
					5937					17 3-18 0 ft No recovery for this interval
						18			CLAYSTONE	18 0-21 7 ft Claystone as described above
	4C			2 00 /2 00	5936	19				
					5935	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 0	GROUND ELEVATION (FT) 5954 60	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751004	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST	KERRY MIYOSHI	73592
EAST	2086447	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED	12/15/92	
REMARKS						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6040TNC			1 90 /2 00	5934	20				
						21				
					5933					21 7-21 9 ft VOA sample obtained from this interval
						22				21 9-22 0 ft No recovery for this interval
										Hole re-drilled on 12/15/92 to 22 0 ft Total depth at 22 0 ft
					5932	23				
					5931	24				
					5930	25				
					5929	26				
					5928	27				
					5927	28				
					5926	29				
					5925	30				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 6	GROUND ELEVATION (FT)	5953 50	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750889	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	73692
EAST	2086514	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	12/03/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1 60 /2 00	5953	0			GC	0 0-1 4 ft Sandy Gravel with abundant clay and trace silt, brown to very dark grayish brown (10YR4/3-3/2), gravel is well graded sub-angular to 18 ft, sand is well graded, fine- to coarse-grained, coarse is angular, remainder is sub-angular to sub-rounded, fines exhibit medium plasticity, damp 38% gravel, 31% sand, 2% silt, 29% clay
	BH60142WC				5952	1				1 4-1 6 ft VOA sample obtained from this interval
										1 6-2 0 ft No recovery for this interval
					5951	2			GC	2 0-3 4 ft Sandy Gravel as described above
	BH60145WC			1 40 /2 00		3				
					5950					3 4-4 0 ft No recovery for this interval
					5949	4			CL	4 2-5 7 ft Clay with some sand and trace silt, grayish brown to white (10YR5/2-8/2), caliche rich clay, with poorly graded fine sand, angular to sub-rounded, moist, fines exhibit low to medium plasticity 24% sand, 4% silt, 72% clay
				1 70 /2 00		5				
	BH60143WC				5948					5 5-5 7 ft VOA sample obtained from this interval
										5 7-6 0 ft No recovery for this interval Top of bedrock at 6 0 ft
					5947	6			CLAYSTONE	6 0-8 5 ft Claystone, light brownish gray (10YR6/2), soft stone with light caliche and iron oxides as disseminations and coating fractures, sand is well sorted, fine-grained, sub-angular to sub-rounded quartz grains, fines show plasticity, damp 24% sand, 4% silt, 72% clay
				2 00 /2 00		7				
					5946					
					5945	8				
	[illegible]			1 70 /2 00		9			SANDY CLAYSTONE	8 5-9 7 ft Sandy Claystone, light gray (10YR7/2), poorly graded, fine, sub-angular to rounded quartz sand, fines exhibits medium plasticity, damp 34% sand, 1% silt, 65% clay
					5944					9 7-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 21 6	GROUND ELEVATION (FT) 5953 50	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750889	AREA (MSS 156 2	CASING DIAMETER (IN)	GEOLOGIST KERRY MIYOSHI	73692
EAST	2086514	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN) 10 0	DATE DRILLED 12/03/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE / DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%	1 80 /2 00	5943	10			CLAYSTONE	10 0-11 8 ft Claystone, light yellow brown to grayish brown (2 5Y6/4-5/2) and 10YR equivalents, also light olive brown (2 5Y5/4) varicolored clean claystone, focal zones of light to pervasive iron oxide staining, trace manganese oxide and carbonized vegetation, horizontal bedding, fines show medium to high plasticity, damp <1% sand, <1% silt, 99% clay
					5942	11				
										11 8-12 0 ft No recovery for this interval
				2 00 /2 00	5941	12			CLAYSTONE	12 0-17 8 ft Claystone as described above
					5940	13				
						14				
	BH601B3C			2 00 /2 00	5939	15				
					5938	16				
				1 80 /2 00	5937	17				
					5936					17 8-18 0 ft No recovery for this interval
						18			CLAYSTONE	18 0-21 9 ft Claystone as described above
				1 90 /2 00	5935	19				
					5934	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 6	GROUND ELEVATION (FT)	5953 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750889	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	73692
EAST	2086514	LOCATOR NUMBER 113	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	12/03/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			20				
					5933	21				
	BH6018SC			1 90 /2 00	5932	22				21 9-22 0 ft No recovery for this interval
									CLAYSTONE	22 0-24 0 ft Claystone as described above
				2 00 /2 00	5931	23				
					5930	24				24 0-24 6 ft No recovery for this interval
				0 00 /0 60	5929					Total depth at 24 6 ft
					5928	25				
						26				
					5927	27				
					5926					
						28				
					5925	29				
					5924	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 9	GROUND ELEVATION (FT)	5953 30	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750761	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	73792
EAST	2086591	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Datum (FT)	Unified Soils Classification or Rock Type	Description
		5953	GC	0 0-1 5 ft Sandy Gravel, olive yellow (2 5Y6/6) to light yellow brown (2 5Y6/4) to reddish brown (7 5YR7/8) to strong brown (7 5YR5/6) to grayish brown (2 5Y5/2) to brown (7 5YR5/4), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartz and quartzite, clay exhibits moderate plasticity, moist 43 8% gravel, 43 7% sand, 5% silt, 7 5% clay
BH60325WC	1 70 /2 00	5952		1 5-1 7 ft VOA sample obtained from this interval
		5951		1 7-2 0 ft No recovery for this interval
			GC	2 0-2 8 ft Sandy Gravel as described above
BH60322WC	0 80 /2 00	5950		2 8-4 0 ft No recovery for this interval
		5949	GC	4 0-4 9 ft Sandy Gravel as described above Top of bedrock at 4 9 ft
	1 90 /1 90	5948	CLAYEY SANDSTONE	4 9-5 5 ft Clayey Sandstone as described below
BH60326WC				5 5-5 7 ft VOA sample obtained from this interval
				5 7-5 9 ft No recovery for this interval
		5947	CLAYEY SANDSTONE	5 9-7 3 ft Clayey Sandstone with some silt, white (2 5Y8/2) to light gray (2 5Y7/2) to light brown (7 5YR6/4) to brown (7 5YR5/4) sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz and quartzite, caliche zone at 4 9-5 7 ft with iron oxide weathering and fractures, 30 degrees at 5 3 ft, iron oxide weathering extensive at 6 5-7 0 ft, carbonaceous material throughout section, 30 degree fracture at 8 5 ft, moist 43 5% sand, 16 9% silt, 39 6% clay
	1 40 /2 00	5946		7 3-7 9 ft No recovery for this interval
BH60323WC		5945	CLAYEY SANDSTONE	7 9-9 7 ft Clayey Sandstone as described above
	2 00 /2 00	5944		9 7-9 9 ft VOA sample obtained from this interval
BH60327WC				Total depth at 9 9 ft

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT) 5952 80	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751059	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST KERRY MIYOSHI	73892
EAST	2086588	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 10 0	DATE DRILLED 12/07/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
									SC	0 0-0 8 ft Gravelly Sand as described below
										0 8-1 0 ft VOA sample obtained from this interval
										1 0-2 0 ft No recovery for this interval
	BH602701C			0 00 /1 00	5952	1			SC	2 0-3 1 ft Gravelly Sand with some clay and silt, very dark gray (5Y3/1) to yellow (10YR8/6-8/8) to light yellowish brown (10YR6/4) to black (N1), gravel maximum size 0 15', average size 0 025', angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, clay exhibits moderate plasticity with extensive iron oxide staining, mottled texture, CaCO3 in voids and asphalt at 0 6-0 8 ft and 2 0-2 9 ft, dry 27% gravel, 40 2% sand, 11 5% silt, 21 3% clay
				1 00 /1 00	5951	2				
	BH602670C			1 10 /2 00	5950	3				
										3 1-4 0 ft No recovery for this interval
					5949	4			SC	4 0-5 0 ft Gravelly Sand as described above
	BH602710C			1 20 /2 00	5948	5				5 0-5 2 ft VOA sample obtained from this interval
										5 2-6 0 ft No recovery for this interval
					5947	6			SC	6 0-6 5 ft Gravelly Sand as described above
				1 20 /2 00	5946	7			SC	6 5-7 2 ft Gravelly Sand as described below
										7 2-8 0 ft No recovery for this interval
					5945	8			SC	8 0-9 4 ft Gravelly Sand as described below
	BH602680C			1 60 /2 00	5944	9				
	BH602720C				5943	10				9 4-9 6 ft VOA sample obtained from this interval
										9 6-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT)	5952 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751059	AREA IKSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY KUYOSHI	73892
EAST	2086588	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	12/07/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL, GRADATIONAL, DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			SC	10 0-11 4 ft Gravelly Sand with some clay and trace silt, dark gray (10YR4/1) to very dark grayish brown (10YR3/2) to white (10YR8/2) to pink (7 5YR7/4) to reddish yellow (7 5YR7/6) to light brownish gray (10YR6/2), gravel maximum size 0 1", average size 0 025", angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, clay exhibits moderate plasticity 35% gravel, 51 1% sand, 2 8% silt, 11 1% clay
				1 10 /2 00	5942	11				11 4-12 0 ft No recovery for this interval
					5941	12			SC	12 0-13 1 ft Gravelly Sand as described above
				1 10 /2 00	5940	13				13 1-13 4 ft VOA sample obtained from this interval
	BH0273C				5939					13 4-14 0 ft No recovery for this interval
						14			SC	14 0-15 1 ft Gravelly Sand as described above
	BH0253C			1 10 /2 00	5938	15				15 1-16 0 ft No recovery for this interval
					5937	16			SC	16 0-16 3 ft Gravelly Sand as described above Top of bedrock at 16 3 ft
				1 60 /2 40	5936	17			SILTY CLAYSTONE	16 3-18 0 ft Silty Claystone with some sand 8 7% sand, 18 3% silt, 73% clay
	BH0275C				5935					17 4-17 6 ft VOA sample obtained from this interval
						18				17 6-18 0 ft No recovery for this interval
					5934					Total depth at 18 0 ft
					5933	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5955 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750935	AREA DISS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	73992
EAST	2086658	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/11/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CRITICAL SAMP DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%				0			SC	0 0-1 5 ft Gravelly Sand as described below
										1 5-1 7 ft VOA sample obtained from this interval
										1 7-2 0 ft No recovery for this interval
						1			SC	2 0-2 9 ft Gravelly Sand with some clay and trace silt, black (5YR2 5/1) to yellow (10YR7/8) to light gray (10YR6/1) at 0 0-1 7 ft, grayish brown (10YR5/2) at 2 0-2 9 ft, pale yellow brown (10YR6/3) at 4 0-4 6 ft, white (N9) at 4 6-5 4 ft, very dark grayish brown (10YR5/2) at 5 4-6 8 ft, mottled texture throughout, gravel maximum size 0 2', average 0 05', angular to sub-angular, consisting of quartzite and lithic rocks, sand is medium to fine-grained, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, clay exhibits moderate to high plasticity, topsoil with extensive plant roots at 0 0-0 7 ft with some plant roots throughout 0 0-6 8 ft interval, local iron oxide staining, voids filled with CaCO3 at 2 9 ft and a caliche zone at 4 6-5 4 ft, moist 32% gravel, 53% sand, 1 5% silt, 13 5% clay
	BH60328C			0 00 /2 00	5955					
						2				
	BH60301C			0 00 /2 00	5953					
						3				
					5952					2 9-4 0 ft No recovery for this interval
						4			SC	4 0-5 3 ft Gravelly Sand as described above
				0 00 /2 00	5951					
						5				
	BH60324C				5950					5 3-5 5 ft VOA sample obtained from this interval
	BH60329C									5 5-5 7 ft VOA sample obtained from this interval
										5 7-6 0 ft No recovery for this interval
						6			SC	6 0-6 8 ft Gravelly Sand as described above
										6 8-7 8 ft No recovery for this interval
				0 00 /1 80	5948	7			GC	7 8-9 4 ft Sandy Gravel with some clay and trace silt, very pale brown (10YR7/3-7/4) to white (10YR8/2) to yellow (10YR7/6-7/8) at 7 8-9 5 ft, light olive gray (5Y6/2) to light gray (5Y7/1) to white (N9) to very pale brown (10YR7/3-7/4) at 9 5-10 3 ft, gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz, quartzite, and schist, fines exhibit moderate plasticity, a 90 degree fracture is present at 10 2 ft, healed with CaCO3, a caliche zone is also present at 7 8-8 8 ft, moist 44 2% gravel, 39 9% sand, 1 6% silt, 14 3% clay
	BH60302C				5947	8				
				0 00 /2 20						
					5946	9				9 4-9 6 ft VOA sample obtained from this interval
	BH60330C									9 6-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT) 5955 50	PROJECT NUMBER 006 RFT/RI	LOG OF BORING NUMBER
NORTH	750935	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LMS	73992
EAST	2086658	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/11/92	
REMARKS	SURFACE SEALED 12/16/92				

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%	1 60 /2 10	5945 5944 5943 5942 5941 5940 5939 5938 5937 5936	10 11 12 13 14 15 16 17 18 19 20			GC	10 0-10 3 ft Sandy Gravel as described above Top of bedrock at 10 3 ft
	B6U021MC								SANDY CLAYSTONE	10 3-11 6 ft Sandy Claystone with abundant silt, light gray (10YR7/1) to yellow (10YR7/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit low plasticity, 10% porosity, high friability, moist, horizontal bedding with iron oxide staining, iron oxide staining extensive at 10 0-10 7 ft fractures at 70 degrees at 11 4 ft and healed with CaCO3 39 2% sand, 26 3% silt, 39 5% clay
										11 6-12 1 ft No recovery for this interval
				1 80 /1 90					SANDY CLAYSTONE	12 1-13 7 ft Sandy Claystone with abundant silt, light brownish gray (2 5Y6/2) to light gray (2 5Y7/1), 0 porosity, moderately friable, moist, faint horizontal bedding with localized iron oxide staining and carbonaceous material, fracture at 80 degrees at 13 1' 39 2% sand, 26 3% silt, 39 5% clay
	B6U033MC									13 7-13 9 ft VOA sample obtained from this interval
										13 9-14 0 ft No recovery for this interval
										Total depth at 14 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT)	5954 40	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750803	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74092
EAST	2086734	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92	
REMARKS	SURFACE SEALED 12/16/92						

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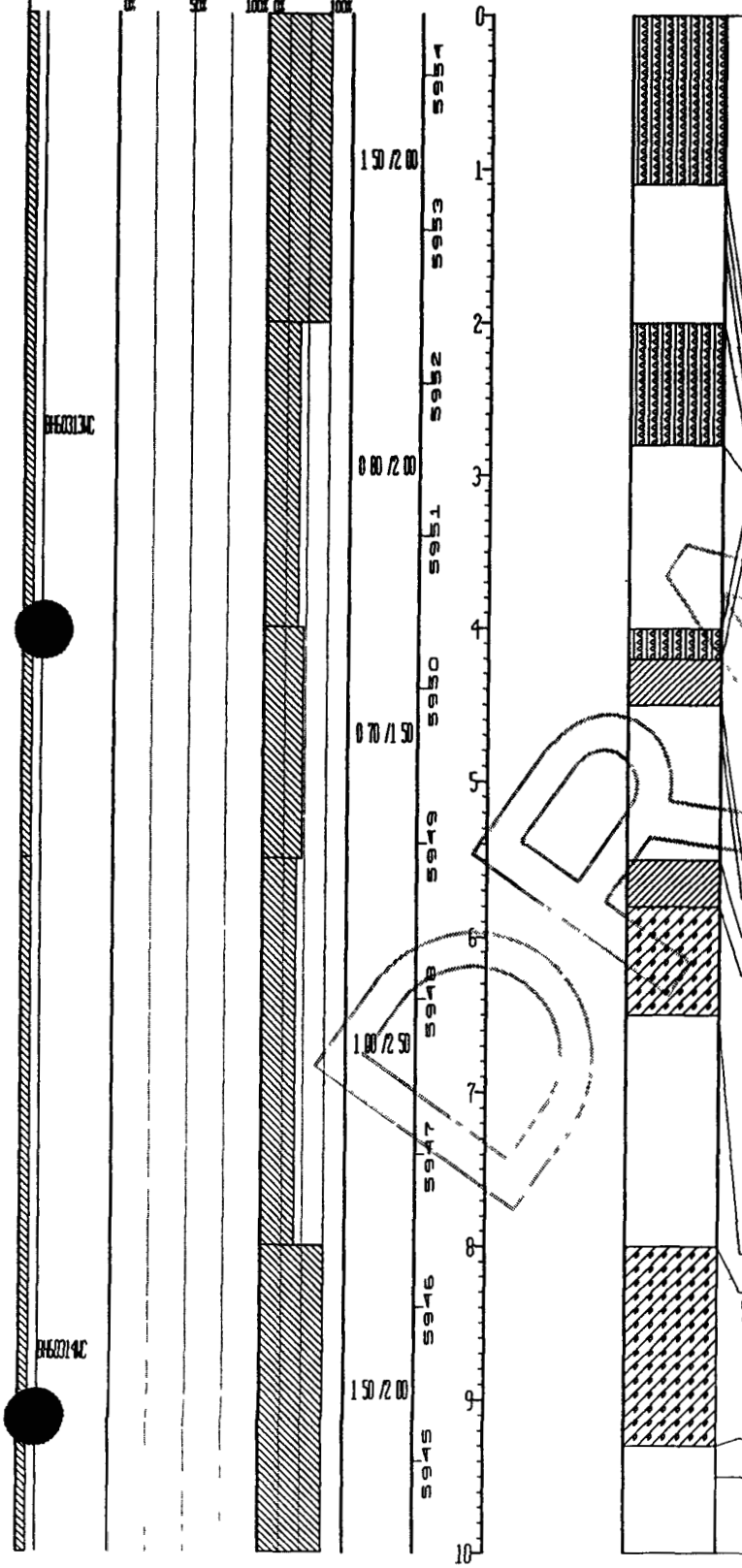
CHEMICAL SAMPLE DEPTH | GRADATIONAL DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	0 0-1 1 ft Gravelly Sand with some silt and trace clay, pale brown (10YR6/3) to yellowish red (5Y4/6) to dark grayish brown (10YR4/2), gravel maximum size 0 1', average size 0 025', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartzite and quartz, clay exhibits moderate plasticity, 0 0-0 8 ft voided with abundant plant roots and some CaCO3, moist 19 2% gravel, 59% sand, 15 3% silt, 6 5% clay
	1 1-1 3 ft VOA sample obtained from this interval
	1 3-1 5 ft VOA sample obtained from this interval
	1 5-2 0 ft No recovery for this interval
SM	2 0-2 8 ft Gravelly Sand as described above
	2 8-4 0 ft No recovery for this interval
SM	4 0-4 2 ft Gravelly Sand as described above
CH	4 2-4 5 ft Sandy Clay with some silt, very pale brown (10YR7/3-7/4) to brownish yellow (10YR6/6-6/8), sand is fine- to medium-grained, poorly graded, angular to sub-angular, consisting of quartzite, clay exhibits high plasticity, fracture at 30 degrees at 4 3 ft, healed with fine to medium sand and CaCO3, clay clasts and mottled texture suggest reworked bedrock, large piece of gravel (0 15') appears to have been pushed through this section to 4 5 ft, moist 31 7% sand, 10 2% silt, 58 1% clay
	4 5-4 7 ft VOA sample obtained from this interval
	4 7-5 5 ft No recovery for this interval
CH	5 5-5 8 ft Sandy Clay as described above
SC	5 8-6 5 ft Gravelly Sand with some clay and silt, brown (10YR4/3) to dark brown (10YR3/3) to white (10YR8/1), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to medium-grained, with trace coarse sand, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, clay exhibits moderate plasticity, moist, caliche zone at 8 5-9 5 ft 33 4% gravel, 44% sand, 6 8% silt, 15 8% clay
	6 5-8 0 ft No recovery for this interval
SC	8 0-9 3 ft Gravelly Sand as described above
	9 3-9 5 ft VOA sample obtained from this interval
	9 5-10 0 ft No recovery for this interval

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT)	5954 40	PROJECT NUMBER	016 RFI/RI	LOG OF BORING NUMBER	
NORTH 750803	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74092	
EAST 2086734	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92		
REMARKS SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	50% 100% 0% 100%			10			SC	10 0-10 3 ft Gravelly Sand as described above
										Top of bedrock at 10 3 ft
									SANDY CLAYSTONE	10 3-11 5 ft
										Sandy Claystone with trace silt, light gray (2 5Y7/1-7/2) to brownish yellow (10YR6/2) to light yellowish brown (10YR6/4) sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, clay exhibits moderate plasticity, caliche at 12 0-12 4 ft and 10 3-11 2 ft, carbonaceous material, extensive iron oxide staining at 12 0-12 4 ft, 13 6-13 7 ft, 14 2-14 6 ft, and 17 1-17 6 ft, moist, moderate friability, 8% porosity
				1 50 /2 00	5944	11				17 1% sand, 4 1% silt, 78 8% clay
										11 5-12 0 ft No recovery for this interval
									SANDY CLAYSTONE	12 0-12 9 ft Sandy Claystone as described above
	BH6031SC			1 10 /1 60	5943	12				12 9-13 1 ft VOA sample obtained from this interval
										13 1-13 6 ft No recovery for this interval
					5942	13			SANDY CLAYSTONE	13 6-14 6 ft Sandy Claystone as described above
					5941	14				
	BH6032SC			1 40 /2 40	5940	15				14 6-14 8 ft VOA sample obtained from this interval
	BH6033SC									14 8-15 0 ft VOA sample obtained from this interval
	BH6034SC									15 0-16 0 ft No recovery for this interval
					5939	16			SANDY CLAYSTONE	16 0-17 6 ft Sandy Claystone as described above
				1 60 /2 00	5938	17				
					5937	18				17 6-18 0 ft No recovery for this interval
					5936	19				Total depth at 18 0 ft
					5935	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT) 5953 20	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751026	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST KERRY MIYOSHI	74192
EAST	2086671	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 10 0	DATE DRILLED 12/08/92	
REMARKS	SURFACE SEALED 12/16/92				

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CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
									GC	0 0-1 0 ft Sandy Gravel as described below
										1 0-1 2 ft VOA sample obtained from this interval
	BH02936C(D)			1 0 /2 00	5952	1				1 2-1 4 ft VOA sample obtained from this interval
	BH02936C									1 4-2 0 ft No recovery for this interval
					5951	2			GC	2 0-3 4 ft Sandy Gravel with some clay and trace silt, dark grayish brown (2 5YR3/2) to light yellowish brown (2 5Y6/4) to light brownish gray (10YR6/2) to grayish brown (10YR5/2), gravel maximum size 0 15', average size 0 05', angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, clay exhibits moderate plasticity, 0 0-0 7 ft extensive plant roots with CaCO3, 2 0-3 0 ft appears to be reworked bedrock with plant roots, fine to coarse sand and a mottled texture, dry 40 7% gravel, 32 2% sand, 2 7% silt, 24 4% clay
	BH02938C			1 0 /2 00	5950	3				3 4-4 0 ft No recovery for this interval
					5949	4			GC	4 0-5 5 ft Sandy Gravel as described above
				1 7 0 /2 00	5948	5				5 5-5 7 ft VOA sample obtained from this interval
	BH02940C									5 7-6 0 ft No recovery for this interval
					5947	6			GC	6 0-7 2 ft Sandy Gravel as described above
				1 2 0 /2 00	5946	7				7 2-8 0 ft No recovery for this interval
					5945	8			GC	8 0-8 3 ft Sandy Gravel as described above
									SC	8 3-9 4 ft Gravelly Sand as described below
	BH02942C			1 6 0 /2 00	5944	9				9 4-9 6 ft VOA sample obtained from this interval
	BH02943C									9 6-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 0	GROUND ELEVATION (FT)	5953 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751026	AREA THSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	74192
EAST	2086671	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	12/08/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	100% GR 100%	1 80 /2 00	5943 5942 5941	10 11 12			SC	10 0-11 8 ft Gravelly Sand with abundant clay and some silt, pink (7 5YR7/4-8/4) to pinkish white (7 5YR8/2) to white (N8) to pale yellow (2 5Y7/4), gravel maximum size 0 2", average size 0 05", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, clay exhibits moderate plasticity, mottled texture, CaCO3 present with plant roots at 10 0-11 0 ft, dry 28 3% gravel, 36 5% sand, 7% silt, 28 2% clay
										11 8-12 0 ft No recovery for this interval
									SC	12 0-13 8 ft Gravelly Sand as described above
				2 00 /2 00	5940	13				
	B602958C									13 8-14 0 ft VOA sample obtained from this interval
					5939	14			SC	14 0-15 9 ft Gravelly Sand as described above
	B602959C			1 90 /2 00	5938	15				
										15 9-16 0 ft No recovery for this interval
					5937	16			SC	16 0-17 4 ft Gravelly Sand as described above Top of bedrock at 17 4 ft
				2 00 /2 00	5936	17			CLAYSTONE	17 4-17 8 ft Claystone with some sand and trace silt, gray (10YR5/1), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, clay exhibits moderate plasticity, moderate friability, less than 5% porosity, dry 8% sand, 4 6% silt, 95% clay
	B603004C				5935	18				17 8-18 0 ft VOA sample obtained from this interval
					5934	19				Total depth at 18 0 ft
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 3	GROUND ELEVATION (FT)	5954 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751116	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	74292
EAST	2086716	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/17/92	

REMARKS SURFACE SEALED 12/21/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%	5954	0			SC	0 0-0 7 ft Clayey Sand with some gravel and silt, brown (10YR5/3) to very pale brown (10YR7/3) to very dark gray (10YR3/1) to yellow (10YR7/8) to brownish yellow (10YR6/8) to white (10YR8/2) to yellowish red (5YR4/6), gravel maximum size 0 2", average 0 05", angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, iron oxide staining, moist
										22 6% gravel, 32 8% sand, 15 6% silt, 29% clay
				0 90 /2 00	5953	1				0 7-0 9 ft VOA sample obtained from this interval
										0 9-2 0 ft No recovery for this interval
					5952	2			SC	2 0-2 4 ft Clayey Sand as described above
				0 40 /2 00	5951	3				2 4-4 0 ft No recovery for this interval
					5950	4			SC	4 0-4 8 ft Clayey Sand as described above
				1 00 /2 00	5949	5				4 8-5 0 ft VOA sample obtained from this interval
										5 0-6 0 ft No recovery for this interval
					5948	6			SC	6 0-7 0 ft Clayey Sand as described above
				1 00 /1 90	5947	7				7 0-7 9 ft No recovery for this interval
					5946	8			SC	7 9-8 5 ft Clayey Sand as described above
										8 5-8 7 ft VOA sample obtained from this interval
				0 80 /2 20	5945	9				8 7-10 1 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 3		GROUND ELEVATION (FT)	[illegible]	PROJECT NUMBER	OU6 RFI/RI
NORTH	751116	AREA IHSS 156 2		CASING DIAMETER (IN)		GEOLOGIST	LVS
EAST	2086716	LOCATOR NUMBER	J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/17/92
REMARKS	SURFACE SEALED 12/21/92						

LOG OF BORING NUMBER

74292

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5944	10			SC	10 1-11 0 ft Clayey Sand as described above
				2 20 /2 20	5943	11				11 0-12 3 ft No recovery for this interval
					5942	12			SC	12 3-13 1 ft Clayey Sand as described above
	BH6047WC			1 00 /1 90	5941	13				13 1-13 3 ft VOA sample obtained from this interval
										13 3-14.2 ft No recovery for this interval
					5940	14			SC	14 2-15 5 ft Clayey Sand as described above
	BH6047WC			1 70 /1 70	5939	15				
										15 5-15 9 ft No recovery for this interval
					5938	16			SC	15 9-16 6 ft Clayey Sand as described above
	BH6047WC			0 90 /1 90						16 6-16 8 ft VOA sample obtained from this interval
					5937	17				16 8-17 8 ft No recovery for this interval
					5936	18			SC	17 8-18 8 ft Clayey Sand as described above
	BH6046WC			1 00 /2 00						
					5935	19				18 8-19 8 ft No recovery for this interval
						20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 3	GROUND ELEVATION (FT)	5954 10	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751116	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	74292
EAST	2086716	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/17/92	
REMARKS	SURFACE SEALED 12/21/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5934	20			SC	19 8-20 1 ft Clayey Sand as described above Top of bedrock at 20 1 ft
									SANDY CLAYSTONE	20 1-20 7 ft Sandy Claystone as described below
	BH60475WC			1 10 /2 30	5933	21				20 7-20 9 ft VOA sample obtained from this interval
										20 9-22 1 ft No recovery for this interval
	BH60487WC				5932	22			SANDY CLAYSTONE	22 1-23 9 ft Sandy Claystone with trace silt, light gray (10YR6/1) to strong brown (10YR5/8) to reddish yellow (10YR6/8) to pinkish white (10YR8/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, porosity is less than 5% argillaceous cementation, moist, local iron oxide staining and carbonaceous material, with fractures (0-10 degrees) at 23 2 ft and (20 degrees) at 23 3 ft, healed with sand and CaCO3, with extensive iron oxide staining 14 8% sand, 4 3% silt, 80 9% clay
				1 80 /2 20	5931	23				
					5930	24				23 9-24 3 ft No recovery for this interval
										Total depth at 24 3 ft
					5929	25				
					5928	26				
					5927	27				
					5926	28				
					5925	29				
						30				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 9	GROUND ELEVATION (FT)	5953 10	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750991	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	74392
EAST	2086798	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/11/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH / SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5953	0			SC	0 0-1 3 ft Gravelly Sand with some clay and silt, pale brown (10YR6/3) to brownish yellow (10YR6/8) to yellowish red (5Y4/6) to dark red (10R3/6) to grayish brown (10YR5/2) to white (10YR8/1) to light gray (10YR7/2), gravel maximum size 0 2', average size 0 1', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-0 5 ft extensive iron oxide staining, voided, with mottled texture, caliche zone at 4 7-5 2 ft, moist 28 6% gravel, 52 4% sand, 7 6% silt, 11 4% clay
			1 50 /2 00	5952	1				
BH6036UC									
				5951	2				1 3-1 5 ft VOA sample obtained from this interval
									1 5-2 0 ft No recovery for this interval
BH6034UC			0 80 /2 00	5950	3			SC	2 0-2 8 ft Gravelly Sand as described above
									2 8-4 0 ft No recovery for this interval
				5949	4			SC	4 0-5 2 ft Gravelly Sand as described above
			1 40 /1 90	5948	5				
BH6036UC									5 2-5 4 ft VOA sample obtained from this interval
									5 4-5 9 ft No recovery for this interval
				5947	6			SC	5 9-6 6 ft Gravelly Sand as described above
									6 6-8 0 ft No recovery for this interval
			0 70 /2 10	5946	7				
								SC	8 0-8 35 ft Gravelly Sand as described above
BH6035UC								CL	8 35-9 1 ft Sandy Clay with some silt and trace gravel, white (10YR8/2) to very pale brown (10YR8/3), gravel maximum and average size 0 1', sub-angular, quartzite, sand is predominantly fine-grained, well sorted, trace medium to coarse sand, angular to sub-angular, consisting of quartz and quartzite, fines exhibit low plasticity, moist, caliche zone 5% gravel, 15 7% sand, 7 9% silt, 71 2% clay
				5945	8				
			1 30 /1 80	5944	9				9 1-9 3 ft VOA sample obtained from this interval
									9 3-9 8 ft No recovery for this interval Top of bedrock at 9 8 ft
					10			SANDY CLAYSTONE	9 8-11 4 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	12 9	GROUND ELEVATION (FT)	5953 10	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750991	AREA IHSS	156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	74392
EAST	2086798	LOCATOR NUMBER	I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/11/92	
REMARKS	SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5943	10				Sandy Claystone with some silt, light gray (5YR7/1) to white (5YR8/1), sand is fine-grained, well sorted, sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, less than 5% porosity, argillaceous cementation, moderate to high friability, veinlets of CaCO3, localized iron oxide staining, fractures (30 degrees) at 10 5-10 7 ft healed with CaCO3, faint bedding 10 degrees, moist
	BH6035WC			1 40 /2 70	5942	11				28 1% sand, 7 2% silt, 64 7% clay
										11 4-12 1 ft No recovery for this interval
					5941	12				
									SANDY CLAYSTONE	12 2-12 5 ft Sandy Claystone as described above
	BH6036WC			0 50 /0 40						12 5-12 7 ft VOA sample obtained from this interval
										12 7-12 9 ft No recovery for this interval
					5940	13				Total depth at 12 9 ft
					5939	14				
					5938	15				
					5937	16				
					5936	17				
					5935	18				
					5934	19				
						20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	14 2	GROUND ELEVATION (FT)	5949 40	PROJECT NUMBER	006 RFI/RI
NORTH	750860	AREA	IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS
EAST	2086872	LOCATOR NUMBER	I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92

REMARKS SURFACE SEALED 12/16/92

LOG OF BORING NUMBER **74492**

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
									SC	0 0-0 9 ft Gravelly Sand with some clay and silt, very pale brown (10YR8/4), light gray (10YR7/1) to pink (5YR7/3) to black (N1) to yellow (10YR7/6) to brown-dark brown (10YR4/3) to white (N9), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, angular to sub-rounded, consisting of quartz and quartzite, moderate plasticity, thin beds (0 05-0 1') sorted sand, clay and gravel at 0 0-1 0 ft, plant roots at 0 0-0 7 ft, asphalt at 2 4 ft, fill at 5 9-7 5 ft, reworked, moist 22 2% gravel 46 8% sand, 9 3% silt, 21 7% clay
										0 9-1 1 ft VOA sample obtained from this interval
	BH60287AC			1 10 /2 00	5948	1				1 1-2 0 ft No recovery for this interval
	BH60284AC			0 80 /2 00	5947	2			SC	2 0-2 8 ft Gravelly Sand as described above
										2 8-4 0 ft No recovery for this interval
					5946	3				
						4			SC	4 0-4 8 ft Gravelly Sand as described above
	BH60288AC			1 00 /1 90	5945	5				4 8-5 0 ft VOA sample obtained from this interval
										5 0-5 9 ft No recovery for this interval
					5944	6			SC	5 9-7 5 ft Gravelly Sand as described above
				1 60 /2 10	5943	7				7 5-8 0 ft No recovery for this interval Top of bedrock at 8 0 ft
	BH60285AC				5942	8			SILTY CLAYSTONE	8 0-8 6 ft Silty Claystone with some sand and trace gravel, light gray (10YR7/1-7/2) to yellow (10YR7/6-7/8) to white (10YR8/1), gravel is 0 025', sub-angular, quartzite, sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, 5% to 10% porosity, low to moderate friability, mottled texture, localized iron oxide staining and CaCO3, moist 0 1% gravel, 16 5% sand, 33 4% silt, 50% clay
	BH60289AC			0 80 /2 10	5941	9				8 6-8 8 ft VOA sample obtained from this interval
					5940	10				8 8-10 1 ft No recovery for this interval

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 14 2	GROUND ELEVATION (FT)	5949 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 750860	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74492	
EAST 2086872	LOCATOR NUMBER 113	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92		
REMARKS SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%		0			SC	0 0-0 9 ft Gravelly Sand with some clay and silt, very pale brown (10YR8/4), light gray (10YR7/1) to pink (5YR7/3) to black (N1) to yellow (10YR7/6) to brown-dark brown (10YR4/3) to white (N9), gravel maximum size 0 2", average size 0 05", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, angular to sub-rounded, consisting of quartz and quartzite, moderate plasticity, thin beds (0 05-0 1") sorted sand, clay and gravel at 0 0-1 0 ft, plant roots at 0 0-0 7 ft, asphalt at 2 4 ft, fill at 5 9-7 5 ft, reworked, moist
	BH02287C			1 10 /2 00	5949	1				22 2% gravel 46 8% sand, 9 3% silt, 21 7% clay
										0 9-1 1 ft VOA sample obtained from this interval
						2				1 1-2 0 ft No recovery for this interval
	BH02284C			0 80 /2 00	5947	3			SC	2 0-2 8 ft Gravelly Sand as described above
					5946					2 8-4 0 ft No recovery for this interval
						4			SC	4 0-4 8 ft Gravelly Sand as described above
	BH02288C			1 00 /1 90	5945	5				4 8-5 0 ft VOA sample obtained from this interval
					5944					5 0-5 9 ft No recovery for this interval
						6			SC	5 9-7 5 ft Gravelly Sand as described above
				1 60 /2 10	5943	7				7 5-8 0 ft No recovery for this interval
	BH02285C				5942	8			SILTY CLAYSTONE	Top of bedrock at 8 0 ft 8 6-8 6 ft Silty Claystone with some sand and trace gravel, light gray (10YR7/1-7/2) to yellow (10YR7/6-7/8) to white (10YR8/1), gravel is 0 025", sub-angular, quartzite, sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, 5% to 10% porosity, low to moderate friability, mottled texture, localized iron oxide staining and CaCO3, moist
	BH02289C			0 80 /2 10	5941	9				0 1% gravel, 16 5% sand, 33 4% silt, 50% clay
					5940					8 6-8 8 ft VOA sample obtained from this interval
						10				8 8-10 1 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 2	GROUND ELEVATION (FT)	5949 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750860	AREA 1855 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74492
EAST	2086872	LOCATOR NUMBER 113	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMP. DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CX	100% CX	100%	5939	10			SILTY CLAYSTONE	10 1-10 8 ft Silty Claystone as described above
				0 70 /2 00	5938	11				10 8-12 1 ft No recovery for this interval
	BH6028JC				5937	12			SILTY CLAYSTONE	12 1-13 2 ft Silty Claystone as described above
	BH6029JC			1 30 /2 10	5936	13				13 2-13 4 ft VOA sample obtained from this interval
					5935	14				13 4-14 0 ft No recovery for this interval
					5934	15				Total depth at 14 2 ft
					5933	16				
					5932	17				
					5931	18				
					5930	19				
						20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 0	GROUND ELEVATION (FT) 5954 50	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751088	AREA THSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LYS	74592
EAST	2086832	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/15/92	
REMARKS					

DRAFT

CHEMICAL, RADIOLOGICAL & GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SM	0 0-1 2 ft Silty Sand with abundant gravel and some pinkish white (10YR8/2) to dark brown (10YR3/2) to brown-dark brown (10YR4/2), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartz and quartzite, fines exhibit, moderate grained, well graded, angular, consisting of quartzite and quartz, extensive plant roots at 0 0-2 5 ft , moist
	BH6M14C			1 10 /2 00	5954	1				26 4% gravel, 27 5% sand, 27 7% silt, 18 4% clay
										1 2-1 4 ft VOA sample obtained from this interval
										1 4-2 0 ft No recovery for this interval
					5953	2			SM	2 0-2 5 ft Silty Sand as described above
									GC	2 5-2 8 ft
					5952					Clayey Gravel with trace sand and silt, light olive gray (5Y6/2) to light gray (5Y6/1), gravel maximum and average size 0 2', angular to sub-angular, consisting of quartz and
	BH6M10C			0 80 /2 00		3				quartzite, sand is fine-grained, well sorted, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist
					5951					50% gravel, 2 6% sand, 2 4% silt, 45% clay
										2 8-3 0 ft No recovery for this interval
						4			SM	4 0-4 4 ft
					5950					Silty Sand with abundant gravel, some clay, very dark grayish brown (10YR3/2), gravel maximum and average size
	BH6M15C			1 20 /2 00		5				0 05', angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist
	BH6M15CDS/MSD				5949					26 4% gravel, 27 5% sand, 27 7% silt, 18 4% clay
									GC	4 4-4 5 ft Clayey Gravel as described at 2 5-2 8 ft , moist
									SC	4 5-4 8 ft Clayey Sand as described above
										4 8-5 0 ft VOA sample obtained from this interval
										5 0-5 2 ft VOA sample obtained from this interval
										5 2-6 0 ft No recovery for this interval
					5948	6			SC	6 0-7 1 ft
										Clayey Sand with some gravel and trace silt, yellow red (5Y4/6) at 4 5-5 2 ft , brown-dark brown (10YR4/3-3/3) at 6 0-6 4 ft , brownish yellow (10YR6/8) at 6 4-7 1 ft , brown (10YR5/3) at 8 0-12 0 ft , white (N9) at 12 0-13 3 ft , very pale brown (10YR7/2) at 14 1-14 7 ft , pink (7 5YR8/4) at 14 7-17 3 ft , pink (5YR7/4) to yellowish red (5YR5/6) at 18 0-25 3 ft , gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, caliche zones at 12 0-13 3 ft , 14 7-17 3 ft , mottled texture at 6 0-6 4 ft and 10 0-10 8 ft , CaCO3 in voids, horizontal bedding, moist
				1 10 /2 00	5947	7				
										23 5% gravel, 38 6% sand, 3 8% silt, 34 1% clay
					5946	8				7 1-8 0 ft No recovery for this interval
	BH6M18C			0 90 /2 00					SC	8 0-8 7 ft Clayey Sand as described above
	BH6M18C				5945	9				8 7-8 9 ft VOA sample obtained from this interval
										8 9-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 0	GROUND ELEVATION (FT)	5954 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751088	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74592
EAST	2086832	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/15/92	
REMARKS							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%		10			SC	10 0-10 8 ft Clayey Sand as described above
				0 80 /1 80	5944	11				10 8-11 8 ft No recovery for this interval
					5943	12			SC	11 8-13 1 ft Clayey Sand as described above
					5942					
				1 50 /2 30		13				13 1-13 3 ft VOA sample obtained from this interval
BH60417C					5941					13 3-14 1 ft No recovery for this interval
						14			SC	14 1-15 1 ft Clayey Sand as described above
BH60412C					5940					
				1 00 /2 00		15				15 1-16 1 ft No recovery for this interval
					5939					
						16			SC	16 1-17 1 ft Clayey Sand as described above
					5938					
BH60418C				1 20 /1 90		17				17 1-17 3 ft VOA sample obtained from this interval
					5937					17 3-18 0 ft No recovery for this interval
						18			SC	18 0-19 3 ft Clayey Sand as described above
					5936					
				1 30 /2 40		19				19 3-20 4 ft No recovery for this interval
BH60423C					5935					
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 0	GROUND ELEVATION (FT)	5954 50	PROJECT NUMBER	OHIO DOT/RI	LOG OF BORING NUMBER
NORTH	751088	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LMS	74592
EAST	2086832	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/15/92	
REMARKS							

DRAFT

CHEMICAL GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			20			SC	20 4-21 3 ft Clayey Sand as described above
					5934	21			CL	21 3-21 8 ft Silty Clay with some sand, light gray (10YR6/1), sand is fine-grained, well sorted, angular to sub-rounded, quartz, fines exhibit moderate plasticity, clay clasts suggest re-worked bedrock, moist 10 5% sand, 26 8% silt, 62 7% clay
				1 60 /2 10	5933	22				21 8-22 0 ft VOA sample obtained from this interval 22 0-22 5 ft No recovery for this interval
	BH01S1C				5932	23			SC	22 5-23 1 ft Clayey Sand as described at 4 5-21 3 ft , moist Top of bedrock at 23 1 ft
	BH01S1C			1 30 /1 50	5931	24			SILTY CLAYSTONE	23 1-23 8 ft Silty Claystone with some sand, light gray (10YR6/1), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 5% porosity, moderate friability, local iron oxide staining and carbonaceous material, moist 12 2% sand, 26 3% silt, 61 5% clay 23 8-24 0 ft No recovery for this interval Total depth at 24 0 ft
					5930	25				
					5929	26				
					5928	27				
					5927	28				
					5926	29				
					5925	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5951 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750960	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	74692
EAST	2086910	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/07/92	
REMARKS	SURFACE SEALED 12/16/92						

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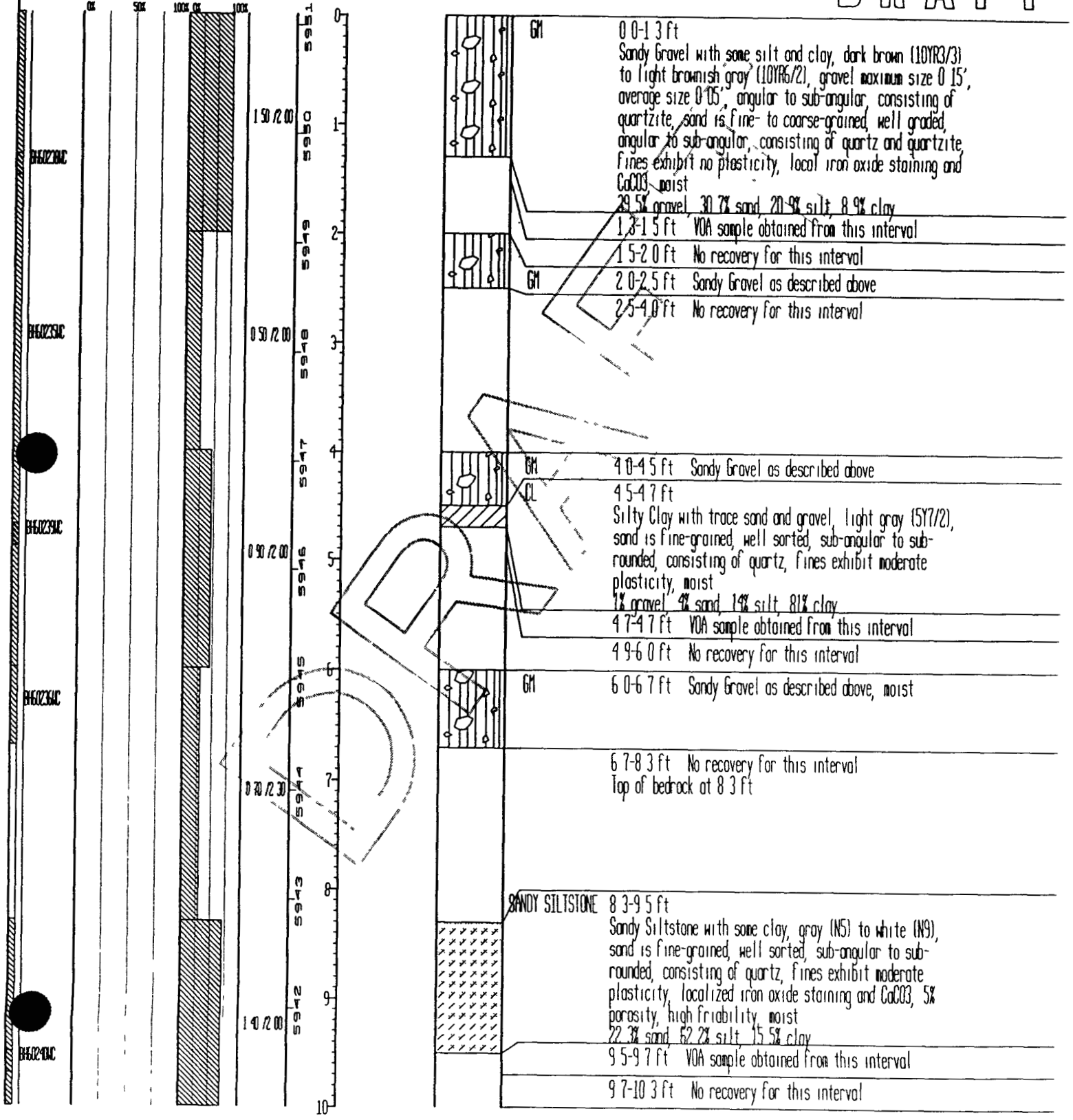

GM 0 0-1 3 ft
Sandy Gravel with some silt and clay, dark brown (10YR3/3) to light brownish gray (10YR6/2), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit no plasticity, local iron oxide staining and CaCO3, moist
29 5% gravel, 30 7% sand, 20 9% silt, 8 9% clay

1 3-1 5 ft VOA sample obtained from this interval

1 5-2 0 ft No recovery for this interval

GM 2 0-2 5 ft Sandy Gravel as described above

2 5-4 0 ft No recovery for this interval

GM 4 0-4 5 ft Sandy Gravel as described above

CL 4 5-4 7 ft
Silty Clay with trace sand and gravel, light gray (5Y7/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, moist
1% gravel, 4% sand, 14% silt, 81% clay

4 7-4 7 ft VOA sample obtained from this interval

4 9-6 0 ft No recovery for this interval

GM 6 0-6 7 ft Sandy Gravel as described above, moist

6 7-8 3 ft No recovery for this interval
Top of bedrock at 8 3 ft

SANDY SILTSTONE 8 3-9 5 ft
Sandy Siltstone with some clay, gray (N5) to white (N9), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, localized iron oxide staining and CaCO3, 5% porosity, high friability, moist
22 3% sand, 62 2% silt, 15 5% clay

9 5-9 7 ft VOA sample obtained from this interval

9 7-10 3 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT) 595 1 10	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750960	AREA 1HSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LYS	74692
EAST	2086910	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/07/92	

REMARKS SURFACE SEALED 12/16/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 20 / 1 90	5941 5940 5939 5938 5937 5936 5935 5934 5933 5932	10 11 12 13 14 15 16 17 18 19 20			SANDY CLAYSTONE	10 3-11 5 ft Sandy Claystone with trace silt, light gray (10YR7/2) to brownish yellow (10YR6/8), sand is fine-grained, well sorted angular to sub-angular, consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, moderately friable, local iron oxide staining, fractures and bedding 0 degrees at 10.7-11 0 ft healed with CaCO3 and iron oxide, moist 37 6% sand, 3 1% silt, 59 3% clay 11 5-12 2 ft No recovery for this interval Total depth at 12 2 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT) 5952 00	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751175	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LVS	74792
EAST	2086861	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/16/92	
REMARKS SURFACE SEALED 12/21/92					

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5952	0			SC	0 0-1 1 ft Clayey Sand with abundant gravel and some silt, brown (10YR5/3), red (2 5YR4/6-5/6), dark grayish brown (10YR3/2), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-0 4 ft and 6 1-6 3 ft, cob webs at 0 0-0 2 ft and 6 1-6 3 ft, caliche zone at 6 8 ft mottled texture, moist 26 7% gravel, 31 2% sand, 8 4% silt, 33 7% clay
	BH6043WC			1 30 /2 10	5951	1				
					5950	2				1 1-1 3 ft VOA sample obtained from this interval
										1 3-2 1 ft No recovery for this interval
	BH6043WC BH6043WC			0 70 /2 00	5949	3			SC	2 1-2 8 ft Clayey Sand as described above
										2 8-4 1 ft No recovery for this interval
					5948	4				
									SC	4 1-4 7 ft Clayey Sand as described above
	BH6043WC BH6043WC									4 7-4 9 ft VOA sample obtained from this interval
				1 00 /2 00	5947	5				4 9-5 1 ft VOA sample obtained from this interval
										5 1-6 1 ft No recovery for this interval
					5946	6				
									SC	6 1-7 5 ft Clayey Sand as described above
				1 40 /1 90	5945	7				
										7 5-8 0 ft No recovery for this interval
					5944	8				
									SC	8 0-8 8 ft Clayey Sand as described above
	BH6043WC			1 00 /2 00	5943	9				8 8-9 0 ft VOA sample obtained from this interval
	[illegible]									9 0-10 0 ft No recovery for this interval
						10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT) 5952 00	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751175	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LYS	74792
EAST	2086861	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/16/92	
REMARKS	SURFACE SEALED 12/21/92				

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%	5942	10			SC	10 0-10 8 ft Clayey Sand as described above
				0 80 /2 30	5941	11				10 8-12 3 ft No recovery for this interval
					5940	12			SC	12 3-13 0 ft Clayey Sand as described above
	BH04934C			0 90 /1 90	5939	13				13 0-13 2 ft VOA sample obtained from this interval
										13 2-14 2 ft No recovery for this interval
					5938	14			CL	14 2-15 6 ft Sandy Clay with some silt and trace gravel, pinkish white (7 5YR8/2), gravel maximum size 0 025', average 0 01', angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, approximately 30% of clay is CaCO3 0 4% gravel, 42 8% sand, 17% silt, 39 8% clay
	BH04935C			1 40 /2 20	5937	15				
					5936	16				15 6-16 4 ft No recovery for this interval
									CL	16 4-16 8 ft Sandy Clay as described above
	BH04936C			1 30 /2 00	5935	17			SM	16 8-17 5 ft Silty Sand with some gravel and clay, reddish yellow (5YR6/6) gravel maximum size 0 15', average size 0 025', angular to sub-angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low to moderate plasticity, voided, CaCO3 present, fracture, 90 degrees at 17 4 ft, healed with CaCO3, moist 12 5% gravel, 59 1% sand, 19 9% silt, 8 5% clay
					5934	18				17 5-17 7 ft VOA sample obtained from this interval
										17 7-18 4 ft No recovery for this interval
	BH04937C			0 80 /1 60	5933	19			GM	18 4-19 2 ft Sandy Gravel with some silt and trace clay, dark gray (7 5YR N4) to pinkish gray (7 5YR7/2), gravel maximum size 0 2', average size 0 05', angular, consisting of quartzite,
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT) 5952 00	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751175	AREA IHSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LYS	74792
EAST	2086861	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/16/92	

REMARKS SURFACE SEALED 12/21/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5932	20				19 2-20 0 ft No recovery for this interval
				1 80 /2 20	5931	21			GM	20 0-20 5 ft Sandy Gravel as described above
									CH	20 5-21 6 ft Silty Clay with trace sand, light gray (10YR7/1), grayish brown (2 5Y5/2), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, moist 4 7% sand, 9 5% silt, 85 8% clay
	BH09GAC				5930	22				21 6-21 8 ft VOA sample obtained from this interval
	BH09GAC									21 8-22 2 ft No recovery for this interval
				1 60 /2 00	5929	23			ML	22 2-22 6 ft Sandy Silt with abundant clay, light gray (10YR7/1), grayish brown (2 5Y5/2), sand is fine- to medium-grained, poorly graded, angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, mottled texture, appearance of reworked bedrock, moist 27 5% sand, 47 1% silt, 25 4% clay Top of bedrock at 22 6 ft
					5928	24			CLAYSTONE	22 6-23 8 ft Claystone with trace silt and sand, light gray (10YR7/1), grayish brown (2 5Y5/2), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit high plasticity, local iron oxide staining, less than 10% porosity, friability, fracture of 60 degrees at 23 1 ft, carbonaceous material, moist 3 3% sand, 4 8% silt, 91 9% clay
					5927	25				23 8-24 2 ft No recovery for this interval
					5926	26				Total depth at 24 2 ft
					5925	27				
					5924	28				
					5923	29				
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5951 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751062	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	74892
EAST	2086925	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SC	0 0-1 0 ft Clayey Sand with some gravel and trace silt, pale brown (10YR6/3), dusky red (2 5YR3/2), light brownish gray (2 5Y6/4), brown (10YR5/3), very pale brown (10YR8/3), gravel maximum size 0 15', average size 0 05', angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive plant roots at 0 0-0 7 ft, CaCO3 and iron oxide staining, mottled texture, moist 17 1% gravel, 41 6% sand, 8 3% silt, 33% clay
	BH6037AC			1 20 /2 00	5951	1				1 0-1 2 ft VOA sample obtained from this interval
										1 2-2 0 ft No recovery for this interval
	BH6037BC			1 80 /2 00	5950	2			SC	2 0-3 8 ft Clayey Sand as described above
					5949	3				
					5948	4				3 8-4 0 ft No recovery for this interval
									SC	4 0-4 9 ft Clayey Sand as described above
	BH6037CC			1 10 /2 00	5947	5				4 9-5 1 ft VOA sample obtained from this interval
					5946					5 1-6 0 ft No recovery for this interval
						6			SC	6 0-7 3 ft Clayey Sand as described above
				1 30 /2 00	5945	7				7 3-8 0 ft No recovery for this interval
	BH6037DC				5944	8			SC	8 0-8 7 ft Clayey Sand as described above
	BH6037EC			0 90 /2 00	5943					8 7-8 9 ft VOA sample obtained from this interval
					5942	9				8 9-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5951 30	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751062	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	74892
EAST	2086925	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5941	10			CL	10 0-11 8 ft Gravelly Clay with some silt, white (N9) to light gray (5YR8/1-7/1), gravel maximum size 0 15', average size 0 1', consisting of quartzite, sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, caliche zone at 10 0-10 4 ft, local iron oxide staining, CaCO3 in voids, fractures 0-30 degrees at 11 2 ft and 90 degrees at 11 6-11 8 ft, healed with CaCO3 and iron oxide, moist
				1 80 /2 00	5940	11				
	BH6037WC									11 6% gravel, 0 7% sand, 8 8% silt, 78 9% clay
					5939	12				11 8-12 0 ft No recovery for this interval
									CL	12 0-12 6 ft Gravelly Clay as described above
	BH6038WC									12 6-12 8 ft VOA sample obtained from this interval
	BH6038WC			1 00 /2 00						12 8-13 0 ft VOA sample obtained from this interval
					5938	13				13 0-14 0 ft No recovery for this interval
					5937	14				Total depth at 14 0 ft
					5936	15				
					5935	16				
					5934	17				
					5933	18				
					5932	19				
						20				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 0	GROUND ELEVATION (FT)	5951 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751152	AREA THSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	74992
EAST	2086952	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	

REMARKS SURFACE SEALED 12/17/92

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%						SC	0 0-1 2 ft Gravelly Sand with some clay and silt, grayish brown (2 5Y5/2), light brownish gray (2 5Y6/2) at 0 0-2 3', pale yellow (2 5Y7/4), light brownish gray (2 5Y6/2) at 2 3-4 8', brown (10YR5/3), light brownish gray (2 5Y6/2) at 4 8-6 3', reddish yellow (7 5YR6/8) to dark reddish brown (2 5YR2 5/4) at 6 3-7 1', brown (7 5YR5/4), very pale brown (10YR7/3-7/4) at 7 1-10 5', very dark gray (10YR3/1) at 10 5-11 7', gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, quartz and schist, fines exhibit moderate plasticity, plant roots at 0 0-2 8 ft, mottled texture, CaCO3 in voids, voided, extensive iron oxide staining on grains at 6 3-7 1', 8 0', 10 5-11 7', plant roots and cob webs, fracture at 30 degrees at 4 3' filled with fine to coarse sand, moist 30% gravel, 47 3% sand, 6 8% silt, 15 9% clay
	BH60396AC			1 40/2 00	5951	1				1 2-1 4 ft VOA sample obtained from this interval
										1 4-2 0 ft No recovery for this interval
	BH60394AC BH60402AC			0 80/2 00	5949	3			SC	2 0-2 8 ft Gravelly Sand as described above
					5948	4				2 8-4 0 ft No recovery for this interval
									SC	4 0-5 8 ft Gravelly Sand as described above
				2 00/2 00	5947	5				
	BH60397AC				5946	6				5 8-6 0 ft VOA sample obtained from this interval
									SC	6 0-9 1 ft Gravelly Sand as described above
				2 00/2 00	5945	7				
					5944	8				
				1 30/2 00	5943	9				
	BH60395AC									9 1-9 3 ft VOA sample obtained from this interval
					5942	10				9 3-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 0	GROUND ELEVATION (FT)	5951 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751152	AREA DHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	74992
EAST	2086952	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	

REMARKS SURFACE SEALED 12/17/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			SC	10 0-11 7 ft Gravelly Sand as described above
				2 00 /2 00	5941	11				
					5940	12			CL	11 7-13 2 ft Sandy Clay with trace silt and gravel, pinkish white (5YR8/2), gravel maximum size 0 15', average size 0 1', angular to sub-angular, consisting of quartzite, sand is fine-grained, well sorted, with trace medium to coarse sand, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, CaCO3 cementation, moist 4% gravel, 27% sand, 3 4% silt, 65 6% clay
				1 40 /2 00	5939	13				13 2-13 4 ft VOA sample obtained from this interval
BH60399C					5938					13 4-14 0 ft No recovery for this interval
						14			CL	14 0-15 8 ft Sandy Clay as described above Top of bedrock at 15 8 ft
				2 00 /2 00	5937	15				
					5936	16			SILTY CLAYSTONE	15 8-17 4 ft Silty Claystone with some sand, olive gray (5Y5/2), very dark gray (5Y3/1), sand is fine-grained, well sorted, angular to sub-angular, consisting of quartzite and quartz, fines exhibit moderate plasticity, 5% porosity, moderate to high friability, argillaceous cementing, fracture approximately 20 degrees at 18 4 ft, horizontal bedding at 15 9 ft, localized iron oxide staining, moist 15 6% sand, 25 3% silt, 59 1% clay
				1 60 /2 00	5935	17				17 4-17 6 ft VOA sample obtained from this interval
BH60100C					5934					17 6-18 0 ft No recovery for this interval
						18			SILTY CLAYSTONE	18 0-18 9 ft Silty Claystone as described above
BH60103C				2 00 /2 00	5933	19			SANDY CLAYSTONE	18 9-20 0 ft Sandy Claystone with trace silt, light brown gray (2 5Y6/2) to yellow (2 5Y7/6), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit high plasticity veinlets of CaCO3, less than 5% porosity, low friability, moist
					5932	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 0	GROUND ELEVATION (FT)	5951 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751152	AREA IDISS 156 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	74992
EAST	2086952	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	

REMARKS SURFACE SEALED 12/17/92

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CHEMICAL SAMP DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5931 5930 5929 5928 5927 5926 5925 5924 5923 5922	20 21 22 23 24 25 26 27 28 29 30			CLAYSTONE	43 3% sand, 2 8% silt, 53 9% clay 20 0-21 8 ft Claystone with some sand, trace silt, yellow (2 5Y7/6), olive yellow (2 5Y6/6), white (10YR8/1), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, Fines exhibit moderate friability, argilloceous cementing, carbonaceous material, some CaCO3 at 20 0-20 5 ft , extensive iron oxide staining at 20 5-20 8 ft , iron oxide staining along horizontal bedding, moist 9 5% sand, 4 5% silt, 86% clay 21 8-22 0 ft VOA sample obtained from this interval Total depth at 22 0 ft
	BH60-01BC									

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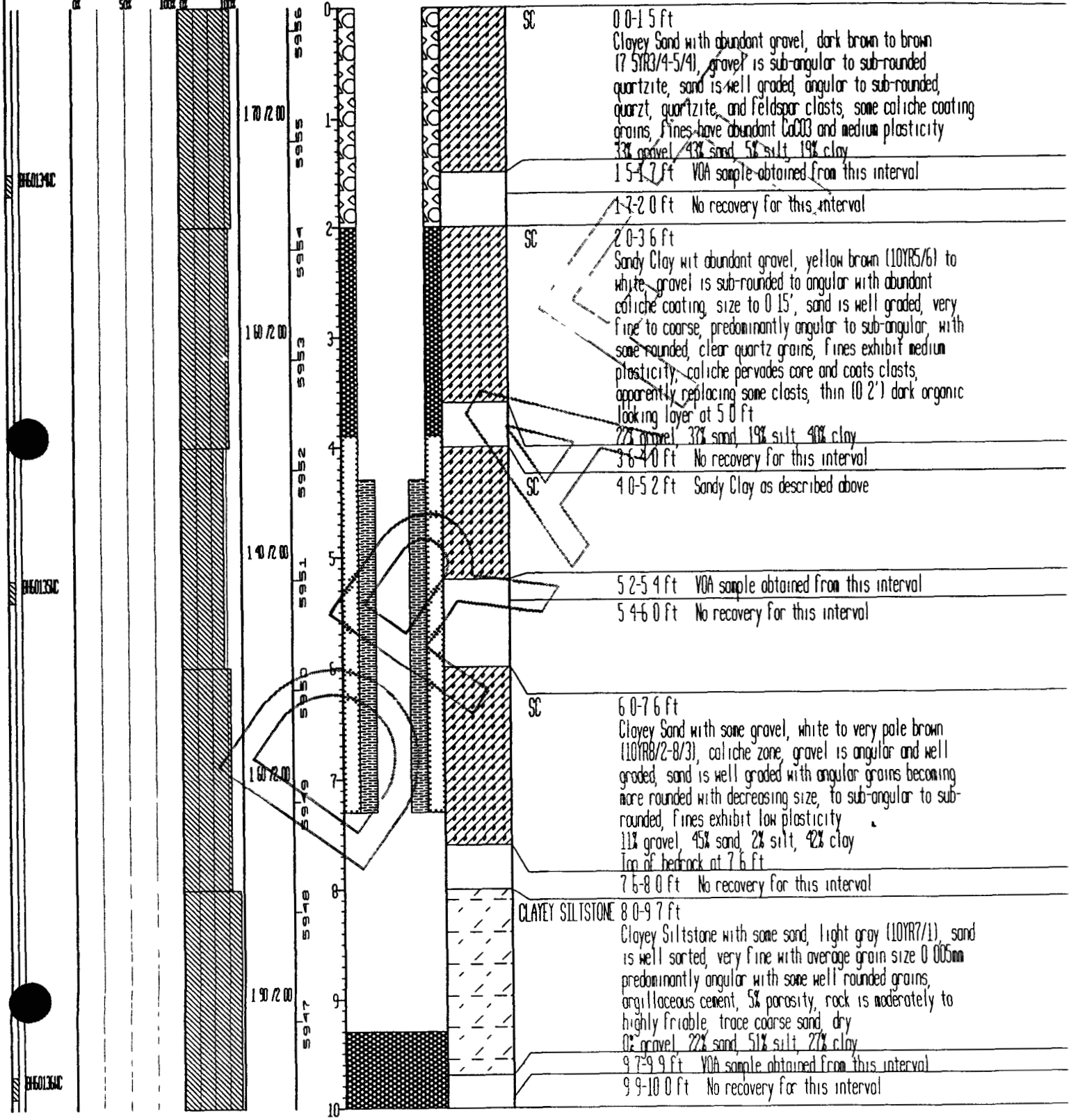
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750915	AREA IHSS 156 2	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY MIYOSHI	75892
EAST	2086558	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/30/92	
REMARKS	WELL SET 12/03/93						



0 0-1 5 ft
Clayey Sand with abundant gravel, dark brown to brown (7 5YR3/4-5/4), gravel is sub-angular to sub-rounded quartzite, sand is well graded, angular to sub-rounded, quarzt, quartzite, and feldspar clasts, some caliche coating grains, fines have abundant CaCO3 and medium plasticity
33% gravel, 43% sand, 5% silt, 19% clay

1 5-1 7 ft VOA sample obtained from this interval

1 7-2 0 ft No recovery for this interval

2 0-3 6 ft
Sandy Clay with abundant gravel, yellow brown (10YR5/6) to white, gravel is sub-rounded to angular with abundant caliche coating, size to 0 15', sand is well graded, very fine to coarse, predominantly angular to sub-angular, with some rounded, clear quartz grains, fines exhibit medium plasticity, caliche pervades core and coats clasts, apparently replacing some clasts, thin (0 2') dark organic looking layer at 5 0 ft
27% gravel, 37% sand, 19% silt, 40% clay

3 6-4 0 ft No recovery for this interval

4 0-5 2 ft Sandy Clay as described above

5 2-5 4 ft VOA sample obtained from this interval

5 4-6 0 ft No recovery for this interval

6 0-7 6 ft
Clayey Sand with some gravel, white to very pale brown (10YR8/2-8/3), caliche zone, gravel is angular and well graded, sand is well graded with angular grains becoming more rounded with decreasing size, to sub-angular to sub-rounded, fines exhibit low plasticity
11% gravel, 45% sand, 2% silt, 42% clay
Top of bedrock at 7 6 ft

7 6-8 0 ft No recovery for this interval

8 0-9 7 ft
Clayey Siltstone with some sand, light gray (10YR7/1), sand is well sorted, very fine with average grain size 0 005mm predominantly angular with some well rounded grains, argillaceous cement, 5% porosity, rock is moderately to highly friable, trace coarse sand, dry
0% gravel, 22% sand, 51% silt, 27% clay

9 7-9 9 ft VOA sample obtained from this interval

9 9-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750915	AREA IHSS 156 2	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY MIYOSHI	75892
EAST	2086558	LOCATOR NUMBER I13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/30/92	
REMARKS	WELL SET 12/03/93						

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5946	10			CLAYSTONE	10 0-12 0 ft Claystone with some silt, olive yellow to grayish brown (2 5Y6/8-5/2), upper 0 5' is highly fractured with iron oxide selectively staining chuncks and caliche filling fracture voids, grades to a more competent dark gray brown, local iron oxide and caliche coatings on fractures 0% gravel, 8% sand, 10% silt, 90% clay
					5945	11				
				1 90 /1 90	5944	12			CLAYSTONE	12 0-13 9 ft Claystone with some sand, very similar to rock described above, but decreased silt, sand is very fine, sub-rounded to angular quartz with trace of angular medium grains 0% gravel, 7% sand, 2% silt, 91% clay
					5943	13				
					5942	14				13 9-14 0 ft No recovery for this interval Total depth at 14 0 ft
					5941	15				
					5940	16				
					5939	17				
					5938	18				
					5937	19				
						20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 3	GROUND ELEVATION (FT)	5949 60	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751049	AREA DHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77592
EAST	2087016	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/07/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMP / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100%			0			SC	0 0-1 0 ft Gravelly Sand with some clay and silt, dark grayish brown (10YR4/2), yellow brown (10YR5/4), dark gray (10YR3/1), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-0 3 ft , CaCO3 in voids at 9 7-10 2 ft , and in fractures 0 degrees at 8 8 ft , iron oxide staining on grains, mottled texture, moist 27% gravel, 38 5% sand, 13 8% silt, 20 7% clay
	BH02558C			1 20 /2 00	5949	1				1 0-1 2 ft VOA sample obtained from this interval
				0 00 /1 40	5948	2				1 2-4 4 ft No recovery for this interval
	BH02560C			0 00 /1 00	5947	3				
					5946	4				
				1 30 /2 00	5945	5			SC	4 4-5 5 ft Gravelly Sand as described above
	BH02561C				5944	6				5 5 -5 7 ft VOA sample obtained from this interval 5 7-6 4 ft No recovery for this interval
				0 70 /1 80	5943	7			SC	6 4-7 1 ft Gravelly Sand as described above
					5942	8				7 1-8 2 ft No recovery for this interval
	BH02562C			0 90 /2 00	5941	9			SC	8 2-8 9 ft Gravelly Sand as described above
	BH02563C				5940	10				8 9-9 1 ft VOA sample obtained from this interval 9 1-10 2 ft No recovery for this interval Top of bedrock at 10 2 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 3	GROUND ELEVATION (FT)	5949 60	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751049	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77592
EAST	2087016	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/07/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMP DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%			10			CLAYSTONE	10 2-11 6 ft Claystone with some silt and trace sand, light gray - gray (5YR6/1), white (5YR8/1), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, less than 0 1% coarse sand, fines exhibit high plasticity, veinlets of CaCO3, low friability, less than 5% porosity, trace iron oxide staining moist 0% gravel, 3 5% sand, 9 6% silt, 86 9% clay
				1 10 /1 50	5939	11				11 6-12 1 ft No recovery for this interval
	BH02540C				5938	12			CLAYSTONE	12 1-12 6 ft Claystone as described above
	BH02580C			0 70 /1 20	5937					12 6-12 8 ft VOA sample obtained from this interval
						13				12 8-13 3 ft No recovery for this interval
					5936					Total depth at 13 3 ft
					5935	14				
					5934	15				
					5933	16				
					5932	17				
					5931	18				
					5930	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 19 5	GROUND ELEVATION (FT)	5952 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751148	AREA IHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77692
EAST	2087055	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMP DEPTH	GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			GR	100% GR	100%	5952	0			SC	0 0-0 9 ft Clayey Sand with some gravel and silt, grayish brown (10YR 5/2) to brown-yellow (10YR6/8) to very grayish dark brown (10YR3/2) at 0 0-2 8 ft , light yellowish brown (2 5Y6/4) to white (10YR8/1) to yellowish red (5YR4/6) to yellow brown (10YR5/8) at 4 0-6 9 ft , dark reddish brown (2 5YR2 5/4) to brown (7 5YR4/4) to yellow brown (10YR5/6) at 7 9-8 2 ft , dark brown (10YR3/3) to gray (5Y5/1) to olive (5Y5/3) to dusky red (10R3/3) at 8 2-11 1 ft , gravel maximum size 15' average size 0 025', angular to sub-angular, consisting of quartzite and granitics, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartzite and quartz, fines exhibit high plasticity, caliche zones at 4 0-5 3 ft and 10 4-10 7 ft , fractures 0-30 degrees healed with CaCO3 and iron oxide staining, localized manganese oxide staining present, moist 29 2% gravel, 36 6% sand, 13 7% silt, 25 5% clay
		BH6201AC			1 10 /2 00	5951	1				0 9-1 1 ft VOA sample obtained from this interval
											1 1-2 0 ft No recovery for this interval
		BH6202AC BH6212AC			0 80 /2 00	5950	2			SC	2 0-2 8 ft Clayey Sand as described above
											2 8-4 0 ft No recovery for this interval
						5949	3			SC	4 0-5 1 ft Clayey Sand as described above
						5948	4				
		BH6203AC			1 30 /1 90	5947	5				5 1-5 3 ft VOA sample obtained from this interval
											5 3-5 9 ft No recovery for this interval
						5946	6			SC	5 9-6 9 ft Clayey Sand as described above
					1 00 /2 00	5945	7				6 9-7 9 ft No recovery for this interval
						5944	8			SC	7 9-8 7 ft Clayey Sand as described above
		BH6210AC BH6208AC			1 00 /2 10	5943	9				8 7-8 9 ft VOA sample obtained from this interval
											8 9-10 0 ft No recovery for this interval
							10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 19 5	GROUND ELEVATION (FT) 5952 10	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	751148	AREA THSS 156 2	CASING DIAMETER (IN)	GEOLOGIST LVS	77692
EAST	2087055	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/04/92	
REMARKS	SURFACE SEALED 12/16/92				

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5942	10			SC	10 0-11 0 ft Clayey Sand as described above
				1 10 /2 00	5941	11				11 1-12 0 ft No recovery for this interval
					5940	12			CL	12 0-12 9 ft Sandy Clay with some silt and gravel, pink (5YR8/3) to reddish yellow (5YR7/8-6/8) to pinkish white (7 5YR8/2), gravel maximum size 0 1', average size 0 025', angular to sub-rounded, consisting of quartz and quartzite coated with CaCO3, sand is fine-grained, well sorted, with trace amounts of medium- and coarse-grained sand, sub-angular to rounded, consisting of quartz and quartzite, grains coated with CaCO3 fines exhibits moderate plasticity, fracture at 14 2 ft, 30 degrees from horizontal, localized iron oxide staining and mottled texture, moist
	B60211UC			1 10 /2 10	5939	13				19 6% gravel, 29 9% sand, 20 4% silt, 30 6% clay
					5938	14				12 9-13 1 ft VOA sample obtained from this interval
										13 1-14 1 ft No recovery for this interval
				1 20 /2 20	5937	15			CL	14 1-14 8 ft Sandy Clay as described above
										Top of bedrock at 14 8 ft
									SANDY CLAYSTONE	14 8-15 3 ft Sandy Claystone as described below
					5936	16				15 3-16 3 ft No recovery for this interval
				1 90 /2 10	5935	17			SANDY CLAYSTONE	16 3-18 0 ft Sandy Claystone with some silt, white (10YR8/1) to light gray (10YR7/1) to yellow (10YR7/8) to very pale brown (10YR7/4), sand is fine-grained, well sorted, sub-rounded to well rounded, consisting of quartz, clay exhibits moderate plasticity, caliche zone at 14 8-15 0 ft with voids filled with CaCO3, localized iron oxide and manganese oxide staining, near horizontol fractures healed with iron oxide stained fine sand, moist
	B60234UC				5934	18				40% sand, 6% silt, 54% clay
	B60232UC									18 0-18 2 ft VOA sample obtained from this interval
										18 2-18 4 ft No recovery for this interval
				1 00 /1 10	5933	19			SANDY CLAYSTONE	18 4-19 4 ft Sandy Claystone as described above
										19 4-19 5 ft No recovery for this interval
						20				Total depth at 19 5 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 9	GROUND ELEVATION (FT)	5947 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751255	AREA IDSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LVS	77792
EAST	2087076	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/03/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%						GC	0 0-1 4 ft Sandy Gravel with abundant clay and some silt, brown (10YR5/3) to dark brown (10YR4/3), gravel maximum size 0 2", average size 0 1", angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite and schist, fines exhibit moderate plasticity, plant roots at 0 0-1 6 ft, local iron oxide staining, CaCO3 in voids at 2 0-2 4 ft, moist 35 2% gravel, 26 8% sand, 11 2% silt, 26 5% clay
				1 60 /2 00	5947	1				1 4-1 6 ft VOA sample obtained from this interval
	BH601910C				5946					1 6-2 0 ft No recovery for this interval
					5945	2			GC	2 0-2 4 ft Sandy Gravel as described above
										2 4-4 0 ft No recovery for this interval
	BH601930C			0 40 /2 00		3			GC	4 0-4 3 ft Sandy Gravel as described above
					5944				CL	4 3-5 1 ft Sandy Clay with some silt and trace gravel, light gray (10YR7/1), brownish yellow (10YR6/8), gravel maximum and average size 0 1", angular to sub-rounded, consisting of quartzite, sand is fine- to medium-grained, poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, mottled texture at 4 3-5 3 ft and 6 3-6 7 ft, extensive iron oxide staining, CaCO3 in voids, appearance of reworked bedrock, weathered, moist 2 3% gravel, 7 4% sand, 9 0% silt, 81 3% clay
					5943	4				
				1 30 /2 00		5				5 1-5 3 ft VOA sample obtained from this interval
	BH601920C				5942					5 3-6 0 ft No recovery for this interval
						6			CL	6 0-6 7 ft Sandy Clay as described above
					5941				GC	6 7-7 6 ft Sandy Gravel with some clay and silt, brown-dark brown (10YR4/3), dark brown (10YR3/3), gravel maximum and average size 0 1", angular, consisting of quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz, quartzite, and schist, fines exhibit moderate plasticity, iron oxide staining on grains, CaCO3 and carbonaceous material present, moist 45 5% gravel 29 5% sand, 9% silt, 21% clay
				1 60 /2 00	5940	7				7 6-8 0 ft No recovery for this interval
						8			GC	8 0-8 4 ft Sandy Gravel as described above
	BH601960C				5939					8 4-8 6 ft VOA sample obtained from this interval
	BH601950C			0 60 /2 00		9				8 6-10 0 ft No recovery for this interval
					5938	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 4	GROUND ELEVATION (FT)	5947 50	PROJECT NUMBER	016 RFI/RI	LOG OF BORING NUMBER
NORTH	751255	AREA DHSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77792
EAST	2087076	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/03/92	

REMARKS SURFACE SEALED 12/16/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			10			GC	10 0-10 5 ft Sandy Gravel as described above
					5937				SC	10 5-10 6 ft Clayey Sand as described below
				0 60 /2 00		11				10 6-12 0 ft No recovery for this interval
					5936					
						12			SC	12 0-13 1 ft Clayey Sand with some gravel and trace silt, pinkish white (5YR8/2) to pink (5YR7/3), gravel maximum size 0 1', average size 0 025', angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low to moderate plasticity, CaCO3 present, CaCO3 and orgilloceous cementing, moist 9 5% gravel, 49 3% sand, 4 1% silt, 37 1% clay
					5935					
BH60197SC				1 30 /2 00		13				13 1-13 3 ft VOA sample obtained from this interval
					5934					13 3-14 0 ft No recovery for this interval
						14			SC	14 0-14 2 ft Clayey Sand as described above Top of bedrock at 14 2 ft
BH60194SC				1 80 /2 00	5933	15			CLAYEY SANDSTONE	14 2-15 8 ft Clayey Sandstone with trace silt, light gray (2 5YN7-7/2), yellow (10YR7/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining along horizontal bedding at 14 2 ft , 14 9-15 1 ft 15 4-15 6 ft , caliche zone at 18 2-18 4 ft with stringers of CaCO3, moist, less than 20% porosity, moderately friable, CaCO3 and orgilloceous cementation 0% gravel, 59 1% sand, 4 1% silt, 36 8% clay
					5932					15 8-16 0 ft No recovery for this interval
				1 50 /2 00		17			CLAYEY SANDSTONE	16 0-17 3 ft Clayey Sandstone as described above
BH60205SC					5930					17 3-17 5 ft VOA sample obtained from this interval
										17 5-18 0 ft No recovery for this interval
						18			CLAYEY SANDSTONE	18 0-18 9 ft Clayey Sandstone as described above
					5929					
				1 10 /2 00		19			SANDY CLAYSTONE	18 9-19 1 ft Sandy Claystone as described below
					5928					19 1-20 0 ft No recovery for this interval
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 4	GROUND ELEVATION (FT) 5947 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751255	AREA DASS 156 2	CASING DIAMETER (IN)	GEOLOGIST	LYS	77792
EAST	2087076	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED	12/03/92	

REMARKS SURFACE SEALED 12/16/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 00 /2 00 2 40 /2 40	5927 5926 5925 5924 5923 5922 5921 5920 5919 5918	20 21 22 23 24 25 26 27 28 29 30			SANDY CLAYSTONE	20 0-21 8 ft Sandy Claystone with trace silt, olive (5Y5/3), olive gray (5Y5/2), brownish yellow (10YR6/8), sand is fine-grained, well sorted, sub-angular, consisting of quartz and quartzite fines exhibit moderate to high plasticity, less than 10% porosity, moderate friability, fractures 30 degrees at 20 3' 30 degrees at 20 9' and 60 degrees at 21 9', all healed with CaCO3, extensive iron oxide staining at 20 7-21 8 ft, carbonaceous material present, interbedded sand and silt with less than 0 1% coarse sand at 21 2-21 8 ft, moist 0% gravel, 26 5% sand, 3 7% silt, 69 8% clay 21 8-22 0 ft No recovery for this interval
									SANDY CLAYSTONE	22 0-22 4 ft Sandy Claystone as described above
										Total depth at 24 4 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 7	GROUND ELEVATION (FT)	5950 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751155	AREA THSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77892
EAST	2087132	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL/GRADATIONAL SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%			0			SC	0 0-1 1 ft Clayey Sand with some gravel and silt, yellowish red (5YR4/6), yellow (10YR7/8), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, consisting of quartz and quartzite, angular to sub-rounded, fines exhibit moderate to high plasticity, plant roots at 0 0-2 2 ft, CaCO3 in voids, extensive iron oxide staining on grains, moist 16 7% gravel, 52 5% sand, 7 8% silt, 23 6% clay
			1 30 /1 80	5950	1				1 1-1 3 ft VOA sample obtained from this interval
BH02491C				5949					1 3-1 8 ft No recovery for this interval
				5948	2			SC	1 8-2 2 ft Clayey Sand as described above
BH02492C			1 50 /2 20	5947	3			CL	2 2-3 3 ft Silty Clay with trace silt and gravel, light gray (10YR7/1), yellow (10YR7/8), gravel maximum and average size 0 025', angular, consisting of quartz, sand is fine- to coarse-grained, well graded, angular, consisting of quartz, fines exhibit moderate plasticity, plant roots, mottled texture and the presence of fine to coarse sand suggest reworked bedrock at 2 2-2 5', slump bedrock at 2 5-3 3' with iron oxide staining, CaCO3 in voids, moist 0 4% gravel, 1 5% sand, 19 6% silt, 78 5% clay
BH02493C				5946	4				3 3-4 0 ft No recovery for this interval
			0 60 /2 00	5945	5			SC	4 0-4 4 ft Clayey Sand as described below
									4 4-4 6 ft VOA sample obtained from this interval
									4 6-6 0 ft No recovery for this interval
				5944	6			SC	6 0-7 3 ft Clayey Sand with some gravel and silt, yellowish brown (10YR5/4), brown-dark brown (10YR4/3), gravel maximum size 0 2', average size 0 1', angular to sub-angular, consisting of quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, mottled texture, iron oxide staining, CaCO3 in voids, moist 17 6% gravel, 48 8% sand, 10 1% silt, 23 5% clay
			1 30 /2 90	5943	7				7 3-8 0 ft No recovery for this interval
				5942	8			SC	8 0-9 4 ft Clayey Sand as described above
			1 60 /2 00	5941	9				9 4-9 6 ft VOA sample obtained from this interval
BH02500C					10				9 6-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 7		GROUND ELEVATION (FT)	5950 30	PROJECT NUMBER	OU6 RFI/RI
NORTH	751155	AREA IHSS 156 2		CASING DIAMETER (IN)		GEOLOGIST	LYS
EAST	2087132	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92
REMARKS	SURFACE SEALED 12/16/92						

LOG OF BORING NUMBER

77892

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

Sample Number	Recovery/Interval	Unified Soils Classification or Rock Type	Description
		SC	10 0-10 8 ft Clayey Sand as described above
	0 80 /2 20		10 8-12 2 ft No recovery for this interval
		SC	12 2-12 3 ft Clayey Sand as described above
BH60251WC	1 00 /2 10	CH	12 3-12 9 ft Silty Clay with trace sand, light gray - gray (10YR6/1), sand is fine-grained, well sorted, sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, fracture approximately 30 degrees at 12 3 ft healed with CaCO3 and sand, plant roots and CaCO3 present, appearance of reworked weathered bedrock, moist 0% gravel, 5% sand, 9 5% silt, 85 5% clay
BH60246WC			12 9-13 1 ft VOA sample obtained from this interval
		CH	13 1-13 2 ft Silty Clay as described above
			13 2-14 3 ft No recovery for this interval Top of bedrock at 14 3 ft
	1 90 /2 20	CLAYSTONE	14 3-16 2 ft Claystone with some silt and trace sand, light gray - gray (10YR6/1), pale yellow (2 5Y7/3), sand is fine-grained, well sorted, sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 5% porosity, moderately friable, 90 degree fracture healed with CaCO3 at 14 3-16 2', caliche at 15 0-15 2', iron oxide staining, moist 2 9% sand, 9 7% silt, 87 4% clay
			16 2-16 5 ft No recovery for this interval
		CLAYSTONE	16 5-17 6 ft Claystone as described above
	1 10 /2 20		17 6-18 7 ft No recovery for this interval
			Total depth at 18 7 ft

Depth scale: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Elevation scale: 5940, 5939, 5938, 5937, 5936, 5935, 5934, 5933, 5932, 5931

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5946 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751233	AREA THSS 156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77992
EAST	2087177	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

BH60169JC
BH60171JC
BH60169JC
BH60170JC
BH60173JC
BH60175JC

1 20 /2 00
0 60 /2 00
1 60 /2 00
0 70 /2 00
0 80 /2 00

5946
5945
5944
5943
5942
5941
5940
5939
5938
5937

0 1 2 3 4 5 6 7 8 9 10

SC 0 0-1 0 ft
Clayey Sand with some gravel and silt, light yellowish brown (10YR6/4), yellowish brown (10YR5/4-5/6), very dark grayish brown (10YR3/2), very pale brown (10YR8/3), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular, consisting of quartzite and quartz, fines exhibit low to moderate plasticity, plant roots at 0 0-2 6 ft, CaCO3 in voids, CaCO3 nodules 1/16" to 1/8", mottled texture, iron oxide staining, black (N1) and cemented at 8 0-8 8 ft, caliche zone at 10 3 ft, reworked bedrock at 4 0-5 6 ft and 10 0-11 4 ft, moist
20 6% gravel, 37 8% sand, 12 5% silt, 29 1% clay

1 0-1 2 ft VOA sample obtained from this interval

1 2-2 0 ft No recovery for this interval

SC 2 0-2 6 ft Clayey Sand as described above

2 6-4 0 ft No recovery for this interval

SC 4 0-5 4 ft Clayey Sand as described above

5 4-5 6 ft VOA sample obtained from this interval

5 6-6 0 ft No recovery for this interval

SC 6 0-6 5 ft Clayey Sand as described above

6 5-6 7 ft VOA sample obtained from this interval

6 7-8 0 ft No recovery for this interval

SC 8 0-8 8 ft Clayey Sand as described above

8 8-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	12 0	GROUND ELEVATION (FT)	5946 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751233	AREA IHSS	156 2	CASING DIAMETER (IN)		GEOLOGIST	LYS	77992
EAST	2087177	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92	
REMARKS	SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5936	10			SC	10 0-11 2 ft Clayey Sand as described above
	BH60172UC			1 40 /2 00	5935	11				
										11 2-11 4 ft VOA sample obtained from this interval
										11 4-12 0 ft No recovery for this interval
					5934	12				Total depth at 12 0 ft
					5933	13				
					5932	14				
					5931	15				
					5930	16				
					5929	17				
					5928	18				
					5927	19				
						20				

DRAFT

APPENDIX C2.6
IHSS 165 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 4	GROUND ELEVATION (FT)	5963 50	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750421	AREA IHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72292
EAST	2085420	LOCATOR NUMBER I12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/26/93	
REMARKS	SURFACE SEALED 02/05/93						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6066WC			1 10 /2 00	5953	10				10 4-10 7 ft VOA sample obtained from this interval
										10 7-11 6 ft No recovery for this interval
					5952	11				
									SC	11 6-12 1 ft Gravelly Sand as described above Top of bedrock at 12 1 ft
						12			SANDY CLAYSTONE	12 1-12 5 ft Sandy Claystone with some silt, light olive gray (5YR6/2), sand is fine-grained, well sorted, fines exhibit low plasticity, less than 5% porosity, slightly friable, mottled texture, lens of sandstone, moist 35 7% sand, 6 4% silt, 57 9% clay
				1 70 /2 00	5951					
	BH6067WC					13			CLAYEY SANDSTONE	12 5-12 8 ft Clayey Sandstone as described below
					5950				SANDY CLAYSTONE	12 8-13 0 ft Sandy Claystone as described above
										13 0-13 3 ft VOA sample obtained from this interval
	[illegible]5WC					14				13 3-13 6 ft No recovery for this interval
									SANDY CLAYSTONE	13 6-13 9 ft Sandy Claystone as described above
				1 50 /2 00	5949				CLAYEY SANDSTONE	13 9-14 8 ft Clayey Sandstone with some silt, brownish yellow (10YR6/6-6/8), brown (7 5YR5/4), strong brown (7 5YR5/6), sand is fine- to medium-grained, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining, 20% porosity, argillaceous cement, highly friable, 90 degree fracture at 16 4 ft, moist 61% sand, 15 6% silt, 23 3% clay
	BH6067WC					15				
					5948					
				0 80 /0 80		16				14 8-15 1 ft VOA sample obtained from this interval
										15 1-15 6 ft No recovery for this interval
					5947				CLAYEY SANDSTONE	15 6-16 4 ft Clayey Sandstone as described above
						17				Total depth at 16 4 ft
					5946					
						18				
					5945					
						19				
					5944					
						20				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 0	GROUND ELEVATION (FT)	5959 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750432	AREA DHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72392
EAST	2085651	LOCATOR NUMBER I12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/26/93	
REMARKS	SURFACE SEALED 02/05/93						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			GC	0 0-1 2 ft Sandy Gravel with some clay, trace silt, very dark brown (10YR2/2), dark reddish brown (5YR2 5/2), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist 50% gravel, 18 4% sand, 5 5% silt, 16 6% clay 1 2-1 5 ft VOA sample obtained from this interval 1 5-2 0 ft No recovery for this interval
				1 50 /2 00	5959	1				
	BH60728C				5958	2			SM	2 0-3 2 ft Gravelly Sand with some silt and clay, dark reddish brown (5YR3/4), very dark brown (10YR2/2), yellowish red (5YR4/6), gravel maximum size 0 1', average size 0 02', angular, consisting of quartzite and weathered granitics, sand is fine- to coarse-grained, well graded, angular to sub-angular consisting of quartz and quartzite, fines exhibit no plasticity, CaCO3 in voids, moist 31 9% gravel, 36 4% sand, 22 2% silt, 9 5% clay 3 2-3 5 ft VOA sample obtained from this interval 3 5-4 0 ft No recovery for this interval
	BH60687C			1 50 /2 00	5957	3				
	BH60673C				5956	4			SM	4 0-4 4 ft Gravelly Sand as described above
					5955				SC	4 4-5 3 ft Clayey Sand as described below 5 3-5 6 ft VOA sample obtained from this interval 5 6-5 8 ft No recovery for this interval
				1 60 /1 80	5954	5			SC	5 8-6 8 ft Clayey Sand with some silt, reddish brown (5YR4/4), brown (7 5YR5/4), sand is medium- to fine-grained, poorly graded, angular to sub-rounded, consisting of quartz, quartzite, and mica, fines exhibit low plasticity, 0-10 degree fractures healed with CaCO3, extensive iron oxide staining, moist 0% gravel, 58 8% sand, 16 5% silt, 24 7% clay 6 8-7 1 ft VOA sample obtained from this interval 7 1-8 0 ft No recovery for this interval
	BH60674C					6				
					5953	7				
	BH60675C			1 60 /2 20	5952	8			SC	8 0-8 9 ft Clayey Sand with some silt and gravel, reddish brown (5YR4/4), brown (7 5YR5/4), gravel maximum size and average size 0 02', angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded, angular to sub-angular, consisting of quartzite and quartz, fines exhibit low to moderate plasticity, stringers of CaCO3, iron oxide staining moist 6 2% gravel, 50 7% sand, 12 9% silt, 30 2% clay
					5951				CL	8 9-9 2 ft Silty Clay with trace sand, light brownish gray (2 5Y6/2), light olive gray (5Y6/2), yellowish red (5YR5/6), white (5YR8/1), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, stringers of CaCO3, local iron oxide staining, mottled texture, appears to be slumped bedrock, as much as 20% of clay appears to be CaCO3, moist 0 6% sand, 9 5% silt, 89 5% clay 9 2-9 5 ft VOA sample obtained from this interval 9 5-10 0 ft No recovery for this interval
	BH60676C			1 50 /2 00	5950	9				
	BH60677C					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 0		GROUND ELEVATION (FT)	5959 40	PROJECT NUMBER	006 [illegible]	LOG OF BORING NUMBER
NORTH	750432	AREA IHSS 165		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72392
EAST	2085651	LOCATOR NUMBER	I12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/26/93	
REMARKS	SURFACE SEALED 02/05/93							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL BASE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
										9 5-10 0 ft No recovery for this interval
									SC	10 0-11 7 ft Gravelly Sand with some clay, trace silt, light olive brown (2 5Y5/4), pale yellow (5Y7/3), gravel maximum size 0 15', average size 0 03', angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, slump bedrock feature at 10 7-11 1 ft same as 8 9-9 4 ft, moist 21 4% gravel, 65 6% sand, 1 3% silt, 11 7% clay
										11 7-12 0 ft VOA sample obtained from this interval
	BH6678IC			2 00 /2 00	5948	11			SC	12 0-12 6 ft Clayey Sand with trace gravel, some silt, yellow (10YR7/6-7/8), light brownish gray (2 5Y6/2), gravel maximum and average size 0 05', sub-angular, consisting of quartzite, sand is fine-grained, well sorted with trace medium-grained sand, angular to rounded, consisting of quartz, fines exhibit moderate plasticity, extensive iron oxide staining on grains, faint horizontal bedding at 12 3 ft, mottled texture, appearance of reworked bedrock, moist 3 8% gravel, 65 9% sand, 9 1% silt, 21 2% clay Top of bedrock at 12 6 ft
				2 00 /2 00	5946	13			SANDY CLAYSTONE	12 6-13 4 ft Sandy Claystone with some silt, brownish yellow (10YR6/6-6/8), light brownish gray (2 5Y6/2), medium- to coarse-grained, poorly graded, angular to sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 20% porosity, argillaceous cement, moderate to slightly friable, local iron oxide staining, moist 25% sand, 7 4% silt, 66 6% clay
									CLAYSTONE	13 4-13 7 ft Claystone as described below
	BH6679IC			2 00 /2 00	5944	15				13 7-14 0 ft VOA sample obtained from this interval
									CLAYSTONE	14 0-15 7 ft Claystone with some silt, trace sand, brownish yellow (10YR6/6-6/8), light brownish gray (2 5Y6/2), sand is fine- to medium-grained, poorly graded, sub-angular to sub-rounded consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, slightly friable, local iron oxide and manganese oxide staining, carbonaceous material present, sluff at 14 0-14 2 ft, pebble at 15 4 ft pushed by auger, moist 5 7% sand, 9 4% silt, 84 9% clay
										15 7-16 0 ft VOA sample obtained from this interval
										Total depth at 16 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 5 0	GROUND ELEVATION (FT)	5958 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750475	AREA DHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72492
EAST	2085770	LOCATOR NUMBER I12	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	01/27/93	
REMARKS	SURFACE SEALED 02/05/93						

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
									GM	0 0-0 7 ft Sandy Gravel with trace clay and silt, very dark brown (10YR2/2), dark yellowish brown (10YR4/6), yellowish red (5YR5/8), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, plant roots at 0 0-0 3 ft, top soil at 0 0-0 7 ft, $CaCO_3$ in voids, iron oxide staining extensive at 2 0-4 8 ft, moist 50 5% gravel, 43 3% sand, 4 2% silt, 1 9% clay
	BH607140			1 00 /2 00	5958	0				
					5957	1				
					5956	2				0 7-1 0 ft VOA sample obtained from this interval
	BH607160									1 0-2 0 ft No recovery for this interval
									GM	2 0-3 0 ft Sandy Gravel as described above
	BH607150			1 30 /2 00	5955	3				3 0-3 3 ft VOA sample obtained from this interval
										3 3-4 0 ft No recovery for this interval
					5954	4			GM	4 0-4 8 ft Sandy Gravel as described above
				0 80 /1 00						
					5953	5				4 8-5 0 ft No recovery for this interval
										Total depth at 5 0 ft
					5952	6				
					5951	7				
					5950	8				
					5949	9				
						10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 5 0	GROUND ELEVATION (FT)	5963 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750523	AREA IHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72592
EAST	2085417	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	01/26/93	
REMARKS	SURFACE SEALED 02/05/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample number: BH60680WC, BH60682WC, BH60681WC

Recovery/interval: 1 60 /2 00; 2 00 /2 00; 1 00 /1 00

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Datum (ft): 5963, 5962, 5961, 5960, 5959, 5958, 5957, 5956, 5955, 5954

Unified Soils Classification or Rock Type	Description
SC	0 0-1 3 ft Clayey Sand with abundant gravel, some silt, dark reddish brown (2 5YR2 5/4), reddish brown (2 5YR4/4), yellowish red (5YR4/6-5/8), gravel maximum size 0 1', average size 0 02', angular, consisting of quartzite and sandstone clasts, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 in voids at 2 4-3 1 ft, local iron oxide staining on grains, fill to 1 3 ft with aluminum foil in matrix, moist 25% gravel, 31 2% sand, 10 9% silt, 32 9% clay
	1 3-1 6 ft VOA sample obtained from this interval
	1 6-2 0 ft No recovery for this interval
SC	2 0-3 1 ft Clayey Sand as described above
SC	3 1-3 7 ft Gravelly Sand with some clay and silt, white (10YR8/1-8/2), very dark brown (10YR2/2), brownish yellow (10YR6/8), yellowish brown (10YR5/8), gravel maximum size 0 1', average size 0 025', angular to sub-angular, consisting of quartzite sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist 24 2% gravel, 49 3% sand, 6 6% silt, 19 9% clay
	3 7-4 0 ft VOA sample obtained from this interval
SC	4 0-4 7 ft Gravelly Sand as described above
SC	4 7-5 0 ft Clayey Sand with some silt, light reddish brown (5YR6/4), reddish yellow (5YR5/6), white (N9), sand is fine- to medium-grained, poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, argillaceous cement, CaCO3 present, moist 64 5% sand, 7 1% silt, 28 4% clay
	Total depth at 5 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0		GROUND ELEVATION (FT)	5961 50	PROJECT NUMBER	OU6 RFI/RI
NORTH	750523	AREA IHSS 165		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2085541	LOCATOR NUMBER	M10	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	01/25/93
REMARKS	SURFACE SEALED 02/05/93						

LOG OF BORING NUMBER

72692

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5961	0			GC	0 0-1 2 ft Sandy Gravel with some clay and silt, dark reddish brown (2 5YR3/4-2 5/4), red (2 5YR4/8-5/8), very dark brown (10YR2/2), gravel maximum size 0 2', average size 0 1', angular to sub-angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, quartzite and mica, fines exhibit moderate plasticity, CaCO3 present, moist 50 7% gravel, 27 1% sand, 6 7% silt, 15 5% clay
				1 50 /2 00		1				
	BH60661WC				5960					
	BH60660WC									1 2-1 5 ft VOA sample obtained from this interval
						2				1 5-2 0 ft No recovery for this interval
					5959				GC	2 0-3 2 ft Sandy Gravel as described above
				1 50 /2 00		3				
	BH60662WC				5958					3 2-3 5 ft VOA sample obtained from this interval
										3 5-4 0 ft No recovery for this interval
						4				Total depth at 4 0 ft
					5957					
						5				
					5956					
						6				
					5955					
						7				
					5954					
						8				
					5953					
						9				
					5952					
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 23 8	GROUND ELEVATION (FT)	5959 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750520	AREA DISS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72792
EAST	2085640	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/27/93	

REMARKS SURFACE SEALED 02/05/93

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR 50%	100% GR 100%			0			CL	0 0-1 0 ft Gravelly Clay with some sand and silt, very dark brown (10YR2/2), gravel maximum size 0 1', average size 0 02', sub-angular, consisting of quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, quartzite and mica, fines exhibit moderate plasticity, slightly moist 27% gravel, 11 8% sand, 6 1% silt, 55 1% clay
	BH60878C			1 30 / 2 00	5959	1				1 0-1 3 ft VOA sample obtained from this interval
					5958					1 3-2 0 ft No recovery for this interval
	BH60880C					2			SM	2 0-2 2 ft Gravelly Sand as described below
										2 2-2 5 ft VOA sample obtained from this interval
	BH60884C			0 50 / 2 00	5957	3				2 5-4 0 ft No recovery for this interval
									SM	4 0-5 0 ft Gravelly Sand with some silt and clay, light reddish brown (5YR6/4), very pale brown (10YR8/3-7/3), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 in voids, extensive iron oxide staining, slightly moist 23 5% gravel, 48 7% sand, 16 7% silt, 11 1% clay
				1 60 / 1 60	5956	4				
	BH60886C				5955	5				5 0-5 3 ft VOA sample obtained from this interval
	BH60889C									5 3-5 6 ft VOA sample obtained from this interval
					5954	6			SM	5 6-6 8 ft Gravelly Sand as described above
	BH60890C			1 50 / 2 10	5953	7				6 8-7 1 ft VOA sample obtained from this interval
										7 1-8 0 ft No recovery for this interval
					5952	8			SM	8 0-9 3 ft Silty Sand with trace gravel and clay, light reddish brown (5YR6/3), reddish brown (5YR5/3), gravel maximum and average size 0 01', sub-angular, consisting of quartzite, sand is medium- to coarse-grained, poorly graded, angular to sub-rounded, consisting of quartz and quartzite, voided, slightly moist 2 1% gravel, 83 3% sand, 10 2% silt, 4 4% clay
	BH60893C			1 60 / 2 10	5951	9				9 3-9 6 ft VOA sample obtained from this interval
	BH60891C									9 6-10 1 ft No recovery for this interval
					5950	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 23 8	GROUND ELEVATION (FT)	5959 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750520	AREA DISS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72792
EAST	2085640	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/27/93	
REMARKS	SURFACE SEALED 02/05/93						

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			SM	10 1-11 3 ft Silty Sand as described above
				1 50/1 90	5949	11				
	BH60692C									11 3-11 6 ft VOA sample obtained from this interval
										11 6-12 0 ft No recovery for this interval
					5948	12			ML	12 0-12 2 ft Clayey Silt with trace sand, reddish yellow (7 5YR7/6), sand is fine-grained, well sorted, angular, consisting of quartz and mica, fines exhibit low to moderate plasticity, moist 1 2% sand, 69 1% silt, 29 7% clay
				2 10/2 10	5947	13			CL	12 2-13 8 ft Silty Clay with trace sand and gravel, dark grayish brown (10YR4/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit low plasticity, sand layer at 13 5-13 7 ft, same as 8 0-11 6 ft moist 2% gravel, 4% sand, 9 4% silt, 84 6% clay
	BH60693C				5946	14				13 8-14 1 ft VOA sample obtained from this interval
	BH60695C								CL	14 1-14 3 ft Silty Clay as described above
	BH60570C			1 90/1 90	5945	15			SM	14 3-15 7 ft Silty Sand with trace gravel and clay, same as 8 0-11 6 ft, slightly moist at 8 0-12 0 ft, moist at 12 0-14 1 ft, moist to very moist at 14 1-17 8 ft, saturated at 17 8-18 9 ft, saturated with water at 18 0 ft 2 3% gravel, 79 6% sand, 12 7% silt, 5 4% clay
	BH60694C				5944	16				15 7-16 0 ft VOA sample obtained from this interval
									SM	16 0-17 5 ft Silty Sand as described above
										17 5-17 8 ft VOA sample obtained from this interval
				1 80/1 80	5943	17			SM	17 8-18 9 ft Silty sand as described above
	BH60696C				5942	18			CL	18 9-19 6 ft Silty Clay with some sand, dark grayish brown (10YR4/2), gravel maximum and average size 0 01', sub-angular, consisting of quartz, sand poorly graded trace amounts of fine- to coarse-grained sand, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, plant stem at 19 3', stuff at 19 9-20 3', mottled texture, appears to be reworked bedrock, CaCO3 concretions, 30 degree fracture at 20 6', healed with fine to coarse sand, CaCO3 along fracture, saturated 1% gravel, 6 5% sand, 9 3% silt, 83 2% clay
				2 10/2 10	5941	19				19 6-19 9 ft VOA sample obtained from this interval
	BH60711C				5940	20			CL	19 9-20 7 ft Silty Clay as described above Top of bedrock at 20 7 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 23 8		GROUND ELEVATION (FT)	5959 90	PROJECT NUMBER	006 RFI/RI
NORTH	750520	AREA IHSS 165		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2085640	LOCATOR NUMBER	M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/27/93
REMARKS	SURFACE SEALED 02/05/93						

LOG OF BORING NUMBER

72792

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER: BH60710WC, BH60712WC, BH60713WC

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 1 80 /1 80; 2 10 /2 10

DATUM (FT): 5939, 5938, 5937, 5936, 5935, 5934, 5933, 5932, 5931, 5930

DEPTH (FT): 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

WELL OR PIEZOMETER CONSTRUCTION

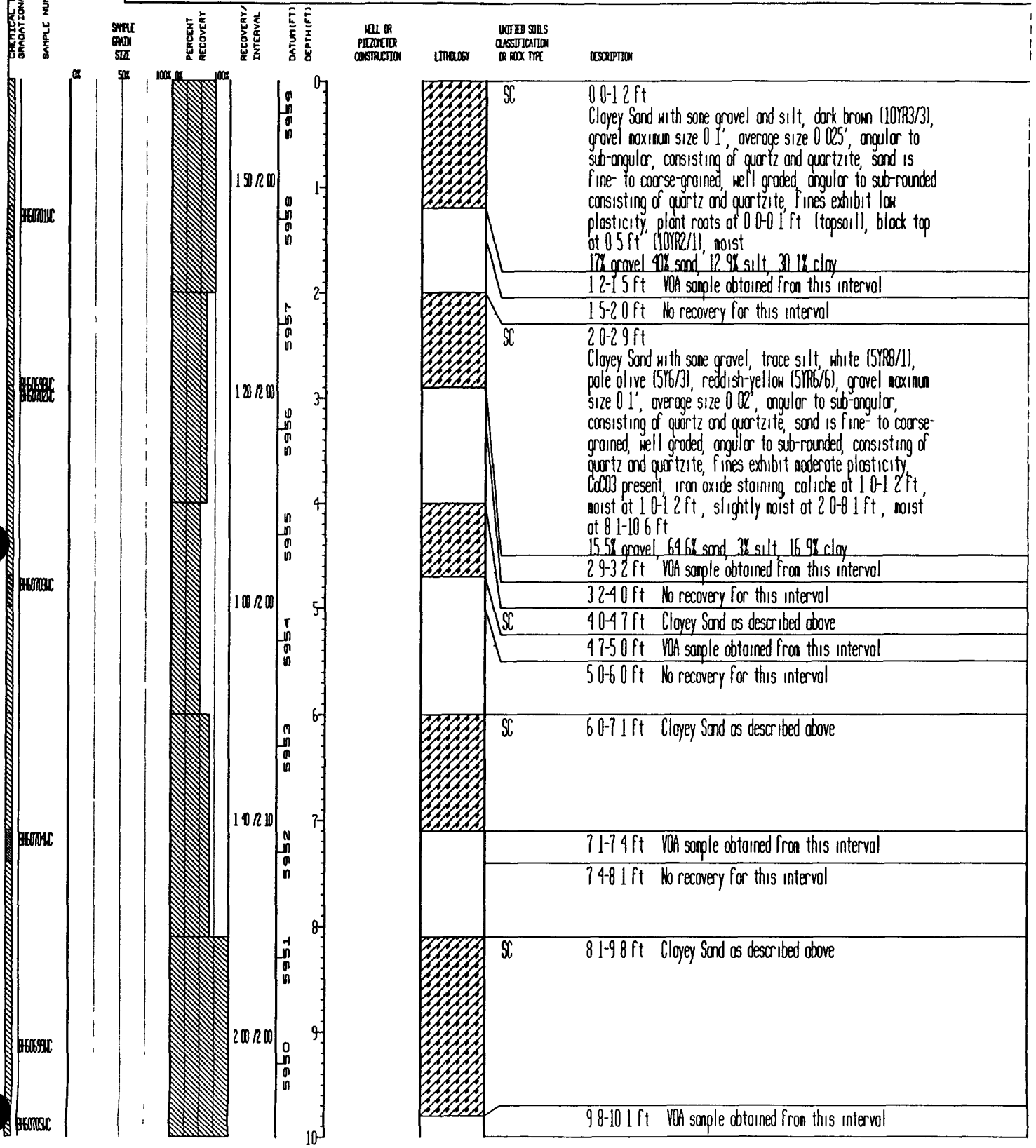
LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

Unified Soils Classification or Rock Type	Description
CLAYSTONE	20 7-21 4 ft Claystone with some silt and trace sand, dark grayish brown (10YR4/2), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, sluff at 21 7-22 1', less than 5% porosity, slightly friable, carbonaceous material present, CaCO3 in voids some gravel present at 22 1-22 4' pushed by auger, extensive iron oxide staining, moist 2 6% sand, 9 7% silt, 87 7% clay
	21 4-21 7 ft VOA sample obtained from this interval
CLAYSTONE	21 7-22 4 ft Claystone as described above
CLAYEY SILTSTONE	22 4-23 5 ft Clayey Siltstone with trace sand, light gray-gray (10YR6/1), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit low plasticity, less than 20% porosity, moderately friable, CaCO3 in voids, local iron oxide and manganese oxide staining, carbonaceous material present, moist 5 5% sand, 66 1% silt, 28 4% clay
	23 5-23 8 ft VOA sample obtained from this interval
	Total depth at 23 8 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5959 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750540	AREA DXSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72892
EAST	2085772	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/28/93	
REMARKS	SURFACE SEALED 02/05/93						



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4		GROUND ELEVATION (FT)	5959 30	PROJECT NUMBER	OU6 RFI/RI
NORTH	750540	AREA INSS 165		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2085772	LOCATOR NUMBER	M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/28/93
REMARKS	SURFACE SEALED 02/05/93						

LOG OF BORING NUMBER

72892

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5949	10			SC	10 1-10 6 ft Clayey Sand as described above Top of bedrock at 10 6 ft
				1 70 /1 70	5948	11			SANDSTONE	10 6-11 5 ft Sandstone as described below
	BH6070GWC									11 5-11 8 ft VOA sample obtained from this interval
				0 60 /0 60	5947	12			SANDSTONE	11 8-12 4 ft Sandstone with some silt and trace clay, white (10YR8/1), light gray (10YR7/1), yellow (10YR7/6-7/8), sand is fine-grained, well sorted, sub-angular to rounded, consisting of quartz, fines exhibit low plasticity, less than 20% porosity silica and argillaceous cement, moderately to highly friable 90 degree fracture at 11 2 ft , moist 0% gravel, 81 8% sand, 14 6% silt, 3 6% clay
					5946	13				Total depth at 12 4 ft
					5945	14				
					5944	15				
					5943	16				
					5942	17				
					5941	18				
					5940	19				
						20				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 15 0	GROUND ELEVATION (FT)	5961 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH 750625	AREA DISS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72992
EAST 2085530	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/20/93	
REMARKS SURFACE SEALED 02/05/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%		5961	0			SC	0 0-1 2 ft Gravelly Sand with some clay, trace silt, very dark brown (10YR2/2), dusky red (10YR3/4), white (N9), light brown (7 5YR6/6), reddish yellow (7 5YR6/8), gravel maximum size 0 2', average size 0 05', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, CaCO3 is present, iron oxide staining, moist at 0 0-1 5 ft, dry at 2 0-3 1 ft moist at 3 9-6 0 ft 29% gravel, 57 9% sand, 1 8% silt, 16 3% clay
	BH60339C			1 50 /2 00	5960	1				1 2-1 5 ft VOA sample obtained from this interval
	BH60336C				5959	2				1 5-2 0 ft No recovery for this interval
	BH60324C			1 10 /1 90	5958	3			SC	2 0-2 8 ft Gravelly Sand as described above
										2 8-3 1 ft VOA sample obtained from this interval
										3 1-3 9 ft No recovery for this interval
					5957	4			SC	3 9-5 7 ft Gravelly Sand as described above
				2 10 /2 10	5956	5				
	BH60342C									5 7-6 0 ft VOA sample obtained from this interval
									SC	6 0-6 2 ft Gravelly Sand as described above Top of bedrock at 6 2 ft
	BH60338C				5955	6			SILTY CLAYSTONE	6 2-6 4 ft Silty Claystone as described below
	BH60337C			1 00 /1 90						6 4-6 7 ft VOA sample obtained from this interval
					5954	7				6 7-7 0 ft VOA sample obtained from this interval
										7 0-7 9 ft No recovery for this interval
					5953	8			SILTY CLAYSTONE	7 9-9 1 ft Silty Claystone with trace gravel, pale olive (5Y6/4), olive gray (5Y5/3), white (N9), yellowish red (5YR5/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, iron oxide staining, CaCO3 present at 6 5-11 4 ft, caliche at 6 5-8 6 ft, moist at 6 0-7 9 ft, wet to moist at 7 9-11 9 ft, moist at 11 9 15 0 ft 0% gravel, 1 3% sand, 19 7% silt, 79% clay
	BH60325C			1 50 /2 10						
	BH60410C				5952	9				9 1-9 4 ft VOA sample obtained from this interval
										9 4-10 0 ft No recovery for this interval
						10				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 15 0	GROUND ELEVATION (FT)	5961 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 750625	AREA 1355 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	72992	
EAST 2085530	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/20/93		
REMARKS SURFACE SEALED 02/05/93							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			SILTY CLAYSTONE	10 0-11 1 ft Silty Claystone as described above
				1 10 /1 10	5951	11				
	BH606-13C				5950					11 1-11 4 ft VOA sample obtained from this interval
										11 4-11 9 ft No recovery for this interval
						12			SILTY CLAYSTONE	11 9-13 0 ft Silty Claystone as described above
				1 10 /2 10	5949					
	BH606-14C					13				13 0-13 3 ft VOA sample obtained from this interval
	BH606-15C				5948					13 3-14 0 ft No recovery for this interval
						14			SILTY CLAYSTONE	14 0-15 0 ft Silty Claystone as described above
				1 00 /1 00	5947					
						15				Total depth at 15 0 ft
					5946					
						16				
					5945					
						17				
					5944					
						18				
					5943					
						19				
					5942					
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0		GROUND ELEVATION (FT)	5960 10	PROJECT NUMBER	006 RFI/RI
NORTH	750720	AREA IHSS 165		CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY
EAST	2085508	LOCATOR NUMBER	M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/25/93
REMARKS	SURFACE SEALED 02/05/93						

LOG OF BORING NUMBER

73092

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample number: BH6064BWC; BH6064BWC; BH6064BWC; BH6065DWCMW/MSD; BH6065DWC; BH6065WC; BH6064SWC; BH6065ZWC

Recovery/interval: 2 00 /2 00; 1 20 /2 00; 1 50 /2 00; 1 70 /2 00; 2 00 /2 00

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Unified soils classification or rock type	Description
SC	0 0-1 7 ft Clayey Sand with some gravel, trace silt, very dusky red (2 5YR2 5/2), dusky red (2 5YR3/2), very dark grayish brown (10YR3/2), white (10YR8/1), white (10YR8/2), gravel maximum size 0 1', average size 0 025', sub-angular, consisting of quartz, schist and granitics, sand is fine- to coarse-grained, well graded, sub-angular, consisting of quartz and schist, fines exhibit moderate plasticity, CaCO3 present, plant roots at 0 0-0 7 ft , iron oxide staining, moist 23 5% gravel, 41 1% sand, 3 5% silt, 31 9% clay
	1 7-2 0 ft VOA sample obtained from this interval
CL	2 0-2 9 ft Sandy Clay with trace gravel and silt, white(10YR8/1), white (10YR8/2), light gray (10YR7/2), gravel maximum and average size 0 15', sub-angular, consisting of quartzite, sand is fine- to coarse-grained (trace amounts of fine, medium, and coarse sand), poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, clay is predominantly caliche, moist 5% gravel, 6 7% sand, 1 8% silt, 88 3% clay
	2 9-3 2 ft VOA sample obtained from this interval
	3 2-4 0 ft No recovery for this interval
CL	4 0-4 7 ft Sandy Clay as described above Top of bedrock at 4 7 ft
CLAYSTONE	4 7-4 9 ft Claystone with some silt, trace sand, light gray-gray (10YR6/1), yellowish brown (10YR5/6), sand is fine-grained, well sorted, angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, less than 5% porosity, slightly friable, iron oxide staining, nodules of caliche, carbonaceous material present, moist 0% gravel, 2 2% sand, 9 8% silt, 88% clay
	4 9-5 2 ft VOA sample obtained from this interval
	5 2-5 5 ft VOA sample obtained from this interval
	5 5-6 0 ft No recovery for this interval
CLAYSTONE	6 0-7 4 ft Claystone as described above
	7 4-7 7 ft VOA sample obtained from this interval
	7 7-8 0 ft No recovery for this interval
CLAYSTONE	8 0-9 7 ft Claystone as described above
	9 7-10 0 ft VOA sample obtained from this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5960 10	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750720	AREA IHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	73092
EAST	2085508	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/25/93	

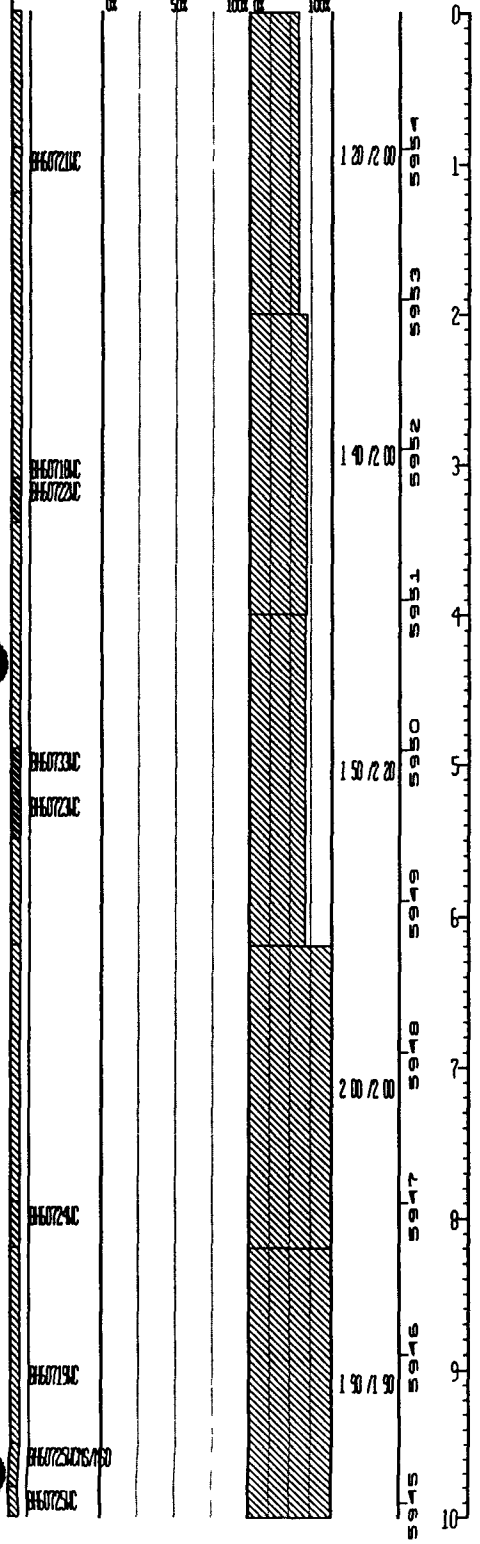
REMARKS SURFACE SEALED 02/05/93

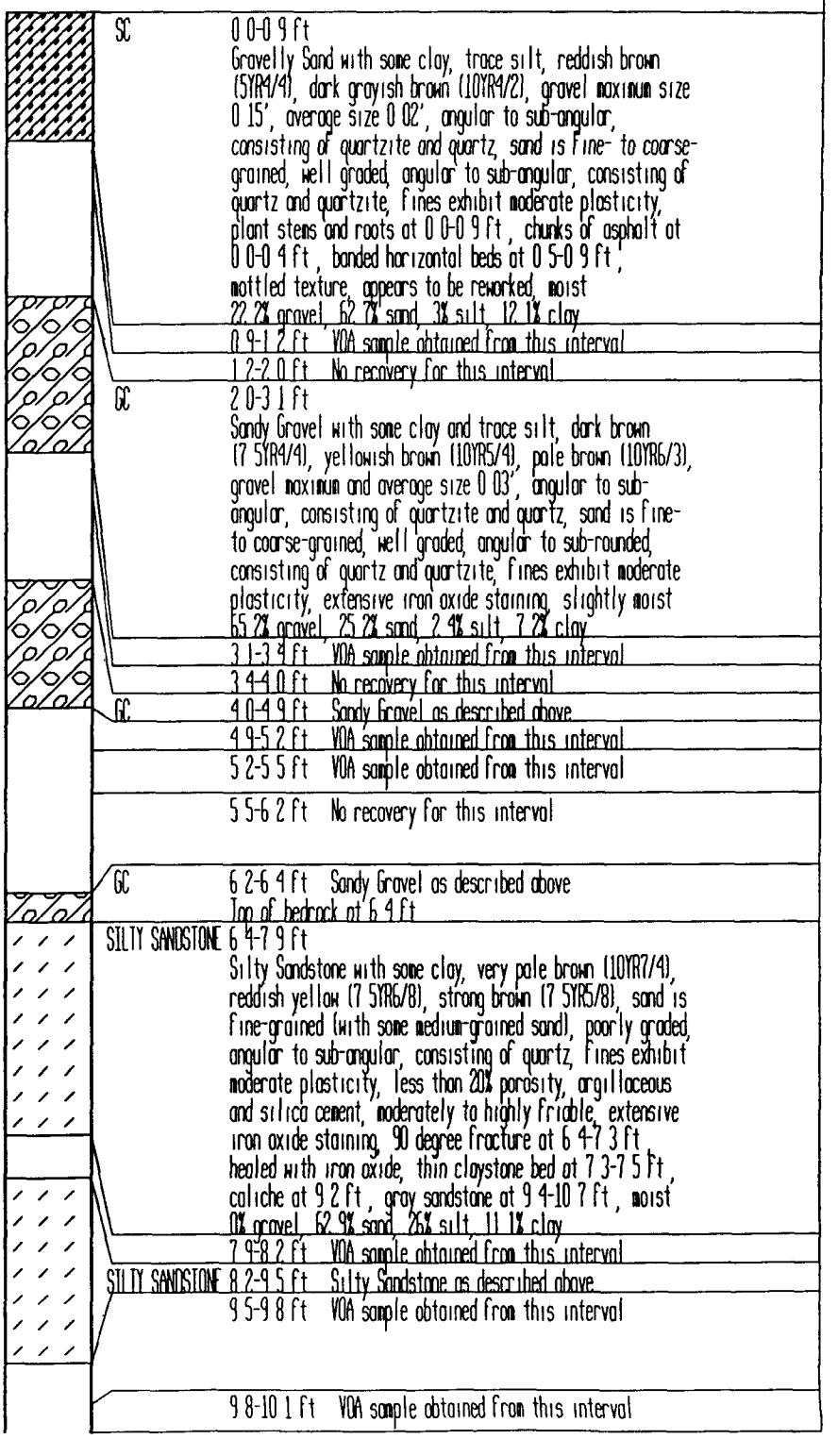
CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5950 5949 5948 5947 5946 5945 5944 5943 5942 5941	10 11 12 13 14 15 16 17 18 19 20			CLAYSTONE	10 0-11 7 ft Claystone as described above
	B60553C									11 7-12 0 ft VOA sample obtained from this interval
										Total depth at 12 0 ft

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5957 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 750733	AREA IHSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	73292	
EAST 2085764	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	02/01/93		
REMARKS SURFACE SEALED 2/5/93							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5957	0			SC	0 0-0 7 ft Clayey Sand with abundant gravel and some silt, dark brown (7 5YR3/2), gravel maximum size 0 1', average size 0 025', sub-angular, consisting of quartz, sand is fine- to medium-grained, poorly graded (trace coarse sand), sub-angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-0 5', top soil at 0 0-1 0 ft , caliche at 0 7 ft , moist 25 5% gravel 27% sand, 14 3% silt, 33 2% clay
	BH607BUC			1 00 /2 00	5956	1				0 7-1 0 ft VOA sample obtained from this interval
	BH607SUC									1 0-2 0 ft No recovery for this interval
	BH607SUC				5955	2			GC	2 0-2 6 ft Sandy Gravel with some clay, trace silt, white (10YR8/1), gravel maximum size 0 1', average size 0 03', angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, dry 44 6% gravel, 31 6% sand, 2 4% silt, 21 4% clay
	BH607SUC			1 20 /2 00	5954	3				2 6-2 9 ft VOA sample obtained from this interval
										2 9-3 2 ft VOA sample obtained from this interval
					5953	4				3 2-4 0 ft No recovery for this interval
										Total depth at 4 0 ft
					5952	5				
					5951	6				
					5950	7				
					5949	8				
					5948	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT) 5954 90	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750738	AREA DHSS 165	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	73392
EAST	2085856	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/28/93	
REMARKS	SURFACE SEALED 02/23/93				





SC 0 0-0 9 ft
Gravelly Sand with some clay, trace silt, reddish brown (5YR4/4), dark grayish brown (10YR4/2), gravel maximum size 0 15', average size 0 02', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant stems and roots at 0 0-0 9 ft , chunks of asphalt at 0 0-0 4 ft , banded horizontal beds at 0 5-0 9 ft , mottled texture, appears to be reworked, moist
22 2% gravel, 62 7% sand, 3% silt, 12 1% clay

0 9-1 2 ft VOA sample obtained from this interval

1 2-2 0 ft No recovery for this interval

GC 2 0-3 1 ft
Sandy Gravel with some clay and trace silt, dark brown (7 5YR4/4), yellowish brown (10YR5/4), pale brown (10YR6/3), gravel maximum and average size 0 03', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining, slightly moist
65 2% gravel, 25 2% sand, 2 9% silt, 7 2% clay

3 1-3 3 ft VOA sample obtained from this interval

3 4-4 0 ft No recovery for this interval

GC 4 0-4 9 ft Sandy Gravel as described above

4 9-5 2 ft VOA sample obtained from this interval

5 2-5 5 ft VOA sample obtained from this interval

5 5-6 2 ft No recovery for this interval

GC 6 2-6 4 ft Sandy Gravel as described above
Top of bedrock at 6 4 ft

SILTY SANDSTONE 6 4-7 9 ft
Silty Sandstone with some clay, very pale brown (10YR7/4), reddish yellow (7 5YR6/8), strong brown (7 5YR5/8), sand is fine-grained (with some medium-grained sand), poorly graded, angular to sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 20% porosity, argillaceous and silica cement, moderately to highly friable, extensive iron oxide staining, 90 degree fracture at 6 4-7 3 ft healed with iron oxide, thin claystone bed at 7 3-7 5 ft , caliche at 9 2 ft , gray sandstone at 9 4-10 7 ft , moist
0% gravel, 62 9% sand, 26% silt, 11 1% clay

7 9-8 2 ft VOA sample obtained from this interval

SILTY SANDSTONE 8 2-9 5 ft Silty Sandstone as described above

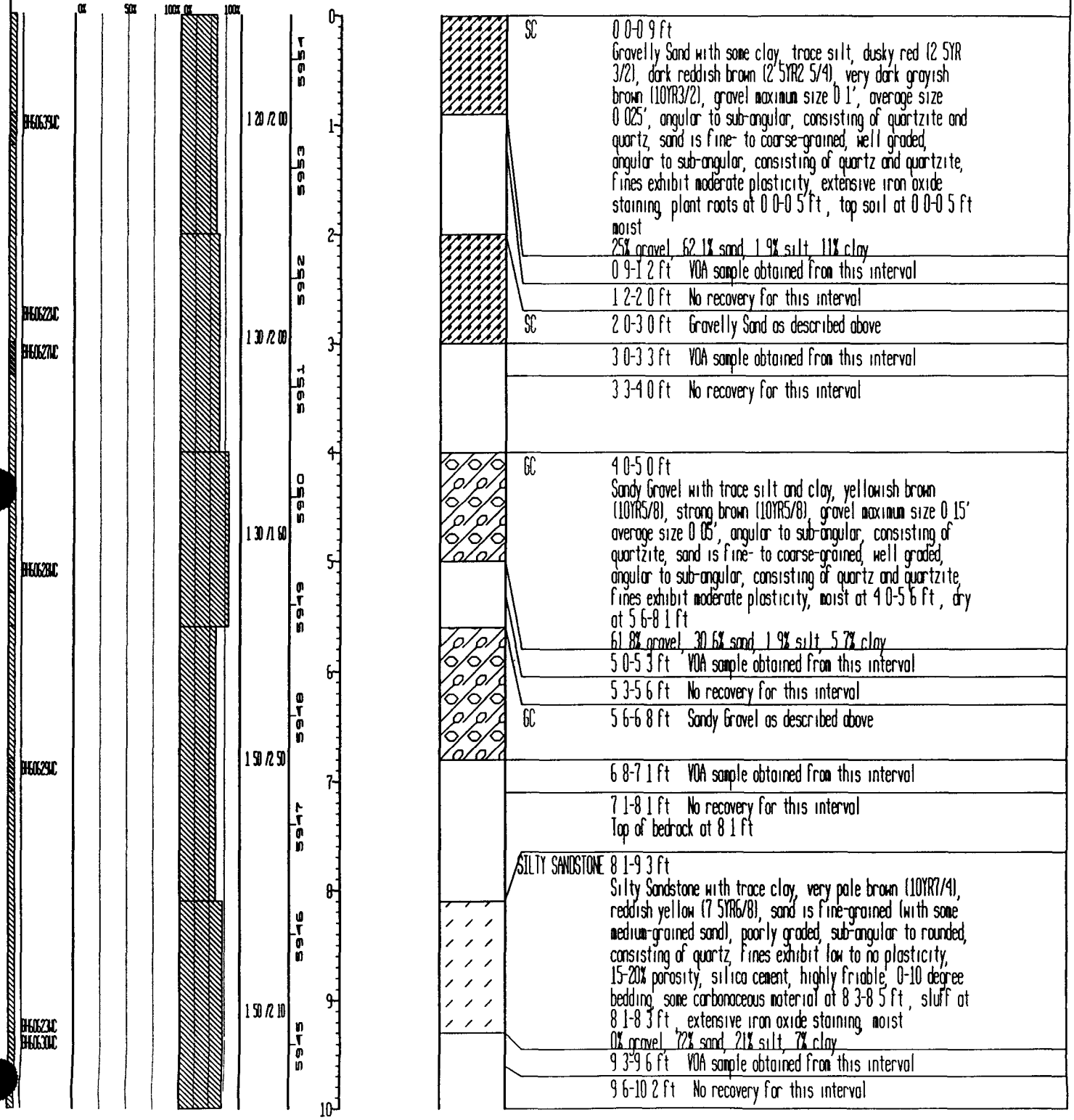
9 5-9 8 ft VOA sample obtained from this interval

9 8-10 1 ft VOA sample obtained from this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5954 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750738	AREA DXSS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	73392
EAST	2085856	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/28/93	
REMARKS	SURFACE SEALED 02/23/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 50/1 90	5944	10			SILTY SANDSTONE	10 1-11 3 ft Silty Sandstone as described above
	96607261C				5943	11				11 3-11 6 ft VOA sample obtained from this interval
					5942	12				11 6-12 0 ft No recovery for this interval
					5941	13				Total depth at 12 0 ft
					5940	14				
					5939	15				
					5938	16				
					5937	17				
					5936	18				
					5935	19				
						20				

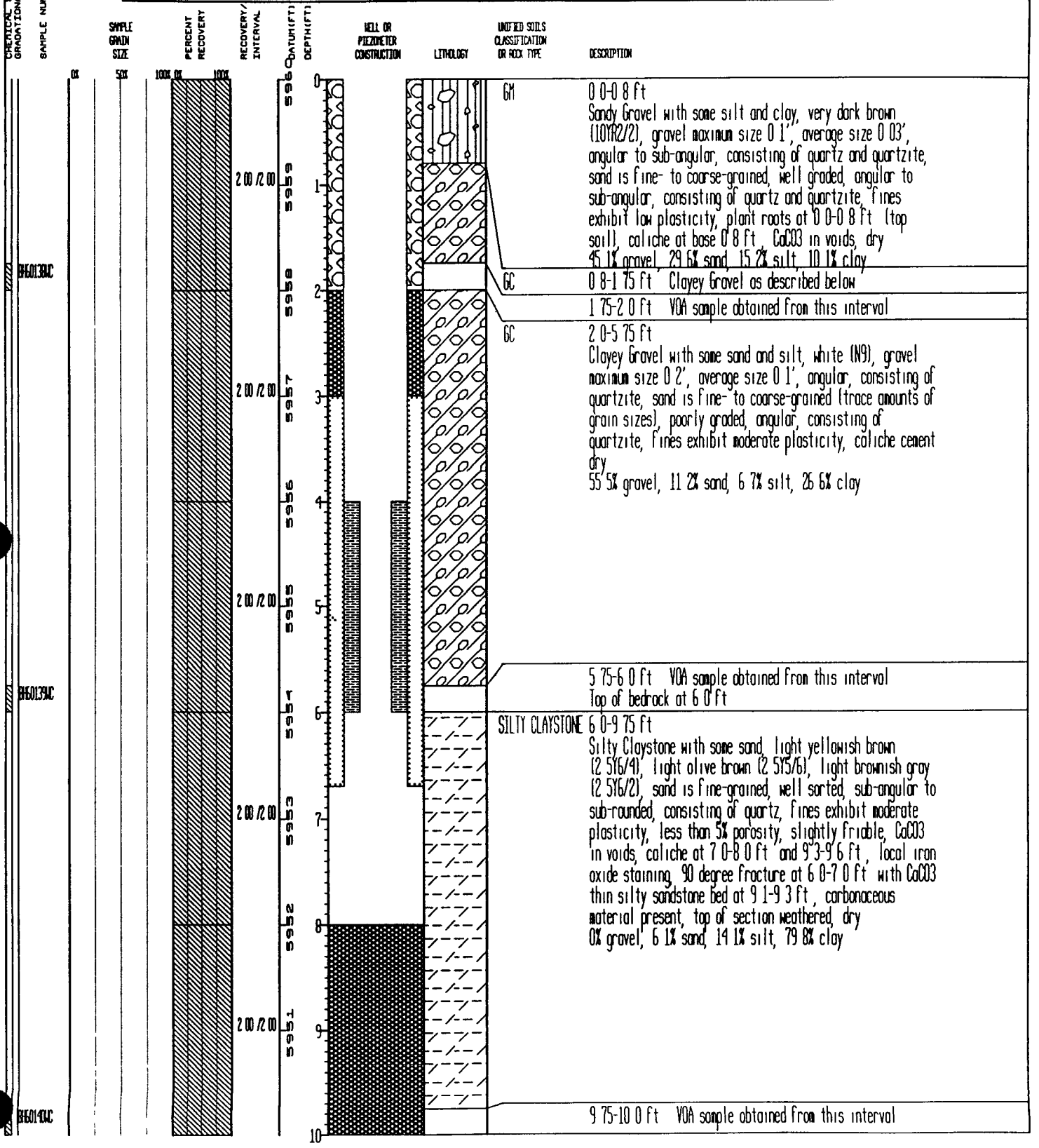
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT) 5954 40	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750840	AREA IHSS 165	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	73492
EAST	2085758	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/19/93	
REMARKS	SURFACE SEALED 2/5/93				



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT)	5954 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 750840	AREA DISS 165	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	73492	
EAST 2085758	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/19/93		
REMARKS SURFACE SEALED 2/5/93							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%		5944	10			SILTY SANDSTONE	10 2-10 9 ft Silty Sandstone as described above
	B66632UC			1 30 /1 80	5943	11				10 9-11 2 ft VOA sample obtained from this interval
	B66631UC									11 2-11 5 ft VOA sample obtained from this interval
										11 5-12 0 ft No recovery for this interval
				1 00 /1 00	5942	12			SILTY SANDSTONE	12 0-13 0 ft Silty Sandstone as described above
					5941	13				Total depth at 13 0 ft
					5940	14				
					5939	15				
					5938	16				
					5937	17				
					5936	18				
					5935	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5960 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750660	AREA DXSS 165	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIROD	76192
EAST	2086122	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/30/92	
REMARKS	WELL SET 12/03/92						

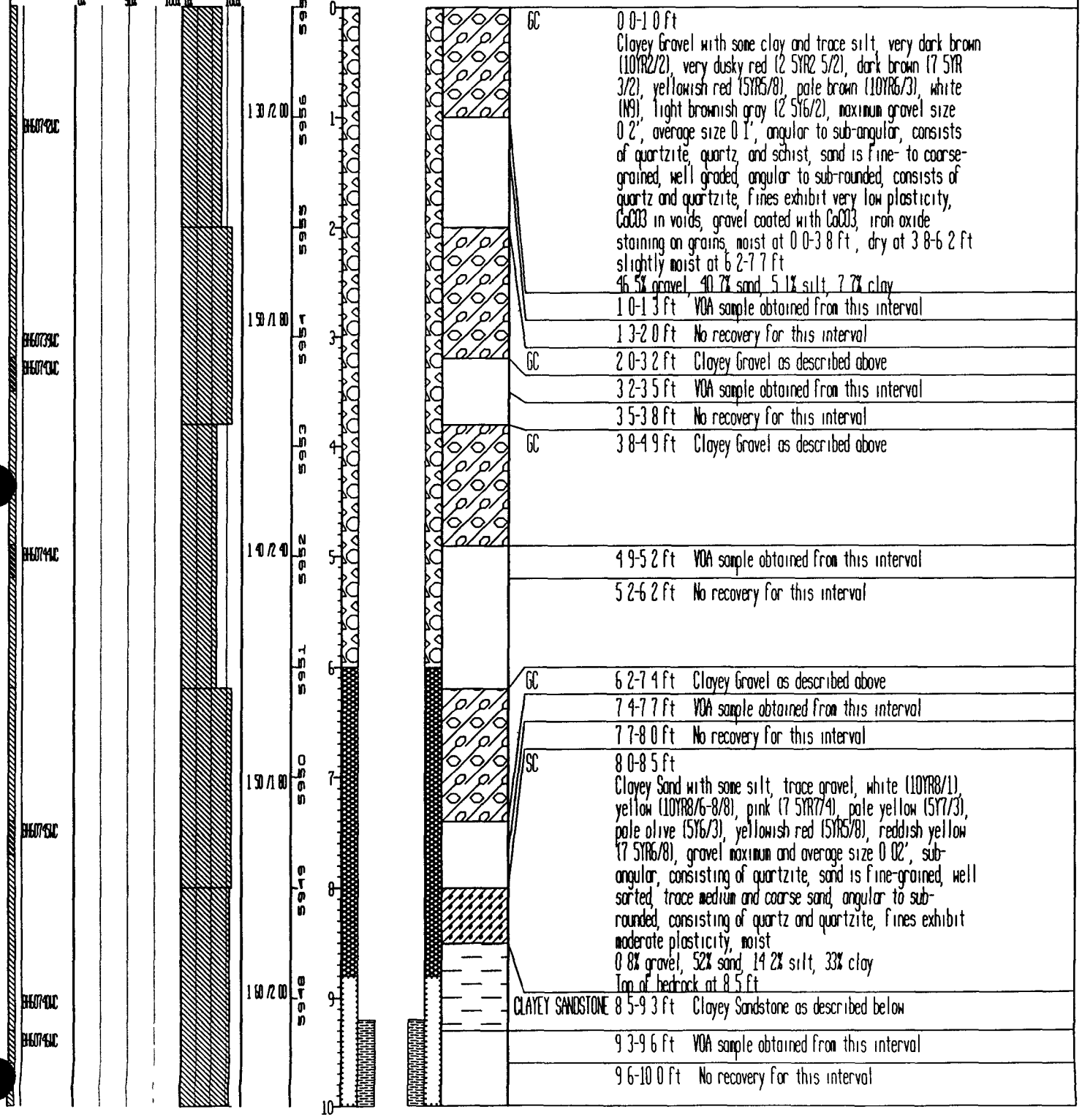


STATE PLANE COORDINATE		TOTAL DEPTH (FT)	14 0	GROUND ELEVATION (FT)	5960 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750660	AREA	THSS 165	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P GIROD	76192
EAST	2086122	LOCATOR NUMBER	N10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/30/92	

REMARKS WELL SET 12/03/92

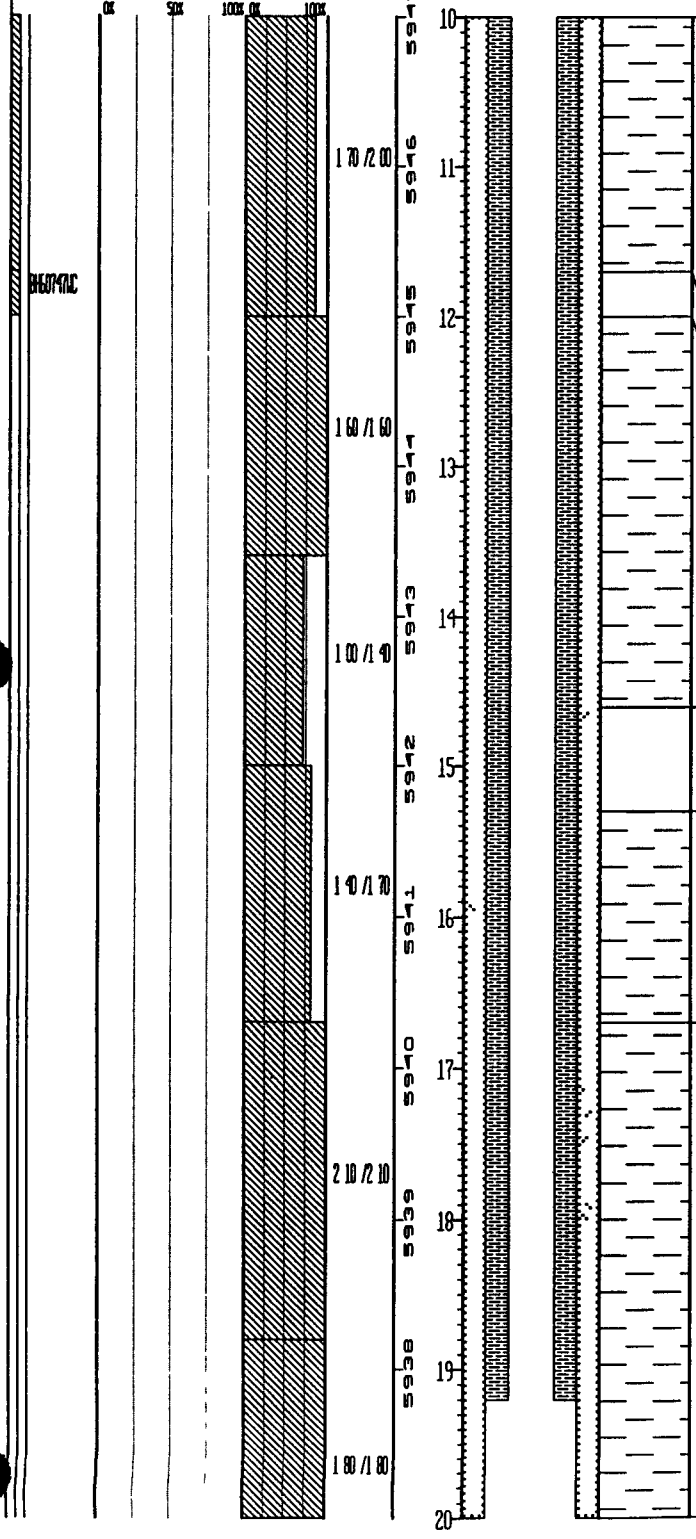
CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	50% 100% 0% 100%		5950	10			SANDY CLAYSTONE	10 0-11 1 ft Sandy Claystone with some silt, light gray (10YR7/1), brownish yellow (10YR6/8), sand is fine-grained, well sorted sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, argillaceous and silica cement, slightly friable, CaCO3 in voids, iron oxide staining along 0 degree bedding planes, carbonaceous material, dry 0% gravel, 25% sand, 7 5% silt, 67 5% clay
	BH6011UC			1 10 / 2 00	5949	11				11 1-11 4 ft VOA sample obtained from this interval
										11 4-14 0 ft No recovery for this interval
				0 00 / 2 00	5948	12				
					5947	13				
					5946	14				Total depth at 14 0 ft
					5945	15				
					5944	16				
					5943	17				
					5942	18				
					5941	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 21 2	GROUND ELEVATION (FT) 5957 00	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	750769	AREA DISS 165	CASING DIAMETER (IN) 2 0	GEOLOGIST MICHAEL MAY	76292
EAST	2085681	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 10 0	DATE DRILLED 01/29/93	
REMARKS					



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 21 2	GROUND ELEVATION (FT)	5957 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	750769	AREA IHSS 165	CASING DIAMETER (IN)	2 0	GEOLOGIST	MICHAEL MAY	76292
EAST	2085681	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/29/93	
REMARKS							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



CLAYEY SANDSTONE 10 0-11 7 ft
Clayey Sandstone with some silt, white (10YR8/1), yellow (10YR8/6-8/8), pink (7 5YR7/4), pale yellow (5Y7/3), pale olive (5Y6/3), yellowish red (5YR5/8), reddish yellow (7 5YR6/8), sand is fine-grained, well sorted, angular to sub-angular, consists of quartz, fines exhibit low plasticity, extensive iron oxide staining, less than 20% porosity, silica and argillaceous cement, highly friable, 90 degree fracture at 13 3-13 9 ft, sluff at 15 0-15 3 ft, thin claystone laminae beds 0 degrees, moist
79 6% sand, 6 1% silt, 14 3% clay

11 7-12 0 ft VOA sample obtained from this interval

CLAYEY SANDSTONE 12 0-14 6 ft Clayey Sandstone as described above

14 6-15 3 ft No recovery for this interval

CLAYEY SANDSTONE 15 3-16 7 ft Clayey Sandstone as described above

CLAYEY SANDSTONE 16 7-20 6 ft
Clayey Sandstone with some silt, color same as above, sand is fine-grained, well sorted, angular to sub-angular, consists of quartz, fines exhibit low plasticity, less than 10% porosity, argillaceous cement, highly to moderately friable, extensive iron oxide staining, 90 degree fracture at 17 9-18 8 ft, 0 degree fracture at 20 3 ft healed with CaCO3, 90 degree fracture at 20 1-20 6 ft, moist
59 1% sand, 12 3% silt, 28 6% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 21 2	GROUND ELEVATION (FT)	5957 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	750769	AREA IHSS 165	CASING DIAMETER (IN)	2 0	GEOLOGIST	MICHAEL MAY	76292
EAST	2085681	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	01/29/93	

REMARKS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	0 00 /0 60	5937 5936 5935 5934 5933 5932 5931 5930 5929 5928	20 21 22 23 24 25 26 27 28 29 30				20 6-21 2 ft No recovery for this interval Total depth at 21 2 ft
	B									

APPENDIX C2.7
IHSS 166.1 - BORING LITHOLOGY LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 3	GROUND ELEVATION (FT)	5971 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752425	AREA DISS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	66892
EAST	2083922	LOCATOR NUMBER 610	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92	
REMARKS	SURFACE SEALED 12/16/92						

CHEMICAL SAMPLE / GRADATIONAL SA... DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE: 0% 50%

PERCENT RECOVERY: 100% 0% 100%

RECOVERY/INTERVAL: 1 40/2 20; 0 50/2 00; 2 00/2 00; 1 70/2 10; 2 00/2 00

DATUM(FT) / DEPTH(FT): 5971 (0), 5970 (1), 5969 (2), 5968 (3), 5967 (4), 5966 (5), 5965 (6), 5964 (7), 5963 (8), 5962 (9), 10

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE		DESCRIPTION
GC	0 0-1 2 ft	Clayey Gravel with some sand and silt, brown (7 5YR5/2) to strong brown (7 5YR4/6), gravel maximum size 0 1', average size 0 025', angular to sub-angular, consisting of quartzite sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, clay exhibits moderate to high plasticity, extensive plant roots at 0 0-0 6' and iron oxide staining at 0 0-0 4', organic material at 0 8-1 4', damp to wet at 0 0-1 4', dry at 2 2-2 7 ft 40% gravel, 20 8% sand, 13 8% silt, 25 4% clay
	1 2-1 4 ft	VOA sample obtained from this interval
	1 4-2 2 ft	No recovery for this interval
	2 2-2 4 ft	VOA sample obtained from this interval
	2 4-2 6 ft	VOA sample obtained from this interval
GC	2 6-2 7 ft	Clayey Gravel as described above
	2 7-4 2 ft	No recovery for this interval
GM	4 2-6 0 ft	Sandy Gravel with some silt and trace clay, pink (7 5YR8/4) to reddish yellow (7 5YR7/8), gravel maximum size 0 2', average size 0 05', sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, gravel consists of quartzite, clay exhibits low plasticity, extensive oxidized zone at 7 7-7 9 ft , iron oxide staining 60% gravel, 29 2% sand, 7 5% silt, 3 3% clay
	6 0-6 2 ft	VOA sample obtained from this interval
GM	6 2-7 7 ft	Sandy Gravel as described above
	7 7-7 9 ft	VOA sample obtained from this interval
	7 9-8 3 ft	No recovery for this interval
SM	8 3-8 4 ft	Silty Sand, yellowish red (5YR5/8), fine- to medium-grained, wet 0% gravel, 85% sand, 15% silt, 0% clay Top of bedrock at 8 4 ft
SILTY CLAYSTONE	8 4-9 8 ft	Very Silty Claystone with trace sand, light gray (10YR7/1-6/1) to gray (10YR5/1), fine sand, well sorted, sub-rounded, poor porosity with trace amount of carbonaceous material, wet, high to moderate friability 0% gravel, 6% sand, 34% silt, 60% clay
CLAYSTONE	9 8-10 1 ft	Claystone as described below

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 3	GROUND ELEVATION (FT) 5971 20	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752425	AREA THSS 166 1	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	66892
EAST	2083922	LOCATOR NUMBER 610	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/08/92	

REMARKS SURFACE SEALED 12/16/92

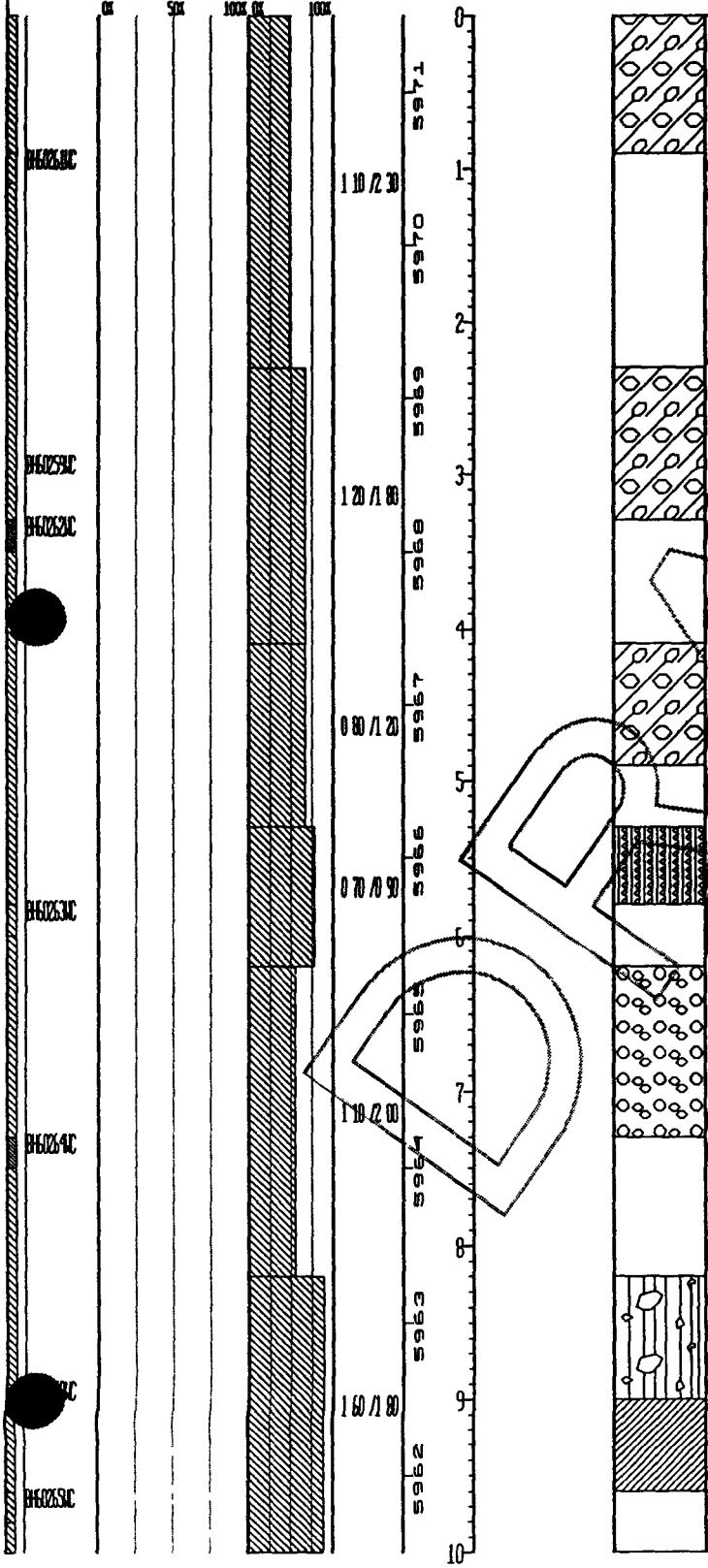
CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5961 5960 5959 5958 5957 5956 5955 5954 5953 5952	10 11 12 13 14 15 16 17 18 19 20				
	BH6003QC									10 1-10 3 ft VOA sample obtained from this interval
									CLAYSTONE	10 3-12 1 ft Claystone with trace sand and some silt, light yellow brown (2 5Y6/4) to light olive brown (2 5YR5/4) to reddish yellow (7 5YR6/8), fine-grained, well sorted, sub-rounded, poor porosity, moderately friable, damp, faint bedding with inclusions of silt and extensive iron oxide staining and local manganese oxide staining 0% gravel, 1% sand, 6% silt, 93% clay
	BH6003RC									12 1-12 3 ft VOA sample obtained from this interval
										Total depth at 12 3 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5971 50	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752429	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	66992
EAST	2083945	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/07/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



Unified Soils Classification or Rock Type	Description
GC	0 0-1 1 ft Clayey Gravel with some sand and silt, dark yellowish brown (10YR4/4) to dark brown (10YR3/3), gravel maximum size 0 15' average size 0 025', sub-angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and granitics, clay exhibits low plasticity, top soil 0 0-0 3', extensive roots, 0 3-5 9' caliche and localized iron oxide staining, wet to damp at depth 70% gravel, 12 2% sand, 5 3% silt, 12 5% clay
	0 9-1 1 ft VOA sample obtained from this interval
	1 1-2 3 ft No recovery for this interval
GC	2 3-3 3 ft Clayey Gravel as described above
	3 3-3 5 ft VOA sample obtained from this interval
	3 5-4 1 ft No recovery for this interval
GC	4 1-4 9 ft Clayey Gravel as described above
	4 9-5 3 ft No recovery for this interval
SM	5 3-5 8 ft Silty Sand with trace clay, yellow brown (10YR5/4), sand is medium- to coarse-grained, poorly graded, consisting of quartz, angular to sub-rounded, clay exhibits low plasticity iron oxide staining, damp to dry 82 4% sand, 15 0% silt, 2 6% clay
	5 8-6 0 ft VOA sample obtained from this interval
	6 0-6 2 ft No recovery for this interval
GW	6 2-7 3 ft Sandy Gravel with trace silt and clay, dark gray (10YR4/1) to very dark gray (10YR3/1), gravel maximum size 0 1', average size 0 025', angular to sub-angular to sub-rounded, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, clay exhibits no plasticity, iron oxide and manganese oxide staining, damp 60% gravel, 33 7% sand, 1 6% silt, 4 7% clay
	7 3-7 5 ft VOA sample obtained from this interval
	7 5-8 2 ft No recovery for this interval
GM	8 2-9 0 ft Sandy Gravel with some silt and trace clay, dark yellowish orange (10YR6/6), gravel maximum size 0 1', average size 0 05', consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, with extensive iron oxide staining, clay exhibits no plasticity, saturated, appears to be a channel sand 50% gravel, 39 8% sand, 9 2% silt, 1 0% clay
CH	9 0-9 6 ft Clay with trace sand and silt, light gray (10YR6/1) to gray (10YR5/1) to very pale brown (10YR8/2), sand is fine-grained well sorted, clay exhibits high plasticity, appearance of reworked bedrock with inclusion of CaCO3 in voids and clasts of claystone, damp to moist 5% sand, 5% silt, 95% clay
	9 6-9 8 ft VOA sample obtained from this interval
	9 8-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5971 50	PROJECT NUMBER	DUG RFI/RI	LOG OF BORING NUMBER
NORTH	752429	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	66992
EAST	2083945	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/07/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						10				9 8-10 0 ft No recovery for this interval
	BH6026WC			1 10 /2 00	5961	11			GM	10 0-10 6 ft Sandy Gravel with some silt and trace clay, dark yellowish orange (10YR6/6), gravel maximum size 0 1", average size 0 05", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz with extensive iron oxide staining, clay exhibits no plasticity, saturated, appears to be a channel sand Top of bedrock at 10 6 ft 50% gravel, 39 8% sand, 9 2% silt, 1 0% clay
					5960	12			CLAYSTONE	10 6-11 1 ft Claystone with trace silt and clay, light gray (10YR6/1) to gray (5/1) to very pale brown (10YR8/4), sand is very fine-grained, well sorted, 0% porosity, low friability with faint horizontal bedding, localized iron oxide staining, dry 5% sand, 5% silt, 95% clay
					5959	13				10 9-11 1 ft VOA sample obtained from this interval
					5958	14				11 1-12 0 ft No recovery for this interval
					5957	15				Total depth at 12 0 ft
					5956	16				
					5955	17				
					5954	18				
					5953	19				
					5952	20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 3	GROUND ELEVATION (FT)	5968 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752434	AREA TMSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67092
EAST	2083971	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/30/92	

REMARKS SURFACE SEALED 12/16/92

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SW	0 0-1 4 ft Gravelly Sand with some clay and trace silt, pale yellow (2 5Y8/2) to light yellowish brown (2 5Y6/4) to very dark gray brown (10YR3/2) to reddish yellow (7 5YR6/8) to weak red (10YR4/3), gravel maximum size 0 2', average size 0 1', sand is fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand grains are sub-angular to sub-rounded, clay exhibits low plasticity, gravel consists of quartzite and quartz, sand grains consist of quartz and schist, CaCO3 is present, wet at 0 0-0 7', dry-damp at 0 7-3 6', wet at 3 6-6 7', damp-moist at 6 7-7 1', damp at 7 1-8 2', dry at 8 2-13 3' 40% gravel, 52% sand, 2% silt, 6% clay
				1 60 /2 80	5968	1				1 4-1 6 ft VOA sample obtained from this interval
BH6015DC					5967	2			SW	1 6-3 4 ft Gravelly Sand as described above
BH6015AC				1 60 /2 40	5966	3				3 4-3 6 ft VOA sample obtained from this interval
BH6015ZC					5965	4				3 6-4 4 ft No recovery for this interval
									SW	4 4-5 8 ft Gravelly Sand as described above
				1 60 /1 60	5964	5				
BH6015JC					5963	6				5 8-6 0 ft VOA sample obtained from this interval
									SW	6 0-7 1 ft Gravelly Sand as described above Top of bedrock at 7 1 ft
				2 60 /3 00	5962	7			CLAYEY SILTSTONE	7 1-8 2 ft Clayey Siltstone and some sand, white (2 5Y8/2) to light gray (10YR7/1) with staining, yellow (10YR7/8), sand is fine grained, well sorted, sub-rounded, and predominantly quartz, moderate friability, no apparent bedding, iron staining and trace CaCO3, bedrock is weathered throughout interval with iron oxide staining and trace manganese oxide staining, slightly moist 10% sand, 70% silt, 20% clay
BH6015SC					5961	8			SANDY CLAYSTONE	8 2-8 4 ft Sandy Claystone as described below
										8 4-8 6 ft VOA sample obtained from this interval
					5960	9				8 6-9 0 ft No recovery for this interval
									SANDY CLAYSTONE	9 0-13 3 ft Sandy Claystone with some silt, yellow (10YR7/8-8/8) to light gray (10YR7/1) to gray (10YR5/1) to very dark gray (10YR3/1), white (10YT8/1) CaCO3 zone at 10 6-10 8',
					5959	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 3	GROUND ELEVATION (FT)	5958 90	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752434	AREA DXSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67092
EAST	2083971	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/30/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	5 50 / 4 30	5958 5957 5956 5955 5954 5953 5952 5951 5950 5949	10 11 12 13 14 15 16 17 18 19 20				sand is fine-grained, sub-rounded, predominantly quartz with some plagioclase, argillaceous cementing of sand grains, moderate friability, sand grains consist of plagioclase and quartz, faint horizontal bedding with fractures 60 degrees to 90 degrees and healed with CaCO3 and manganese oxide and iron oxide staining, lower 0 8' of bedrock is very dark gray (10YR3/1) with iron oxide staining with near vertical fracturing and bleaching, dry at 9 0-13 3', moist at 8 2-8 6', 110% recovery due to expansive properties of the claystone 35 3% sand, 13 1% silt, 51 6% clay Total depth at 13 3 ft

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STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 5	GROUND ELEVATION (FT)	5967 70	PROJECT NUMBER	016 RFI/RI	LOG OF BORING NUMBER	
NORTH 752439	AREA TASS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY		
EAST 2083998	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92	67192	
REMARKS SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE / DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%					SC	0 0-0 9 ft Gravelly Sand with some clay, trace silt, white (10YR8/1-8/2), very pale brown (10YR7/3), gravel maximum size 0 2', average size 0 05', angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartz and quartzite, fines exhibit low plasticity, abundant plant roots at 0 0-0 3 ft , caliche present, mottled texture, 0 0-1 1 ft wet, 2 2-3 8 ft moist 36 1% gravel, 44 9% sand, 2 4% silt, 13 3% clay
										0 9-1 1 ft VOA sample obtained from this interval
										1 1-2 2 ft No recovery for this interval
									SC	2 2-3 6 ft Gravelly Sand as described above
									SM	3 6-3 8 ft Gravelly Sand as described above
										3 8-4 0 ft VOA sample obtained from this interval
										4 0-4 2 ft No recovery for this interval
									SM	4 2-5 0 ft Gravelly Sand with some clay and silt, yellowish red (5YR5/8), gravel maximum size 0 025', average size 0 01', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartz, quartzite, and mica, fines exhibit low plasticity, extensive iron oxide staining, twigs present, moist at 3 6-3 8 ft , saturated at 4 2-5 0 ft 24 8% gravel, 49 3% sand, 15 5% silt, 10 4% clay
										Top of bedrock at 5 0 ft
									CLAYEY SILTSTONE	5 0-5 6 ft Clayey Siltstone with some sand, light gray (10YR7/1), very pale brown (10YR7/6), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz and mica, fines exhibit low plasticity, local iron oxide staining, 10% porosity, highly friable, argillaceous cement, dry 6 3% sand, 75% silt, 18 7% clay
										5 6-5 8 ft VOA sample obtained from this interval
										5 8-6 2 ft No recovery for this interval
									SANDY CLAYSTONE	6 2-7 4 ft Sandy Claystone with some silt, trace gravel, light olive brown (2 5Y5/4-5/6), very dark brown (10YR2/2), yellow (10YR7/6), gravel maximum size 0 1', angular, CaCO3 (calcite), sand is fine-grained, well sorted, angular to rounded, CaCO3 (calcite), fines exhibit moderate plasticity, extensive iron oxide staining, mottled texture, 30 degree fractures at 7 1 ft , 6 2-7 6 ft dry, 7 6-11 9 ft wet, 11 9-12 2 ft dry, damp 1 2% gravel, 13 6% sand, 8 5% silt, 76 7% clay
										7 4-7 6 ft VOA sample obtained from this interval
									SANDY CLAYSTONE	7 6-7 8 ft Sandy Claystone as described above
										7 8-8 2 ft No recovery for this interval
									SANDY CLAYSTONE	8 2-9 2 ft Sandy Claystone as described above
										9 2-9 4 ft VOA sample obtained from this interval
									SANDY CLAYSTONE	9 4-12 0 ft Sandy Claystone as described above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 5	GROUND ELEVATION (FT)	5967 70	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752439	AREA (MSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67192
EAST	2083998	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CK SIX	100% CK 100%	2 80 /3 10	5957 5956 5955 5954 5953 5952 5951 5950 5949 5948	10 11 12 13 14 15 16 17 18 19 20				12 0-12 2 ft VOA sample obtained from this interval 12 2-12 5 ft No recovery for this interval Total depth at 12 5 ft

DRAFT

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5967 60	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH 752413	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67292
EAST 2084020	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92	
REMARKS SURFACE SEALED 12/16/92						

DRAFT

DEPTH (FT)	DATUM (FT)	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0	5967		0%	100% 0% 100%				GC	0 0-1 1 ft Clayey Gravel with some sand, trace silt, white (2 5Y8/2), gray (2 5YN5), olive brown (2 5Y6/2), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-0 3 ft, approximately 30% of clay is CaCO3, moist 57 1% gravel, 14 3% sand, 1 4% silt, 27 2% clay
1	5966	BH60158C			1 30 /2 00				1 1-1 3 ft VOA sample obtained from this interval
									1 3-2 0 ft No recovery for this interval
2	5965							GC	2 0-3 1 ft Clayey Gravel as described above
		BH60162C							3 1-3 3 ft VOA sample obtained from this interval
		BH60160C			1 30 /2 00				3 3-4 0 ft No recovery for this interval
3	5964							GC	4 0-4 3 ft Clayey Gravel as described above
4	5963							CL	4 3-5 3 ft Sandy Clay with trace silt and gravel, light brownish gray (2 5Y6/2), white (N9), gravel maximum and average size 0 01' angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded, with trace coarse sand, angular to rounded, consisting of quartz, fines exhibit moderate plasticity, 0-10 degree fractures, 4 6-5 0 ft, healed with CaCO3, appears to be reworked bedrock 0 4% gravel, 34 4% sand, 3 2% silt, 61% clay Top of bedrock at 5 3 ft
5	5962				1 80 /2 00			CLAYEY SILTSTONE	5 3-5 8 ft Clayey Siltstone as described below
		BH60161C							5 8-6 0 ft VOA sample obtained from this interval
6	5961							CLAYEY SILTSTONE	6 0-7 1 ft Clayey Siltstone with some sand, light gray (10YR7/1), white (10YR8/1), sand is fine-grained, well sorted, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, 5-10% porosity, argillaceous cement, highly friable, 80 degree fracture at 6 9-7 1 ft, local iron oxide staining, damp 0% gravel, 10% sand, 67 5% silt, 22 5% clay
7	5960	BH60163C			1 30 /2 00				7 1-7 3 ft VOA sample obtained from this interval
									7 3-8 0 ft No recovery for this interval
8	5959							CLAYSTONE	8 0-9 5 ft Claystone with trace silt and sand, yellow (10YR7/8), light gray (10YR7/1-7/2), sand is fine-grained, well sorted, sub-angular, consisting of quartz, fines exhibit high plasticity less than 5% porosity, low friability, CaCO3 in voids, carbonaceous material present, faint horizontal bedding, extensive iron oxide staining at 7 3-9 5 ft, damp at 7 3-9 7 ft, dry at 9 7-12 0 ft 0% gravel, 1% sand, 4 9% silt, 95 1% clay
9	5958	[illegible]C			2 00 /2 00				9 5-9 7 ft VOA sample obtained from this interval
10		BH60164C							

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0		GROUND ELEVATION (FT)	5957 60	PROJECT NUMBER	006 REI/RI
NORTH	752193	AREA DESS 166 1		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2084020	LOCATOR NUMBER	K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/02/92

REMARKS SURFACE SEALED 12/16/92

LOG OF BORING NUMBER 67292

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5957 5956 5955 5954 5953 5952 5951 5950 5949 5948	10 11 12 13 14 15 16 17 18 19 20			CLAYSTONE	9 7-11 8 Ft Claystone as described above 11 8-12 0 Ft VOA sample obtained from this interval Total depth at 12 0 Ft
	BH6015SC									

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 5	GROUND ELEVATION (FT) 5968 00	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752448	AREA BASS 166 I	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	67392
EAST	2084046	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/04/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	50% 100% 0% 100%		5968	0			ML	0 0-1 0 ft Sandy Silt with some clay and trace gravel, dark grayish brown (10YR4/2), gravel maximum size 0 05', average size 0 02', angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive roots at 0 0-0 7 ft , caliche at 1 0 ft , moist 5 8% gravel, 33 6% sand, 36 4% silt, 24 2% clay
	BH60148C			1 20 / 2 50	5967	1				1 0-1 2 ft VOA sample obtained from this interval 1 2-2 5 ft No recovery for this interval
	BH60167C				5966	2			SM	2 5-3 1 ft Silty Sand with some gravel and clay, reddish yellow (5YR 6/8-7/8), light yellowish brown (2 5Y6/4), gravel maximum size 0 15', average size 0 05', angular to sub-rounded, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining, 2 5-3 3 ft damp, 3 8-4 9 ft dry, 5 6-5 9 ft damp 12 5% gravel, 63 2% sand, 17% silt, 7 3% clay
	BH60174C			0 80 / 1 30	5965	3				3 1-3 3 ft VOA sample obtained from this interval 3 3-3 8 ft No recovery for this interval
					5964	4			SM	3 8-4 7 ft Silty Sand as described above 4 7-4 9 ft VOA sample obtained from this interval 4 9-5 6 ft No recovery for this interval
	BH60197C			1 10 / 1 80	5963	5			SM	5 6-5 9 ft Silty Sand as described above Top of bedrock at 5 9 ft
					5962	6			SILTY CLAYSTONE	5 9-7 4 ft Silty Claystone with trace sand, white (10YR8/1), light gray (10YR7/1), yellow (10YR7/8-8/8), sand is fine-grained, well sorted, angular, consisting of quartz, fines exhibit high plasticity, less than 5% porosity, moderate friability, local and extensive iron oxide staining (especially at 9 5-10 5 ft), CaCO3 in voids at top of bedrock at 5 9 ft and at 6 8 ft , faint horizontal bedding at 10 9 ft outlined by iron oxide staining, carbonaceous material present, 5 9-6 3 ft dry, 6 3-11 5 ft damp 0% gravel, 1% sand, 19 8% silt, 79 2% clay
	BH60213C			2 00 / 2 00	5961	7				7 4-7 6 ft VOA sample obtained from this interval
					5960	8			SILTY CLAYSTONE	7 6-9 3 ft Silty Claystone as described above
				2 40 / 2 40	5959	9				9 3-9 5 ft VOA sample obtained from this interval
	BH60214C					10			SILTY CLAYSTONE	9 5-11 3 ft Silty Claystone as described above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12.5		GROUND ELEVATION (FT)	5958 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752448	AREA DISS 166 1		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67392
EAST	2084046 -	LOCATOR NUMBER K11		BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92	
REMARKS	SURFACE SEALED 12/16/92							

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5958 5957 5956 5955 5954 5953 5952 5951 5950 5949				
	BH021SC			1 50 /2 50	10 11 12 13 14 15 16 17 18 19 20				11 3-11 5 ft VOA sample obtained from this interval 11 5-12 0 ft No recovery for this interval Total depth at 12 5 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5968 10	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752451	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67492
EAST	2084068	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER: BH60226WC, BH60224WC, BH60227WC, BH60228WC, BH60229WC, BH60225WC

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 0 90 /2 10; 1 80 /2 10; 1 10 /1 60; 2 00 /2 50; 1 70 /1 90

DATUM (FT): 5968, 5967, 5966, 5965, 5964, 5963, 5962, 5961, 5960, 5959

DEPTH (FT): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

Unified Soils Classification or Rock Type	Description
ML	0 0-0 4 ft Gravelly Silt with some clay and sand, dark grayish brown (10YR4/2), gravel maximum size 0 05', average size 0 05', angular to sub-angular, consisting of quartzite, sand is medium-grained, poorly graded with trace amounts of fine and coarse sand, angular to sub-angular, consisting of quartz and quartzite, fines exhibit low plasticity, extensive plant roots at 0 0-0 4 ft, wet at 0 0-0 9 ft 22 5% gravel, 19 6% sand, 40 5% silt, 17 4% clay
SC	0 4-0 7 ft Gravelly Sand as described below
	0 7-0 9 ft VOA sample obtained from this interval
	0 9-2 1 ft No recovery for this interval
SC	2 1-3 7 ft Gravelly Sand with some clay and silt, brownish yellow (10YR6/6-6/8), pale olive (5Y6/3), strong brown (7 5YR5/6-4/6), reddish yellow (7 5YR6/8), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining on grains, wet at 0 4-0 9 ft, damp at 2 1-3 9 ft, damp to dry at 4 2-5 3 ft, damp at 5 3-6 7 ft 30 2% gravel, 38 1% sand, 6 5% silt, 15 3% clay
	3 7-3 9 ft VOA sample obtained from this interval
	3 9-4 2 ft No recovery for this interval
SC	4 2-5 1 ft Gravelly Sand as described above
	5 1-5 3 ft VOA sample obtained from this interval
	5 3-5 8 ft No recovery for this interval
SC	5 8-6 7 ft Gravelly Sand as described above Top of bedrock at 6 7 ft
CLAYSTONE	6 7-7 6 ft Claystone with some silt and trace sand, very pale brown (10YR7/4), white (10YR8/2), sand is fine-grained, well sorted, angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, less than 5% porosity, moderate friability, damp, carbonaceous material present 0% gravel, 2 2% sand, 9 8% silt, 88% clay
	7 6-7 8 ft VOA sample obtained from this interval
	7 8-8 3 ft No recovery for this interval
CLAYSTONE	8 3-9 2 ft Claystone as described above
	9 2-9 4 ft VOA sample obtained from this interval
SILTY CLAYSTONE	9 2-10 0 ft Silty Claystone as described below

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5968 10	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752451	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	67492
EAST	2084068	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/04/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
BH60230WC				5958	10				10 0-10 2 ft VOA sample obtained from this interval
								SILTY CLAYSTONE	10 2-11 9 ft Silty Claystone with trace sand, olive yellow (2 5Y6/6), light brownish gray (2 5Y6/2), sand is fine-grained, well sorted, angular to sub-rounded, consisting of quartz, local iron oxide staining, carbonaceous material, less than 5% porosity, moderate friability, dry 0% gravel, 1 4% sand, 29.6% silt, 69% clay
			1 90 /2 20	5957	11				
BH60230WC				5956	12				11 9-12 1 ft VOA sample obtained from this interval
									12 1-12 4 ft No recovery for this interval
									Total depth at 12 4 ft
				5955	13				
				5954	14				
				5953	15				
				5952	16				
				5951	17				
				5950	18				
				5949	19				
					20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5971 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752403	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68292
EAST	2083903	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92	
REMARKS	SURFACE SEALED 12/16/92						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Datum (ft)	Depth (ft)
BH60307WC	0 90 /2 20	5970	0
BH60305WC	1 40 /2 00	5969	1
BH60308WC	1 30 /2 00	5968	2
BH60309WC	1 00 /1 80	5967	3
BH60310WC	0 50 /1 90	5966	4
BH60311WC		5965	5
BH60306WC		5964	6
		5963	7
		5962	8
			9
			10

Unified Soils Classification or Rock Type	Description
CL	0 0-0 7 ft Gravelly Clay with some sand and silt, dark brown (7 5YR3/2) gravel maximum size 0 1', average size 0 01', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, abundant grass and plant roots at 0 0-0 2 ft 30 6% gravel, 19% sand, 20 2% silt, 30 2% clay
	0 7-0 9 ft VOA sample obtained from this interval
	0 9-2 2 ft No recovery for this interval
SC	2 2-3 4 ft Gravelly Sand with some clay, trace silt, white (10YR8/1), light yellowish brown (10YR6/4), yellowish brown (10YR5/8), strong brown (7 5YR4/6), gravel maximum size 0 2', average size 0 025', angular to sub-angular, consisting of quartzite sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining, CaCO3 in voids, caliche at 2 2-3 6 ft , some manganese oxide present, wet 36 8% gravel, 49% sand, 0 7% silt, 13 5% clay
	3 4-3 6 ft VOA sample obtained from this interval
	3 6-4 2 ft No recovery for this interval
SC	4 2-5 3 ft Gravelly Sand as described above
	5 3-5 5 ft VOA sample obtained from this interval
	5 5-6 2 ft No recovery for this interval
SC	6 2-7 0 ft Gravelly Sand as described above
	7 0-7 2 ft VOA sample obtained from this interval
	7 2-8 0 ft No recovery for this interval
CL	8 0-8 2 ft Sandy Clay with some silt and gravel, yellow (10YR7/6), brownish yellow (10YR7/8), light gray-gray (10YR6/1), pale red (10R6/4), weak red (10R5/4), gravel maximum size 0 075' (sandstone clast), sub-rounded, consisting of quartz, sand is fine-grained, well sorted, sub-angular, consisting of quartz, local iron oxide staining, appears to be reworked, dry 6 3% gravel, 31 3% sand, 15 6% silt, 46 8% clay
	8 2-8 5 ft VOA sample obtained from this interval
	8 5-9 9 ft No recovery for this interval Top of bedrock at 9 9 ft
SILTY CLAYSTONE	9 9-12 1 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5971 00	PROJECT NUMBER	006 REI/RI	LOG OF BORING NUMBER
NORTH	752403	AREA IHSS 166 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68292
EAST	2083903	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/08/92	

REMARKS SURFACE SEALED 12/16/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 20 / 2 50	5961 5960 5959 5958 5957 5956 5955 5954 5953 5952	10 11 12 13 14 15 16 17 18 19 20				Silty Claystone with trace sand, reddish yellow (5YR6/8), gray (5YR5/1), sand is fine-grained, well sorted, sub-angular, consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, slightly friable, dry, 0-30 degree fractures at 10 2 ft, 10 3 ft, 10 8 ft, extensive and local iron oxide staining along fractures, carbonaceous material present, extensive iron oxide staining at 9 9 ft 1 5% sand, 9 8% silt, 88 7% clay 11 9-12 1 ft VOA sample obtained from this interval 12 1-12 4 ft No recovery for this interval Total depth at 12 4 ft

DRAFT

APPENDIX C2.8
IHSS 166.2 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT) 5972 30	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752201	AREA IHSS 166 2	CASING DIAMETER (IN)	GEOLOGIST J P GIROD	67592
EAST	2083853	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/13/93	
REMARKS SURFACE SEALED 01/14/93					

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5972	0			SC	0 0-1 4 ft Gravelly Sand with some silt and clay, brown-dark brown (10YR4/3), white (10YR8/2), very pale brown (10YR7/3), pale yellow (2 5Y7/4), gravel maximum size 0 2', average size 0 1', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well-graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, abundant plant roots at 0 0-0 5 ft, voided, CaCO3 in voids, caliche zone at 0 5-1 6 ft, moist 34 5% gravel, 35 2% sand, 6 1% silt, 24 2% clay
				1 60 /2 00	5971	1				
	BH6570WC									
					5970	2				1 4-1 6 ft VOA sample obtained from this interval
										1 6-2 0 ft No recovery for this interval
									SC	2 0-2 9 ft Gravelly Sand as described above
	BH6549WC BH6571WCMS/MSD BH6573WC			1 30 /2 00	5969	3				2 9-3 1 ft VOA sample obtained from this interval
										3 1-3 3 ft VOA sample obtained from this interval
										3 3-4 0 ft No recovery for this interval
					5968	4			SC	4 0-4 4 ft Gravelly Sand as described above
										4 4-4 6 ft VOA sample obtained from this interval
				0 60 /1 80	5967	5				4 6-5 8 ft No recovery for this interval
					5966	6			SC	5 8-7 8 ft Gravelly Sand with some clay and silt, pale red (10R6/3), weak red (10R4/3), dusky red (10R3/3), gravel maximum size 0 1', average size 0 025', angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular, to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, mottled texture, CaCO3 in voids, extensive iron oxide staining, material become finer at 7 1-7 3 ft with no coarse sand or gravel, moist 19 8% gravel, 66 3% sand, 5 6% silt, 8 3% clay
				2 20 /2 20	5965	7				
	BH6574WC									7 8-8 0 ft VOA sample obtained from this interval Top of bedrock at 8 0 ft
					5964	8			SILTY CLAYSTONE	8 0-10 1 ft Silty Claystone with some sand, yellow brown (10YR5/8), olive gray (5Y5/2), olive brown (2 5Y4/4), sand is fine-grained, well sorted, sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, less than 5% porosity, slightly friable, carbonaceous material present, local and extensive iron oxide staining, plant roots at 10 6 ft, possible 0 degree fracture at 8 7 ft healed with iron
	[illegible]WC			1 30 /2 30	5963	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT) 5972 30	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752201	AREA IHSS 166 2	CASING DIAMETER (IN)	GEOLOGIST J P GIROD	67592
EAST	2083853	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/13/93	

REMARKS SURFACE SEALED 01/14/93

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 90 / 1 90	5962 5961 5960 5959 5958 5957 5956 5955 5954 5953	10 11 12 13 14 15 16 17 18 19 20				oxide and manganese oxide, moist 0% gravel, 14 3% sand, 21 4% silt, 64 3% clay 10 1-10 3 ft VOA sample obtained from this interval SILTY CLAYSTONE 10 3-12 0 ft Silty Claystone as described above 12 0-12 2 ft VOA sample obtained from this interval Total depth at 12 2 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 9		GROUND ELEVATION (FT)	5971 30	PROJECT NUMBER	006 [illegible]
NORTH	752207	AREA DXSS 166 2		CASING DIAMETER (IN)		GEOLOGIST	J P GIROD
EAST	2083876	LOCATOR NUMBER	K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/13/93

REMARKS SURFACE SEALED 01/14/93

LOG OF BORING NUMBER 67692

DRAFT

CHEMICAL SAMPLES DEPTH / GRADATIONAL SAMPLES DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%		5971	0			SC	0 0-1 3 ft Gravelly Sand with some clay and silt, reddish yellow (7 5YR 7/6), light gray (2 5Y7/2), yellow brown (10YR5/4), gravel maximum size 0 1', average size 0 02', angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist 23 4% gravel, 52 8% sand, 6 0% silt, 17 8% clay
				1 50/2 00	5970	1				1 3-1 5 ft VOA sample obtained from this interval
					5969	2				1 5-2 0 ft No recovery for this interval
	BH60579C								SC	2 0-3 4 ft Gravelly Sand as described above
	BH60578C			1 60/2 00	5968	3				
	BH60580C									3 4-3 6 ft VOA sample obtained from this interval
										3 6-4 0 ft No recovery for this interval
					5967	4			SC	4 0-4 8 ft Gravelly Sand as described above
				1 80/1 80					SC	4 8-5 6 ft Clayey Sand with some silt and gravel, yellowish red (5YR 5/8), pale brown (10YR6/3), gravel maximum size 0 1', average size 0 02', angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist 14 3% gravel, 30 3% sand, 15 2% silt, 22 7% clay
					5966	5				5 6-5 8 ft VOA sample obtained from this interval
	BH60581C								SC	5 8-6 5 ft Clayey Sand as described above
						6				6 5-6 7 ft VOA sample obtained from this interval
	BH60582C			2 40/2 40	5964	7				6 7-8 2 ft No recovery for this interval
									CL	8 2-8 5 ft Gravelly Clay with some silt and sand, yellow-brown (10YR 5/8), brown (10YR5/3), gravel maximum size 0 05', average size 0 02', angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 in voids, iron oxide staining and carbonaceous material present, moist 29 4% gravel, 17 6% sand, 21 2% silt, 31 8% clay Top of bedrock at 8 5 ft
					5963	8				
	BH60583C			2 00/2 00	5962	9				
						10			CLAYEY SANDSTONE	8 5-10 0 ft Clayey Sandstone as described below

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 9	GROUND ELEVATION (FT)	5971 30	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752207	AREA IHSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67692
EAST	2083876	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/13/93	
REMARKS	SURFACE SEALED 01/14/93						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH605B3WC					10				10 0-10 2 ft VOA sample obtained from this interval
					5961				CLAYEY SANDSTONE	10 2-11 1 ft Clayey Sandstone with some silt, reddish yellow (7 5YR6/8-7/8), light gray (10YR7/1), sand is fine-grained, well sorted with trace medium and coarse sand, angular to sub-rounded, consisting of quartz, fines exhibit low plasticity, less than 10% porosity, high friability, argillaceous and silica cementation, bedding at 20 degrees, moist 41 5% sand, 17 6% silt, 40 9% clay
				1 70 /1 70	5960	11				
	BH605B4WC								CLAYSTONE	11 1-11 7 ft Claystone, light gray (10YR7/1), sand is fine-grained, well sorted, sub-rounded to rounded, consisting of quartz, fines exhibit moderate plasticity, less than 5% porosity, slightly friable, 50 degree fracture at 11 3 ft , healed with silt and sand, local iron oxide staining, moist 2 5% sand, 14 6% silt, 82 9% clay
					5959	12				
					5958	13				11 7-11 9 ft VOA sample obtained from this interval
					5957	14				Total depth at 11 9 ft
					5956	15				
					5955	16				
					5954	17				
					5953	18				
					5952	19				
						20				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT) 5970 40	PROJECT NUMBER 006 REI/RI	LOG OF BORING NUMBER
NORTH	752212	AREA IKSS 166 2	CASING DIAMETER (IN)	GEOLOGIST J P GIROD	67792
EAST	2083904	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/14/93	

REMARKS SURFACE SEALED 01/18/93

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			GC	0 0-1 4 ft Clayey Sand with abundant gravel, trace silt, white (2/5Y8/2), light gray (2 5Y7/2), olive gray (5Y5/2), pinkish white (5Y8/2), gravel maximum size 0 15", average 0 05", angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, CaCO3 in voids, mottled texture, dry 39 4% gravel, 37 5% sand, 9 2% silt, 13 9% clay
					5970	1				1 2-1 6 ft VOA sample obtained from this interval
				1 60 /2 00	5969					1 6-2 0 ft No recovery for this interval
	BH60588C					2			GC	2 0-2 9 ft Clayey Sand as described above
	BH60589C			1 30 /2 00	5968	3				2 9-3 1 ft VOA sample obtained from this interval
					5967					3 1-3 3 ft VOA sample obtained from this interval
										3 3-4 0 ft No recovery for this interval
	BH60590C					4			GC	4 0-4 2 ft Clayey Sand as described above
					5966					4 2-4 4 ft VOA sample obtained from this interval
				0 40 /1 70						4 4-5 7 ft No recovery for this interval
					5965	5				Top of bedrock at 5 7 ft
									SILTY CLAYSTONE	5 7-7 2 ft Silty Claystone with some sand, reddish yellow (7 YR6/8), olive (5Y5/3), light olive brown (2 5Y5/4), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, moderate to slight friability, 45 degree fracture at 6 3 ft, local iron oxide staining, carbonaceous material present, moist
					5964	6				12 2% sand, 26 3% silt, 61 5% clay
				1 40 /2 30						7 2-7 4 ft VOA sample obtained from this interval
	BH60591C				5963	7				7 4-8 0 ft No recovery for this interval
									SILTY CLAYSTONE	8 0-9 9 ft Silty Claystone as described above
					5962	8				
				2 10 /2 10						
					5961	9				
	BH60592C					10				9 9-10 1 ft VOA sample obtained from this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752212	AREA IHSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67792
EAST	2083904	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/14/93	
REMARKS	SURFACE SEALED 01/18/93						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6059ZC	0% 50% 100%	0% 100%	2 00 /2 00	5960 5959	10 11			SILTY CLAYSTONE	10 1-11 9 ft Silty Claystone as described above
	BH6059ZC				5958 5957 5956 5955 5954 5953 5952 5951	12 13 14 15 16 17 18 19 20				11 9-12 1 ft VOA sample obtained from this interval Total depth at 12 1 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752216	AREA IHSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67892
EAST	2083928	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/14/93	
REMARKS	SURFACE SEALED 01/18/93						

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SC	0 0-0 4 ft Gravelly Sand with abundant clay, trace silt, white (5Y8/2), pale yellow (5Y7/3), light gray (5Y7/2), brown (10YR5/3), gravel maximum size 0 075', average size 0 01', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartzite and quartz, fines exhibit moderate plasticity, abundant plant roots at 0 0-0 4', CaCO3 in voids dry 25 5% gravel, 38 7% sand, 3 6% silt, 32 0% clay
	B60594C			1 30 /2 00	5970	1			SC	0 4-1 1 ft Gravelly Sand as described below
										1 1-1 3 ft VOA sample obtained from this interval
					5969					1 3-2 0 ft No recovery for this interval
	B60595C					2			SC	2 0-3 5 ft Gravelly Sand with some clay and silt, white (2 5Y8/2), pale yellow (5Y8/3), gravel maximum size 0 2', average size 0 05' angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartz and quartzite, fines exhibit low plasticity, plant roots at 0 4-1 1 ft , caliche present 32 7% gravel, 42 4% sand, 7 5% silt, 17 4% clay
				1 70 /2 00	5968					
	B60596C					3				3 5-3 7 ft VOA sample obtained from this interval
					5967					3 7-4 0 ft No recovery for this interval
	B60597C			0 80 /1 60		4			SC	4 0-4 6 ft Gravelly Sand as described above
					5966					4 6-4 8 ft VOA sample obtained from this interval
										4 8-5 6 ft No recovery for this interval
					5965	5			CL	5 6-5 8 ft Silty Clay with some sand and gravel, light gray-gray (5Y6/1), pinkish white (5YR8/2), maximum and average size 0 02', angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded with trace coarse-grained sand angular to sub-angular, consisting of quartz and quartzite, fines exhibit high plasticity, plant roots, CaCO3 in voids, appearance of reworked bedrock, dry 6 2% gravel, 18 5% sand, 18 9% silt, 56 4% clay Top of bedrock at 5 8 ft
					5964	6			SILTY CLAYSTONE	5 8-7 3 ft Silty Claystone as described below
	B60600C			1 90 /2 60						7 3-7 5 ft VOA sample obtained from this interval
					5963	7				7 5-8 2 ft No recovery for this interval
									SILTY CLAYSTONE	8 2-9 9 ft Silty Claystone with trace sand, reddish yellow (7 5YR6/8) to gray (7/5YRN6), sand is fine-grained, well sorted, sub-angular, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, less than 5% porosity, slightly friable, 0-45 degree fractures at 6 5', 6 6', 8 4-8 6', 9 1-9 4', 10 3-11 0', healed with fine to coarse sand and silt, cob webs and plant roots present, CaCO3 in voids, moist
	B60601C				5962	8				
	B60602C			1 90 /1 90		9				
					5961					
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752216	AREA TASS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67892
EAST	2083928	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/14/93	

REMARKS SURFACE SEALED 01/18/93

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	96680UC	GR	100% GR 100%	1 50 / 1 90	5960	10				9 9-10 1 ft
									SILTY CLAYSTONE	10 1-11 4 ft Silty claystone as described above
	96680VC				5959	11				11 4-11 6 ft VOA sample obtained from this interval
										11 6-12 0 ft No recovery for this interval
					5958	12				Total depth at 12 0 ft
					5957	13				
					5956	14				
					5955	15				
					5954	16				
					5953	17				
					5952	18				
					5951	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752220	AREA (HSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67992
EAST	2083953	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/15/93	

REMARKS SURFACE SEALED 01/18/93

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CHEMICAL SAMPLE GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%	5970	0			SC	0 0-1 1 ft Clayey Sand with some gravel and silt, white (5Y8/2), pale yellow (5Y7/3), light gray (5Y7/2), brown (10YR5/3), gravel maximum size 0 2", average size 0 05", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit low plasticity, plant roots at 0 0-0 7 ft., caliche present, local iron oxide staining, dry 20 4% gravel, 63% sand, 11% silt, 5 6% clay
				1 30 /2 00	5969	1				1 1-1 3 ft VOA sample obtained from this interval
	BH60608C									1 3-2 0 ft No recovery for this interval
					5968	2			SC	2 0-3 0 ft Clayey Sand as described above
	BH60609C			1 40 /2 00						3 0-3 2 ft VOA sample obtained from this interval
	BH60607C				5967	3				3 2-3 4 ft VOA sample obtained from this interval
	BH60607MS/MSD									3 4-4 0 ft No recovery for this interval
					5966	4			SC	4 0-4 8 ft Clayey Sand as described above
									CL	4 8-5 3 ft Sandy Clay with some silt and trace gravel, strong brown (7 5YR4/6-5/8), reddish-yellow (7 5YR6/8), gravel maximum size and average size 0 01", sub-angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining, weathered, appears to be reworked, dry 5 9% gravel, 37 1% sand, 14 3% silt, 42 7% clay
				1 50 /2 00	5965	5				5 3-5 5 ft VOA sample obtained from this interval
	BH60608C									5 5-6 0 ft No recovery for this interval Top of bedrock at 6 0 ft
					5964	6			SANDY CLAYSTONE	6 0-7 6 ft Sandy Claystone as described below
				1 80 /2 20						7 6-7 8 ft VOA sample obtained from this interval
					5963	7				7 8-8 2 ft No recovery for this interval
	BH60605C								SANDY CLAYSTONE	8 2-9 7 ft Sandy Claystone with trace silt, light gray to gray (7 5YR/N5), reddish yellow (7 5YR5/8), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, slightly friable, iron oxide staining local, CaCO3 in voids and fractures, 0 degree fracture at 8 4', 9 6', 9 8' healed with fine- to medium-grained sand and silt, 60 degree fractures faint, dry 6 0-8 2 ft , moist 8 2-9 9 ft 16 7% sand, 4 2% silt, 79 1% clay
	BH60605C				5962	8				
				1 70 /2 00						9 7-9 9 ft VOA sample obtained from this interval
					5961	9				9 9-10 2 ft No recovery for this interval
	BH60610C					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752220	AREA DHSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	67992
EAST	2083953	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/15/93	

REMARKS SURFACE SEALED 01/18/93

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5960 5959 5958 5957 5956 5955 5954 5953 5952 5951	10 11 12 13 14 15 16 17 18 19 20				Total depth at 10 2 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5969 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752225	AREA IHSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	68092
EAST	2083979	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/15/93	
REMARKS	SURFACE SEALED 1/18/93						

DRAFT

CHEMICAL, RADIOLOGICAL & GEOTECH DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SC	0 0-1 5 ft Gravelly Sand with some clay and trace silt, white (5Y8/2), light gray (5Y7/2), pale yellow (5Y7/3), gravel maximum size 0 15", average size 0 05", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, iron oxide staining local, plant roots at 0 0-0 4 ft , CaCO3 present, manganese oxide present, damp 30 2% gravel, 55 3% sand, 1 4% silt, 13% clay
				1 70/2 00	5969	1				1 5-1 7 ft VOA sample obtained from this interval
BH60613C										1 7-2 0 ft No recovery for this interval
					5968	2			SC	2 0-3 2 ft Gravelly Sand as described above
BH60610C										
				1 40/2 00	5967	3				3 2-3 4 ft VOA sample obtained from this interval
BH60614C										3 4-4 0 ft No recovery for this interval
					5966	4			CH	4 0-4 5 ft Silty Clay with trace sand, light gray-gray (10YR6/1-5/1), yellow brown (10YR5/8), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate to high plasticity, carbonaceous material present, local iron oxide staining, damp 3 4% sand, 9 7% silt, 86 9% clay
BH60615C				1 10/1 60	5965	5			SC	4 5-4 9 ft Gravelly Sand with some clay, trace silt, yellow brown (10YR5/8), brownish yellow (10YR6/8), gravel maximum size 0 1", average size 0 02", angular to sub-angular, consisting of quartzite, fines exhibit low plasticity, iron oxide staining, caliche at 4 5 ft , CaCO3 present, damp 29% gravel, 52 8% sand, 2 7% silt, 15 5% clay
BH60616C										4 9-5 1 ft VOA sample obtained from this interval
BH60620C					5964	6				5 1-5 6 ft No recovery for this interval
				1 90/2 60	5963	7			SC	5 6-5 8 ft Gravelly Sand as described above Top of bedrock at 5 8 ft
									SILTY CLAYSTONE	5 8-6 3 ft Silty Claystone as described below
					5962	8				6 3-6 5 ft VOA sample obtained from this interval
										6 5-6 7 ft VOA sample obtained from this interval
										6 7-8 2 ft No recovery for this interval
BH60612C				2 00/2 00	5961	9			SILTY CLAYSTONE	8 2-10 0 ft Silty Claystone with trace sand, brownish yellow (10YR6/8), light gray-gray (10YR6/1), sand is fine- to medium-grained, poorly graded, sub-rounded, consisting of quartz, fines exhibit high plasticity, less than 5% porosity, slightly friable, iron oxide and manganese oxide staining, 0 degree fracture at 11 6 ft healed with CaCO3, 70 degree fracture at 10 9 ft , CaCO3 in voids, carbonaceous material present,
					5960	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5969 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752225	AREA INSS 166 2	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	68092
EAST	2083979	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/15/93	

REMARKS SURFACE SEALED 1/18/93

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CHEMICAL &/OR GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
										Faint horizontal bedding, damp
										2 8% sand, 14 6% silt, 82 6% clay
										10 0-10 2 ft VOA sample obtained from this interval
					5959	10			SILTY CLAYSTONE	10 2-11 9 ft Silty Claystone as described above
				1 90 / 1 90		11				
					5958	12				11 9-12 1 ft VOA sample obtained from this interval
										Total depth at 12 1 ft
					5957	13				
					5956	14				
					5955	15				
					5954	16				
					5953	17				
					5952	18				
					5951	19				
					5950	20				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT)	5971 40	PROJECT NUMBER	006 REI/RI	LOG OF BORING NUMBER
NORTH	752228	AREA DISS 166 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	68192
EAST	2084001	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/11/93	
REMARKS	SURFACE SEALED 01/12/93						

DRAFT

CHEMICAL, WATER, GRADATIONAL & DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%					GC	0 0-0 8 ft Sandy Gravel with some clay and trace silt, very dark brown (10YR2/2), very pale brown (10YR7/3), pale olive (5Y6/3), light yellowish brown (10YR6/4), gravel maximum size 0 2", average size 0 075", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots 1/8"-1/4", 0 0-0 8 ft, caliche at 2 0-3 0 ft, local iron oxide staining, moist 37 3% gravel, 38 6% sand, 2 8% silt, 11 3% clay
	BH60552AC			1 10 /2 00	5971	0				0 8-1 1 ft VOA sample obtained from this interval
					5970	1				1 1-2 0 ft No recovery for this interval
	BH60554AC			1 40 /2 00	5969	2			GC	2 0-3 1 ft Sandy Gravel as described above
	BH60558AC				5968	3				3 1-3 4 ft VOA sample obtained from this interval
										3 4-4 0 ft No recovery for this interval
				1 70 /2 00	5967	4			GC	4 0-5 7 ft Sandy Gravel as described above
	BH60559AC				5966	5				5 7-6 0 ft VOA sample obtained from this interval
					5965	6			CL	6 0-6 7 ft Sandy Clay with some silt, trace gravel, pale brown (10YR6/3), gravel maximum size 0 1", average 0 02", angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, moist 5 8% gravel, 34 3% sand, 18% silt, 41 9% clay
	BH60560AC			1 00 /2 00	5964	7				6 7-7 0 ft VOA sample obtained from this interval
										7 0-8 0 ft No recovery for this interval
					5963	8			CH	8 0-9 9 ft Silty Clay with trace sand, gray (10YR5/1-6/1), brown (10YR5/3), light olive brown (2 5Y5/4-6/1), brownish yellow (10YR6/8), sand is fine-grained, well sorted, with trace medium to coarse sand, angular to sub-rounded, consisting of quartz, fines exhibit high plasticity, iron oxide staining at 10 2-11 3 ft, CaCO3 in voids, mottled texture, carbonaceous material present, grass stems at 12 1-13 0 ft, moist 8 8% sand, 18 2% silt, 73% clay
				2 20 /2 20	5962	9				
	BH60555AC									
	BH60556AC					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT) 5971 40	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752228	AREA IHSS 166 2	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	68192
EAST	2084001	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/11/93	

REMARKS SURFACE SEALED 01/12/93

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6056UC	0% 50% 100%	0% 100%			10				9 9-10 2 ft VOA sample obtained from this interval
					5961				CH	10 2-11 8 ft Silty Clay as described above
				1 90 /2 80	5960	11				
	BH6056UC					12				11 8-12 1 ft VOA sample obtained from this interval
					5959					12 1-13 0 ft No recovery for this interval
					5958	13				Total depth at 13 0 ft
					5957	14				
					5956	15				
					5955	16				
					5954	17				
					5953	18				
					5952	19				
						20				

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APPENDIX C2.9
IHSS 166.3 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	12 3	GROUND ELEVATION (FT)	5972 80	PROJECT NUMBER	006 RFI/RI
NORTH	752302	AREA IHSS 166 3		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2083872	LOCATOR NUMBER	K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92
REMARKS	SURFACE SEALED 12/18/92						

LOG OF BORING NUMBER

68392

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Sample numbers: BH60334WCMS/MSD, BH60334WC, BH60331WC, BH60335WC, BH60274WC, BH60336WC, BH60337WC, BH60338WC

Recovery/interval: 0 80 /2 10; 1 20 /2 20; 1 20 /1 70; 1 90 /1 90; 0 90 /2 30

Datum (FT): 5972, 5971, 5970, 5969, 5968, 5967, 5966, 5965, 5964, 5963

Unified Soils Classification or Rock Type	Description
CL	0 0-0 4 ft Sandy Clay as described below
	0 4-0 6 ft VOA sample obtained from this interval
	0 6-0 8 ft VOA sample obtained from this interval
	0 8-2 1 ft No recovery for this interval
CL	2 1-3 3 ft Sandy Clay with some silt and gravel, white (N9), very pale brown (10YR8/3), very dark brown (10YR2/2), pale yellow (5Y7/3), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartzite and quartz, fines exhibit moderate plasticity, abundant plant roots at 0 0-0 2 ft, caliche zone at 2 1-3 5 ft, CaCO3 in voids, iron oxide staining at 4 8-5 3 ft, wet to damp at 0 0-0 8 ft, dry at 2 1-3 5 ft, 4 3-5 5 ft, damp to wet at 6 0-7 2 ft 17% gravel, 24 1% sand, 17 8% silt, 41 2% clay
	3 3-3 5 ft VOA sample obtained from this interval
	3 5-4 3 ft No recovery for this interval
CL	4 3-5 1 ft Sandy Clay as described above
	5 1-5 3 ft VOA sample obtained from this interval
	5 3-5 5 ft VOA sample obtained from this interval
	5 5-6 0 ft No recovery for this interval
CL	6 0-7 2 ft Sandy Clay as described above
SC	7 2-7 7 ft Clayey Sand with some gravel, trace silt, yellowish red (5YR5/8), brownish yellow (10YR6/8), very pale brown (10YR7/4), gravel maximum size 0 1', average size 0 02', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining, manganese oxide present, CaCO3 in voids, clasts of red sandstone, slump bedrock at 7 3-7 8 ft, claystone with fine to coarse sand and caliche 20% gravel, 37 5% sand, 4 3% silt, 38 2% clay
	7 7-7 9 ft VOA sample obtained from this interval
SC	7 9-8 6 ft Clayey Sand as described above
	8 6-8 8 ft VOA sample obtained from this interval
	8 8-10 2 ft No recovery for this interval Top of bedrock at 10 2 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 3	GROUND ELEVATION (FT)	5972 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752302	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68392
EAST	2083872	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92	

REMARKS SURFACE SEALED 12/18/92

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE / DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 10 /2 10	5962 5961 5960 5959 5958 5957 5956 5955 5954 5953	10 11 12 13 14 15 16 17 18 19 20			CLAYSTONE	10 2-12 1 ft Claystone with some silt, trace sand, sand is fine-grained, well sorted, sub-angular, consisting of quartz, exhibits moderate to high plasticity, less than 5% porosity, slightly friable, moist, carbonaceous material present, 0 1" piece of gravel pushed through core by auger to 10 7 ft 2% sand, 9 8% silt, 88 2% clay
										12 1-12 3 ft VOA sample obtained from this interval
										Total depth at 12 3 ft

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STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5971 50	PROJECT NUMBER	006 RFI/R1	LOG OF BORING NUMBER	
NORTH 752308	AREA 1985 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY		68492
EAST 2083898	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/10/92		
REMARKS SURFACE SEALED 12/18/92							

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SDS	100% GR 100%		5971 5970 5969 5968 5967 5966 5965 5964 5963 5962	0 1 2 3 4 5 6 7 8 9 10			GC	0 0-0 9 ft Clayey Gravel with some sand and silt, grayish brown (10YR5/2), white (10YR8/2), gravel maximum size 0 1', average size 0 01', angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, wet, grass and plant roots at 0 0-0 5 ft , caliche at 0 5-1 1 ft 28 8% gravel, 23 6% sand, 11 9% silt, 35 7% clay
				1 10 /2 10						0 9-1 1 ft VOA sample obtained from this interval
										1 1-2 1 ft No recovery for this interval
									SC	2 1-2 5 ft Gravelly Sand as described below
				0 50 /0 90						2 5-3 0 ft No recovery for this interval
									SC	3 0-3 5 ft Gravelly Sand with some clay, some silt, very pale brown (10YR7/3), white (10YR8/2), light yellowish brown (2 5Y6/4), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartz and quartzite, fines exhibit high plasticity, caliche cementation, iron oxide staining, dry 31 1% gravel, 47 1% sand, 6 5% silt, 15 3% clay
				0 70 /0 70						3 5-3 7 ft VOA sample obtained from this interval
				1 60 /2 30					SC	3 7-4 3 ft Gravelly Sand as described above
									CL	4 3-5 1 ft Sandy Clay as described below
										5 1-5 3 ft VOA sample obtained from this interval
										5 3-6 0 ft No recovery for this interval
				1 20 /2 90					CL	6 0-7 0 ft Sandy Clay with some gravel and silt, light yellowish brown (2 5Y6/4), pale olive (5Y6/3), white (5Y8/1), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity 17 9% gravel, 25 4% sand, 11 3% silt, 45 4% clay
										7 0-7 2 ft VOA sample obtained from this interval
										7 2-8 0 ft No recovery for this interval
									CL	8 0-8 4 ft Sandy Clay as described above Top of bedrock at 8 4 ft
									SILTY CLAYSTONE	8 4-9 7 ft Silty Claystone as described below
				1 90 /2 20						9 7-9 9 ft VOA sample obtained from this interval
										9 9-10 2 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT) 5971 50	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752308	AREA IRSS 166 3	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	68492
EAST	2083898	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/10/92	

REMARKS SURFACE SEALED 12/18/92

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CHEMICAL SAMPLE / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 90 /1 90	5961 5960 5959 5958 5957 5956 5955 5954 5953 5952	10 11 12 13 14 15 16 17 18 19 20			SILTY CLAYSTONE	10 2-11 9 ft Silty Claystone with some sand, gray (10YR5/1), dark grayish brown (10YR4/2), sand is fine-grained, well sorted, angular, consisting of quartz, fines exhibit moderate to high plasticity, less than 5% porosity, 8 4-9 9 ft slightly friable, 9 9-12 1 ft moderately friable, iron oxide staining along faint horizontal bedding at 11 7 ft , CaCO3 in voids, carbonaceous material present, dry 22 3% sand, 23 4% silt, 54 5% clay 11 9-12 1 ft VOA sample obtained from this interval Total depth at 12 1 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 60	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752315	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68592
EAST	2083924	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/11/92	
REMARKS	SURFACE SEALED 12/18/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
6 2		0% 50% 100%	0% 100%			0			CL	0 0-0 8 ft Gravelly Clay with some sand and silt, very dark brown (10YR2/2), white (10YR8/1-8/2), gravel maximum size 0 1', average size 0 025', angular, consisting of quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular consisting of quartz and quartzite, fines exhibit moderate plasticity, caliche present, grass and plant roots, dry 19 2% gravel, 18% sand, 6 3% silt, 56 5% clay
	BH6035WC			1 00 /2 10	5970	1				0 8-1 0 ft VOA sample obtained from this interval
					5969	2				1 0-2 1 ft No recovery for this interval
	BH6035WC BH6034WC			0 90 /2 20	5968 5967	3			SC	2 1-2 8 ft Clayey Sand with some gravel and silt, very pale brown (10YR7/3-8/3), gravel maximum size 0 1', average size 0 02', angular to sub-angular, consisting of quartzite, sand is fine- to medium-grained, poorly graded, angular to rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, caliche is present in matrix and as a cement, iron oxide staining, dry 15 1% gravel, 55 2% sand, 7 4% silt, 22 3% clay
						4				2 8-3 0 ft VOA sample obtained from this interval
										3 0-4 3 ft No recovery for this interval
				1 50 /1 90	5966 5965	5			GC	4 3-5 6 ft Sandy Gravel with some clay, trace silt, strong brown (7 5YR5/6-5/8), light yellowish brown (2 5Y6/4), gravel maximum size 0 2', average size 0 1', angular to sub-angular 6 6-5 8 ft VOA sample obtained from this interval well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining, fine-grained, damp 47% gravel, 31 2% sand, 1 1% silt, 20 7% clay
	BH6035WC					6			GC	6 2-6 6 ft Sandy Gravel as described above
					5964					6 6-6 8 ft VOA sample obtained from this interval
				0 60 /2 10	5963	7				6 8-8 3 ft No recovery for this interval Top of bedrock at 8 3 ft
					5962	8			CLAYSTONE	8 3-9 7 ft Claystone with trace silt and sand, gray (10YR5/1), brownish yellow (10YR5/8), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit high plasticity less than 5% porosity, slightly friable, CaCO3 in voids, local iron oxide staining, moist 1 2% sand, 4 9% silt, 93 9% clay
				1 70 /1 80	5961	9			SANDY CLAYSTONE	9 7-9 8 ft Sandy Claystone as described below
	BH6035WC					10				9 8-10 0 ft VOA sample obtained from this interval

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT) 5970 60	PROJECT NUMBER OU6 RFI/RI	LOG OF BORING NUMBER	
NORTH 752315	AREA IHSS 166 3	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	68592	
EAST 2083924	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/11/92		

REMARKS SURFACE SEALED 12/18/92

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CHEMICAL SAMPLE DEPTH / GRADATIONAL BASE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						10				10 0-10 1 ft No recovery for this interval
					5960				SANDY CLAYSTONE	10 1-11 8 ft Sandy Claystone with some silt, gray (10YR5/1), very pale brown (10YR7/4), sand is fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, CaCO3 present, local iron oxide with extensive iron oxide staining along horizontal fractures at 11 2 ft, 30 degree fracture at 10 4 ft, moist 30% sand, 14% silt, 56% clay
				1 90/1 90		11				
	BH6035AC				5959					
						12				11 8-12 0 ft VOA sample obtained from this interval
										Total depth at 12 0 ft
					5958	13				
					5957	14				
					5956	15				
					5955	16				
					5954	17				
					5953	18				
					5952	19				
					5951	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752319	AREA INSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68692
EAST	2083946	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	
REMARKS	SURFACE SEALED 12/18/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH — SAMPLE NUMBER — SAMPLE GRAIN SIZE (0% 50% 100%) — PERCENT RECOVERY (0% 100%) — RECOVERY/INTERVAL — DATUM (FT) — DEPTH (FT) — WELL OR PIEZOMETER CONSTRUCTION — LITHOLOGY — UNIFIED SOILS CLASSIFICATION OR ROCK TYPE — DESCRIPTION

Sample Number	Recovery/Interval	Datum (FT)	Unified Soils Classification or Rock Type	Description
		5970	SC	0 0-1 1 ft Clayey Sand with abundant gravel, trace silt, light gray (10YR7/2), very pale brown (10YR7/3), pale olive (10YR6/3-6/4), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz, quartzite and mica, fines exhibit moderate to high plasticity, grass roots at 0 0-0 9 ft, caliche at 2 1-2 9 ft, some iron oxide staining on gravel, damp to moist at 0 0-1 3 ft, dry to damp at 2 1-3 4 ft, damp at 4 1-5 8 ft 27 8% gravel, 41% sand, 3 1% silt, 28 1% clay
BH60366WC	1 30 /2 10	5969		
		5968		1 1-1 3 ft VOA sample obtained from this interval
				1 3-2 1 ft No recovery for this interval
BH60364WC	1 30 /2 00	5967	SC	2 1-3 2 ft Clayey Sand as described above
BH60367WC				3 2-3 4 ft VOA sample obtained from this interval
				3 4-4 1 ft No recovery for this interval
		5966	SC	4 1-5 4 ft Clayey Sand as described above
	1 70 /1 70	5965		
BH60372WC				5 4-5 6 ft VOA sample obtained from this interval
BH60368WC				5 6-5 8 ft VOA sample obtained from this interval
		5964		5 8-8 0 ft No recovery for this interval Top of bedrock at 8 0 ft
	0 00 /2 20	5963		
		5962	CLAYSTONE	8 0-9 7 ft Claystone with some sand and trace silt, grayish brown (2 5Y5/2), gray (10YR5/1), sand is fine-grained, well sorted angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate to high plasticity, less than 5% porosity, slightly friable, some iron oxide staining, dry, 0 2' piece of cobble caught by auger and pushed to 8 2' 7 4% sand, 4 6% silt, 88% clay
BH60365WC	1 90 /2 20	5961		
				9 7-9 9 ft VOA sample obtained from this interval
BH60369WC				9 9-10 2 ft No recovery for this interval

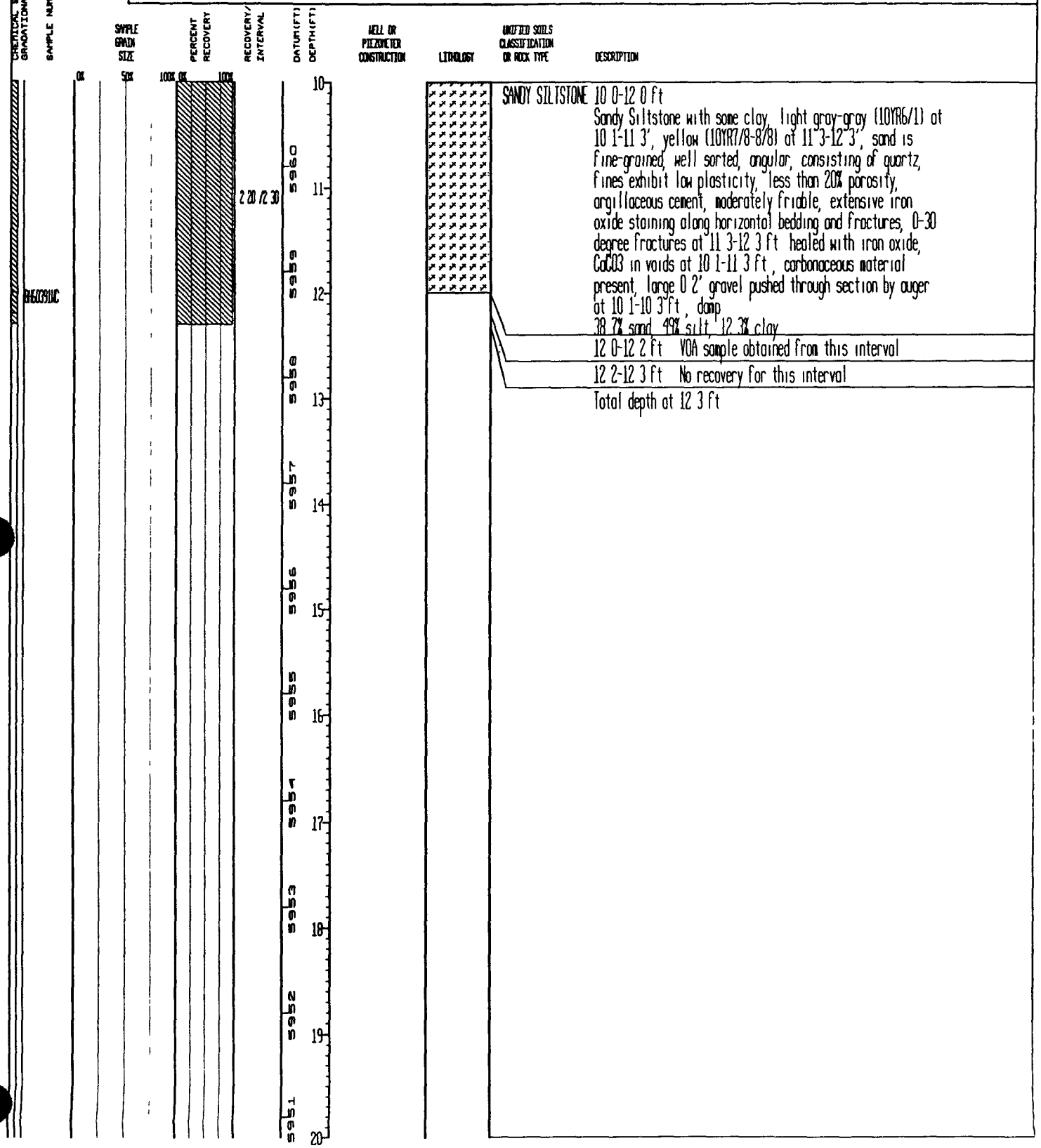
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752319	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68692
EAST	2083946	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	
REMARKS	SURFACE SEALED 12/18/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6037WC			1 80 /1 80	5960 5959 5958 5957 5956 5955 5954 5953 5952 5951	10 11 12 13 14 15 16 17 18 19 20			SANDY SILTSTONE	10 2-11 8 ft Sandy Siltstone with some clay, grayish brown (2 5Y5/2), gray (10YR5/1), yellowish brown (10YR5/8), sand is fine-grained, well sorted, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, less than 10% porosity, argillaceous and silica cement, moderately friable, small horizontal fractures at 11 3 ft healed with silt, dry 35% sand, 42 3% silt, 22 7% clay 11 8-12 0 ft VOA sample obtained from this interval Total depth at 12 0 ft

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 3	GROUND ELEVATION (FT) 5970 80	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER		
NORTH 752324	AREA DESS 166 3	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	68792		
EAST 2083973	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/14/92			
REMARKS SURFACE SEALED 12/18/92						

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%					CL	0 0-0 9 ft Gravelly Clay with some sand and silt, dark brown (10YR3/3), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, fines exhibit moderate plasticity, abundant plant roots at 0 0-0 3 ft, caliche at 0 9 ft, CaCO3 in voids, moist 23 8% gravel, 21 1% sand, 22 0% silt, 33 1% clay
	BH60886C			1 10 /2 10	5970	1				0 9-1 1 ft VOA sample obtained from this interval
					5969					1 1-2 1 ft No recovery for this interval
	BH60894C				5968	2			GC	2 1-3 4 ft Sandy Gravel with some clay, trace silt, white (10YR8/2), very pale brown (10YR8/3), pale olive (5Y6/4), white (5Y8/2) grayish olive green (5Y3/2), gravel maximum size 0 15', average size 0 075', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, dry at 2 1-4 8 ft, damp at 6 0-6 9 ft 77% gravel, 12 3% sand, 1 1% silt, 9 6% clay
				1 50 /1 90		3				
	BH60897C				5967					3 4-3 6 ft VOA sample obtained from this interval
						4				3 6-4 0 ft No recovery for this interval
	BH60898C			0 80 /1 40	5966				GC	4 0-4 6 ft Sandy Gravel as described above
						5				4 6-4 8 ft VOA sample obtained from this interval
				0 00 /0 60	5965					4 8-6 0 ft No recovery for this interval
						6			GC	6 0-6 7 ft Sandy Gravel as described above
	BH60899C				5964					6 7-6 9 ft VOA sample obtained from this interval
				0 50 /2 00		7				6 9-8 0 ft No recovery for this interval Top of bedrock at 8 0 ft
					5963					
						8			SANDY CLAYSTONE	8 0-9 7 ft Sandy Claystone with some silt, light gray (10YR7/1), brownish yellow (10YR6/8), sand is fine-grained, well sorted sub-angular, consisting of quartzite and quartz, fines exhibit moderate plasticity, less than 5% porosity, slightly friable, 90 degree fracture at 9 5-9 7 ft healed with CaCO3 local iron oxide staining, CaCO3 nodules, damp 13 1% sand, 8 7% silt, 78 2% clay
	BH60895C			2 00 /2 00	5962					
	BH60902C					9			SANDY SILTSTONE	9 7-9 8 ft Sandy Siltstone as described below
					5961					9 8-10 0 ft VOA sample obtained from this interval
	BH60900C					10				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 3	GROUND ELEVATION (FT)	5970 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH 752324	AREA DHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68792
EAST 2083973	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/14/92	
REMARKS SURFACE SEALED 12/18/92						



SANDY SILTSTONE 10 0-12 0 ft

Sandy Siltstone with some clay, light gray-gray (10YR6/1) at 10 1-11 3', yellow (10YR7/8-8/8) at 11 3-12 3', sand is fine-grained, well sorted, angular, consisting of quartz, fines exhibit low plasticity, less than 20% porosity, argillaceous cement, moderately friable, extensive iron oxide staining along horizontal bedding and fractures, 0-30 degree fractures at 11 3-12 3 ft healed with iron oxide, CaCO3 in voids at 10 1-11 3 ft, carbonaceous material present, large 0 2" gravel pushed through section by auger at 10 1-10 3 ft, damp

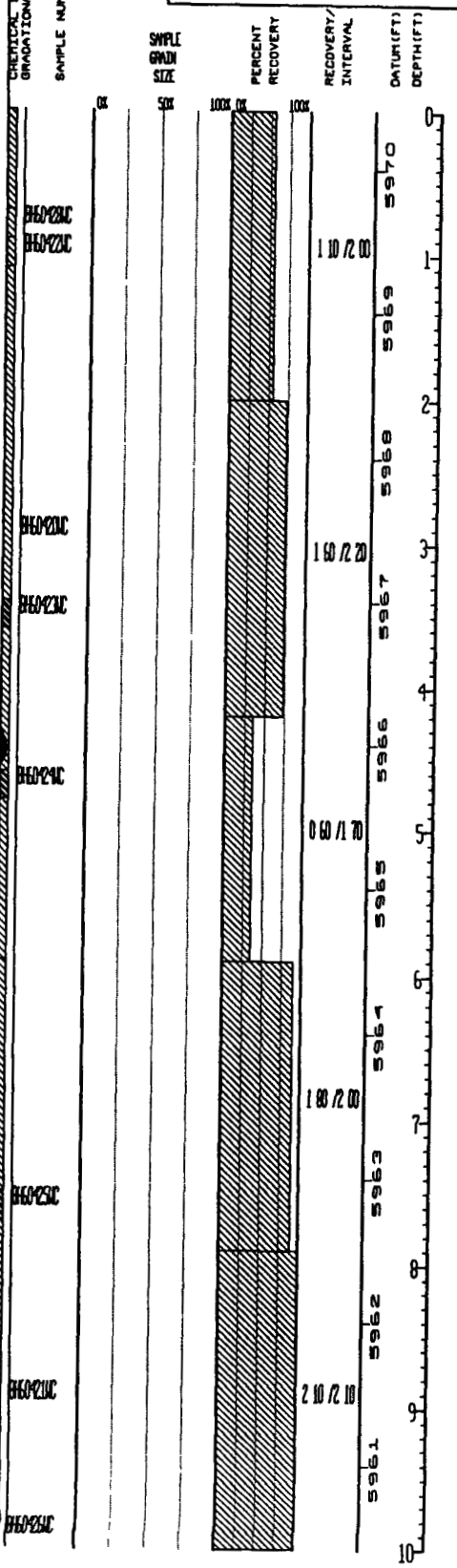
38 7% sand, 49% silt, 12 3% clay

12 0-12 2 ft VOA sample obtained from this interval

12 2-12 3 ft No recovery for this interval

Total depth at 12 3 ft

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 752327	AREA DISS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68892	
EAST 2083999	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/15/92		
REMARKS SURFACE SEALED 12/18/92							



WELL OR PIEZOMETER CONSTRUCTION

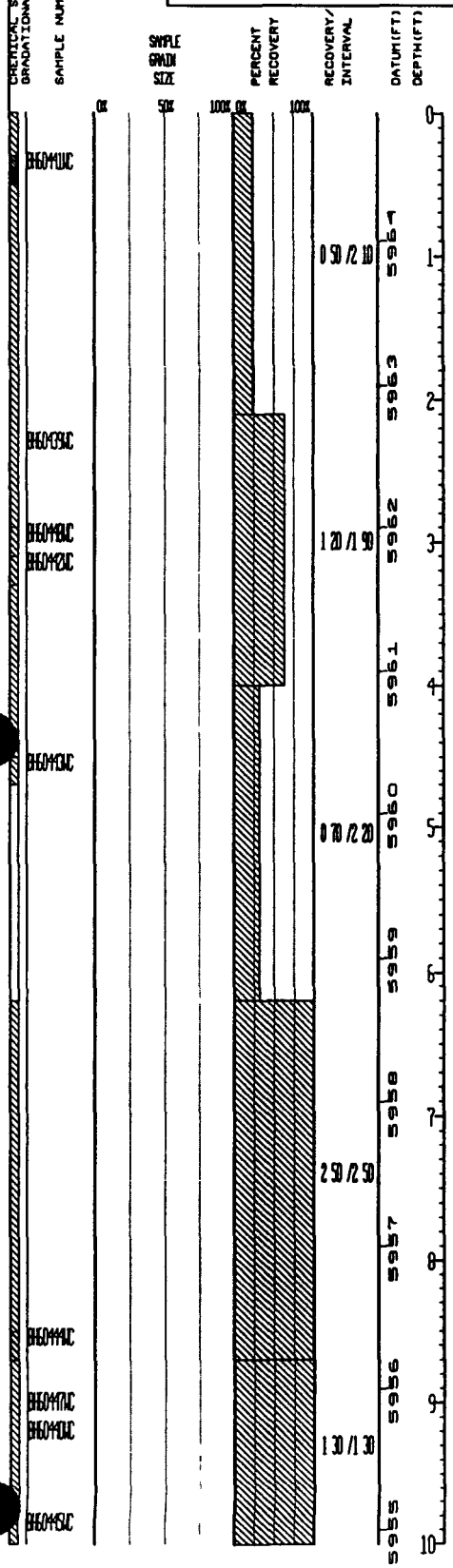
LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	SC	0 0-0 7 ft Clayey Sand with some silt and gravel, very dark grayish brown (10YR3/2), gravel maximum size 0 15', average size 0 02', angular to sub-rounded, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, abundant plant roots and stems at 0 0-0 4 ft , CaCO3 in voids, moist 11 9% gravel, 41 4% sand, 18 7% silt, 28% clay
		0 7-0 9 ft VOA sample obtained from this interval
		0 9-1 1 ft VOA sample obtained from this interval
		1 1-2 0 ft No recovery for this interval
	GW	2 0-3 4 ft Sandy Gravel with trace silt and clay, pale yellow (5Y7/4), very pale brown (10YR8/4), gravel maximum size 0 2', average size 0 05', angular to sub-angular, consisting of quartzite, sand is medium-grained, poorly graded, with trace fine and coarse sand, angular to sub-rounded, consisting of quartz and quartzite, caliche at 2 0-2 2 ft , CaCO3 in matrix and as a cement as well as argillaceous cement, dry 77 6% gravel, 18 9% sand, 1% silt, 0 7% clay
		3 4-3 6 ft VOA sample obtained from this interval
		3 6-4 2 ft No recovery for this interval
	GW	4 2-4 6 ft Sandy Gravel as described above
		4 6-4 8 ft VOA sample obtained from this interval
		4 8-5 9 ft No recovery for this interval
	GW	5 9-6 9 ft Sandy Gravel as described above
	GM	6 9-7 5 ft Sandy Gravel as described below
		7 5-7 7 ft VOA sample obtained from this interval
		7 7-7 9 ft No recovery for this interval
	GM	7 9-8 3 ft Sandy Gravel with some silt, trace clay, very pale brown (10YR7/4), yellow (10YR7/6), strong brown (7 5YR4/6), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit low plasticity, extensive iron oxide staining on grains (especially at 7 9-8 3 ft), gravel coated with caliche, damp at 6 9-7 7 ft , saturated at 7 9-8 3 ft 45 8% gravel 41 7% sand, 8 8% silt, 3 7% clay Top of bedrock at 8 3 ft
	CLAYSTONE	8 3-9 8 ft Claystone with some sand and silt, grayish brown to dark grayish brown (2 5Y4/2-5/2), yellowish brown (10YR5/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz and quartzite, fines exhibit high plasticity, less than 5% porosity, slightly friable, iron oxide staining, carbonaceous material present, moist 9 5% sand, 9% silt, 81 5% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5970 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752327	AREA 1HSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68892
EAST	2083999	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/15/92	

REMARKS SURFACE SEALED 12/18/92

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SOX	100% GR 100%	2 00 /2 00	5960 5959 5958 5957 5956 5955 5954 5953 5952 5951	10 11 12 13 14 15 16 17 18 19 20				9 8-10 0 ft VOA sample obtained from this interval
									SANDY SILTSTONE	10 0-11 8 ft Sandy Siltstone with some clay, yellow (10YR7/8), light gray (10YR7/1), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz and quartzite, moderate to high plasticity, extensive iron oxide staining, less than 10% porosity, argillaceous cement, moderately friable, iron oxide and manganese oxide staining, carbonaceous material present, damp 29 7% sand 52 7% silt 22 6% clay
										11 8-12 0 ft VOA sample obtained from this interval
										Total depth at 12 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5964 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752532	AREA DISS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68992
EAST	2084328	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/16/92	
REMARKS	SURFACE SEALED 12/18/92						



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE		DESCRIPTION
GM	0 0-0 3 ft	Sandy Gravel as described below
	0 3-0 5 ft	VOA sample obtained from this interval
	0 5-2 1 ft	No recovery for this interval
GM	2 1-2 9 ft	Sandy Gravel with some silt, trace clay, very dark brown (10YR2/2), white (10YR8/8), gravel maximum and average size 0 15", sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite and schist, fines exhibit low plasticity, CaCO3/caliche zone at 0 5-4 7 ft, gravel coated with CaCO3, plant stems and roots at 0 0-0 3 ft, damp 66 7% gravel, 22 7% sand, 7 4% silt, 3 2% clay
	2 9-3 1 ft	VOA sample obtained from this interval
	3 1-3 3 ft	VOA sample obtained from this interval
	3 3-4 0 ft	No recovery for this interval
GM	4 0-4 5 ft	Sandy Gravel as described above
	4 5-4 7 ft	VOA sample obtained from this interval
	4 7-6 2 ft	No recovery for this interval Top of bedrock at 6 2 ft
SILTY CLAYSTONE	6 2-8 5 ft	Silty Claystone with some sand, gray (5Y5/1), pale olive (5Y6/3), dark gray (5Y4/1), yellowish brown (10YR5/8), reddish yellow (7 5YR6/8), sand is fine-grained, well sorted sub-rounded, consisting of quartz, less than 5% porosity, slightly friable, 0 degree fractures at 10 4 ft, 10 7 ft, 11 3 ft, filled with iron oxide and CaCO3, extensive iron oxide staining at 10 0-11 6 ft, manganese oxide staining, nodules of CaCO3, damp 13 8% sand, 17 2% silt, 69% clay
	8 5-8 7 ft	VOA sample obtained from this interval
SILTY CLAYSTONE	8 7-9 8 ft	Silty Claystone as described above
	9 8-10 0 ft	VOA sample obtained from this interval

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5964 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER	
NORTH 752532	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	68992	
EAST 2084328	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/16/92		
REMARKS SURFACE SEALED 12/18/92							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 60 /2 10	5954 5953 5952 5951 5950 5949 5948 5947 5946 5945	10 11 12 13 14 15 16 17 18 19 20			SILTY CLAYSTONE	10 0-11 4 ft Silty Claystone as described above 11 4-11 6 ft VOA sample obtained from this interval 11 6-12 1 ft No recovery for this interval Total depth at 12 1 ft
	B6GM16JC									

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5964 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752533	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	69092
EAST	2084352	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/17/92	
REMARKS	SURFACE SEALED 12/21/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%						GM	0 0-0 5 ft Sandy Gravel with some silt and clay, very dark brown (10YR2/2), white (10YR8/2), pink (7 5YR7/4), gravel maximum size 0 1", average size 0 05", angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, plant roots at 0 0-0 2 ft , caliche at 2 0-2 7 ft , iron oxide staining, dry 59 5% gravel, 18% sand, 13 5% silt, 9% clay
	BH0480SC			0 70 / 2 00	5964	0				0 5-0 7 ft VOA sample obtained from this interval
										0 7-2 0 ft No recovery for this interval
					5963	1			GM	2 0-2 5 ft Sandy Gravel as described above
	BH0481SC									2 5-2 7 ft VOA sample obtained from this interval
					5962	2				2 7-4 0 ft No recovery for this interval
	BH0478SC			0 70 / 2 00					GC	4 0-4 5 ft Sandy Gravel with some clay and silt, yellowish red (5YR5/6) light gray (2 5Y7/2), gravel maximum size 0 1", average size 0 02", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive iron oxide staining, 0 degree fractures/bedding at 4 0-4 7 ft , healed with CaCO3, dry 49 4% gravel, 25 9% sand, 9 9% silt, 14 8% clay
					5961	3				
	BH0482SC									4 5-4 7 ft VOA sample obtained from this interval
					5960	4				4 7-6 1 ft No recovery for this interval
				0 70 / 2 10						
					5959	5				
									GC	6 1-6 2 ft Sandy Gravel as described above Top of bedrock at 6 2 ft
					5958	6			SILTY CLAYSTONE	6 2-7 1 ft Silty Claystone as described above
										7 1-7 3 ft VOA sample obtained from this interval
	BH0485SC			1 20 / 1 90						7 3-8 0 ft No recovery for this interval
					5957	7			SILTY CLAYSTONE	8 0-9 3 ft Silty Claystone with trace sand, light gray-gray (10YR6/1), brownish yellow (10YR6/8), gravel maximum and average size 0 075 ft , sub-angular, consisting of quartz, sand is fine-grained, well sorted, angular to sub-angular, consisting of quartz, fines exhibit high plasticity, less than 5% porosity slightly friable, 30 degree fracture at 6 6 ft , healed with CaCO3 and 0 1 ft gravel, CaCO3 nodules, local iron oxide staining, caliche at 8 1 ft , dry 5 8% sand, 18 6% silt, 74 6% clay
					5956	8				
	BH0479SC			1 50 / 2 10						
	BH0483SC				5955	9				9 3-9 5 ft VOA sample obtained from this interval
						10				9 5-10 1 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT) 5964 90	PROJECT NUMBER 006 REI/RI	LOG OF BORING NUMBER
NORTH	752533	AREA IHSS 166 3	CASING DIAMETER (IN)	GEOLOGIST J P GIROD	69092
EAST	2084352	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/17/92	
REMARKS	SURFACE SEALED 12/21/92				

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10			SILTY CLAYSTONE	10 1-11 6 ft Silty Claystone with some sand, light gray-gray (10YR6/1-7/1), white (10YR8/1), sand is fine-grained, well sorted, angular to sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, moderately friable, local iron oxide staining, some caliche, dry 13 1% sand, 34 8% silt, 52 1% clay
					5954					
				1 70 /2 10		11				
	B60981C				5953					11 6-11 8 ft VOA sample obtained from this interval
						12				11 8-12 2 ft No recovery for this interval
					5952					Total depth at 12 2 ft
					5951	13				
					5950	14				
					5949	15				
					5948	16				
					5947	17				
					5946	18				
					5945	19				
						20				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT) 5963 60	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH 752536	AREA INSS 166 3	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	69192
EAST 2084380	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 12/18/92	
REMARKS SURFACE SEALED 12/21/92				

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Depth (ft)	Unified Soils Classification or Rock Type	Description
		0	GM	0 0-0 3 ft Sandy Gravel as described above
BH6049UC				0 3-0 5 ft VOA sample obtained from this interval
				0 5-2 3 ft No recovery for this interval
	0 50 /2 30	1	GM	2 3-3 6 ft Sandy Gravel with some silt, trace clay, very dark brown (10YR2/2), light yellowish brown (10YR6/4), dark yellowish brown (10YR4/4), yellowish brown (10YR5/8), pale yellow (2 5Y7/4), gravel maximum size 0 2', average size 0 1', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartz and quartzite, fines exhibit low plasticity, top soil with plan roots at 0 0-0 5 ft, clay lenses at 2 7-3 0 ft, 3 0-3 5 ft, iron oxide staining on grains, caliche at 2 3-4 0 ft, damp at 0 0-5 2 ft, wet at 8 2-8 6 ft, moist at 8 6-9 0 ft 44 9% gravel, 44% sand, 7 8% silt, 3 3% clay
BH6049UC		2		
	1 70 /1 90	3		
BH6044UC				3 6-3 8 ft VOA sample obtained from this interval
BH6042UC				3 8-4 0 ft VOA sample obtained from this interval
		4		4 0-4 2 ft No recovery for this interval
			GM	4 2-5 0 ft Sandy Gravel as described above
BH6043UC	1 00 /2 00	5		5 0-5 2 ft VOA sample obtained from this interval
				5 2-8 2 ft No recovery for this interval
	0 00 /2 00	7		
		8	GM	8 2-8 8 ft Sandy Gravel as described above
BH6044UC				8 8-9 0 ft VOA sample obtained from this interval
BH6047UC				
BH6049UC	0 80 /1 90	9		9 0-10 1 ft No recovery for this interval Top of bedrock at 10 1 ft
		10		

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1		GROUND ELEVATION (FT)	5963 60	PROJECT NUMBER	006 RFI/RI
NORTH	752536	AREA IHSS 166 3		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2084380	LOCATOR NUMBER	L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/18/92
REMARKS	SURFACE SEALED 12/21/92						

LOG OF BORING NUMBER

69192

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60485UC			2 00 /2 00	5953 5952 5951 5950 5949 5948 5947 5946 5945 5944	10 11 12 13 14 15 16 17 18 19 20			SANDY CLAYSTONE	10 1-11 9 ft Sandy Claystone with some silt, olive gray (5Y5/2), dark gray (5Y4/1), reddish-yellow (7 5YR6/8-7/8), sand is fine-grained, well sorted, sub-angular, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, nodules of CaCO3, 0-30 degree fractures at 10 7 ft, healed with CaCO3, extensive iron oxide staining at 11 4-11 6 ft, clayey at 10 1-10 6 ft coarsens upward, silty clay with depth, moist 25 7% sand, 22 3% silt, 52% clay
										11 9-12 1 ft VOA sample obtained from this interval
										Total depth at 12 1 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1	GROUND ELEVATION (FT)	5962 80	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752537	AREA IHSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	69292
EAST	2084402	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/21/92	
REMARKS	SURFACE SEALED 12/22/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

Sample number: BH6050BWC; BH6050 6WC; BH6050 9WC; BH6051 0WC; BH6051 1WCMS/MSD; BH6051 1WC; BH6050 7WC; BH6051 2WC

Recovery/interval: 0 80 /2 20; 1 30 /1 90; 0 80 /2 00; 1 30 /2 20; 1 70 /1 90

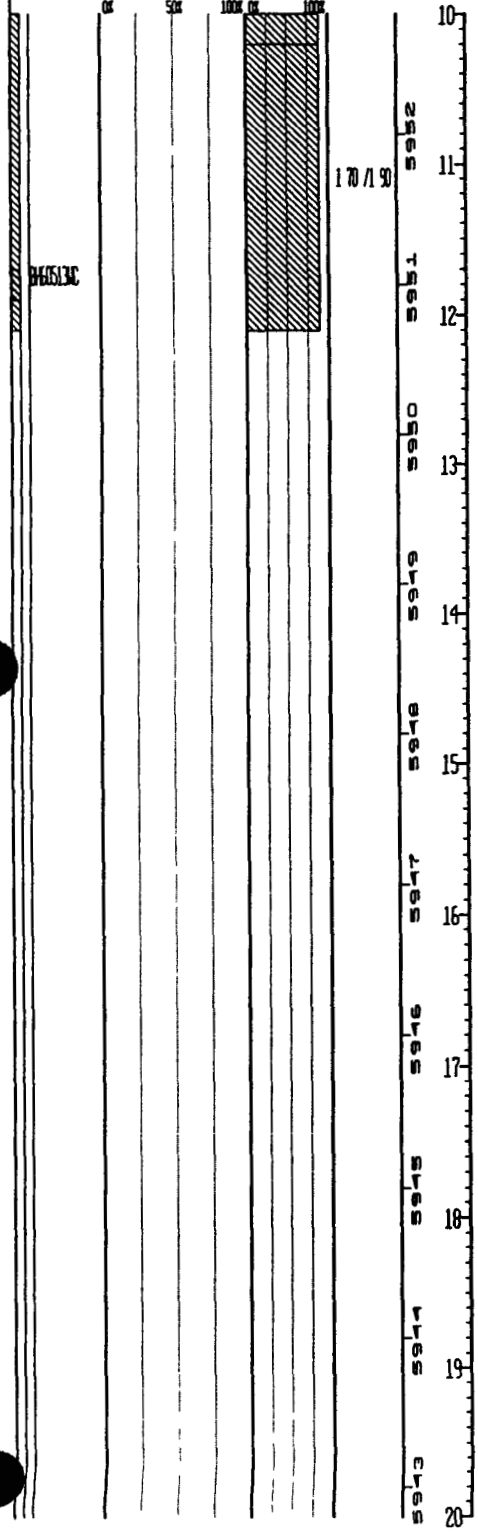
Datum (FT): 5962, 5961, 5960, 5959, 5958, 5957, 5956, 5955, 5954, 5953

Depth (FT): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Unified Soils Classification or Rock Type	Description
GW	0 0-0 6 ft Sandy Gravel as described below
	0 6-0 8 ft VOA sample obtained from this interval
	0 8-2 2 ft No recovery for this interval
GW	2 2-3 3 ft Sandy Gravel with trace clay and silt, very dark brown (10YR2/2), pale red (10YR6/4), light red (10R6/6), pink (5YR7/4), light reddish brown (5YR6/4), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting quartzite, sand is fine- to coarse-grained, well graded, angulat to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, grass and grass roots at 0 0-0 3 ft, caliche at 2 2-3 5 ft and 6 4 ft, iron oxide staining on grains, dry 52 1% gravel, 42 1% sand, 2 3% silt, 3 5% clay
	3 3-3 5 ft VOA sample obtained from this interval
	3 5-4 1 ft No recovery for this interval
GW	4 1-4 7 ft Sandy Gravel as described above
	4 7-4 9 ft VOA sample obtained from this interval
	4 9-6 1 ft No recovery for this interval
GW	6 1-6 4 ft Sandy Gravel as described above Top of bedrock at 6 4 ft
CLAYSTONE	6 4-7 0 ft Claystone as described below
	7 0-7 2 ft VOA sample obtained from this interval
	7 2-7 4 ft VOA sample obtained from this interval
	7 4-8 3 ft No recovery for this interval
SILTY CLAYSTONE	8 3-9 8 ft Silty Claystone, gray (2 5YN6), light brownish gray (2 5Y6/2), grayish brown (2 5Y5/2), brownish yellow (2 5Y6/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, CaCO3 nodules, local iron oxide staining, slight carbonaceous material, dry at 6 4-6 6 ft, damp at 6 6-11 9 ft 16 7% sand, 25% silt, 58 3% clay
	9 8-10 0 ft VOA sample obtained from this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 1		GROUND ELEVATION (FT)	5952 80	PROJECT NUMBER	006 RFI/RI
NORTH	752537	AREA IHSS 166 3		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2084402	LOCATOR NUMBER	L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/21/92
REMARKS	SURFACE SEALED 12/22/92						

LOG OF BORING NUMBER 69292



WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION	
	10 0-10 2 ft	No recovery for this interval
CLAYSTONE	10 2-11 7 ft	Claystone as described above
	11 7-11 9 ft	VOA sample obtained from this interval
	11 9-12 1 ft	No recovery for this interval
	Total depth at 12 1 ft	

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5962 40	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752540	AREA INSS 166 3	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	69392
EAST	2084427	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/04/93	
REMARKS	SURFACE SEALED 01/08/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Datum (FT)	Unified Soils Classification or Rock Type	Description
		5962	GM	0 0-0 6 ft Sandy Gravel as described below
				0 6-0 8 ft VOA sample obtained from this interval
BH60518WC				0 8-2 2 ft No recovery for this interval
	0 80 /2 20	5961	GM	2 2-3 2 ft Sandy Gravel with some silt and clay, very dark brown (10YR2/2), white (10YR8/1-8/2), light gray (10YR7/2), pale yellow (5Y7/4), pinkish white (5YR8/2), gravel maximum size 0 2', average size 0 1', angular to sub-rounded, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low to moderate plasticity, grass and roots at 0 0-0 5 ft (top soil), caliche at 0 5-0 8 ft, 2 2-3 2 ft, 3 7-5 2 ft, local iron oxide staining on some grains and gravel, dry 48 3% gravel, 36% sand, 9 4% silt, 6 3% clay
BH60515WC		5960		
	1 20 /1 50			
BH60519WC		5959		3 2-3 4 ft VOA sample obtained from this interval
				3 4-3 7 ft No recovery for this interval
	1 50 /1 50	5958	GM	3 7-5 0 ft Sandy Gravel as described above
BH60520WC				5 0-5 2 ft VOA sample obtained from this interval
	0 80 /0 80	5957	GM	5 2-5 8 ft Sandy Gravel as described above
BH60521WC				5 8-6 0 ft VOA sample obtained from this interval
		5956	GM	6 0-7 2 ft Sandy Gravel as described above
	1 40 /2 10			
BH60522WC		5955		7 2-7 4 ft VOA sample obtained from this interval
				7 4-8 1 ft No recovery for this interval
BH60523WC		5954	GM	8 1-8 2 ft Sandy Gravel as described above
BH60524WC				8 2-8 4 ft VOA sample obtained from this interval
BH60516WC				8 4-8 6 ft VOA sample obtained from this interval
	0 50 /2 00	5953		8 6-10 1 ft No recovery for this interval

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5962 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752540	AREA DISS 166 3	CASING DIAMETER (IN)		GEOLOGIST	J P GIROD	69392
EAST	2084427	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/04/93	
REMARKS	SURFACE SEALED 01/08/93						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SDS	100% GR 100%	2 10 /2 10	5952 5951 5950 5949 5948 5947 5946 5945 5944 5943	10 11 12 13 14 15 16 17 18 19 20			GM	10 1-10 3 ft Sandy Gravel as described above Top of bedrock at 10 3 ft
	BH0625IC								SILTY CLAYSTONE	10 3-12 0 ft Silty Claystone with abundant sand, light gray-gray (10YR7/1-6/1), light brownish gray (10YR6/2), brownish yellow (10YR6/8), sand is fine-grained, well sorted, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, less than 10% porosity, slightly friable, CaCO3 nodules, 35 degree fracture at 11 0 ft, healed with CaCO3, extensive iron oxide staining at 11 0-11 6 ft, gravel at very top of run 10 1-10 2 ft appears to have been pushed through section by auger, dry 25% sand, 30% silt, 45% clay 12 0-12 2 ft VOA sample obtained from this interval Total depth at 12 2 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 4	GROUND ELEVATION (FT)	5955 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752561	AREA TASS 166 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY MIYOSHI	76992
EAST	208500	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/19/92	

REMARKS WELL SET 12/03/92

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

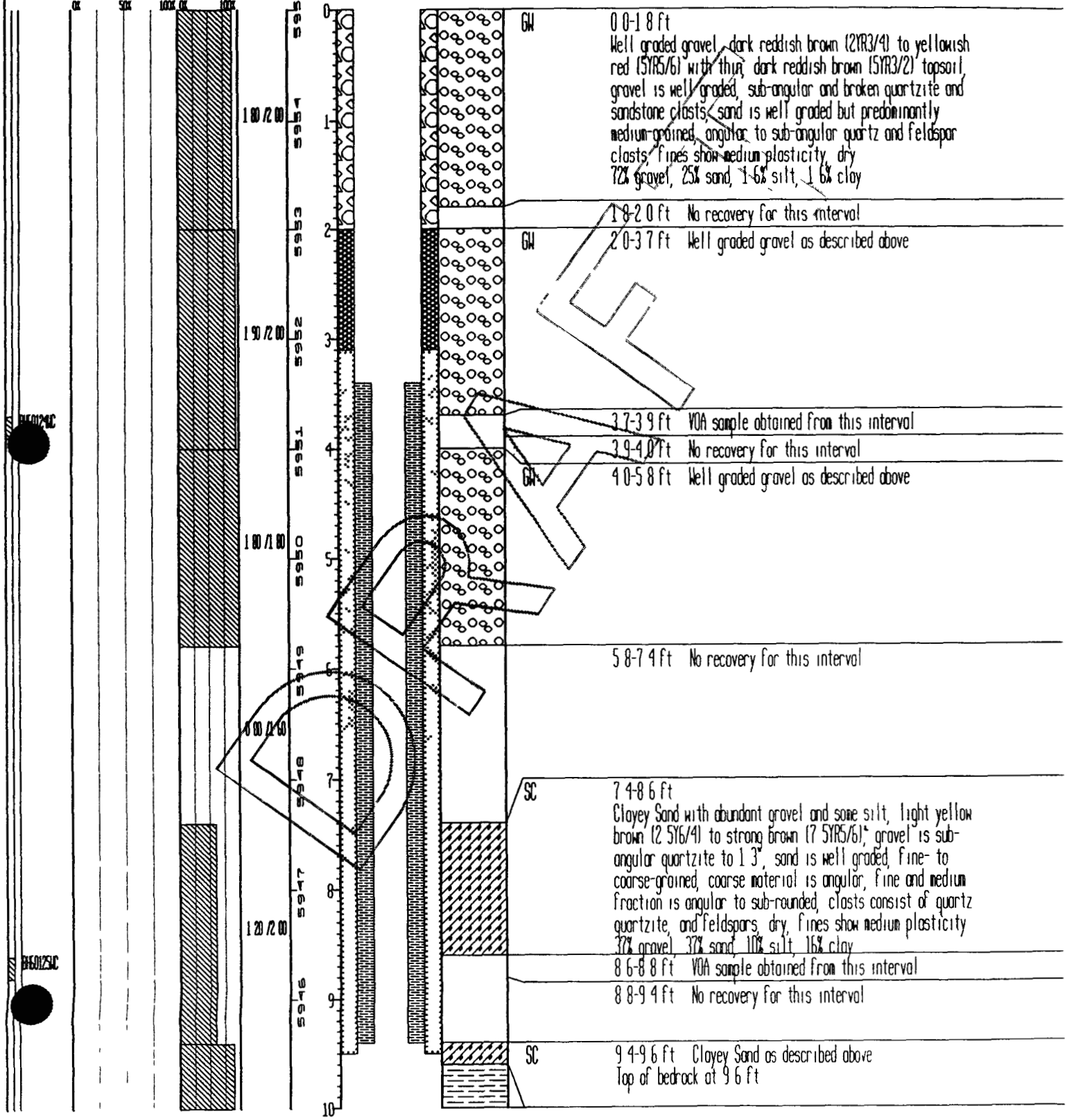
DATUM(FT) DEPTH(FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION



GW 0 0-1 8 ft
Well graded gravel, dark reddish brown (2YR3/4) to yellowish red (5YR5/6) with thin, dark reddish brown (5YR3/2) topsoil, gravel is well graded, sub-angular and broken quartzite and sandstone clasts, sand is well graded but predominantly medium-grained, angular to sub-angular quartz and feldspar clasts, fines show medium plasticity, dry
72% gravel, 25% sand, 1 6% silt, 1 6% clay

1 8-2 0 ft No recovery for this interval

GW 2 0-3 7 ft Well graded gravel as described above

3 7-3 9 ft VOA sample obtained from this interval

3 9-4 0 ft No recovery for this interval

GW 4 0-5 8 ft Well graded gravel as described above

5 8-7 4 ft No recovery for this interval

SC 7 4-8 6 ft
Clayey Sand with abundant gravel and some silt, light yellow brown (2 5Y6/4) to strong brown (7 5YR5/6), gravel is sub-angular quartzite to 1 3", sand is well graded, fine- to coarse-grained, coarse material is angular, fine and medium fraction is angular to sub-rounded, clasts consist of quartz quartzite, and feldspars, dry, fines show medium plasticity
32% gravel, 32% sand, 10% silt, 16% clay

8 6-8 8 ft VOA sample obtained from this interval

8 8-9 4 ft No recovery for this interval

SC 9 4-9 6 ft Clayey Sand as described above
Top of bedrock at 9 6 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 4	GROUND ELEVATION (FT)	5955 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752561	AREA TASS 166 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY KIYOSHI	76992
EAST	2084500	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/19/92	
REMARKS	WELL SET 12/03/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%	1 80 /2 00	5945	10			CLAYSTONE	9 6-11 0 ft Claystone, pale yellow to light brownish gray (2 5Y7/4-6/2), local iron oxide staining along bedding planes and pervading possible reworked clasts, thin lignitic layer at 10'5 ft, trace caliche on fractures, manganese oxides on some bedding planes and disseminated, medium to high plasticity, dry, unconformity between alluvium and bedrock at 9 4-9 6 ft 2% silt, 98% clay
	B6012SIC				5944	11				11 0-11 2 ft VOA sample obtained from this interval
										11 2-11 4 ft No recovery for this interval
				1 80 /1 80	5943	12			SANDY CLAYSTONE	11 4-13 2 ft Sandy Claystone as described above
					5942	13				13 2-13 4 ft No recovery for this interval
									SANDY CLAYSTONE	13 4-15 4 ft Sandy Claystone with some silt, pale yellow to light brownish gray (2 5Y7/4-6/2), sand is well sorted, very fine-grained, sub-rounded to rounded quartz, 15% porosity, argillaceous cement, very friable, dry, distinct clean clay lenses noted from 13 6-15 4 ft, lenses range from 0 1-0 25' thick with trace silt (2%), color is light olive brown (2 5Y5/4), manganese and iron oxides occur locally on fractures, no $CaCO_3$, dry 0% gravel, 34% sand, 13% silt, 53% clay
				2 20 /2 20	5941	14				
					5940	15				
					5939	16				Total depth at 15 4 ft
					5938	17				
					5937	18				
					5936	19				
						20				

DRAFT

APPENDIX C2.10
IHSS 167.1 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5965 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753838	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61192
EAST	2083890	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/27/92	
REMARKS	SURFACE SEALED 10/27/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			GC	0 0-1 6 ft Clayey Gravel with some sand and silt, brown to dark brown (10YR4/3) to dark reddish brown (2 5YR3/4) top soil 0-0 7', gravel maximum 0 2', average 0 15', sand is fine- to coarse-grained well graded gravel sub-angular to sub-rounded, sand grains sub-rounded, gravel quartzite, schist, sand grains quartz, rock fragments quartzite, moderate to low plasticity of clay, sequence is coarser in run 1 (0-1 6') than run 2 (2 0-3 3'), dry 50% gravel, 20 5% sand, 8 5% silt, 20 9% clay
	96000BC			1 60 /2 00	5965	1				
					5964	2				1 6-2 0 ft No recovery for this interval
									GC	2 0-3 0 ft Clayey Gravel as described above
	96000ZC			1 30 /2 00	5963	3			CL	3 0-3 3 ft Silty Clay with some sand and caliche and trace gravel, light olive gray (5Y6/2) to white (5Y8/1), sand fine to medium grained, poorly graded sub-rounded quartz grains, carbonaceous material with interbedded caliche zones, moderate plasticity of clay, reworked bedrock and mottled texture from 3 0-3 3', dry 1% gravel, 10% sand, 21% silt, 48% clay, 20% CaCO3
					5962	4				3 3-4 0 ft No recovery for this interval
					5961	5				Total depth at 4 0 ft
					5960	6				
					5959	7				
					5958	8				
					5957	9				
					5956	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5964 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753780	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61292
EAST	2083779	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/28/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE

SURFACE SEALED 10/28/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5964	0			GC	0 0-1 5 ft Sandy Gravel with some clay and silt, very dark gray (10YR 3/1) to dark red-brown (10YR3/4) to red (10YR4/8), mottled texture, gravel maximum size 0 15', average size 0 05', sand consists of fine-to coarse grains, well graded, gravel is sub-angular to sub-rounded, gravel consists of quartzite and schist, sand grains consist of schist and quartz with red (10YR4/8) iron-oxide staining, clay exhibits moderate plasticity, dry 50% gravel, 23 8% sand, 7 9% silt, 18 3% clay
	BH0003C			1 50 /2 00	5963	1				1 5-2 0 ft No recovery for this interval
					5962	2			GC	2 0-2 8 ft Sandy Gravel with some clay and trace silt, yellow (10YR7/6) to brownish yellow (10YR6/6) to yellowish-brown (10YR5/6), mottled texture, gravel maximum size 0 15', average size 0 1', sand is fine- to coarse-grained, well-graded, gravel is sub-angular to sub-rounded, sand grains are sub-angular to sub-rounded, clay exhibits low to moderate plasticity, gravel consists of quartzite and schist, sand grains consist of schist, feldspar and quartz with red-yellow (5YR6/8) staining of iron-oxide, dry 65% gravel, 21 7% sand, 4% silt, 9 3% clay
	BH0004C			0 80 /2 00	5961	3				2 8-4 0 ft No recovery for this interval
					5960	4				Total depth at 4 0 ft
					5959	5				
					5958	6				
					5957	7				
					5956	8				
					5955	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5961 80	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753784	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61392
EAST	2083892	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/29/92	

REMARKS HOLE TWINNED TO GET SUFFICENT SAMPLE

SURFACE SEALED 10/29/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60006WC			1 00 /2 00	5961	0–1			GC	0 0-1 0 ft Clayey Gravel with some sand and silt, dark brown (10YR3/8), gravel maximum size 0 15', average size 0 1', sand is fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand consists of sub-angular to sub-rounded grains, clay exhibits moderate to high plasticity, gravel consists of quartzite, schist, sand grains consist of quartzite and schist, dry 40% gravel, 11 7% sand, 9 7% silt, 38 6% clay 1 0-2 0 ft No recovery for this interval
					5960	1–2				
	BH60007WC			2 00 /2 00	5959	2–3			GC	2 0-4 0 ft Sandy Gravel with some clay and trace silt, olive (5Y5/6) to pale olive (5Y6/4) to pink (5YR8/4) to weak red (10R5/4), gravel maximum size 0 15', average size 0 1', sand is fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand consists of sub-angular to sub-rounded grains, clay exhibits moderate to high plasticity, gravel consists of quartzite, schist and remnants of disintegrated gravel (pink 5Y8/4) within -4 0' section a clay layer is present at 2 25-2 9', gravel interbedded with this clay suggests a slump bedrock feature, carbonaceous material is present in trace amounts, dry 50% gravel, 30 8% sand, 3 8% silt, 15 4% clay Total depth at 4 0 ft
					5958	3–4				
					5957	4–5				
					5956	5–6				
					5955	6–7				
					5954	7–8				
					5953	8–9				
					5952	9–10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5958 90	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753789	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61492
EAST	2083996	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/29/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 10/29/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6000BWC BH6004BWC			1 20 /2 00	5958	0–1			GW	0 0-1 2 ft Sandy Gravel with trace silt and clay, dark-brown (7 5YR3/2) gravel size maximum 0 15', average 0 1', gravel sub-angular to sub-rounded, sand fine to coarse, well-graded sand, angular to sub-angular grains, gravel consists of quartzite, sand grains consist of quartz, rock fragments, dry 60% gravel, 36 8% sand, 2 6% silt, 0 6% clay
						1				1 2-2 0 ft No recovery for this interval
	BH6009WC			1 20 /2 00	5957	2–3			GW	2 0-3 2 ft Sandy Gravel with trace silt and clay, strong brown (7 5YR5/6), gravel size 0 1' maximum and 0 05' average, sand is fine- to coarse-grained, well-graded, gravel is sub-angular to sub-rounded, sand is sub-angular, gravel is quartzite, sand consists primarily of iron stained quartz, rock fragments and granite grains, moist 52 4% gravel, 45 1% sand, 1 6% silt, 0 9% clay
					5956	3				3 2-4 0 ft No recovery for this interval
					5955	4				Total depth at 4 0 ft
					5954	5				
					5953	6				
					5952	7				
					5951	8				
					5950	9				
					5949	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5966 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753681	AREA THSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61692
EAST	2083891	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/02/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 11/02/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE / DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5966 5965 5964 5963 5962 5961 5960 5959 5958 5957	0 1 2 3 4 5 6 7 8 9 10			GW	0 0-1 0 ft Sandy Gravel with some clay and trace silt - very dark grayish brown (10YR3/2), maximum gravel diameter 0 2', average diameter 0 1', sand is fine- to coarse-grained, poorly graded, gravel is angular, sand is sub-angular, clay exhibits moderate plasticity, gravel is primarily quartzite, sand is composed of quartz and some rock fragments, dry 49 5% gravel, 41 6% sand, 0 9% silt, 8% clay
	BH60012C			1 00 /2 00						1 0-2 0 ft No recovery for this interval
									GW	2 0-2 5 ft Sandy Gravel with some caliche and trace clay and silt, pale brown (10YR6/3), white (10YR8/2) to dark yellowish brown (10YR4/6), maximum gravel size 0 15', average 0 1', fine to coarse sand, well-graded gravel is angular, sand grains are angular, clay exhibits moderate to low plasticity, gravel consists of quartzite, sand is composed of rock fragments, quartzite, quartz, dry 54 3% gravel, 41 1% sand, 2% silt, 2 6% clay
	BH60013C			0 50 /2 00						2 5-4 0 ft No recovery for this interval
										Total depth at 4 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5961 10	PROJECT NUMBER	006 RFI/R1	LOG OF BORING NUMBER
NORTH	753678	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61792
EAST	2083996	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/02/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 11/02/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	100% GR	100%					GW	0 0-0 4 ft Sandy Gravel with trace clay and silt, dark brown (7 5YR3/2) to brownish-yellow (10YR6/8), maximum gravel diameter up to 2 0", average gravel size 15', fine to coarse grained sand, well graded gravel to moderately graded gravel is angular, sand grains are sub-angular, low plasticity, gravel consists of quartzite, sand grains are primarily quartz with some lithic rock fragments, dry 78% gravel, 21% sand, 0 5% silt, 0 5% clay
	BH0014C			0 40 /2 00	5960	1				0 4-2 0 ft No recovery for this interval
					5959	2			GW	2 0-2 5 ft Sandy gravel as described above
	BH0015C			0 50 /2 00	5958	3				2 5-4 0 ft No recovery for this interval
					5957	4				Total depth at 4 0 ft
					5956	5				
					5955	6				
					5954	7				
					5953	8				
					5952	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5949 90	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH 753666		AREA IHSS 167 1	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	61892
EAST 2084116		LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 11/03/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%		0			GC	0 0-0 8 ft Sandy Gravel with some clay and trace silt, very dark grayish brown (10YR3/2), gravel size maximum 0 15', average 0 1', sand is fine- to coarse-grained, well-graded, gravel is sub-angular to sub-rounded, moderately to highly plastic clay, gravel consists of schist and quartzite, sand consists of quartz grains, dry 50% gravel, 39 7% sand, 2 1% silt, 8 2% clay
	BH0018C	50%		0 80 /2 00	5949	1				0 8-2 0 ft No recovery for this interval
					5948	2			GW	2 0-2 6 ft Sandy Gravel with trace silt and clay, brownish-yellow (10YR6/8) to yellowish-brown (10YR5/6), gravel size maximum 0 1', average 0 1', sand fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand grains are sub-angular to sub-rounded, gravel and sand consist of quartzite and schist and quartz, dry 60% gravel, 38 4% sand, 1 3% silt, 0 3% clay
	BH0017C			1 10 /2 00	5947	3				2 6-3 0 ft No recovery for this interval
					5946	4			GW	3 0-3 3 ft Sandy Gravel as described above
					5945	5			CL	3 3-3 8 ft Sandy Clay with some silt and caliche and trace gravel, gray (5Y5/1), gravel maximum and average size 0 02', sand is fine- to medium-grained, poorly graded, gravel is sub-rounded, sand grains angular to sub-angular, moderately plastic clay, gravel consists of quartzite, sand consists of quartz, iron-oxide staining along bedding planes, moist 0 6% gravel, 48% sand, 15 4% silt, 36% clay
					5944	6				3 8-4 0 ft No recovery for this interval
					5943	7				Total depth at 4 0 ft
					5942	8				
					5941	9				
					5940	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5944 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753653	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	61992
EAST	2084192	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/12/92	
REMARKS	SURFACE SEALED 12/04/92						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRADATION SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%						GC	0 0-1 8 ft Sandy Gravel with some clay and trace silt, dark yellow brown (10YR4/2), gravel maximum size 0 2", average size 0 075", angular to sub-angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded grains, consisting of schist, quartz, and quartzite, clay exhibits moderate to high plasticity, dry 60% gravel, 30% sand, 2% silt, 8% clay Top of bedrock at 1 8 ft
	B6001BC			1 80 /1 80	5944	0			CLAYSTONE	1 8-3 6 ft Silty Claystone with some sand, grayish orange (10YR7/4) to dark yellowish orange (10YR6/6) at 1 8-2 3', yellowish gray (5Y7/2) to light olive gray (5Y5/2) at 2 3-3 6', sand fraction is fine-grained, sub-rounded, consisting quartzite and feldspar, slightly friable, iron oxide staining and abundant plant roots and weathered bedrock at 1 8-2 3', CaCO3 present and bedrock is fractured with zones of iron oxide staining at 2 3-3 6', dry 0% gravel, 15 7% sand, 29 5% silt, 54 8% clay
	B6001BC				5943	1				
	B6001BC			1 80 /2 20	5942	2				
					5941	3				
					5940	4				3 6-4 0 ft No recovery for this interval Total depth at 4 0 ft
					5939	5				
					5938	6				
					5937	7				
					5936	8				
					5935	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 1		GROUND ELEVATION (FT)	5926 70	PROJECT NUMBER	016 RFI/RI
NORTH	753636	AREA (MSS 167 1		CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2084280	LOCATOR NUMBER L11		BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/12/92
REMARKS	SURFACE SEALED 12/23/92						

LOG OF BORING NUMBER 62092

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5926	0			SILTY CLAYSTONE	0 0-0 6 ft Silty Claystone with trace sand, light olive gray (5Y5/2) to olive gray (5Y3/2) to dark yellowish orange (10YR6/6), sand is fine-grained, sub-rounded, consisting of quartz with iron oxide staining, possibly reworked bedrock, slightly friable, mottled texture with no apparent bedding, plant roots abundant at 0 0-0 4', CaCO3 present, clay exhibits moderate plasticity, dry 5% sand, 20% silt, 75% clay Top of bedrock at 0 0 ft
	BH6021BC			0 60 /2 00		1				
					5925	2				0 6-2 0 ft No recovery for this interval
									SILTY CLAYSTONE	2 0-2 6 ft Silty Claystone with some sand and carbonaceous material, black (N1), olive gray (5Y4/1), white (N9), sand is fine-grained, sub-rounded and consists of quartz with iron oxide staining, moderately friable, black carbonized zone at 2 4-2 6', CaCO3 present, dry 8 9% sand, 11% silt, 80% clay
	BH6021BC			2 10 /2 10	5924	3				
					5923	4			SILTY CLAYSTONE	2 6-4 1 ft Silty Claystone with some fine sand, moderate brown (5YR3/4) to dusky brown (5YR2/2), sand is fine-grained, sub-rounded, consisting of feldspar grains, highly friable, CaCO3 and carbonaceous material along fractures, no apparent bedding, dry 8 9% sand, 11% silt, 80% clay Total depth at 4 1 ft
					5922	5				
					5921	6				
					5920	7				
					5919	8				
					5918	9				
					5917	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5968 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753577	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62192
EAST	2083782	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/09/92	
REMARKS	SURFACE SEALED 12/04/92						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR			5968	0			GW	0 0-0 4 ft Sandy Gravel with trace silt and clay, dark brown (10YR2/2), gravel maximum size 0 1', average size 0 05', sub-angular to sub-rounded, consisting of quartzite and schist, sand is fine to coarse, well graded, angular to sub-angular, consisting of quartzite, schist and quartz, moist 75% gravel, 22 5% sand, 1% silt, 1 5% clay
	BH6022C	SOIL	100% GR	0 4/2 00	5967	1				0 4-2 0 ft No recovery for this interval
						2			GW	2 0-2 75 ft Sandy Gravel with trace silt and clay, very dusky red (10R2/2), gravel maximum size 0 075', average size 0 05', sub-angular and consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartzite, quartz, and schist, with iron oxide staining, moist 85% gravel, 12 9% sand, 1% silt, 1 1% clay
	BH6023C		100%	0 75/1 00	5966					2 75-3 0 ft No recovery for this interval
				0 4/1 00	5965	3			GW	3 0-3 4 ft Sandy Gravel with trace silt and clay, very pale orange (10YR8/2) to white (N9), gravel maximum size 0 15', average size 0 025', angular to sub-angular, consisting of quartzite sand is fine- to coarse-grained, angular to sub-angular, consisting of quartzite, quartz and schist with iron oxide staining and cemented with CaCO3, decomposing rock fragments present, dry 85% gravel, 13 2% sand, 1 5% silt, 0 3% clay
					5964	4				3 4-4 0 ft No recovery for this interval
					5963	5				Total depth at 4 0 ft
					5962	6				
					5961	7				
					5960	8				
					5959	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5970 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753691	AREA DWSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62292
EAST	2083593	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/30/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 10/30/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%						
					5970	0			GW	0 0-0 8 ft Sandy Gravel with some clay and trace silt, dark-brown (10YR3/3), gravel maximum size 0 2', average size 0 1', sand is fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand grains are sub-angular to sub-rounded, clay exhibits low to moderate plasticity, gravel consists of quartzite, sand grains consist of quartz and schist and iron oxide stained 65% gravel, 26 8% sand, 2 5% silt, 5 7% clay
				0 80 /2 00	5969	1				0 8-2 0 ft No recovery for this interval
					5968	2			GW	2 0-2 5 ft Sandy Gravel with trace silt and clay, red (10R4/6-5/6) to light red (10R6/6), gravel maximum size 0 025', average size 0 25', sand is fine- to coarse-grained, well graded, gravel is sub-angular to sub-rounded, sand is sub-angular to sub-rounded, clay exhibits high plasticity, gravel consists of quartzite, sand consists of quartz and schist grains with iron oxide staining 65% gravel, 30 4% sand, 3 6% silt, 1% clay
				0 70 /2 00	5967	3				
					5966	4			GW	2 5-2 7 ft Sandy Gravel with trace clay and caliche, white (10YR8/2), gravel maximum size 0 15', average size 0 1', sand is fine- to coarse grained, well graded, gravel is sub-angular, sand is sub-angular to sub-rounded, gravel consists of quartzite, sand grains consist of quartz and K-spar, with iron oxide staining 80% gravel, 15 6% sand, 2 4% caliche, 2 0% clay
					5965	5				2 7-4 0 ft No recovery for this interval
					5964	6				Total depth at 4 0 ft
					5963	7				
					5962	8				
					5961	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5968 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753690	AREA DASS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62392
EAST	2083671	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	10/30/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 10/30/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%					GC	0 0-1 0 ft Sandy gravel with some clay and trace silt, dark red (10R3/6) to dusky red (10R3/4) to darkish reddish gray (10R3/1), mottled texture, gravel maximum size 0 2", average size 0 15", sand is fine- to coarse-grained, well-graded, gravel is sub-rounded, sand grains are sub-rounded to rounded, gravel consists of quartzite and schist, sand grains consist of quartz and schist with iron oxide staining, dry 60% gravel, 23 5% sand, 4 9% silt, 11 6% clay
	B6002SNC			1 00 /2 00	5968	1				1 0-2 0 ft No recovery for this interval
					5967	2			GW	2 0-2 6 ft Well-graded gravel with trace silt and clay, reddish-yellow (7 5YR7/6-7/8) to pinkish white (7 5YR8/2), mottled texture, gravel size maximum 0 15", average 0 05", sand is fine- to coarse-grained, well-graded, gravel is sub-rounded, sand grains are sub-angular to sub-rounded, gravel consists of schist and quartzite, sand grains are schist and quartz, sequence coarsens downward, dry 70% gravel, 26% sand, 3% silt, 1% clay
	B6002TNC			0 60 /2 00	5966	3				2 6-4 0 ft No recovery for this interval
					5965	4				Total depth at 4 0 ft
					5964	5				
					5963	6				
					5962	7				
					5961	8				
					5960	9				
					5959	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5967 80	PROJECT NUMBER OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753686	AREA IHSS 167 1	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	62492
EAST	2083781	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 11/02/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 11/02/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6028WC BH6029WC			0 70 /2 00	5967	0			GW	0 0-0 7 ft Sandy Gravel with trace silt and clay, very dark brown (10YR2/2), maximum gravel diameter 2', average size 0 1', sand is fine- to coarse-grained, well-graded gravel is sub-rounded to sub-angular, sand is sub-rounded to sub-angular, low plasticity, gravel is primarily quartzite, sand is quartz, dry 65% gravel, 31% sand, 2 8% silt, 1 2% clay
					5966	1				0 7-2 0 ft No recovery for this interval
	BH6054WC			0 70 /2 00	5965	2			GW	2 0-2 7 ft Sandy Gravel with trace silt and clay, yellowish red (5YR5/8), maximum gravel size 2', average gravel size 2', fine to coarse sand, well-graded gravel is sub-angular to sub-rounded, sand is sub-angular to sub-rounded, low plasticity, gravel is quartzite, sand consists of quartz, dry 80% gravel, 48 9% sand, 5% silt, 2 1% clay
					5964	3				
					5963	4				Total depth at 4 0 ft
					5962	5				
					5961	6				
					5960	7				
					5959	8				
					5958	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 0	GROUND ELEVATION (FT) 5967 10	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	753574	AREA THSS 167 1	CASING DIAMETER (IN)	GEOLOGIST BRIAN J RUBY	62592
EAST	2083892	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 11/09/92	

REMARKS SURFACE SEALED 12/04/92

DRAFT

CRITICAL SAMPLE / GRADATIONAL BAR DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CK	100% CK	100%	5967	0			GW	0 0-0 5 ft Sandy Gravel with trace silt and clay, dark yellowish orange (10YR6/6) to moderate brown (5YR4/4), gravel maximum size 0 2', average size 0 1', sub-angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, angular to sub-rounded, consisting of quartz, feldspar and schist with iron oxide staining and magnesium oxide along gravel fractures, dry, abundant roots 0 0-0 2' 50% gravel, 44% sand, 5% silt, 1% clay
	BH60000C			0 50 /2 00	5966	1				0 5-2 0 ft No recovery for this interval
					5965	2			GC	2 0-2 7 ft Sandy Gravel with some clay and trace silt, dark reddish brown (10R3/4) to moderate brown (5YR4/4), gravel maximum size 0 1', average size 0 05', angular to sub-angular, consisting of quartzite, sand is fine- to coarse grained, well graded, angular to sub-rounded, consisting of quartzite and quartz with iron oxide staining, dry 55% gravel, 36% sand, 3% silt, 6% clay
	BH60010C			0 70 /2 00	5964	3				2 7-9 0 ft No recovery for this interval
					5963	4				
					5962	5				Total depth at 9 0 ft
					5961	6				
					5960	7				
					5959	8				
					5958	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5963 90	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753568	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62692
EAST	2083997	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/04/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 12/04/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6003WC BH6005WC			1 20 /2 00	5963	0–1			GC	0 0-1 2 ft Sandy Gravel with some clay and trace silt, moderate brown (5YR3/4-4/4), gravel maximum size 0 15', average size 0 05', sub-angular to sub-rounded, consisting of quartzite, quartz and schist, sand is fine- to coarse- grained, well graded, angular to sub-rounded, consisting of quartzite, quartz, and schist, upper 0 5' of section consists of more silt in matrix with dark reddish brown (10R3/4) clay in matrix at 0.5-1 2', moist and very hard 60% gravel, 32 7% sand, 2 2% silt, 5 1% clay
					5962	2				1 2-2 0 ft No recovery for this interval
	BH6003WC			2 00 /2 00	5961	3			GW	2 0-4 0 ft Sandy Gravel with trace silt and clay, gravel maximum size 0 15', average size 0 05', angular to sub-rounded, consisting of quartzite and quartz, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartzite, quartz, and schist, with iron oxide staining, CaCO3 cement at 2 0-2 6', yellowish gray (5Y7/2), dry 70% gravel, 28% sand, 1% silt, 1% clay
					5960	4				Total depth at 4 0 ft
					5959	5				
					5958	6				
					5957	7				
					5956	8				
					5955	9				
					5954	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 4	GROUND ELEVATION (FT)	5953 20	PROJECT NUMBER	006 REI/RI	LOG OF BORING NUMBER
NORTH	753564	AREA 1X55 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62792
EAST	2084103	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/11/92	

REMARKS HOLE THINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 12/04/92

DRAFT

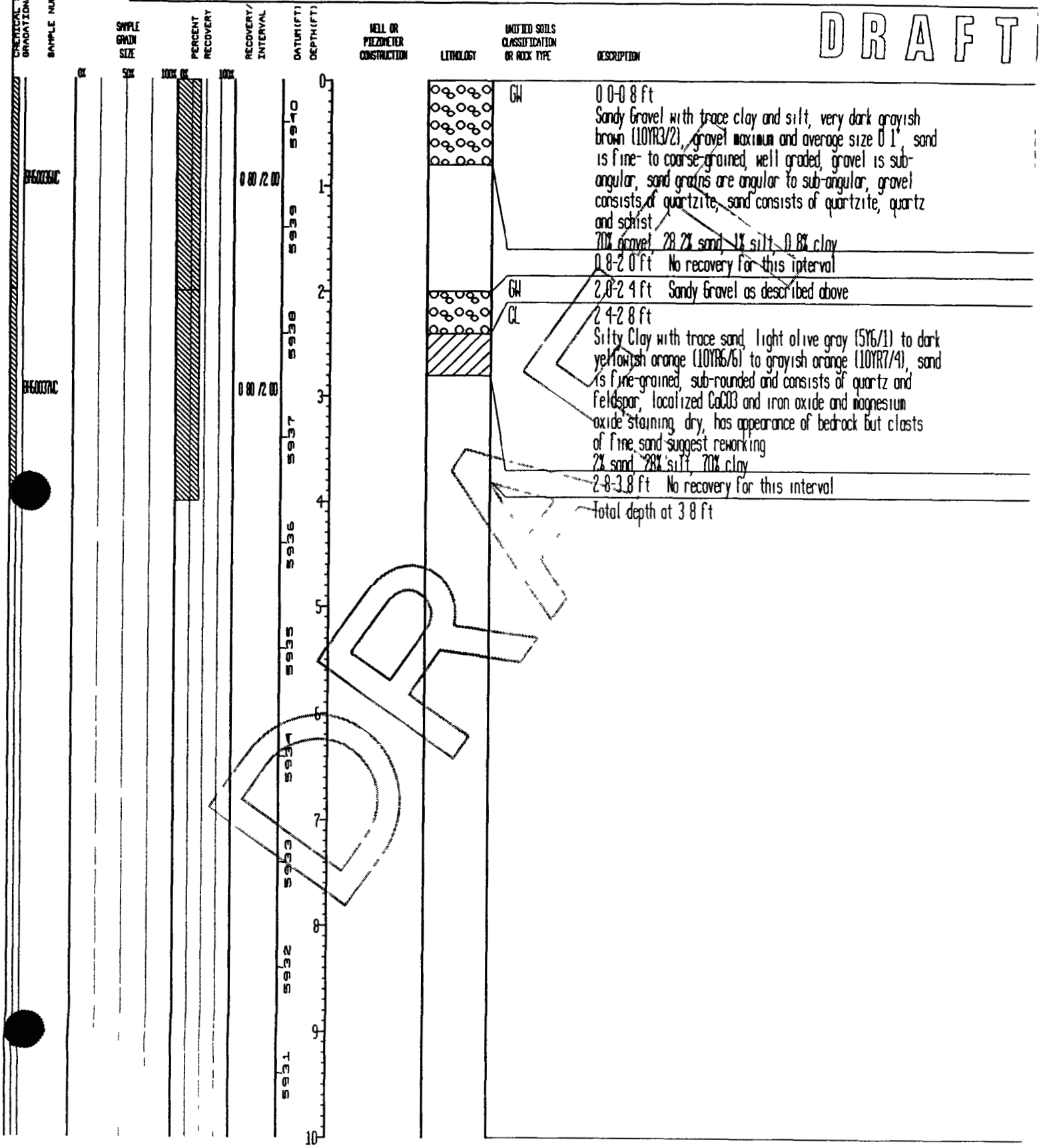
CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5953 5952 5951 5950 5949 5948 5947 5946 5945 5944	0 1 2 3 4 5 6 7 8 9 10			GW	0 0-0 6 ft Sandy Gravel with trace silt and clay, dusky brown (5Y2/2), gravel is sub-angular to sub-rounded, sand is fine to coarse well graded, gravel maximum size 0 15', average size 0 1', sand grains are sub-angular to sub-rounded, gravel consists of quartzite and schist, sand consists of quartz, quartzite and feldspar with iron staining, moist 75% gravel, 24 1% sand, 0 6% silt, 0 3% clay
	BH60094C			0 60 /2 40						0 6-2 4 ft No recovery for this interval
									GW	2 4-3 1 ft Sandy Gravel with trace silt and clay, light olive gray (5Y5/2) at 2 4-2 9' to dark yellowish orange (10YR6/6) at 2 9-3 1', gravel maximum size 0 15', average size 0 1', sand is fine- to coarse-grained, with finer sand at 2 9-3 1', gravel is sub-angular, sand grains are angular to sub-angular, clay exhibits moderate plasticity, gravel consists of quartzite and schist, sand grains consists of quartzite and quartz with iron oxide staining, saturated 50% gravel, 47% sand, 1 3% silt, 1 7% clay
	BH60095C			2 00 /2 00						Top of bedrock at 3 1 ft
									CLAYSTONE	3 1-4 4 ft Silty Claystone with trace sand, light gray (N7) to dark yellowish orange (10YR6/6) to white (N9), sand is fine-grained, sub-rounded, and consists of quartz, abundant iron oxide staining with some carbonaceous material, caliche is present also, bedrock is weathered throughout section, but more evident in the upper 3 1-3 3', slightly moist 2% sand, 18% silt, 80% clay Total depth at 4 4 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 3 8	GROUND ELEVATION (FT)	5940 40	PROJECT NUMBER	006 REI/R1	LOG OF BORING NUMBER
NORTH	753565	AREA THSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62892
EAST	2084201	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/11/92	

REMARKS SURFACE SEALED 12/04/92

DRAFT



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5967 00	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753519	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	62992
EAST	2083890	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/10/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 12/04/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60038WC			0 90 /2 00	5967, 5966, 5965	0, 1, 2			GC	0 0-0 9 ft Sandy Gravel with some clay and silt, dark brown (7 5YR3/2) to dark red (2 5YR2 5/4), gravel maximum size 0 15', average size 0 1', sand is fine to coarse, well graded, gravel is angular to sub-angular, sand is angular to sub-angular, gravel consists of quartzite, schist, sand grains consist of quartz and quartzite with red-yellow iron staining, clay shows moderate plasticity, dry 60% gravel, 21 5% sand, 10% clay, 8 5% silt
										0 9-2 0 ft No recovery for this interval
	BH60039WC			0 70 /2 00	5964, 5963, 5962, 5961, 5960, 5959, 5958	3, 4, 5, 6, 7, 8, 9, 10			GC	2 0-2 7 ft Clayey Gravel with some sand silt, reddish yellow (5YR6/8) to red (2 5YR4/8), gravel maximum 0 2', average 0 1', sand is fine- to coarse-grained, well-graded, gravel is sub-angular to sub-rounded, sand grains sub-angular to sub-rounded with yellow-red iron staining, fines show moderate to high plasticity, gravel quartzite, sand grains quartz and quartzite, dry 65% gravel, 17 2% sand, 7 8% silt, 10% clay
										2 7-4 0 ft No recovery for this interval
										Total depth at 4 0 ft

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5969 70	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753626	AREA THSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	63092
EAST	2083673	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/04/92	

REMARKS HOLE THINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 12/04/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%		0			GW	0 0-1 0 ft Sandy Gravel with trace silt and clay, dark yellow brown (10YR4/2), gravel maximum size 0 15", average size 0 1", angular to sub-rounded, consisting of quartzite and schist, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartzite, quartz and schist, with iron oxide staining, moist 80% gravel, 15 4% sand, 3 7% silt, 0 9% clay
	RIEG010C			1 00 /2 00	5969	1				1 0-2 0 ft No recovery for this interval
						2			GW	2 0-2 8 ft Sandy Gravel with trace clay and silt, moderate reddish brown (10R4/6) to moderate brown (5YR3/4), gravel maximum size 0 1", average size 0 025", angular to sub-angular, consisting of quartzite and schist, sand is fine- to coarse-grained, well graded, sub-angular to angular, consisting of quartz, schist and quartzite with iron oxide staining, moist 75% gravel, 22 3% sand, 0 9% silt, 1 6% clay
	RIEG011C			0 80 /2 00	5967	3				2 8-4 0 ft No recovery for this interval
					5966	4				Total depth at 4 0 ft
					5965	5				
					5964	6				
					5963	7				
					5962	8				
					5961	9				
					5960	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5968 30	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753626	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	63192
EAST	2083776	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/09/92	
REMARKS	SURFACE SEALED 12/04/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5968	0			GC	0 0-0 8 ft Sandy Gravel with trace silt and clay, moderate brown (5YR3/4), gravel maximum size 0 1', average size 0 1', angular to sub-angular, consisting of quartzite and granitics, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, clay exhibits moderate plasticity, abundant roots in top 0 2', slightly moist to dry 60% gravel, 35 8% sand, 2 0% silt, 2 2% clay
	BH600M2WC			0 80 /2 00	5967	1				
										0 8-2 0 ft No recovery for this interval
					5966	2			GW	2 0-2 8 ft Sandy Gravel with trace calcareous silt and clay, very pale orange (10YR8/2) to yellowish gray (5Y7/2) to white (N9), gravel maximum size 0 1', average size 0 05', sub-angular to angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, sub-angular to sub-rounded consisting of quartz and quartzite, fines are predominantly calcium carbonate with trace amounts of silt and clay, moist 70% gravel, 25 6% sand, 3 4% CaCO3, 0 5% silt, 0 5% clay
	BH600M3WC			0 80 /2 00	5965	3				
					5964	4				2 8-4 0 ft No recovery for this interval
										Total depth at 4 0 ft
					5963	5				
					5962	6				
					5961	7				
					5960	8				
					5959	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 3	GROUND ELEVATION (FT)	5951 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753519	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	63292
EAST	2084098	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/10/92	

REMARKS HOLE TWINNED TO GET SUFFICIENT SAMPLE
SURFACE SEALED 12/07/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5951	0			SC	0 0-0 7 ft Clayey Sand with abundant gravel, brownish black (5YR2/1), gravel maximum size 0 1', average 0 05', angular to sub-angular, consisting of granitics with iron oxide staining, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of granitics and quartz, clay exhibits moderate plasticity, dry and stiff, abundant roots 30% gravel, 37 3% sand, 13 1% silt, 19 6% clay
	BH6094SC			0 70 /2 40	5950	1				0 7-2 4 ft No recovery for this interval
					5949	2			CL	2 4-3 1 ft Silty clay with some sand, light gray (N7) to dark yellowish orange (10YR6/6), sand is fine-grained, sub-angular and consists of plagioclase and quartz with iron oxide staining, clay exhibits moderate plasticity, wet 16 2% sand, 33 5% silt, 50 3% clay
	BH6095SC			0 70 /1 90	5948	3				3 1-4 3 ft No recovery for this interval
					5947	4				
					5946	5				Total depth at 4 3 ft
					5945	6				
					5944	7				
					5943	8				
					5942	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 5	GROUND ELEVATION (FT)	5960 70	PROJECT NUMBER	006 AFT/RI	LOG OF BORING NUMBER
NORTH	753464	AREA IHSS 167 1	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	63392
EAST	2083998	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/11/92	

REMARKS SURFACE SEALED 12/07/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5960	0				0 0-0 7 ft No recovery for this interval
	BH60M6C			0 70 /2 00	5959	1			GW	0 7-2 0 ft Sandy Gravel with trace silt and clay, dusky yellow brown (10YR2/2), gravel maximum size 0 15", average size 0 5", angular to sub-angular consisting of schist and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of schist, quartz, and quartzite with iron oxide staining, dry 95% gravel, 3 4% sand, 0 6% silt, 1% clay
	BH60M7C			2 50 /2 50	5958	2			GW	2 0-4 5 ft Sandy Gravel with trace silt and clay, very dark red (5R2/6) to blackish red (5R2/2) to dark yellowish orange (10YR6/6), gravel maximum size 0 15', average size 0 05', sub-angular to sub-rounded, consisting of quartzite and schist, sand is fine- to coarse-grained, well graded, angular to sub-rounded consisting of quartz, schist and quartzite with iron staining, moist 65% gravel, 30 5% sand, 1 1% silt, 3 4% clay
					5957	3				
					5956	4				
					5955	5				Total depth at 4 5 ft
					5954	6				
					5953	7				
					5952	8				
					5951	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5913 90	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	753646	AREA IHSS 167 1	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	77192
EAST	2084381	LOCATOR NUMBER F11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/19/92	
REMARKS	WELL SET 12/21/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER: BH6011WC, BH6012WC, BH6001WC

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 1 40 /2 00; 0 00 /2 00

DATUM (FT): 5913, 5912, 5911, 5910, 5909, 5908, 5907, 5906, 5905, 5904

DEPTH (FT): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

SC — 0 0-1 2 ft
Sandy Clay with abundant gravel, dark grayish brown (10YR4/2) to yellow brown (10YR5/4), gravel is angular to sub-angular, up to 1" diameter, quartzite feldspar and sandstone clasts, sand is well graded quartz clasts, fine- to coarse-grained with medium size primarily rounded, remainder is sub-angular-angular, fines exhibit medium plasticity
30% gravel 23% sand, 1 4% silt, 45 6% clay

1 2-1 4 ft VOA sample obtained from this interval

1 4-4 0 ft No recovery for this interval

CH — 4 0-4 9 ft
Clay colluvium, grayish brown (10YR5/2) with trace silt, fines are highly plastic, upper 2' is fractured and appears reworked, trace of carbonized vegitation, trace iron oxides on fractures, local caliche filling voids and on some fractures, zone at 8 9-9 5 ft looks broken up and rehealed, trace vegetation in bottom of run within broken and reworked claystone indicates colluvial origin

4 1-5 2 ft 99% VOA sample obtained from this interval

CH — 6 0-7 3 ft Clay colluvium as described above

7 3-7 5 ft VOA sample obtained from this interval

7 5-8 0 ft No recovery for this interval

CH — 8 0-10 1 ft Clay colluvium as described above

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5913 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	753646	AREA IHSS 167 1	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	77192
EAST	2084381	LOCATOR NUMBER F11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/19/92	
REMARKS	WELL SET 12/21/92						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0% 50% 100%	0% 100%		5903 5902 5901 5900 5899 5898 5897 5896 5895 5894	10 11 12 13 14 15 16 17 18 19 20				10 1-12 0 ft No recovery for this interval Boring reamed for well installation Total depth at 12 0 ft

DRAFT

APPENDIX C2.11
IHSS 167.2 - BORING LITHOLOGY LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 1	GROUND ELEVATION (FT)	5930 70	PROJECT NUMBER	006 RFI/RI
NORTH	752800	AREA (MSS 167 2)	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY
EAST	2084079	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/18/92

REMARKS SURFACE SEALED 12/23/92

LOG OF BORING NUMBER 64792

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SILTY CLAYSTONE	0 0-1 0 ft Silty Claystone with fine sand, light olive gray (5Y5/2) to yellowish gray (5Y7/2) with dark yellowish orange (10YR6/6) staining, slightly friable, consisting of fine-grained plagioclase and quartz grains, dry, with localized CaCO3 and abundant plant roots at 0 0-0 1', faint horizontal bedding 2% sand, 18% silt, 18% clay, 80% clay Top of bedrock at 0 0 ft
	B60062C			2 00 /2 00	5930	1				
					5929	2			CLAYEY SILTSTONE	1 0-4 7 ft Clayey Siltstone with trace fine sand, light olive gray (5Y5/2) to yellowish gray (5Y7/2) with dark yellowish orange (10YR6/6) staining, highly friable, sand is fine-grained, sub-rounded, and consists of quartz, dry, with iron oxide staining along horizontal bedding planes 1% sand, 68% silt, 31% clay
	B60063C			2 10 /2 10	5928	3				
					5927	4				Total depth at 9 1 ft
					5926	5				
					5925	6				
					5924	7				
					5923	8				
					5922	9				
					5921	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 2	GROUND ELEVATION (FT)	5930 40	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752795	AREA DISS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	64892
EAST	2084181	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/18/92	

REMARKS SURFACE SEALED 12/23/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRADN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CK SIX	100% CK 100%		5930	0			CL	0 0-0 9 ft Silty Clay with some sand, moderate brown (5YR3/4) to dark yellowish brown (10YR4/2), gravel maximum size of 0 05', average 0 025', angular to sub-angular, consisting of quartzite and quartz, sand is predominantly medium-grained with trace fine and coarse sand, poorly graded, angular to sub-angular, consisting of quartz and quartzite, clay exhibits moderate plasticity, extensive plant roots at 0 0-0 3', dry 2% gravel, 12 2% sand, 25 7% silt, 60 1% clay
	B6006AC			1 50 /2 00	5929	1				
					5928	2			CL	0 9-1 5 ft Silty Clay with trace sand, pale yellowish brown (10YR6/2) to dark yellowish brown (10YR4/2), sand is predominantly medium-grained with trace amounts of fine to coarse sand, angular to sub-angular, consisting of quartz, clay exhibits moderate plasticity with a mottled texture, plant roots and leaves, localized deposits of CaCO3 and stringers of fine sand with iron oxide staining, dry 1 4% sand, 4 9% silt, 93 7% clay
	B6006BC			0 90 /2 20	5927	3				
					5926	4				1 5-2 0 ft No recovery for this interval
									CL	2 0-2 2 ft Silty Clay as described above Top of bedrock at 2 2 ft
					5925	5			SILTY CLAYSTONE	2 2-2 9 ft Silty Claystone with trace sand, light gray (N7) to white (N9) to dark yellow orange (10YR6/6), sand is fine-grained, angular and consists of quartz, clay exhibits moderate plasticity with localized CaCO3 and iron oxide staining and sparse plant roots, dry 3 1% sand, 4 8% silt, 92 1% clay
					5924	6				2 9-4 2 ft No recovery for this interval
					5923	7				Total depth at 4 2 ft
					5922	8				
					5921	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5932 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752803	AREA INSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	64992
EAST	2084281	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/17/92	

REMARKS SURFACE SEALED 12/18/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR	100% GR	100%	5932	0			GW	0 0-1 0 ft Well graded gravel with some sand, some silt and trace clay, occurring as matrix within cobbles and gravel dark yellow brown to yellow brown (10YR3/4 - 5/4), clasts to 2 5" of quartzite and granite, sub-angular to sub-rounded, abundant roots, sand is fine- to coarse-grained sub-angular to angular grains of quartz and feldspar, fines are silt rich with medium plasticity, dry 66% gravel, 23% sand, 10% silt, 1% clay
	BH0056C			1 00 /1 70	5931	1				1 0-1 7 ft No recovery for this interval Top of bedrock at 1 7 ft
					5930	2			SILTSTONE	1 7-2 7 ft Siltstone with trace sand, dark yellow brown (10YR4/2) to light brownish gray (10YR6/2), poorly graded, angular silt, sand is fine- to medium-grained, rounded to sub-rounded quartz grains, local iron oxide staining on fractures and apparent clasts of reworked siltstone (light orange-greenish orange), some white caliche coating fractures in lower 0 2', moist 1% gravel, 9% sand, 86% silt, 9% clay
	BH0057C			1 00 /2 30	5929	3				2 7-4 0 ft No recovery for this interval
					5928	4				Total depth at 4 0 ft
					5927	5				
					5926	6				
					5925	7				
					5924	8				
					5923	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5934 00	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752780	AREA INSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65092
EAST	2084133	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/18/92	

REMARKS SURFACE SEALED 12/23/92

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CHEMICAL SAMPLE/ GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0%	100%	5934	0			GC	0 0-0 5 ft Sandy gravel with some clay and trace silt, very yellowish brown (10YR4/2) to grayish orange (10YR7/4), gravel maximum size 0 15', average 0 1', angular to sub-angular, consisting of quartzite and granites, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartzite granites and quartz with iron oxide staining, clay exhibits moderate plasticity, dry. 50% gravel, 38 8% sand, 2 2% silt, 9% clay
	BH6009SC			1 00 /2 00	5933	1				0 5-1 0 ft No recovery for this interval
					5932	2			GC	1 0-1 5 ft Sandy gravel as described above
										1 5-2 0 ft No recovery for this interval
									GC	2 0-2 6 ft Sandy gravel as described above
	BH6010SC			0 90 /2 00	5931	3				2 6-3 5 ft No recovery for this interval
					5930	4			GC	3 5-3 8 ft Sandy gravel as described above
										3 8-4 0 ft No recovery for this interval
					5929	5				Total depth at 4 0 ft
					5928	6				
					5927	7				
					5926	8				
					5925	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5935 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752776	AREA IHSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	65192
EAST	2084231	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/17/92	

REMARKS SURFACE SEALED 12/18/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL BASIS	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5935	0			GC	0 0-1 0 ft Clayey Gravel, dark yellow brown (10YR4/2) to pale yellow brown (10YR6/2), well graded, cobbles and gravel to 2 5', trace coarse sand of quartzite clasts, angular to sub-angular, fines exhibit moderate plasticity, local beds of dark yellow brown (10YR4/2) fines to 2" thick within the gravels, trace CaCO3 coatings on fractures and void filling, dry in upper 1 0', moist in lower section, weathered bedrock in cuttings at 4 0' 50% gravel, 2% sand, 17% silt, 31% clay
	BH0070AC			1 00 /1 80	5934	1				1 0-1 8 ft No recovery for this interval
	BH0071AC BH0088AC			1 00 /2 20	5933	2			GC	1 8-2 8 ft Clayey Gravel as described above
					5932	3				2 8-4 0 ft No recovery for this interval
					5931	4				Total depth at 4 0 ft
					5930	5				
					5929	6				
					5928	7				
					5927	8				
					5926	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5935 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752741	AREA IHSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65292
EAST	2084082	LOCATOR NUMBER L12	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/16/92	

REMARKS SURFACE SEALED 12/22/92

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5935 5934 5933 5932 5931 5930 5929 5928 5927 5926	0 1 2 3 4 5 6 7 8 9 10			CL	0 0-0 7 ft Clay with some sand and trace gravel, brown (10YR5/3) sand is well graded, very fine-coarse, well rounded to angular, quartz and feldspar clasts, trace mafics and magnetite, fines have medium to high plasticity, trace carbonized vegetation, dry, appears reworked 4% gravel, 17% sand, 4% silt, 75% clay
	BH60726			2 00 /2 00					CL	0 7-1 0 ft Clay with some sand and trace silt, dark gray-brown (10YR4 2), sand is very fine- to medium-coarse, rounded to angular, quartz with trace feldspar Top of bedrock at 1 0 ft
	BH60736			1 00 /2 00					CLAYSTONE	1 0-3 0 ft Claystone with trace silt, gray to grayish brown (10YR6/2-5/2), local magnesium oxide and iron oxide on fractures, dry 5% silt, 95% clay
										3 0-4 0 ft No recovery for this interval
										Total depth at 4 0 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5938 60	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752747	AREA IHSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65392
EAST	2084181	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/16/92	
REMARKS	SURFACE SEALED 12/23/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH6007MC			2.00 /2 00	5938	0			CL	0 0-0 8 ft Sandy Clay with abundant sand and some gravel to 1 25", dark yellow brown (10YR4/2), gravel is sub-rounded to sub-angular sand is medium size, angular quartz and feldspar with trace well-rounded, fine, clear, quartz grains, clay and silt highly plastic, dry 17% gravel, 28% sand, 6% silt, 49% clay Top of bedrock at 0 8 ft
	BH6007SC			1 60 /2 00	5937	1			CLAYSTONE	0 8-3 6 ft Claystone with some silt and trace fine sand, light olive brown to moderate olive gray (5Y5/6-5Y5/2), dense damp clay at 0 8-1 1' with iron oxide staining grades to a dry, fractured claystone with local iron oxide staining, white caliche on fractures and as void filling, claystone clasts with some healing at 2 7-3 6' (possible block of colluvium), highly plastic 3% sand, 10% silt, 87% clay
					5936	2				
					5935	3				3 6-4 0 ft No recovery for this interval
					5934	4				Total depth at 4 0 ft
					5933	5				
					5932	6				
					5931	7				
					5930	8				
					5929	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5937 70	PROJECT NUMBER 006 RFI/MT	LOG OF BORING NUMBER
NORTH	752754	AREA IHSS 167 2	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	65492
EAST	2084281	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED 11/17/92	
REMARKS	SURFACE SEALED 12/18/92				

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SA	100% CR	100%	5937	0			GC	0 0-1 0 ft Clayey Gravel, dark brown to dark yellow brown (10YR3/3-3/6) gravel is angular to sub-rounded quartz and quartzite to 2" diameter, sand is very fine- to coarse-grained, angular to sub-rounded grains, fines have low to medium plasticity, dry, roots 78% gravel, 13% sand, 3% silt, 6% clay
CHEMTAC				1 00 /2 00	5936	1				1 0-2 0 ft No recovery for this interval
					5935	2			CL	2 0-3 0 ft Clay with some sand, trace of gravel and silt, gravel is sub-angular quartzite clasts, sand is sub-angular to angular quartz and quartzite clasts, clay shows medium plasticity, moist 3% gravel, 7% sand, 5% silt, 85% clay
CHEMTAC				1 00 /2 00	5934	3				3 0-4 0 ft No recovery for this interval
					5933	4				Total depth at 4 0 ft
					5932	5				
					5931	6				
					5930	7				
					5929	8				
					5928	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5938 60	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752728	AREA THSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65592
EAST	2084131	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/16/92	

REMARKS SURFACE SEALED 12/22/92

DRAFT

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50%	100% 0% 100%		5938	0			CL	0 0-0 4 ft Clay with some gravel and sand, dark yellow brown (10YR4/4), gravel is sub-angular to 0 1" diameter, sand is very fine- to fine-grained with trace coarse, grains are sub-rounded to rounded quartz with some sub-angular feldspars, fines exhibit medium to high plasticity, dry 20% gravel, 19% sand, 61% silt, 55% clay Top of bedrock at 0 4 ft
RHEOTRAC			2 00 /2 00	5937	1				
				5936	2			CLAYSTONE	0 4-3 0 ft Claystone, light brownish gray to pale brown (10YR6/2 - 6/3) and light yellow brown (2 5YR6/4), orange-yellow iron oxide and manganese oxide on fractures, gravel is highly fractured and appears brecciated at 2 2-3 0', breccia has abundant yellow-orange iron oxide on fractures and pervading rock, fresh material is grayish brown (2 5YR5/2), damp, upper section to 2 2' is dry 5-10% silt, 90-95% clay
RHEOTRSC			1 00 /2 00	5935	3				
				5934	4				3 0-4 0 ft No recovery for this interval Total depth at 4 0 ft
				5933	5				
				5932	6				
				5931	7				
				5930	8				
				5929	9				
					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5942 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752727	AREA 1355 167 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	65692
EAST	2084234	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/18/92	

REMARKS SURFACE SEALED 12/18/92

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5942	0			GM	0 0-1 1 ft Sandy Gravel with some silt and trace clay, brown (10YR3/3 - 3/4), gravel is well graded, angular to sub-angular quartzite to 2 5", some granitics also, sand is well graded, angular to round quartz and feldspar clasts, fines are rich in quartz silt with low plasticity, moist, roots in upper 0 3" 93% gravel, 93% sand, 11% silt, 3% clay
	B6608BC			1 10 /2 00	5941	1				1 1-2 0 ft No recovery for this interval
					5940	2			GM	2 0-2 1 ft Sandy Gravel as described above Top of bedrock at 2 1 ft
									CLAYSTONE	2 1-3 2 ft Weathered Claystone, yellow brown to gray brown (10YR5/4 - 5/2), dense clay forms sharp contact with alluvium in upper 0 3", then darker gray material with local zones of iron oxide staining on fractures and porous material, trace calcite as void filling and coating fractures, 10% porosity, moist 5% silt, 95% clay
	B6608BC			1 20 /2 00	5939	3				3 2-4 0 ft No recovery for this interval
					5938	4				Total depth at 4 0 ft
					5937	5				
					5936	6				
					5935	7				
					5934	8				
					5933	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5937 80	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752695	AREA IHSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65792
EAST	2084082	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/16/92	
REMARKS	SURFACE SEALED 12/22/92						

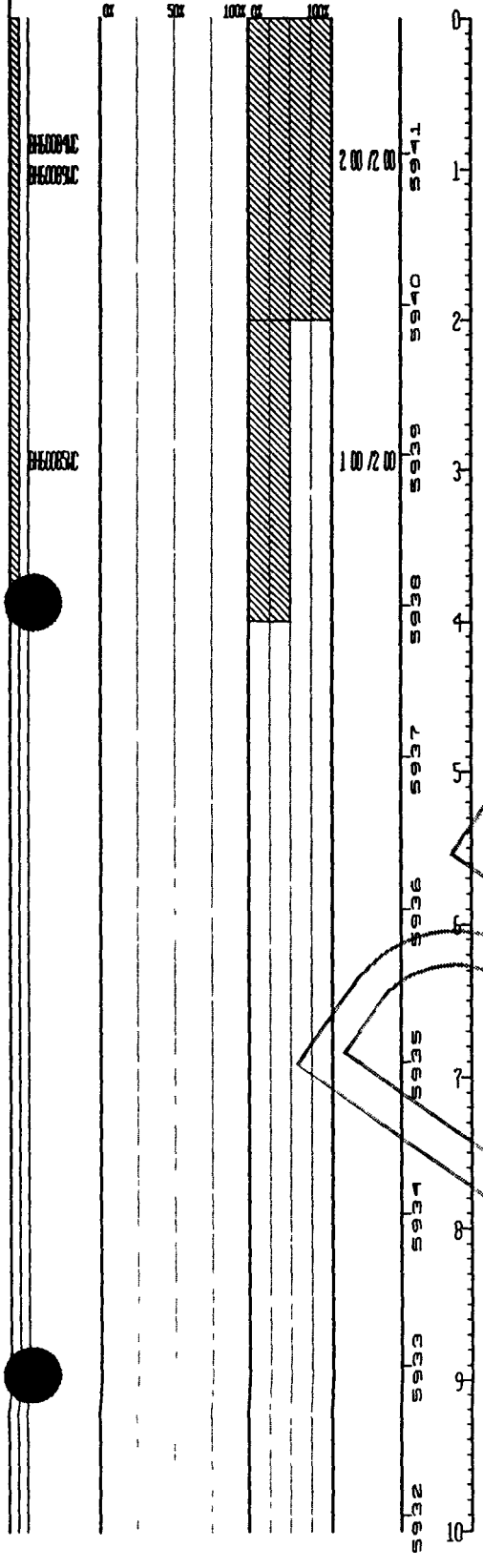
DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60082WC			1 50 /2 00	5937	0–1			CLAYSTONE	0 0-0 3 ft Weathered Claystone, grayish brown to yellow (2 5YR5/2 & 7/6 very friable, approximately 5% quartz and feldspar sand, dry 5% silt, 95% clay Top of bedrock at 0 0 ft Competent bedrock at 0 3 ft
					5936	1–2			CLAYSTONE	0 3-1 5 ft Claystone with some silt, grayish brown to yellow (2 5YR5/2 & 7/6), highly fractured with caliche as void filling, light iron oxide on caliche and at bottom of run, dry 7% silt, 93% clay 1 5-2 0 ft No recovery for this interval
	BH60083WC			1 50 /2 00	5935	2–3			CLAYSTONE	2 0-3 5 ft Claystone with some silt, grayish brown (2 5YR5/2), dry, extensively fractured with iron oxide staining on high angle fractures, pale yellow caliche fills occasional voids 15% silt, 85% clay 3.5-4 0 ft No recovery for this interval
					5934	3–4				Total depth at 4 0 ft
					5933	4–5				
					5932	5–6				
					5931	6–7				
					5930	7–8				
					5929	8–9				
					5928	9–10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5941 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752701	AREA DISS 167 2	CASING DIAMETER (IN)		GEOLOGIST	BRIAN J RUBY	65892
EAST	2084182	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	11/16/92	

REMARKS SURFACE SEALED 12/23/92



WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		SILTY CLAYSTONE	0 0-1 5 ft Silty Claystone, olive yellow to light brownish gray (2 5YR 6/6-5/2), siltier zone at 0 5-1 0 ft , all is weathered with pervasive iron oxide staining, trace of fresh material, dry, fines exhibit low to medium plasticity 0% gravel, 0% sand, 40% silt, 60% clay
		CLAYSTONE	1 5-3 1 ft Claystone with some silt, light olive brown to grayish brown (2 5YR5/6-5/2), distinct caliche coated fracture at 1 5 ft with fresher looking material below, fines have medium to high plasticity, caliche coated fractures show iron oxide halos, dry 0% gravel, 0% sand, 10% silt, 90% clay
			3 1-4 0 ft No recovery for this interval
			Total depth at 4 0 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5944 80	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752705	AREA INSS 167 2	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	65992
EAST	2084282	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/18/92	
REMARKS	SURFACE SEALED 12/18/92						

CHEMICAL SAMPLE GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60086WC			1 00 /2 00	5944	0–1			GC	0 0-1 0 ft Clayey Gravel with some sand, trace silt, dark yellow brown (10YR3/4), gravel is sub-angular to angular to 0 14', predominantly quartzite, sand is well graded, very fine to coarse, angular to sub-angular with some well rounded clear quartz clasts, fines exhibit medium to high plasticity, some caliche coatings on clasts, abundant roots, dry 60% gravel, 13% sand, 4% silt, 23% clay
					5943	1–2				1 0-2 0 ft No recovery for this interval
						2			GC	2 0-2 3 ft Clayey Gravel as described above
	BH60087WC			0 80 /2 00	5942	2–3			CL	2 3-2 8 ft Clay with some gravel, sand and silt, dark yellow brown (10YR3/4), gravel is sub-angular quartzite to 1 5", sand is poorly graded, sub-angular to angular, fine-coarse quartz clasts, fines show medium plasticity, moist 25% gravel, 17% sand, 20% silt, 31% clay
					5941	3–4				2 8-4 0 ft No recovery for this interval
						4				Total depth at 4 0 ft
					5940	5				
					5939	6				
					5938	7				
					5937	8				
					5936	9				
					5935	10				

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APPENDIX C2.12
IHSS 167.3 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

APPENDIX C2.12
IHSS 167.3 - BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5960 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752492	AREA DISS 167 3	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	66092
EAST	2084470	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/18/92	

REMARKS SURFACE SEALED 12/16/92

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	50%	100% 0% 100%						
	B60093C			1 10 / 2 00	5960	0			SC	0 0-1 1 ft Clayey Sand with abundant gravel, very dark brown (10YR2/2), gravel is sub-angular to 1 5", sand is well graded, very fine to coarse, with angular to sub-angular grains, and occasionally some very round grains, fines show medium plasticity, local zones of caliche throughout and gravel heavily coated below 0 5', dry 40% gravel, 35% sand, 5% silt, 20% clay
					5959	1				1 1-2 0 ft No recovery for this interval
	B60094C			1 80 / 2 00	5958	2			GW	2 0-3 8 ft Well graded gravel, grayish brown (10YR5/2), gravel is sub-rounded to angular, quartzite and granite clasts, coated heavily with caliche, sand is well graded, angular to sub-angular with similar lithology as the gravel, fines are rich in CaCO3 and exhibit medium plasticity, dry, note, nearly all fines taken for sample 70% gravel, 23% sand, 1% silt, 6% clay
					5957	3				
					5956	4				3 8-4 0 ft No recovery for this interval Tool depth at 4 0 ft
					5955	5				
					5954	6				
					5953	7				
					5952	8				
					5951	9				
						10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5958 90	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752455	AREA IHSS 167 3	CASING DIAMETER (IN)	GEOLOGIST LVS	66192
EAST	2084618	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED 11/19/92	

REMARKS SURFACE SEALED 12/07/92

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						0			GW	0 0-1 2 ft Well graded gravel, brown (10YR4/3), to white matrix in vari-colored cobbles and gravel of quartzite and meta-sediments, maximum size greater than 2 5" shown by abundant rock broken during drive sampling, heavy caliche coating clasts at 2 0-3 1 ft, sand is well graded, very fine to very coarse grains, angular, fines exhibit low to medium plasticity 78% gravel, 18% sand, <1% silt, 4% clay
	BH60095WC			1 20 /2 00	5958	1				
					5957	2				1 2-2 0 ft No recovery for this interval
									GW	2 0-3 1 ft Well graded gravel as described above
	BH60096WC			1 10 /2 00	5956	3				
										3 1-4 0 ft No recovery for this interval
					5955	4				Total depth at 4 0 ft
					5954	5				
					5953	6				
					5952	7				
					5951	8				
					5950	9				
					5949	10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5961 20	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH 752409		AREA IHSS 167 3	CASING DIAMETER (IN)	GEOLOGIST LYS	66292
EAST 2084538		LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED 11/19/92	
REMARKS SURFACE SEALED 12/07/92					

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5961	0			GC	0 0-1 2 ft Clayey Gravel with some sand, pinkish gray (7 5YR7/2), caliche rich matrix within coarse gravel and cobbles to 22' diameter, gravel is rounded to angular, quartzite and granite, sand is well graded, fine- to coarse-grained, angular to sub-rounded, quartzite and feldspar clasts, fines exhibit low plasticity 70% gravel, 18% sand, 3% silt, 9% clay
	BH6097AC			1 20 /2 00	5960	1				1 2-2 0 ft No recovery for this interval
					5959	2			GC	2 0-3 5 ft Clayey Gravel as described above
	BH6098AC			1 50 /2 00	5958	3				3 5-4 0 ft No recovery for this interval
					5957	4				Total depth at 4 0 ft
					5956	5				
					5955	6				
					5954	7				
					5953	8				
					5952	9				
						10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5958 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752434	AREA 1HSS 167 3	CASING DIAMETER (IN)		GEOLOGIST	LVS	66392
EAST	2084671	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/19/92	
REMARKS	SURFACE SEALED 12/07/92						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%						GC	0 0-0 8 ft Sandy Gravel with some clay, dark yellow brown (10YR3/4), gravel is sub-rounded to sub-angular quartzite clasts to 0 2", sand is poorly graded, medium graded, angular to sub-angular, fines exhibit medium plasticity 58% gravel, 25% sand, 2% silt, 15% clay
	BH0099C			1 10 /2 00	5958 5957	0 1			GM	0 8-1 4 ft Sandy Gravel with some silt, yellow brown (10YR5/4), gravel is sub-angular, up to 0 18" diameter, sand is well graded, fine to very coarse, angular to sub-angular quartz, quartzite and feldspar, fines show medium to high plasticity 50% gravel, 39% sand, 10% silt, 1% clay
					5956	2				1 4-2 0 ft No recovery for this interval
	BH0100C			1 50 /2 00	5955	3			GM	2 0-3 0 ft Sandy Gravel as described above
					5954	4			SW	3 0-3 5 ft Well graded sand with abundant gravel, yellow brown (10YR5/4), gravel is sub-rounded to sub-angular quartzite and sedimentary clasts to 1 25", sand is well graded, angular to sub-angular, very fine- to coarse-grained, fines have low plasticity 35% gravel, 59% sand, 5% silt, 1% clay
					5953	5				3 5-4 0 ft No recovery for this interval
					5952	6				Total depth at 4 0 ft
					5951	7				
					5950	8				
					5949	9				
						10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5963 20	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752364	AREA 1NSS 167 3	CASING DIAMETER (IN)		GEOLOGIST	LYS	66492
EAST	2084467	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/19/92	

REMARKS SURFACE SEALED 12/16/92

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%		5963	0			GM	0 0-1 1 ft Silty gravel/poorly graded gravel, very dark brown (10YR2/2) gravel average size 1 2", angular to sub-angular and broken, sand is well graded, angular and broken, fine- to coarse-grained, fines exhibit low to medium plasticity 80% gravel, 12% sand, 6% silt, 2% clay
	BH601101C BH601105C	50%		2 00 /1 10	5962	1				1 1-2 0 ft No recovery for this interval
				1 10 /0 60	5961	2			SC	2 0-3 4 ft Well graded sand, light yellow brown (10YR6/4) to very pale brown (10YR8/3), gravel is rounded to sub-rounded, sand is very fine- to coarse-grained, angular to sub-rounded with 40% CaCO3 as cement, fines show medium plasticity, entire interval is caliche as matrix 9% gravel, 72% sand, 8% silt, 12% clay
	BH601102C BH601102CDS/TSO			1 40 /2 00	5960	3				3 4-4 0 ft No recovery for this interval
					5959	4				Total depth at 4 0 ft
					5958	5				
					5957	6				
					5956	7				
					5955	8				
					5954	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5961 60	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752366	AREA IHSS 167 3	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	66592
EAST	2084603	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/20/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH601003C			1 30 /2 00	5961	0			GM	0 0-1 3 ft Sandy Gravel with some silt and trace clay and CaCO3, dusky yellow brown (10YR2/2) to white (N9), gravel maximum size is 0 15', average size 0 1', angular to sub-angular, consisting of quartzite, sand is medium- to fine-grained, poorly graded angular to sub-angular, consisting of quartz, clay exhibits low plasticity, extensive roots at 0 0-0 1', top soil, moist 65% gravel, 23 7% sand, 5 7% silt, 5 6% clay
					5960	1				1 3-2 0 ft No recovery for this interval
	BH601004C			1 30 /2 00	5959	2			SP	2 0-3 3 ft Gravelly Sand with trace silt and CaCO3, moderate yellowish brown (10YR5/4) to dark yellowish orange (10 6/6) to white (N9), gravel maximum size 0 15', average size 0 05', angular to sub-angular, consisting of quartzite and quartz, sand is fine- to coarse-grained (predominantly medium- to coarse-grained), poorly graded, angular to sub-rounded, consisting of quartz and quartzite, with localized iron oxide and manganese oxide staining, CaCO3 and carbonaceous material is present, moist 40% gravel, 57 7% sand, 0 9% silt, 1 4% CaCO3
					5958	3				3 3-4 0 ft No recovery for this interval
					5957	4				Total depth at 4 0 ft
					5956	5				
					5955	6				
					5954	7				
					5953	8				
					5952	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT) 5962 90	PROJECT NUMBER 006 RFI/RI	LOG OF BORING NUMBER
NORTH	752323	AREA DISS 167 3	CASING DIAMETER (IN)	GEOLOGIST MICHAEL MAY	66692
EAST	2084536	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED 11/20/92	

REMARKS SURFACE SEALED 12/16/92

CHEMICAL SAMPLE / GRADATIONAL SAMPLE / DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	5962	0			GW	0 0-0 9 ft Well graded gravel, brown (10YR4/3) with very pale brown (10YR8/4) caliche blebs and clast like bodies within the fine matrix, gravel is various sizes from 0 25" to 1 25", sub-angular and broken, sand is well graded, fine- to coarse angular, with abundant caliche coating, fines are predominantly CaCO3 with a trace of clay, low plasticity, moist 81 6% gravel, 14 6% sand, 1% silt, 3% clay
	BH60105C			0 90 /2 00	5961	1				0 9-2 0 ft No recovery for this interval
						2			GW	2 0-2 2 ft Well graded gravel as described above
	BH60106C			1 00 /2 00	5960	3			SP	2 2-3 0 ft Poorly graded sand with some gravel, yellow brown to pale yellow (10YR5/8-2 5Y7/9), gravel and fines show heavy caliche coating, sand is predominantly very fine to medium, angular to sub-angular grains, fines are CaCO3 rich and show medium to high plasticity 20% gravel, 70% sand, 4% silt, 6% clay
					5959	4				3 0-4 0 ft No recovery for this interval
										Total depth at 4 0 ft
					5958	5				
					5957	6				
					5956	7				
					5955	8				
					5954	9				
					5953	10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5961 20	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	752333	AREA IHSS 167 3	CASING DIAMETER (IN)		GEOLOGIST	MICHAEL MAY	66792
EAST	2084674	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	11/20/92	
REMARKS	SURFACE SEALED 12/16/92						

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CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5961	0			GC	0 0-1 0 ft Sandy Gravel with trace silt, clay and CaCO3, dusky yellow brown (10YR2/2), gravel maximum size 0 2', average size 0 05', sub-angular, consisting of quartzite and quartz and granitics, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, with localized iron oxide staining, fines consist of silt, clay, and CaCO3 with inclusion of CaCO3 in silt and clay, clay exhibits moderate to high plasticity, top soil 0 0-0 2' extensive plant roots, moist 70% gravel, 18 9% sand, 2 2% silt, 8 9% clay
	BH6010RC BH6011RC			1 00 /2 00	5960	1				
					5959	2				1 0-2 0 ft No recovery for this interval
	BH6010RC			1 00 /2 00	5958	3			GW	2 0-3 0 ft Sandy Gravel with trace silt, clay, and CaCO3, white (N9) to gray (N5), gravel maximum size 0 1', average size 0 025', angular to sub-angular, consisting of quartz and quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, with localized iron oxide, clay exhibits very low plasticity, staining, build up of CaCO3 (caliche) around gravel, moist 50% gravel, 47% sand, 1 5% silt, 1 6% clay
					5957	4				3 0-4 0 ft No recovery for this interval
										Total depth at 4 0 ft
					5956	5				
					5955	6				
					5954	7				
					5953	8				
					5952	9				
						10				

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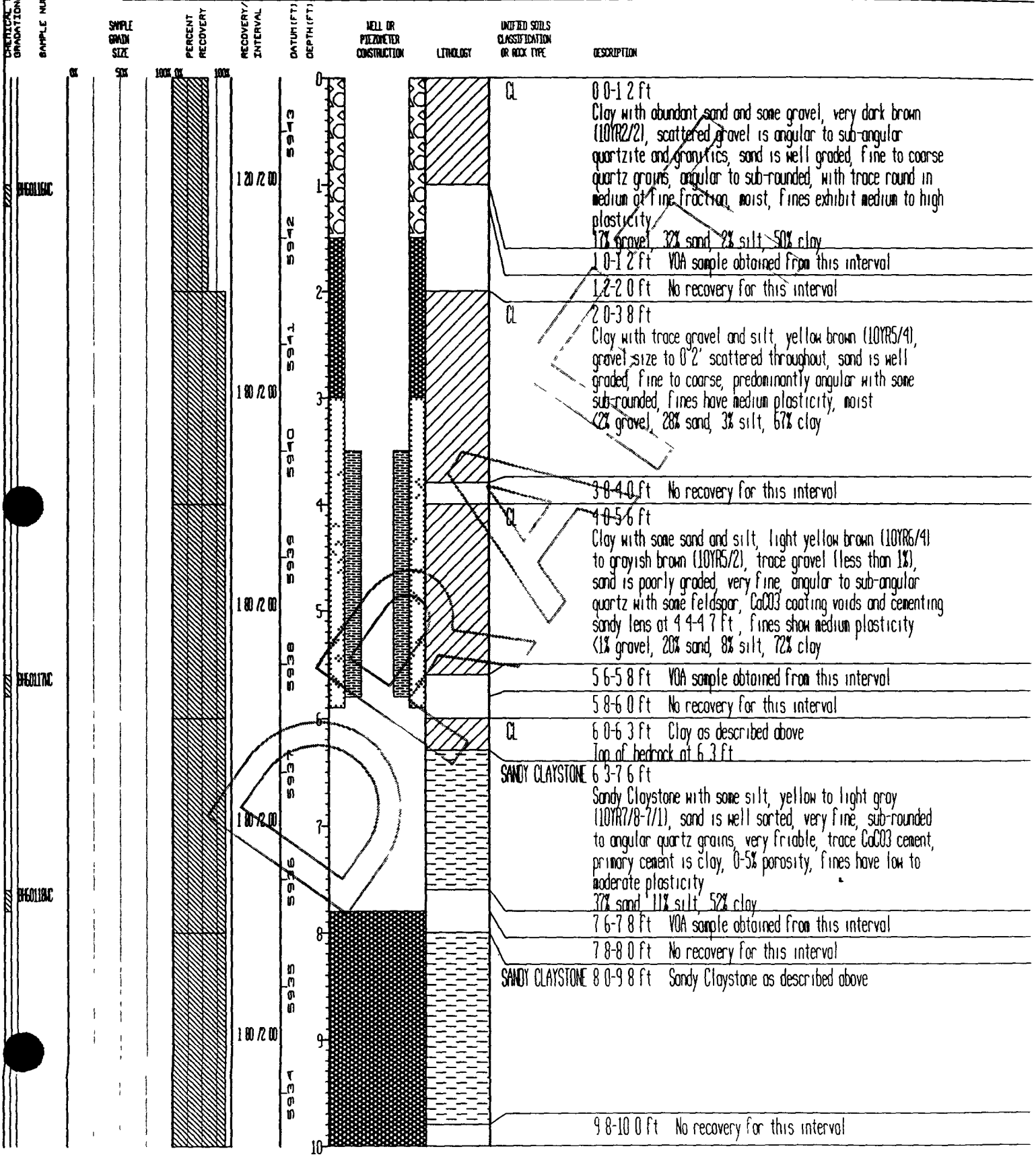
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5943 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752546	AREA (MSS 167 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY MIYOSHI	76792
EAST	2084618	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/18/92	
REMARKS	WELL SET 12/07/92						



CL 0 0-1 2 ft
Clay with abundant sand and some gravel, very dark brown (10YR2/2), scattered gravel is angular to sub-angular quartzite and granitics, sand is well graded, fine to coarse quartz grains, angular to sub-rounded, with trace round in medium of fine fraction, moist, fines exhibit medium to high plasticity
17% gravel, 32% sand, 2% silt, 50% clay

1 0-1 2 ft VOA sample obtained from this interval

1 2-2 0 ft No recovery for this interval

CL 2 0-3 8 ft
Clay with trace gravel and silt, yellow brown (10YR5/4), gravel size to 0 2' scattered throughout, sand is well graded, fine to coarse, predominantly angular with some sub-rounded, fines have medium plasticity, moist
(2% gravel, 28% sand, 3% silt, 67% clay

3 8-4 0 ft No recovery for this interval

CL 4 0-5 6 ft
Clay with some sand and silt, light yellow brown (10YR6/4) to grayish brown (10YR5/2), trace gravel (less than 1%), sand is poorly graded, very fine, angular to sub-angular quartz with some feldspar, CaCO3 coating voids and cementing sandy lens at 4 4-4 7 ft, fines show medium plasticity
(1% gravel, 20% sand, 8% silt, 72% clay

5 6-5 8 ft VOA sample obtained from this interval

5 8-6 0 ft No recovery for this interval

CL 6 0-6 3 ft Clay as described above
Top of bedrock at 6 3 ft

SANDY CLAYSTONE 6 3-7 6 ft
Sandy Claystone with some silt, yellow to light gray (10YR7/8-7/1), sand is well sorted, very fine, sub-rounded to angular quartz grains, very friable, trace CaCO3 cement, primary cement is clay, 0-5% porosity, fines have low to moderate plasticity
32% sand, 11% silt, 52% clay

7 6-7 8 ft VOA sample obtained from this interval

7 8-8 0 ft No recovery for this interval

SANDY CLAYSTONE 8 0-9 8 ft Sandy Claystone as described above

9 8-10 0 ft No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 2	GROUND ELEVATION (FT)	5943 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752546	AREA DESS 167 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	KERRY MIYOSHI	76792
EAST	2084618	LOCATOR NUMBER 611	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/18/92	
REMARKS	WELL SET 12/07/92						

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) / DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 /2 00	5933 5932 5931 5930 5929 5928 5927 5926 5925 5924				SANDY CLAYSTONE 10 0-10 6 ft Sandy Claystone as described above SANDY CLAYSTONE 10 6-12 0 ft Sandy Claystone with abundant silt, white (10YR8/1), very friable, very fine, angular to sub-rounded quartz grains, less than 2% porosity, argillaceous cement, fines exhibit low plasticity 37% sand, 25% silt, 38% clay 12 0-12 2 ft No recovery for this interval Total depth at 12 2 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	5962 50	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752243	AREA DESS 167 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	77392
EAST	2084299	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/20/92	
REMARKS	WELL SET 12/02/92						

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CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			0			SC	0 0-1 0 ft Clayey Gravel with abundant sand, dark brown to brown (10YR3/3-4/3), gravel is sub-rounded to sub-angular and broken up to 0 21', average size 05- 1', sand is poorly graded, fine- to medium-grained with some coarse, angular to sub-rounded grains, fines show low plasticity and have abundant CaCO3 in matrix, CaCO3 also coats clasts, dry 30% gravel, 27% sand, 9% silt, 34% clay
				1 00 /2 00	5962	1				1 0-2 0 ft No recovery for this interval
					5961	2			SC	2 0-3 8 ft Gravelly Sand with some clay and trace silt, light gray to pale yellow (2 5Y7/2-7/4), local zones of yellow brown (10YR5/4), gravel is angular quartz and quartzite, well graded with clasts to 0 2 ft, sand is well graded, fine- to coarse-grained, angular to sub-rounded, with a caliche rich matrix, fines show low to medium plasticity, dry at 2 0-6 0 ft, moist at 6 0-7 0 ft 29% gravel, 58% sand, 5% silt, 13% clay
				1 80 /2 00	5960	3				3 8-4 0 ft VOA sample obtained from this interval
					5959	4			SC	4 0-7 0 ft Gravelly Sand as described above Top of bedrock at 7 0 ft
				2 00 /2 00	5958	5				
					5957	6				
				1 50 /2 40	5956	7			CLAYSTONE	7 0-7 3 ft Claystone as described below
					5955					7 3-7 5 ft VOA sample obtained from this interval
										7 5-8 0 ft No recovery for this interval
				2 00 /2 00	5954	8			CLAYSTONE	8 0-13 8 ft Claystone with trace sand and silt, upper 2 ft light yellow brown to light brownish gray (2 5Y6/4-6/2), iron oxide concretions and nodules in upper 1 ft, zones of heavy iron oxide staining throughout, grades with depth to grayish brown and light olive brown (2 5Y5/2-5/4), white CaCO3 fills voids throughout claystone, trace of manganese oxide and additional iron oxide on fractures and disseminating through rock, moist, fines exhibit medium plasticity 4% sand, 2% silt, 94% clay
					5953	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 0	GROUND ELEVATION (FT)	592 59	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	752243	AREA DISS 167 3	CASING DIAMETER (IN)	2 0	GEOLOGIST	BRIAN J RUBY	77392
EAST	2084299	LOCATOR NUMBER K11	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/20/92	
REMARKS	WELL SET 12/02/92						

DRAFT

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%							
				2 00 /2.00	5952	10				
					5951	11				
				1 80 /2 00	5950	12				
					5949	13				
					5948	14				13 8-14 0 ft No recovery for this interval
					5947	15				Total depth at 14 0 ft
					5946	16				
					5945	17				
					5944	18				
					5943	19				
						20				

APPENDIX C2.13
IHSS 216.1 - BORING LITHOLOGY LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5924 80	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751384	AREA IHSS 216 1	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	78092
EAST	2087565	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	3 0	DATE DRILLED	12/16/92	
REMARKS	SURFACE SEALED 12/21/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60450UC BH60452UC			1 30 /2 00	5924	0–1			ML	0 0-1 1 ft Clayey Silt with some gravel and sand, dark brown (7 5YR3/2) gravel maximum size 0 1', average size 0 05', sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low plasticity, extensive plant roots at 0 0-0 5 ft, caliche zone at 1 0-1 3 ft, dry 24 6% gravel, 7 4% sand, 40 8% silt, 27 2% clay
					5923	1–2				1 1-1 3 ft VOA sample obtained from this interval
										1 3-2 0 ft No recovery for this interval
	BH60451UC			1 50 /2 00	5922	2–3			ML	2 0-3 1 ft Sandy Silt with some clay and trace gravel, light gray (10YR7/2), white (10YR8/2), gravel maximum and average size 0 05', angular, consisting of quartzite, sand is fine-grained, well sorted, angular to rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots and trace gravel and medium sand suggest reworked bedrock, stringer of CaCO3 at 3 1-3 5 ft, dry 1% gravel, 27 3% sand, 60 8% silt, 10 9% clay Top of bedrock at 3 1 ft
					5921	3–4			CLAYEY SILTSTONE	3 1-3 5 ft Clayey Siltstone with some sand, light gray (10YR7/3), white (10YR8/2), sand is fine-grained, well sorted, angular to rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, stringers of CaCO3 and caliche present, less than 10% porosity, argillaceous cementation, moderately friable, dry 0% gravel, 15% sand, 61 2% silt, 23 8% clay
					5920	4–5				3 5-4 0 ft No recovery for this interval
					5919	5–6				Total depth at 4 0 ft
					5918	6–7				
					5917	7–8				
					5916	8–9				
					5915	9–10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5919 90	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751238	AREA DESS 216 1	CASING DIAMETER (IN)		GEOLOGIST	KERRY KIYOSHI	78192
EAST	2087768	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/18/92	

REMARKS SURFACE SEALED 12/21/92

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
								CL	0 0-1 0 ft Gravelly Clay with some sand and silt, dark brown (7 5YR3/2) gravel maximum size 0 1", average size 0 02", angular to sub-angular, consisting of quartz, quartzite, and schist, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, quartzite, and schist, fines exhibit moderate plasticity, plant roots at 0 0-1 0 ft iron oxide staining on some grains, caliche present, dry 25 4% gravel, 15 6% sand, 14 8% silt, 44 2% clay
	B6650UC			1 60 /2 00					1 0-1 4 ft No recovery for this interval
	B6650VC								1 4-1 6 ft VOA sample obtained from this interval
									1 6-2 0 ft No recovery for this interval
	B6650WC			1 60 /2 00				CL	2 0-3 6 ft Silty Clay with some gravel and sand, light gray (10YR7/2), white (10YR8/2), gravel maximum size 0 2", average size 0 1" angular to sub-angular, consisting of quartz, quartzite, and schist, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz, quartzite, and schist, fines exhibit low plasticity, CaCO3 present, dry 22 3% gravel, 15 3% sand, 24 8% silt, 37 2% clay
									3 6-4 0 ft No recovery for this interval
									Total depth at 4 0 ft

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5917 60	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751444	AREA IHSS 216 1	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	78292
EAST	2087756	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	3 0	DATE DRILLED	12/16/92	
REMARKS							

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CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH60455C BH60456C BH60457C			1 60 /2 00	5917 5916	0 1			CL	0 0-1 2 ft Gravelly Clay with some sand and silt, dark brown (7 5YR3/2) gravel maximum size 0 1', average size 0 025', angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, plant roots at 0 0-1 6 ft , dry 19 4% gravel, 13 2% sand, 13 5% silt, 53 9% clay
										1 2-1 4 ft VOA sample obtained from this interval
										1 4-1 6 ft VOA sample obtained from this interval
						2				1 6-2 0 ft No recovery for this interval
	BH60456C			1 40 /2 00	5915 5914	3			CL	2 0-3 4 ft Silty Clay with some sand and trace gravel, light gray (10YR7/2), white (10YR8/2), gravel maximum and average size 0 025', angular, consisting of quartzite, sand is medium- to fine-grained, poorly graded, angular to sub-angular, consisting of quartz and quartzite, fines exhibit moderate plasticity, CaCO3 present in voids, caliche at 3 1 ft , dry 1 5% gravel, 11 5% sand, 21 8% silt, 65 2% clay
						4				3 4-4 0 ft No recovery for this interval
										Total depth at 4 0 ft
					5913 5912 5911 5910 5909 5908	5 6 7 8 9 10				

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STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5923 20	PROJECT NUMBER	OU6 RFI/RI	LOG OF BORING NUMBER
NORTH	751187	AREA IHSS 216 1	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	78392
EAST	2087573	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	3 0	DATE DRILLED	12/17/92	
REMARKS	SURFACE SEALED 12/21/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5923	0			CL	0 0-0 7 ft Silty Clay with some sand and trace gravel, very dark brown (10YR2/2), gravel maximum and average size 0 025', sub-rounded, consisting of quartzite, sand is fine-grained, well sorted, with trace amounts of medium and coarse sand, sub-angular to sub-rounded, consisting of quartzite and quartz, fines exhibit moderate plasticity, abundant plant roots at 0 0-0 7 ft, dry 1 2% gravel, 12 4% sand, 34 6% silt, >51 8% clay
	BH6046AC			1 60 /2 00	5922	1				
	BH6046BC									
					5921	2			CL	0 7-1 4 ft Silty Clay as described below
										1 4-1 6 ft VOA sample obtained from this interval
										1 6-2 0 ft No recovery for this interval
	BH6046SC			1 50 /2 00	5920	3			CL	2 0-3 5 ft Silty Clay with trace sand, light brownish gray (10YR6/2), pale brown (10YR6/3), white (10YR8/1), very pale brown (10YR7/4), yellow (10YR7/8), sand fine-grained, well sorted, sub-rounded, consisting of quartz, fines exhibit moderate plasticity, plant roots 0 7-1 6 ft and 2 0-3 0 ft, clay clasts (appearance of reworked bedrock), 45 degree fracture at 3 2 ft healed with CaCO3, extensive iron oxide staining at 3 0-3 5 ft, dry 0% gravel, 2 1% sand, 9 8% silt, 88 1% clay
					5919	4				
										3 5-4 0 ft No recovery for this interval
					5918	5				Total depth at 4 0 ft
					5917	6				
					5916	7				
					5915	8				
					5914	9				
						10				

DRAFT

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5912 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751472	AREA EMSS 216 2	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	78492
EAST	2087970	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	3 0	DATE DRILLED	12/17/92	

REMARKS SURFACE SEALED 12/21/92

DRAFT

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%							
				5912	0			GC	0 0-1 4 ft Clayey Gravel with some sand, trace silt, dark brown (10YR3/3), light brownish gray (10YR6/2), gravel maximum size 0 2", average size 0 025", angular to sub-angular, consisting of quartzite, sand is fine- to coarse-grained well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit low to moderate plasticity, abundant plant roots at 0 0-1 0 ft., caliche at 2 2 ft", dry 35 7% gravel, 16 0% sand, 4 8% silt, 43 5% clay
EHEM60C			1 60 /2 00	5911	1				1 4-1 6 ft VOA sample obtained from this interval
EHEM62C									1 6-2 0 ft No recovery for this interval
EHEM63C				5910	2			GC	2 0-2 2 ft Clayey Gravel as described above
								CL	2 2-3 5 ft Silty Clay with some sand, trace gravel, white (10YR8/1), light gray (10YR7/1), gravel maximum size 0 1", average size 0 025", angular to sub-angular, consisting of quartz, sand is fine- to coarse-grained, well graded, sub-angular to sub-rounded, consisting of quartz, fines exhibit moderate plasticity, plant roots present with sand and gravel suggest reworked bedrock, caliche zone at 2 2-4 0 ft, local iron oxide staining, dry 1 1% gravel, 8 9% sand, 9 0% silt, 81 0% clay
EHEM61C			1 50 /2 00	5909	3				3 5-4 0 ft No recovery for this interval
				5908	4				Total depth at 4 0 ft
				5907	5				
				5906	6				
				5905	7				
				5904	8				
				5903	9				
					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 4 0	GROUND ELEVATION (FT)	5911 30	PROJECT NUMBER	006 RFI/RI	LOG OF BORING NUMBER
NORTH	751287	AREA IHSS 216 1	CASING DIAMETER (IN)		GEOLOGIST	KERRY MIYOSHI	78592
EAST	2087963	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	12/18/92	
REMARKS	SURFACE SEALED 12/21/92						

DRAFT

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5911	0			SC	0 0-1 2 ft Gravelly Sand with abundant clay and trace silt, dark reddish brown (5YR3/2), red (2 5YR4/8), gravel maximum size 0 15', average 0 1' angular to sub-rounded, consisting of quartzite, sand is fine- to coarse-grained, well graded, angular to sub-rounded, consisting of quartz and quartzite, fines exhibit moderate plasticity, extensive plant roots at 0 0-0 3 ft', mottled texture, dry 31 3% gravel, 34 0% sand, 3 5% silt, 31 4% clay
	B6G003C			1 60 /2 00	5910	1				1 2-1 4 ft VOA sample obtained from this interval
	B6G003D/S/MSD									1 4-1 6 ft VOA sample obtained from this interval
	B6G003C				5909	2				1 6-2 0 ft No recovery for this interval
									SC	2 0-3 1 ft Gravelly Sand as described above
	B6G004C			1 10 /2 00	5908	3				3 1-4 0 ft No recovery for this interval
					5907	4				Total depth at 4 0 ft
					5906	5				
					5905	6				
					5904	7				
					5903	8				
					5902	9				
						10				

DRAFT

APPENDIX C3
HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS; AND IHSS 141 VADOSE ZONE DATA

APPENDIX C3.1
OU2 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT) 5956 20	PROJECT NUMBER WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN) 6/2	GEOLOGIST DC/JSW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN) 10/6	DATE DRILLED 06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15' 30' AND 50'

CENTER'N SAMPLE GRADATIONAL BAR	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%		5956 5955 5954 5953 5952 5951 5950 5949 5948 5947	0 1 2 3 4 5 6 7 8 9 10				NO SAMPLE Interval not sampled Begin rotary core drilling at 60 3'

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER	
NORTH 749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692	
EAST 2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92		

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15' 30' AND 50

CHEMICAL/PHYSICAL GRADATIONAL BAR

SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM(FT)

DEPTH(FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

0% 50% 100% 0% 100%

5946 5945 5944 5943 5942 5941 5940 5939 5938 5937

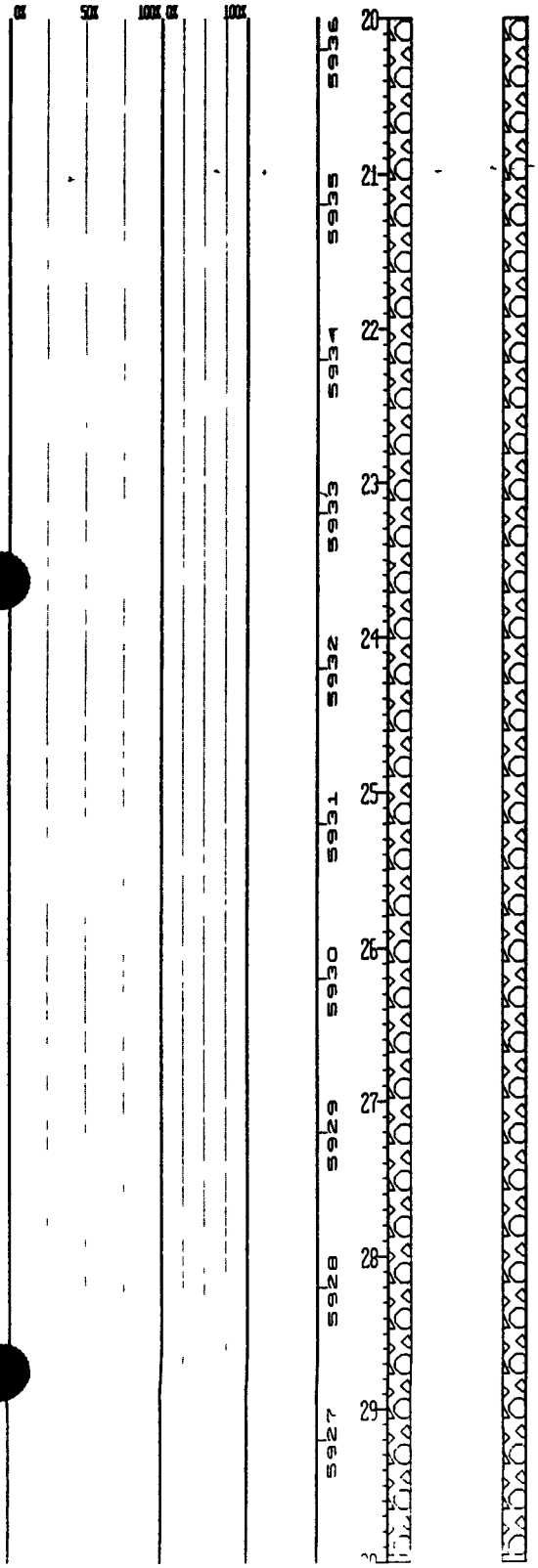
10 11 12 13 14 15 16 17 18 19

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRADATION SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

0% 50% 100% 0% 100%



STATE PLANE COORDINATE		TOTAL DEPTH (FT)	90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA	OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

CHEMICAL SAMPLE GRADATIONAL SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0 90 /63 70	5926	30				
				5925	31				
				5924	32				
				5923	33				
				5922	34				
				5921	35				
				5920	36				
				5919	37				
				5918	38				
				5917	39				
					40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13		GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP
NORTH	749554	AREA OU 2		CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW
EAST	2087077	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92

LOG OF BORING NUMBER

46692

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5916	40				
				5915	41				
				5914	42				
				5913	43				
				5912	44				
				5911	45				
				5910	46				
				5909	47				
				5908	48				
				5907	49				
					50				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	OC/JAW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

FINITIAL SAMPLE GRADATIONAL SA	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%		5906	50				
					5905	51				
					5904	52				
					5903	53				
					5902	54				
					5901	55				
					5900	56				
					5899	57				
					5898	58				
					5897	59				
						60				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

DEPTH (FT)	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
60		OR	100% OR		5896			NO SAMPLE	Core Loss, No Retrieval
61		50%	100%		5895				
62					5894				
63					5893				
64					5892			CLAYSTONE	Claystone with trace silt Olive gray(5Y 4/1) grading to olive black(5Y 2/1) Core consists of slightly damp, friable to mod friable, mod indurated claystone, slightly more indurated near bottom of interval Trace to moderate carbonaceous material imparts olive black cast to the claystone Several sub-vertical, unhealed fractures noted in the 64 7' to 65 2' portion of this interval Bedding is somewhat obscured, however suggests sub-horizontal to horizontal bedding <5% Silt >95% Clay
65					5891				
66				100/5 00	5890				
67					5889			NO SAMPLE	Core Loss, No Retrieval
68					5888			CLAYSTONE	Claystone with some silt Olive gray(5Y 4/1) grading to olive black(5Y 2/1) Core consists of slightly damp, weakly friable to mod friable claystone Interval 71 4' to 73 7' less friable and mod indurated Trace to mod carbonaceous material v f g disseminations imparting olive-black cast to rock Several thin <2mm cabonaceous stringers noted cross-cutting apparent sub-horizontal to horizontal bedding Several sub-vertical thin fractures(unhealed) noted in the interval 69 5' to 70 5 Claystone has greater silt content near portion of interval <5% Silt >95% Clay
69					5887				
70									

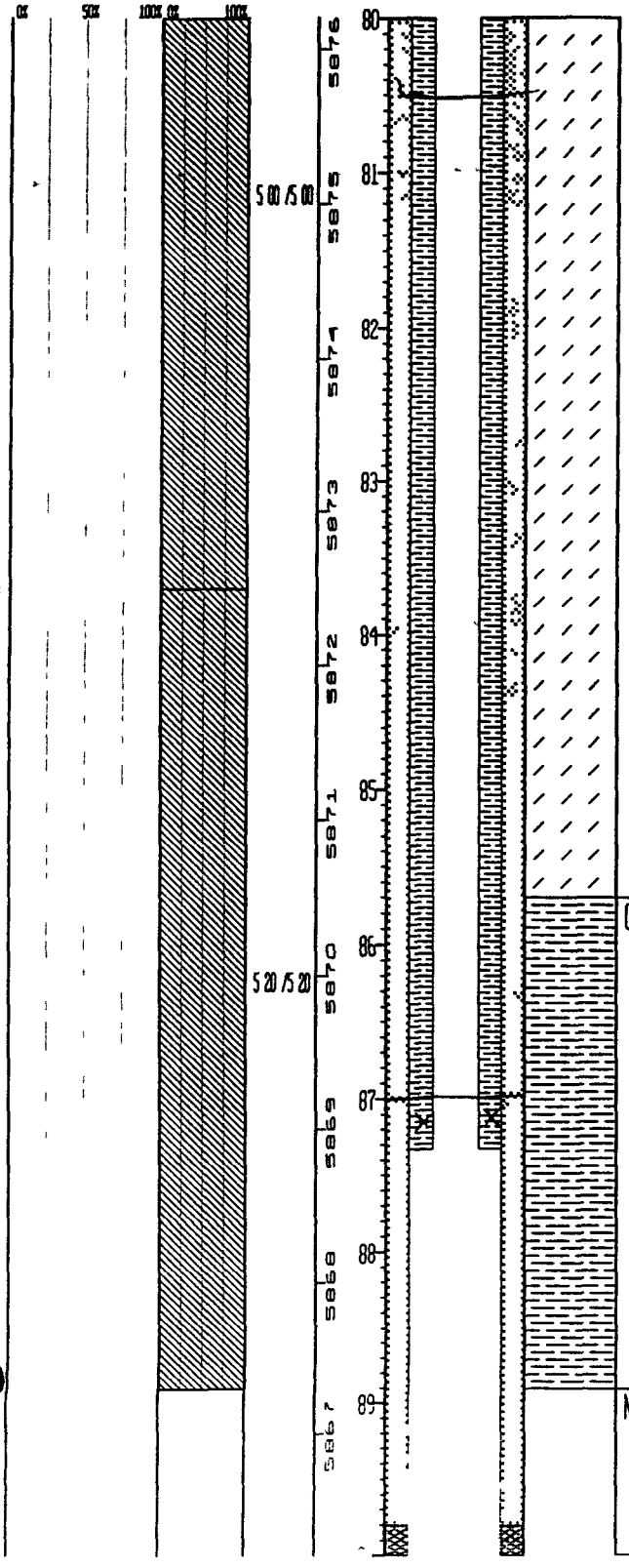
STATE PLANE COORDINATE		TOTAL DEPTH (FT)	90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA	OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15' 30' AND 50'

CRITICAL SAMPLE GRADATIONAL BAR	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	5 00 /5 00	sea6 sea5 sea4 sea3 sea2 sea1 sea0 sa79 sa78 sa77	70 71 72 73 74 75 76 77 78 79				
				4 00 /5 00					SANDY SILTSTONE	Sandy Siltstone with some clay Olive gray(5Y4/1) grading to a mottled dark greenish gray(5GY 4/1) Core consists of dry to slightly damp intervals, dampness in thin clay rich organic intervals(1"-3") Mod well indurated, mod friable Very thin laminae of mixed lithologies grading from thin clay laminae to silt to v f g sand, sand grains v f g, sub-angular to sub-rounded with minor thin silt laminae Bedding is comprised of thin alternating silts, sands and clay laminae apparently disturbed by soft sediment deformation 25% V F G Sand 65% Silt 10% Clay
									SILTY SANDSTONE	Silty Sandstone with some clay Greenish gray(5GY 6/1) grading to a mottled dark greenish gray(5GY 4/1) V f g sand well to mod sorted, f g sand sub-rounded to sub-angular quartz grains >30% porosity Mod well cemented by silica and locally by v f g clay Mod friable, mod indurated Rock is thinly laminated to thin bedded with alternating lamallae of v f g sand and silt and very thin mixed silt and clay lamallae Bedding is predom subhorizontal to horizontal and moderately disrupted by soft sediment deformation Core is locally moist along clay and organic rich, thinly laminated inter's 60% V [illegible] 32% Silt 8% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone with trace silt Olive gray(5Y 4/1) grading to olive black(5Y 2/1) Core consists of slightly damp, weakly to mod friable claystone Mod indurated Mod abundant disseminated organic material as irreg masses and blebs V f g organics appear to impart dark gray cast to rock Thin silty lens and laminae near top of interval stained by FeOxide(limonite) Several sub-vertical unhealed fractures noted in the 86 7' to 87 7' interval <5% Silt >95% Clay
NO SAMPLE	No sample collected, overdrill boring 90 13'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 90 13	GROUND ELEVATION (FT)	5956 20	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749554	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46692
EAST	2087077	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/29/92	

REMARKS FIRST 60 FEET ADVANCED WITH A CME 75 DRILL RIG FROM 60-92 FEET ADVANCED WITH A DRILLING SYSTEMS AP1000 PERCUSSION HAMMER DRILL RIG ADDITIONAL CENTRALIZERS AT 15', 30' AND 50'

DEPTH (FT)	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%	100%					
90									TOTAL DRILLED DEPTH 90 13'
									NOTE
									TOTAL SAMPLED DEPTH 88 90'
									BOTTOM DEPTH OF CASING 90 13'
									BOTTOM DEPTH OF FILTER PACK 89 80'
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.6A (REV. 2) 61

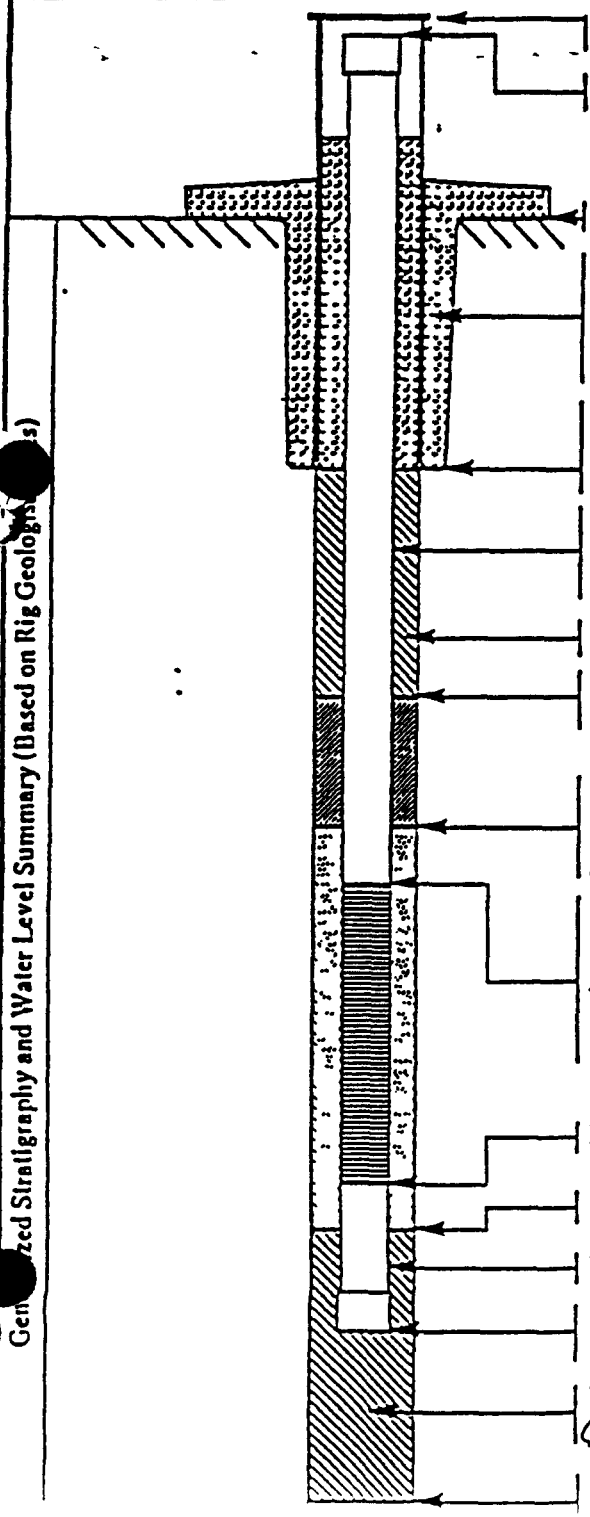
Groundwater Monitoring Well and Piezometer Report

PROJECT NAME WARP
LOCATION 46692
DATE COMPLETED 6-29-92 TOTAL HOLE DEPTH (FT) 89.8
CHECKED BY _____ DATE _____

WELL NO. 46692
SCREENED INTERVAL
DEPTH (FT) 72.0' to 87.0'
LITHOLOGY SANDSTONE/CLAYEY SANDSTONE

NOTE: All measurements will be from ground surface. Centralizer depths (when applicable) will also be shown.

Surface Casing Used (Check 1): ✓ Yes ____ No (If Yes, See Form GT.3A for specific information)



Height of top of protective casing (Ft)	2.60'
Height of top of well casing (Ft)	2.0'
Ground Elevation (Ft)	
I.D. of protective casing (In)	8"
Type of protective casing: STEEL	
Depth of protective casing (Ft)	2.4'
Depth of surface seal (Ft)	3.0'
Type of surface seal: PORTLAND CEMENT	
I.D. of well casing (In)	2"
Type of well casing: SCD 40 PVC	
Type of backfill: PUREGOLD VOLCLAY GROUT	
Depth of top of seal (Ft)	66.0
Type of seal: 1/4" PUREGOLD VOLCLAY PELLETS	
Depth of top of filter pack / bottom of seal (Ft)	70.0
Type of filter pack: 16-40 CSSI SILICA SAND	
Depth of top of screened section (Ft)	72.0'
Type of screened section: SCD40 PVC	
I.D. of screened section (In)	2"
Size of screen openings (In)	0.010
Depth of bottom of screened section (Ft)	87.0'
Depth of bottom of filter pack (Ft)	89.8
Length of plugged blank section - Sump (Ft)	2.8'
Depth of bottom of plugged blank section - Sump (Ft)	89.8
Type of backfill below filter pack: CLAYSTONE BEDROCK	
Diameter of hole (In)	6"

Generalized Stratigraphy and Water Level Summary (Based on Rig Geologist's)

Best Available Copy

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 Ft to 64 5 Ft) & continuous rotary core (67 0 Ft to 118 8 Ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%		5956	0			GM	Sandy Gravel, some silt, trace clay Very dark gray (10YR 3/1) Gravel, poorly graded, sub-rounded, dom lithology, quartzite, fragments to 2 5 inch in size Sand, sub-rounded to sub-angular, dom lithology, quartz & quartzite Moist at time of recovery Non-calcareous At 0.6 ft , 66% Gravel 24% Sand 9% Silt <1% Clay
				5955	1			GC	Clayey Gravel, some sand & silt Very pale brown (10YR 7/3) Gravel, poorly graded, sub-angular to sub-rounded, dom lithology, quartzite with lesser micaceous quartzite, v c g to 2 5 inch in size Gravel throughout interval Fractured cobble at base of interval Sand, angular to sub-angular, dom lithology, quartz & quartzite Caliche, calcareous cement, very strong reaction to HCl Moist at time of recovery At 1 8 ft , 39% Gravel 12% Sand 14% Silt 35% Clay
			2 80 /4 50	5954	2				
				5953	3			NO SAMPLE	No recovery
				5952	4				
BH3001IT				5951	5			SM	Gravelly Sand, some silt, trace clay Reddish yellow (7 5YR 7/6) to brownish yellow (10YR 6/6) Sand, well graded, angular to sub-rounded, dom lithology, quartz & quartzite with mica in f g fraction Gravel, sub-angular to sub-rounded, dom lithology, quartzite Fractured v c g to 2 5 inch gravel throughout interval Calcareous cement throughout interval Very strong reaction to HCl Moist at time of recovery At 5 5', 41% Gravel 47% Sand 7% Silt 5% Clay
				5950	6				
			5 00 /5 00	5949	7			SM	Gravelly Sand, some silt, trace clay Strong brown (7 5YR 5/6) Sand, well graded, angular to sub-rounded, pred m g , dom lithology, quartz & quartzite with lesser feldspar, mica in f g fraction Gravel, sug-angular to sub-rounded, dom lithology quartzite Calcareous cement throughout interval Strong reaction to HCl Moist at time of recovery At 6 2', 41% Gravel 50% Sand 5% Silt 4% Clay
				5948	8			GP	Sandy Gravel, trace silt & clay Light yellowish brown (10YR 6/4) Gravel, poorly graded, sub-angular to sub-rounded, dom lithology, quartzite, cobble (3 inch) to v c g (2 5 inch) gravel fragments throughout interval Sand well graded, angular to sub-rounded, dom lithology quartz & quartz[illegible] with mica in f g fraction Calcareous cement [illegible] interval Strong reaction to HCl Moist at [illegible] [illegible] [illegible] Sand [illegible] Silt [illegible] Clay
				5947	9				
BH3002IT					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT) 5956 30	PROJECT NUMBER WAPP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN) 6 0/2 0	GEOLOGIST D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 10 0/6 0	DATE DRILLED 06/01/92	

REMARKS Drilling Method CME 75. HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

WTR DEPTH	CRITICAL SAMP GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0% 50%	100% 0% 100%			10			SM	Gravelly Sand, trace silt & clay Reddish brown (5YR 5/6) Sand, well graded, angular to sub-angular, dom lithology, quartzite with micaceous quartzite, granite, pink feldspar & mica Gravel throughout interval, well graded, same lithology as sand, sub-angular to sub-rounded fragments to 2 8 inches in size Calcareous cement throughout interval Strong reaction to HCl Moist at time of recovery At 10 7', 31% Gravel 61% Sand 5% Silt 3% Clay
						5946	11				
						5945	12				
					5 00 /5 00	5944	13	07/24/92			
						5943	14				
						5942	15			GM	Sandy Gravel, some silt, trace clay Mottled, light gray (10YR 7/2) to strong brown (7 5YR 5/8) Gravel, well graded, sub-rounded, fragments to one inch in size, dom lithology, quartzite, with lesser granite Sand, well graded, sub-round with angular fragments, dom lithology, quartz & quartzite with pink feldspar & mica Non-calcareous Water encountered at 15 95' below grade At 14 8', 44% Gravel 40% Sand 12% Silt 4% Clay
						5941	16			NO SAMPLE	No recovery, drilled with center bit
						5940	17			SW	Gravelly Sand, trace silt & clay Yellowish red (5YR 5/8) Sand, well graded, sub-angular to sub-rounded, dom lithology, quartz & quartzite with mica Gravel, well graded, sub-angular, dom lithology, quartzite with granite, max size 2 5 inches Slightly calcareous, weak reaction to HCl Wet at time of recovery At 17 2', 45% Gravel 48% Sand >5% Silt <1% Clay
					3 00 /5 50	5939	18				
						5938	19			NO SAMPLE	No Recovery
						5937					

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WAPP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CR 50%	100% 0%	2 50 /5 00	5936 5935 5934	20 21 22			SW	Gravelly Sand, trace silt & clay Yellowish red (5YR 5/8) Sand, well graded, angular to sub-rounded, dom lithology, quartz & quartzite with granite, mica in f g sand Gravel, well graded, rounded to angular fragments to 2 inches in size, dom lithology, quartzite & micaceous quartzite with granite Slightly calcareous, weak reaction to HCl Wet at time of recovery At 21 5', 44% Gravel 49% Sand 4% Silt 3% Clay
					23			NO SAMPLE	No recovery Bedrock encountered at 24 5', per drill rig geologists observations
		100%	4 50 /4 50	5933 5932 5931 5930 5929 5928 5927	24 25 26 27 28 29 30			CLAYSTONE	Claystone, some silt, trace f g sand Mottled yellowish gray (5Y 7/2) to dark yellowish orange (10YR 6/6) Fe/Mn staining on silty seam at 26 8' Yellowish orange Fe staining decreases towards the bottom of the interval Minor Mn staining on fracture surfaces Fine grained sand fraction is well rounded quartzite Claystone is well sorted, non-porous, mod well indurated & non-friable No bedding structures observed Closed sub-horizontal fractures at 20 to 30 degrees occur randomly throughout interval Sample was moist at time of recovery Non-calcareous At 26 9', 5% F G Sand 14% Silt 81% Clay

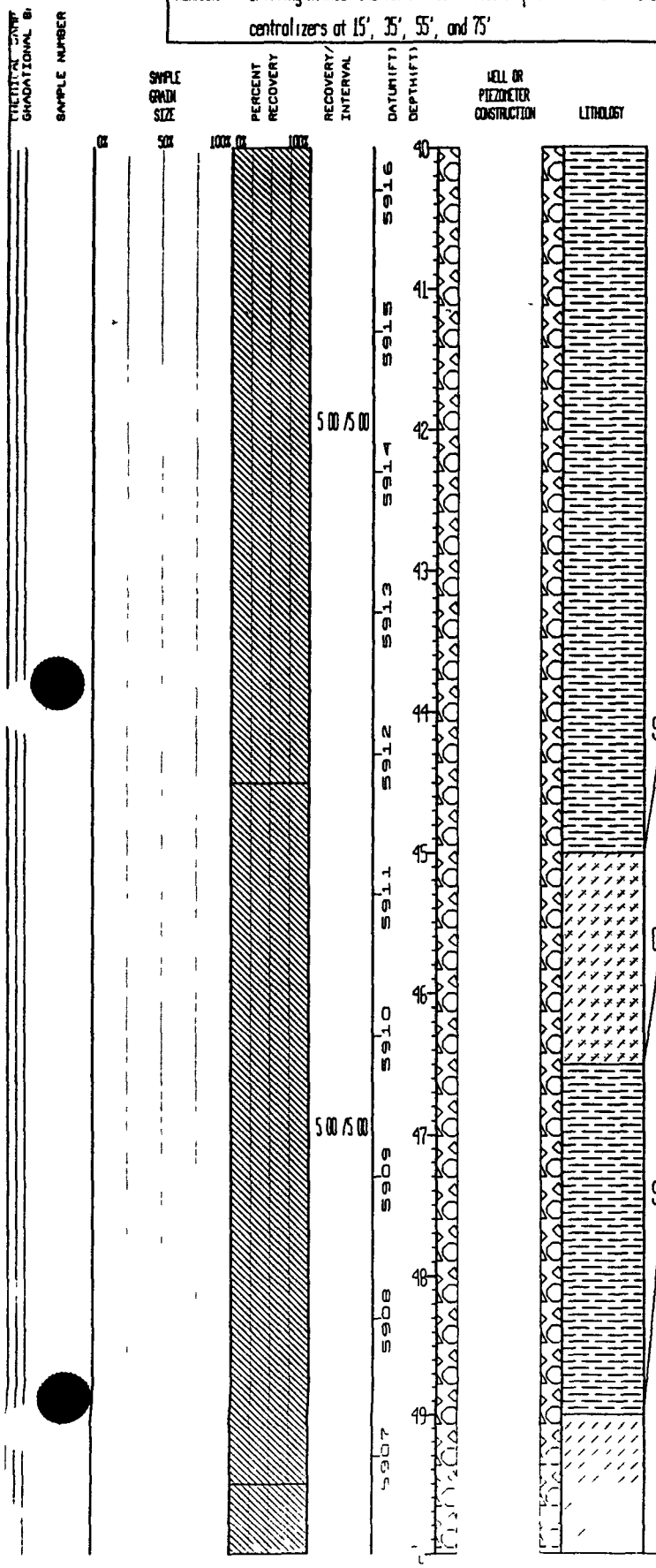
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT) 5956 30	PROJECT NUMBER WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN) 6 0/2 0	GEOLOGIST D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN) 10 0/6 0	DATE DRILLED 06/01/92	

REMARKS Drilling Method CME 75, NSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centrolizers at 15', 35', 55', and 75'

CRITICAL SAMPLE GRADATIONAL BAR	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					30			SILTY SANDSTONE	Silty Sandstone, some clay Mottled, light gray (N7) to grayish orange (10YR 7/4) Minor Mn staining on vertical fracture surfaces Sand is sub-rounded to rounded, frosted quartz Sandstone is well sorted with an estimated porosity of 10%, mod to slightly friable with no apparent bedding structures A few vertical fractures healed with clay were observed Moist at time of recovery Non-calcareous At 30 5', 45% Sand 44% Silt 11% Clay
				5 00 /5 00	31			CLAYEY SILTSTONE	Clayey Siltstone, trace fine sand Mottled, yellowish gray (5Y 7/2) to dark yellowish orange (10YR 6/6) Minor Mn staining on fractured surfaces Siltstone is well sorted, non-porous, well indurated & slighty friable No apparent bedding structures or natural fractures present Moist at time of recovery Non-calcareous At 32 0', 3% F G Sand 73% Silt 24% Clay
					32			SILTY SANDSTONE	Silty Sandstone, trace clay Mottled, yellowish gray (5Y 7/2) to dark yellowish orange (10YR 6/6) Sand is sub-rounded to rounded frosted quartz Sandstone is well sorted with an estimated porosity of 15%, highly friable with no apparent bedding structures or fractures Moist at time of recovery Non-calcareous At 33 2', 70% F G Sand 28% Silt 2% Clay
					33			CLAYSTONE	Claystone, some silt Mottled, light gray (N7) to dark yellowish orange (10YR 6/6) Mn staining on fractured surfaces Claystone is well sorted, well indurated & non-friable No apparent bedding Some randomly oriented fractures present Moist at time of recovery Non-calcareous At 34 3', 18% Silt 82% Clay
					34			SANDY SILTSTONE	Sandy Siltstone, some clay Mottled, light gray (N7) to dark yellowish orange (10YR 6/6) Minor Mn staining present on fractured surfaces Siltstone is well sorted, non-porous, & mod friable No apparent bedding Some randomly oriented healed fractures Slightly moist at time of recovery Non-calcareous At 34 8', 36% F G Sand 51% Silt 13% Clay
					35			CLAYSTONE	Claystone, some silt Mottled, light gray (N7) to dark yellowish orange (10YR 6/6), pred light olive gray (5Y 5/2) Some black (N1) Mn staining present on fractured surfaces Few small mm size Fe concretions throughout interval Pebble size Fe concretions at 35 4' & 35 9' Few thin mm thick sandy to silty seams between 42 5' to 44 0' Claystone is well sorted, well indurated & non-porous No apparent bedding structures or fractures observed Sample was slightly moist at time of recovery Non-calcareous
				5 00 /5 00	36				
					37				
					38				
					39				
					40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

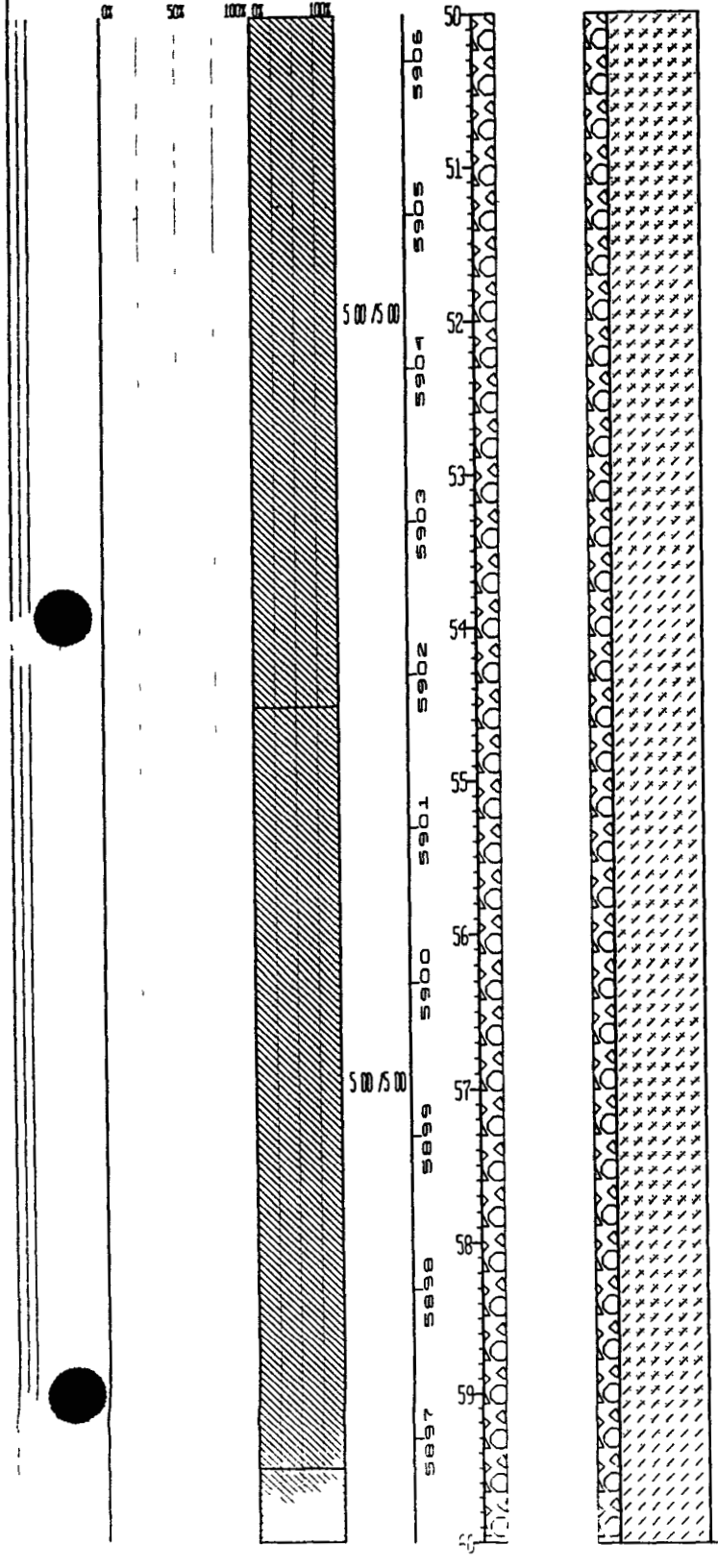


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SANDY SILTSTONE	Sandy Siltstone, some clay Dusky yellow (5Y 6/4) to dark yellowish orange (10YR 6/6) Siltstone is well sorted, mod friable & non-porous Pred sub-angular to sub-rounded frosted quartz Some mm thick silty to sandy seams occur throughout interval No apparent bedding or fractures present Moist at time of recovery Non-calcareous At 45 9', 15% F G Sand 70% Silt 15% Clay
CLAYSTONE	Claystone, some silt Dark gray (N3) with medium light gray (N6) mm thick sandy to silty seams Some black (N1) Mn staining on fractured surfaces & dark yellowish orange Fe staining present Claystone is well sorted, well indurated & non-porous No apparent bedding structures or fractures observed Trace black carbonaceous material observed Moist at time of recovery Non-calcareous At 48 5', 10% Silt 90% Clay
SANDY SILTSTONE	Sandy Siltstone, some clay Dark gray (N3) with medium light gray (N6) mm to cm thick sandy to silty layers Layers are less than one cm thick until a depth of 53 5' where they range up to one cm or more thick to the end of the interval Siltstone is laminated, well sorted, mod indurated, pred sub-angular to sub-rounded frosted quartz Sandy to silty layers are highly friable Primary cementing medium is clay Trace black (N1) carbonaceous material (angular lignite fragments) throughout interval Few evaporite, possibly gypsum crystals observed No apparent fractures Moist at time of recovery Non-calcareous At 53 1 [illegible] F G Sand 52% Silt 17% Clay At 57 5 [illegible] F G Sand 59% Silt 7% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2		CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER	J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75. HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%							
			5 00 /5 00	5906 5905 5904 5903 5902 5901 5900	50 51 52 53 54 55 56				
			5 00 /5 00	5899 5898 5897	57 58 59 60				



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		5 00 /5 00	5896, 5895, 5894, 5893, 5892	60, 61, 62, 63, 64			CLAYEY SILTSTONE	Clayey Siltstone Olive gray (5Y 4/1) to light olive gray (5Y 6/1) Siltstone is dense & indurated, well sorted & non-porous, pred sub-angular to sub-rounded frosted quartz, mod friable Primary cementing agent clay White (N9) clay veins & black (N1) carbonaceous material present No apparent bedding or fractures present Dry on recovery Non-calcareous At 64 0', 75% Silt 25% Clay
		0 00 /2 50	5891, 5890	65, 66			NO SAAMPLE	Interval not sampled Begin rotary core drilling at 67 0'
			5889, 5888, 5887	67, 68, 69, 70			CLAYSTONE	Claystone, trace silt Olive gray (5Y 4/1) to olive black (5Y 2/1) Claystone is very well sorted, dense & indurated, non-porous & non-friable No apparent bedding observed Thin 0 5 cm thick silty sand layer at 70 8' Interval is fractured at 68 0' & from 69 5' to 70 7' at angles approaching 30 & 60 degrees from the vertical Fractures are slickensided & coated with white calcareous material (aragonite) which reacts strongly with HCl At 67 5', 5% Silt 95% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
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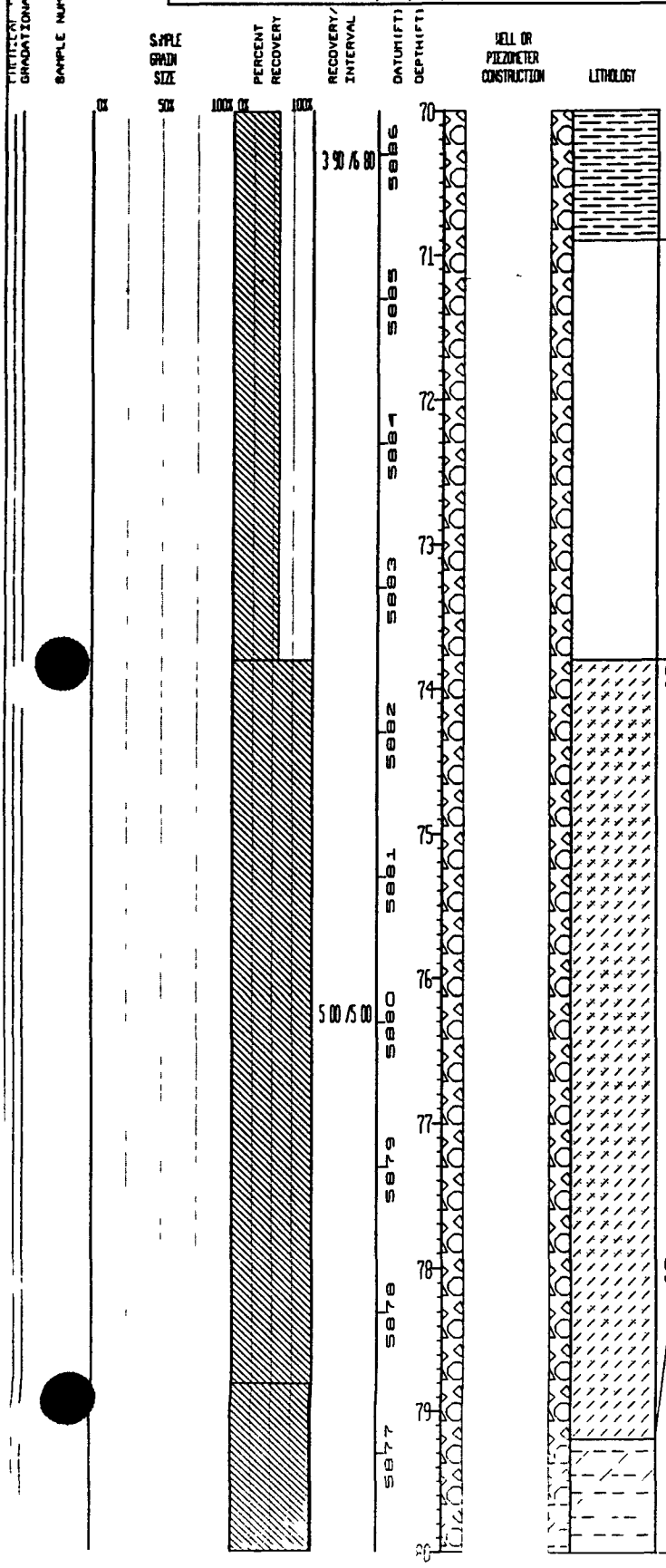
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
NO SAMPLE	No recovery
SANDY SILTSTONE	Sandy Siltstone, trace clay Olive gray (5Y 4/1) silty layers with light olive gray (5Y 6/1) sandy layers Siltstone is laminated, mod sorted, pred angular to sub-angular frosted quartz with calcareous cement, no observable porosity & slightly friable Black (N1) carbonaceous material (lignite) occurs as f g lithic fragments and very thin layers, usually 1 mm or less thick Bedding is horizontal to sub-horizontal at angles of 10 to 20 degrees with alternating silty and sandy layers not more than one cm thick No fractures present Fairly moist at time of recovery Very strong reaction to HCl At 76 8', 30% F G Sand 65% Silt 5% Clay
SILTY CLAYSTONE	Silty Claystone, trace clay Pred olive gray (5Y 4/1) with olive gray (5Y 5/2) silty layers Claystone is laminated, well to mod sorted, dense & indurated, non-porous & non-friable with angular to sub-angular frosted quartz grains Carbonaceous material (lignite) occurs as lithic fragments and in thin layers usually less than 1 mm thick Bedding is horizontal to sub-horizontal at angles up to 15 degrees and [illegible] deformation No fractures [illegible] careous [illegible] 69% Clay

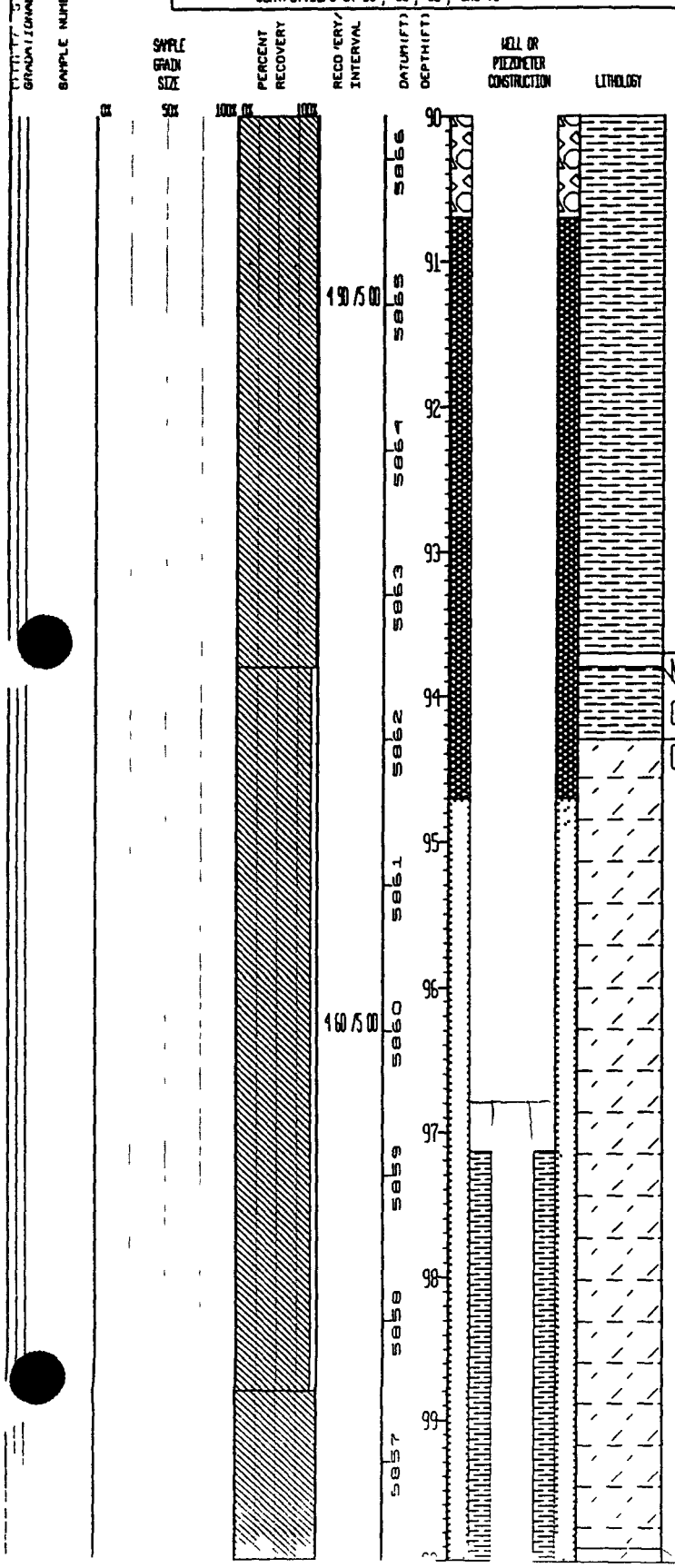
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75. HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50%	100% 0% 100%		5876 5875 5874 5873 5872 5871 5870 5869 5868 5867	80 81 82 83 84 85 86 87 88 89 90			SILTY SANDSTONE	Silty Sandstone, trace clay Olive gray (5Y 4/1) to light olive gray (5Y 6/1) Sandstone is laminated, mod well sorted, pred angular to sub-angular frosted quartz with calcareous cement, an estimated porosity of 10% & mod friable Black carbonaceous material (lignite) present as lithic fragments & thin layers less than 1 mm thick Bedding is more or less horizontal with alternating sandy, silty & carbonaceous layers less than 1 cm thick No fractures present Weak reaction to HCl At 82 3', 65% F G Sand 33% Silt 2% Clay
			4 90 / 5 00					SANDY SILTSTONE	Sandy Siltstone, some clay Olive gray (5Y 4/1) silty layers with light olive gray (5Y 6/1) sandy layers Siltstone is laminated, well to mod sorted, with angular to sub-angular frosted quartz, non-porous & mod friable Black carbonaceous material (lignite) occurs as thin layers less than 1 mm thick & large 1 cm wide fragments at 82 9' Small 8 mm dia Fe concretion at 82 6' Bedding is horizontal to sub-horizontal at 10 to 20 degrees with alternating sandy & silty layers less than 1 cm thick & shows signs of post depositional deformation No fractures present Non-calcareous At 83 6', 42% F G Sand 52% Silt 6% Clay
								NO SAMPLE	No recovery
								SANDY SILTSTONE	Sandy siltstone, some clay, as 82 4' to 83 7' interval
								CLAYSTONE	Claystone, some silt Olive gray (5Y 4/1) to light olive gray (5Y 5/2) Claystone is finely laminated becoming more massive towards base of interval, very well sorted, dense and indurated, non-porous & non-friable Carbonaceous material (lignite) occurs as lithic fragments pred less than 1 mm in size throughout interval Small Fe concretions less than 1 cm in size occur at 87 2' & from 83 8' to 84 8' Bedding is horizontal to sub-horizontal at angles up to 10 degrees Closed slickensided fractures occur from 86 ft to 87 ft at angles of 60 to 30 degrees, & from 91 2' to 92 0' at angles of 60 to 70 degrees Dry on recovery Non-calcareous At 91 2', 16% Silt 84% Clay
			3 50 / 5 00					NO SAMPLE	No recovery
								CLAYSTONE	Claystone, trace sand, Same as 85 1' to 87 3' interval At 91 2ft 16% Silt 84% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
NO SAMPLE	No recovery
CLAYSTONE	Claystone, some silt, Same as 85 1' to 87 3' interval
CLAYEY SILTSTONE	Clayey Siltstone, trace sand Olive gray (5Y 3/3) to light olive gray (5Y 5/2) Siltstone is laminated, mod sorted pred angular to sub-angular frosted quartz, dense & indurated, non-porous & non-friable Carbonaceous material (lignite) occurs as lithic fragments pred less than 1 mm in size Bedding is difficult to destinguish, appears to be horizontal to sub-horizontal at angles up to 20 degrees & shows signs of post depositional deformation Slickensided fractures occur at 96 5' (45 degrees) Dry on recovery Non-calcareous At 96 4', <1% F G Sand 59% Silt 40% Clay

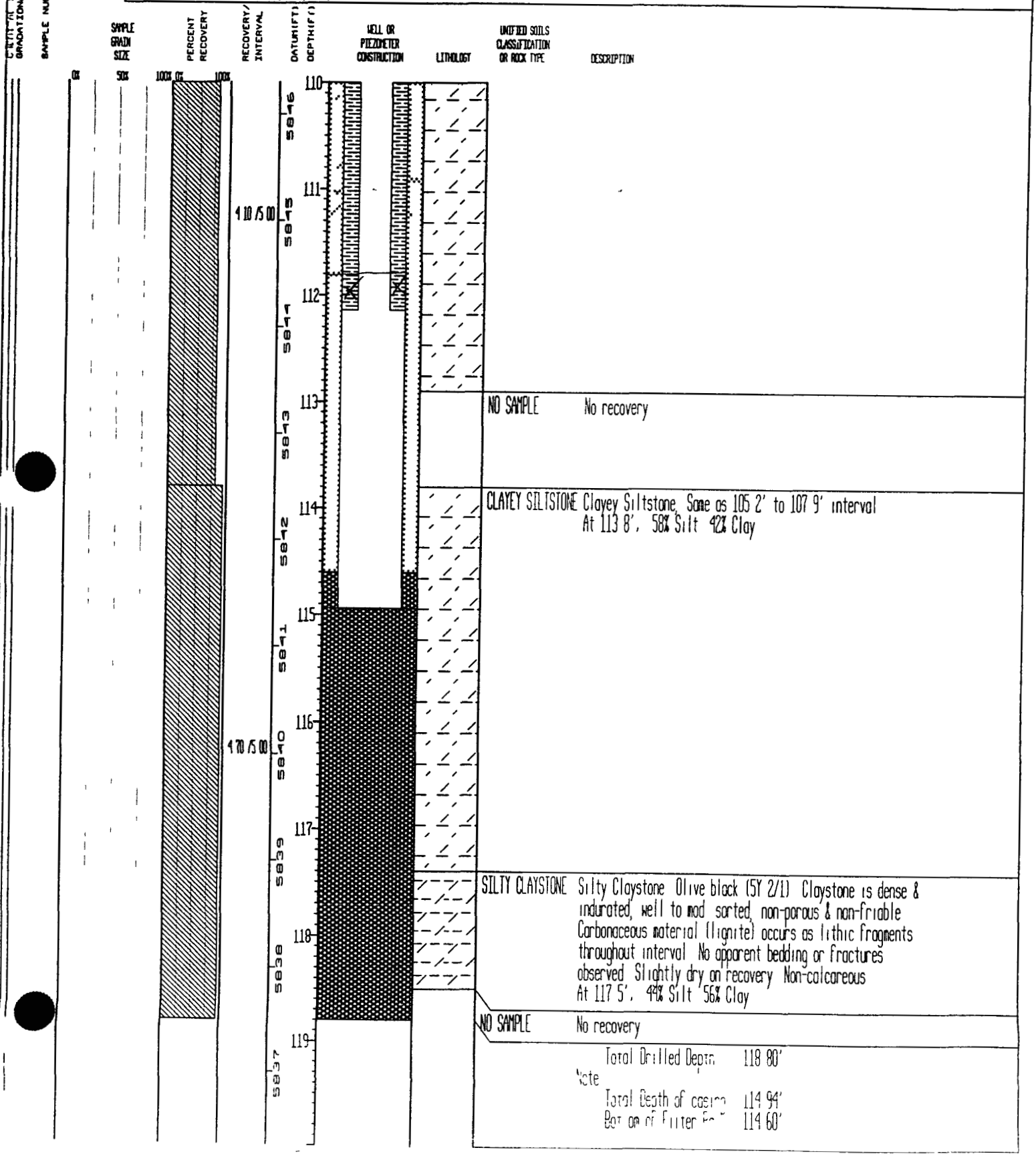
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'

SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			5856	100			SANDY SILTSTONE	Sandy Siltstone, some clay Light olive gray (5Y 5/2) Siltstone is mod sorted angular to sub-angular, frosted quartz with argillaceous cement, an estimated porosity of 10% & mod friable Carbonaceous material (lignite) occurs as lithic fragments less than 1 mm in size throughout interval Bedding is difficult to destinguish, but appears to be horizonal No fractures present Non-calcareous At 100 3', 32% F G Sand 61% Silt 7% Clay
		5 00 /5 00	5855	101				
			5854	102			SILTSTONE	Siltstone, some clay Olive gray (5Y 4/1) to light olive gray (5Y 5/2) Siltstone is finely laminated, well sorted, angular to sub-angular quartz, non-porous & non-friable Carbonaceous material (lignite) occurs as small fragments throughout interval Bedding is difficult to distinguish, appears to be massive towards top & bottom of interval with horizontal laminations towards center of interval Fractured/crushed zones with no preferred orientation occur at 102 5' to 102 9' & 103 2' to 103 7' Non-calacareous At 102 5', 82% Silt 18% Clay
			5853	103				
			5852	104			SANDY SILTSTONE	Sandy Siltstone, some clay Olive gray (5Y 3/2) to light olive gray (5Y 5/2) Siltstone is laminated, mod sorted with angular to sub-rounded frosted quartz, non-porous & mod friable Carbonaceous material (lignite) occurs as lithic fragments Bedding is more or less horizontal No fractures present Non-calcareous At 105 0', 20% Sand, 72% Silt, 8% Clay
			5851	105				
		4 10 /5 00	5850	106			CLAYEY SILTSTONE	Clayey Siltstone Olive gray (5Y 3/2) to light olive gray (5Y 6/1) Siltstone is massive to laminated, dense & indurated, mod sorted, non-porous & non-friable Carbonaceous material (lignite) occurs as lithic fragments throughout interval Bedding is difficult to distinguish, however some horizontal laminations apparent at 105 3', 108 8' & 109 6' Slickensided fractures occur at 105 7' to 106 7' (30 to 60 degrees), 107 6' to 107 9' (60 degrees), 112 5' to 112 9' (70 degrees), & 115 0' to 115 8' (60 to 90 degrees) Fe stained horizontal fracture at 106 0' Slightly dry on recovery Non-calcareous At 109 4', 60% Silt 40% Clay
			5849	107				
			5848	108			NO SAMPLE	No recovery
			5847	109			CLAYEY SILTSTONE	Clayey Siltstone Same as 105 2' to 107 9' interval At [illegible] Clay
				110				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 118 8	GROUND ELEVATION (FT)	5956 30	PROJECT NUMBER	WARP	LOG OF BORING NUMBER
NORTH	749538	AREA OU 2	CASING DIAMETER (IN)	6 0/2 0	GEOLOGIST	D E C/E E M	46792
EAST	2087080	LOCATOR NUMBER J13	BOREHOLE DIAMETER (IN)	10 0/6 0	DATE DRILLED	06/01/92	

REMARKS Drilling Method CME 75, HSA continuous sample tube (0 0 ft to 64 5 ft) & continuous rotary core (67 0 ft to 118 8 ft) Additional centralizers at 15', 35', 55', and 75'



NO SAMPLE No recovery

CLAYEY SILTSTONE Clayey Siltstone, Same as 105 2' to 107 9' interval
At 113 8', 58% Silt 42% Clay

SILTY CLAYSTONE Silty Claystone Olive black (5Y 2/1) Claystone is dense & indurated, well to mod sorted, non-porous & non-friable Carbonaceous material (lignite) occurs as lithic fragments throughout interval No apparent bedding or fractures observed Slightly dry on recovery Non-calcareous
At 117 5', 44% Silt 56% Clay

NO SAMPLE No recovery

Total Drilled Depth 118 80'

Note
Total Depth of casing 114 94'
Bottom of Filter Sand 114 60'

DEPARTMENT OF ENERGY ROCKY FLATS PLANT — FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME: WARP — WELL NO.: 46792

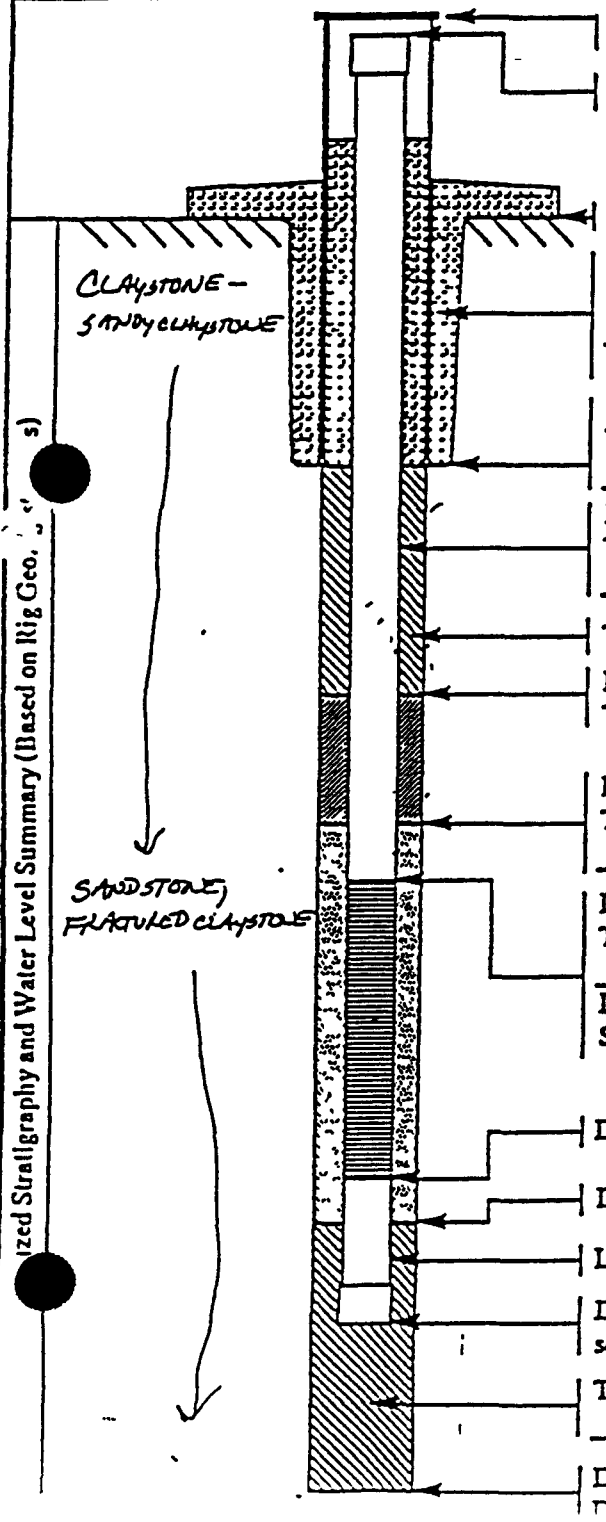
LOCATION: OU2 — SCREENED INTERVAL

DATE COMPLETED: 6-25-92 — TOTAL HOLE DEPTH (FT): 118.8 — DEPTH (FT): 96.8 to 111.8

CHECKED BY: ____ — DATE: ____ — LITHOLOGY: SANDSTONE/ FRACTURED CLAYSTONE

NOTE: All measurements will be from ground surface. Centralizer depths (when applicable) will also be shown.

Surface Casing Used (Check 1): ____ Yes ____ No (If Yes, See Form GT.3A for specific information)



Height of top of protective casing (Ft)	2.3'
Height of top of well casing (Ft)	2.0'
Ground Elevation (Ft)	
I.D. of protective casing (In)	6"
Type of protective casing: STEEL	
Depth of protective casing (Ft)	
Depth of surface seal (Ft)	3.0'
Type of surface seal: VOLCLAY GROUT	
I.D. of well casing (In)	2"
Type of well casing: SCD-40 PVC	
Type of backfill:	
Depth of top of seal (Ft)	90.7'
Type of seal: 1/4" VOLCLAY PUREGOLD PELLETS	
Depth of top of filter pack / bottom of seal (Ft)	94.7'
Type of filter pack: 16-40 CSSI SILICA SAND	
Depth of top of screened section (Ft)	96.8'
Type of screened section: PVC	
I.D. of screened section (In)	2"
Size of screen openings (In)	.010
Depth of bottom of screened section (Ft)	111.8
Depth of bottom of filter pack (Ft)	114.6'
Length of plugged blank section - Sump (Ft)	2.8'
Depth of bottom of plugged blank section - Sump (Ft)	114.6'
Type of backfill below filter pack: CLAYSTONE	
Diameter of hole (In)	6"
Depth of hole (Ft)	118.8'

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Lized Stratigraphy and Water Level Summary (Based on Rig Geo. s)

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2		GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2		CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%		5956 5955 5954 5953 5952 5951 5950 5949 5948 5947	0 1 2 3 4 5 6 7 8 9 10				NO SAMPLE Interval not sampled Begin rotary core drilling at 67 80'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'

PHYSICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%		5946 5945 5944 5943 5942 5941 5940 5939 5938 5937	10 11 12 13 14 15 16 17 18 19 20	09/14/92			

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
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SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%		5936 5935 5934 5933 5932 5931 5930 5929 5928 5927	20 21 22 23 24 25 26 27 28 29				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2		GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2		CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

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Additional centralizers at 10' 30' 50' 70' 90' 110' and 130'

DEPTH (FT)	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
30								
31				5926				
32				5925				
33				5924				
34			0 00 /66 66	5923				
35				5922				
36				5921				
37				5920				
38				5919				
39				5918				
40				317				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

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DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5916	40				
					5915	41				
					5914	42				
					5913	43				
					5912	44				
					5911	45				
					5910	46				
					5909	47				
					5908	48				
					5907	49				
						50				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
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Additional centralizers at 10' 30', 50', 70' 90' 110 and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%		50 51 52 53 54 55 56 57 58 59				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
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REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG

Additional centralizers at 10', 30' 50', 70', 90', 110' and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5896	60				
				5895	61				
				5894	62				
				5893	63				
				5892	64				
				5891	65				
				5890	66				
				5889	67				
				5888	68				
					69				
					70				

CLAYEY SILTSTONE Clayey Siltstone Light olive gray(5Y 6/1) grading to olive gray(5Y 4/1) Core slightly moist, mod friable, mod indurated spotty thin wispy irregular masses of carbonaceous material No visible, apparent bedding 65% Silt 35% Clay

SILTY CLAYSTONE Silty Claystone Light olive gray(5Y 6/1) grading to olive gray(5Y 4/1) Core is dry, mod friable, mod indurated, brittle fracture, moderately carbonaceous with v f g disseminated organic matter as wispy irregular masses and thin fractures filled by carbonaceous material No apparent bedding visible Several subvertical fractures 45-75 degrees with prominent slickensides with apparent dip slip motion 20% Silt 70% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG

Additional centralizers at 10' 30 50', 70 90' 110' and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%	6 00 /7 14	5886 5885 5884 5883 5882 5881 5880 5879 5878 5877	70 71 72 73 74 75 76 77 78 79 80				
								NO SAMPLE	Core loss, No retrieval
			5 00 /5 00					SANDY SILTSTONE	Sandy Siltstone with some clay Mottled olive gray(5Y 4/1) grading to light olive gray(5Y 6/1) Core is dry, moderately well indurated, moderate to weakly friable Rock is mod cemented with argillaceous cement Interval is finely laminated Alternating silt, clays, clayey silts and f g sand interbeds Sandy horizons and laminae crossbedded and soft sediment deformed Abundant carbonaceous material (lignite) as disseminated irregular stringers and fracture fillings Sand fraction is f g well sorted, sub-angular to sub-rounded, translucent white to clear quartz grains 22% Sand 57% Silt 21% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA	00 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5876	80				
					81				
			2 60 /5 00	5875				NO SAMPLE	Core loss, No Retrieval
					82			SANDY SILTSTONE	Sandy Siltstone with some clay Mottled olive gray(5Y 4/1) grading to light olive gray(5Y 6/1) Core is dry, mod well indurated, moderate to weakly friable Rock is moderately cemented with argillaceous cement Interval is finely laminated, alternating silt, clays, clayey silts, and f g sandy interbeds Sandy horizons and laminae crossbedded and soft sediment deformed Abundant carbonaceous material (lignite) as disseminated irregular blebs and masses <3mm as well as thin stringers and fractures fillings Sand fraction is f g well sorted, sub-angular to sub-rounded translucent white to clear quartz grains 22% Sand 57% Silt 21% Clay
				5874	83				
			1 00 /1 00	5873	84				
				5872				CLAYSTONE	Claystone with trace silt Olive gray(5Y4/1) grading to dark greenish gray(5GY 4/1) Core is dry and brittle, rock is moderately indurated, friable to moderately friable Interval is thinly laminated with several thin silty pods and lens Bedding is sub-horizontal (10-20 degrees) Abundant thin irregular stringers of organic material (lignite) Patchy irregular stains and coatings of FeOxide(limonite) Porosity is nil 4% Silt 96% Clay
					85				
				5871	86				
			3 40 /4 00	5870				CLAYSTONE	Claystone with some silt Olive gray(5Y 4/1) grading to dark greenish gray(5GY 4/1) Core is dry and brittle, moderately to weakly friable, moderately to well indurated Bedding is somewhat obscure and mottled appearing Bedding where visible is thinly laminated and subhorizontal 10-20 degrees Consisting of alternating silt laminae with thicker claystone horizons Abundant thin irregular stringers and masses of carbonaceous material(lignite) 10% Silt 90% Clay
				5869	87				
					88			NO SAMPLE	Core Loss, No Retrieval
				5868	89			CLAYSTONE	Claystone with some silt Olive gray(5Y 4/1) grading to dark greenish gray(5GY 4/1) Core [illegible] to 99 [illegible] material
				5867	90				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centrolizers at 10' 30, 50' 70' 90' 110' and 130'

SAMPLE NUMBER | SAMPLE GRAIN SIZE | PERCENT RECOVERY | RECOVERY/ INTERVAL | DATUM(FT) | DEPTH(FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

0% 50% 100% 0% 100%

5 00 /5 00

9 10 /10 00

5956 5955 5954 5953 5952 5951 5950 5949 5948

90 91 92 93 94 95 96 97 98 99

CLAYEY SILTSTONE Clayey Siltstone with some sand Greenish gray(5GY 6/1) grading to olive gray(5Y 4/1) Core is dry, weak to mod friable, moderately well indurated, with brittle fracture No visible apparent bedding Sand fraction consist of v f g to f g quartz sand, sub-round, moderately argillic cement Abundant irregular blebs and v f g masses of organic material(lignite) Observable porosity is n
2% Sand 46% Silt 7 Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2		GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2		CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER	J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60 165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50% 100%	0% 100%		5956 5955 5954 5953 5952 5951 5950 5949 5948 5947	100 101 102 103 104 105 106 107 108 109 110				
								CLAYEY SILTSTONE	Clayey Siltstone with some sand Greenish gray(5GY 6/1) grading to olive gray(5Y 4/1) Interval is much the same as the above interval However, somewhat broken along 1"-2" fracture zones 25% Sand 48% Silt 27% Clay
								NO SAMPLE	Core Loss, No Retrieval
								CLAYEY SILTSTONE	Clayey Siltstone Much the same as 101 7' to 102 9' interval 25% Sand 48% Silt 27% Clay
								CLAYEY SILTSTONE	Clayey Siltstone with some clay Olive gray(5Y 4/1) grading to olive black(5Y 2/1) Core is slightly moist to dry Moderately friable, moderately well indurated Mottled appearance with thin 1"-3" intervals of thinly laminated bedding comprised of alternating silts and clays Abundant carbonaceous material(lignite) as disseminated irregular blebs and masses Observable porosity is nil 75% Silt 25% Clay
			2 80 /10 00					NO SAMPLE	Core Loss, No Retrieval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG

Additional centralizers at 10', 30', 50', 70', 90', 110 and 130'

SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			5846	110				
				111				
			5845	112				
			5844	113				
			5843	114			CLAYSTONE	Claystone with some silt Mottled olive gray(5Y 4/1) grading to mottled olive black(5Y 2/1) Core is dry to slightly damp Interval is moderate to weakly friable, moderately indurated moderately abundant carbonaceous material(lignite) as irregular blebs, disseminated masses and thin stringers Several thin irregular silty lenses that grades to a thin bedded, thinly parted claystone No observable porosity 20% Silt 80% Clay
		1 40/1 40	5842	115				
			5841	116				
			5840	117			CLAYSTONE	Claystone with some silt Olive gray(5Y4/1) grading to light olive gray(5Y 6/1) Core is dry to slightly moist Bedding is obscure Core is thinly parted with a brittle fracture Rock is moderately friable, weakly to moderately indurated Abundant carbonaceous material(lignite) as thin fracture coatings and irregular stringers and as irregular blebs and f g disseminated masses Several fractured/broken zones noted 116 4'-116 7', 120 5'-121 0' 10% Silt 90% Clay
			5839	118				
			5838	119				
		5 80 /8 60	5837	120				

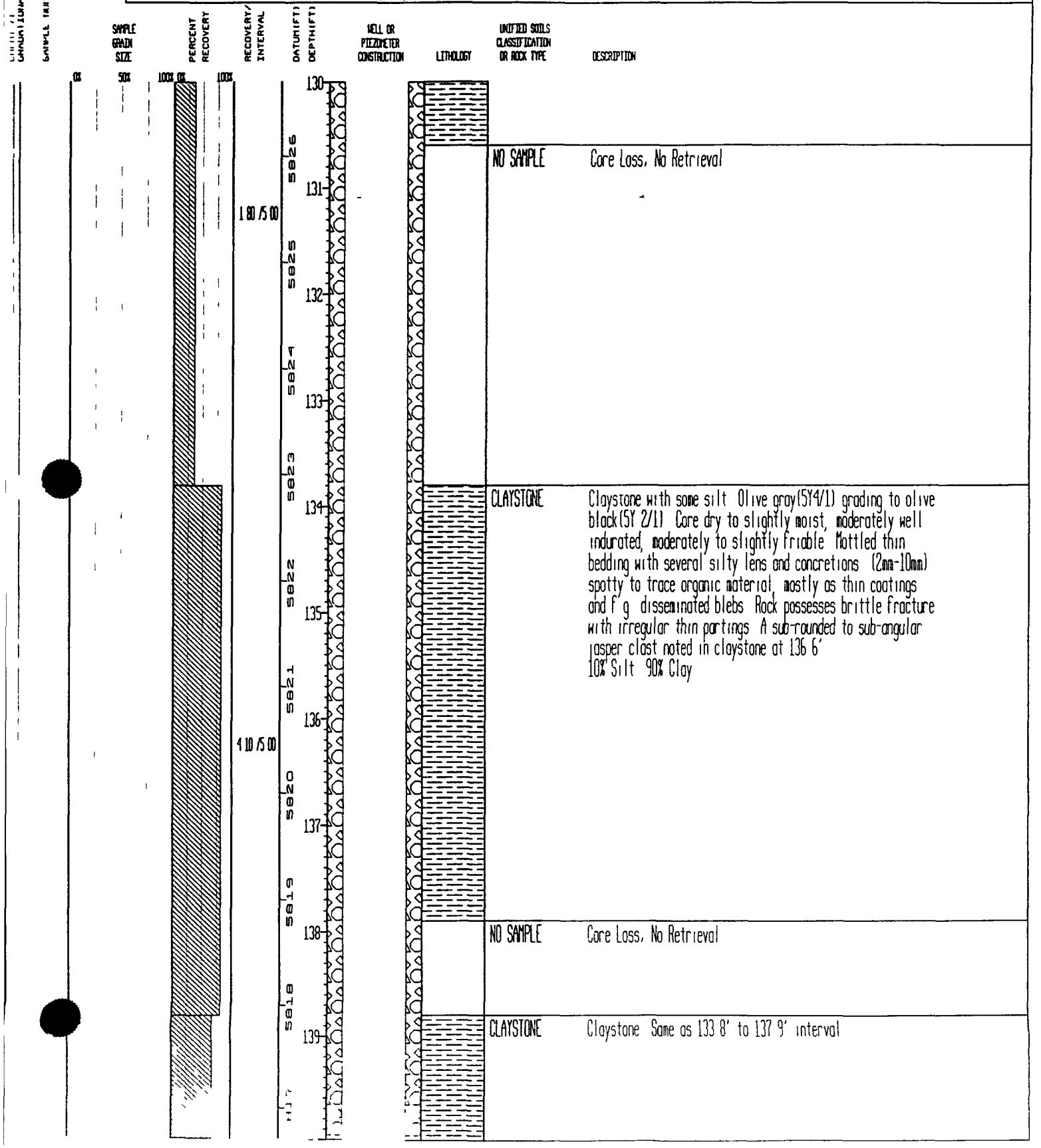
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A MP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10' 30' 50' 70', 90', 110' and 130'

DEPTH (FT)	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						120				
					5836	121			NO SAMPLE	Core Loss, No Retrieval
					5835	122				
					5834	123				
					5833	124			CLAYSTONE	Claystone with some silt Mottled olive gray(5Y 4/1) grading to light olive gray Core is dry, moderately indurated Weakly to moderately friable, some carbonaceous material as disseminated irregular blebs and patchy coatings along very thin fractures Bedding is mostly obscured and mottled appearing with no apparent bedding planes Rock is thinly parted with a brittle fracture where not easily parted Broken/fractured zone at the following intervals 129 4'-129 9', 130'-130 6' Fractured/broken zones orientation not attainable due to broken nature of rock 12% Silt 88% Clay
					5832	125				
					5831	126				
				4 00 /5 00	5830	127				
					5829	128			NO SAMPLE	Core Loss, No Retrieval
					5828	129			CLAYSTONE	Claystone Same as 123 8' to 127 8' interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG, 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130'

SAMPLE NUMBER	TYPICAL SAMP GRADATIONAL & DEPTH	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		140				
					141			SILTY SANDSTONE	Silty Sandstone with trace clay Greenish gray(5GY 6/1) grading to dark greenish gray(5GY 4/1) Core is slightly moist to moist, moderately to slightly friable, moderately well indurated Moderately well cemented by calcareous cement Sand fraction moderately well sorted, sub-angular to angular grains Trace amounts of f g disseminated carbonaceous material Rock is thinly laminated 10% Silt 90% Clay
				3 4 / 5 0 0	142				
					143			NO SAMPLE	Core Loss, No Retrieval
					144			SILTY SANDSTONE	Silty Sandstone with trace clay Greenish gray(5GY 6/1) grading to dark greenish gray(5GY 4/1) Core is moist to slightly moist Moderately to slightly friable, moderately well indurated Mod well cemented with calcareous cement Sand fraction comprised of sub-angular to angular, clear to translucent quartz grains Grains mod well sorted Rock is faintly thin bedded with alternating sandy and silty laminae with some thin wispy laminae of organic material(lignite) Bedding is sub-horizontal 10-20 degrees 60% Sand 35% Silt 5% Clay
					145				
				4 3 0 / 5 0 0	146			SANDY SILTSTONE	Sandy Siltstone with some clay Olive gray(5Y 4/1) grading to dark greenish gray(5Y 4/1) Core slightly moist, mod well indurated, mod to slightly friable Sand fraction comprised of angular to sub-angular, clear to translucent quartz grains Moderately cemented by argillic cement Interval has thin partings and locally brittle fracture Rock contains trace amounts of carbonaceous material as f g irregular blebs of lignite Faint wispy thinly laminated bedding mostly obscure, appears subhorizontal at 10-20 degrees 26% Sand 63% Silt 11% Clay
					147				
					148			NO SAMPLE	Core Loss, No Retrieval
					149			SANDY SILTSTONE	Sandy Siltstone Core [illegible]
					150				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT)	5956 70	PROJECT NUMBER	304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN)	6/2	GEOLOGIST	DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN)	10/6	DATE DRILLED	06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10', 30', 50', 70', 90', 110' and 130

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					150				
				5806	151			SANDY SILTSTONE	Sandy Siltstone with some clay Olive gray(5Y 4/1) grading to light olive gray(5Y 6/1) Core is slightly moist, mod well indurated, moderately to slightly friable Moderately well cemented by argillic cement Mottled to wavy thin bedded alternating siltstone to sandstone Rock possesses brittle fracture and variable thin to thick parting Bedding attitude is obscure, however appears subhorizontal at 10-20 degrees Sand fraction is comprised of f g sub-angular to angular moderately sorted, clear to translucent quartz grains Trace amount of carbonaceous material as disseminated f g angular fragments and grains and thin stringers disseminated throughout interval 32% Sand 58% Silt 10% Clay
			5 00 /5 00	5805	152				
				5804	153				
				5803	154				
				5802	155				
				5801	156			SILTY SANDSTONE	Silty Sandstone with trace clay Light olive gray(5Y 6/1) grading to olive gray(5Y 4/1) Core is moist Moderately well indurated, moderately friable with weak argillic cement Interval is thin bedded to thinly laminated with alternating sands and silts Bedding has wavy appearance suggestive of soft sediment deformation Overall attitudes are subhorizontal 10-30 degrees Sand fraction is comprised of well sorted, f g, angular to sub-angular quartz grains ranging from clear to translucent 70% Sand 28 5% Silt 2 5% Clay
			4 50 /5 00	5800	157				
				5799	158				
								NO SAMPLE	Core Loss, No Retrieval
				5798	159			SILTY SANDSTONE	Silty Sandstone Same As 155 1' to 158 3' interval
				5797	160				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 165 2	GROUND ELEVATION (FT) 5956 70	PROJECT NUMBER 304929	LOG OF BORING NUMBER
NORTH	749524	AREA OU 2	CASING DIAMETER (IN) 6/2	GEOLOGIST DC/JAW	46892
EAST	2087086	LOCATOR NUMBER J14	BOREHOLE DIAMETER (IN) 10/6	DATE DRILLED 06/16/92	

REMARKS FIRST 60 FEET ADVANCED WITH A AP 1000 RC PERCUSSION HAMMER DRILL RIG 60-165 2 FEET ADVANCED WITH A CME 75 DRILL RIG
Additional centralizers at 10' 30', 50' 70' 90', 110 and 130'

CHEMICAL SAMPLE / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5 00 /5 00	5796	160				
						161				
					5795	162			CLAYSTONE	Claystone with some silt Olive gray(5Y 4/1) grading to dark greenish gray(5GY 4/1) Core is moist, moderately indurated moderately to weakly friable, brittle fracture with weak thin partings Thin bedded with spotty irregular stringers of carbonaceous material(lignite) Bedding is sub-horizontal at 5-10 degrees Broken/fracture zones noted at 162 8' to 163 4' Attitudes not recognizable 13% Silt 87% Clay
					5794	163				
					5793	164			NO SAMPLE	Hole reamed to 165 2' prior to well installation
					5792	165				
					5791	166				
					5790	167				
					5789	168				
					5788	169				
					5787	170				

NOTE
TOTAL DRILLED DEPTH 165 20'
TOTAL DEPTH OF CASING 165 20'
BOTTOM OF FILTER PACK 165 20'

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.0A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME WARP | WELL NO. 46892

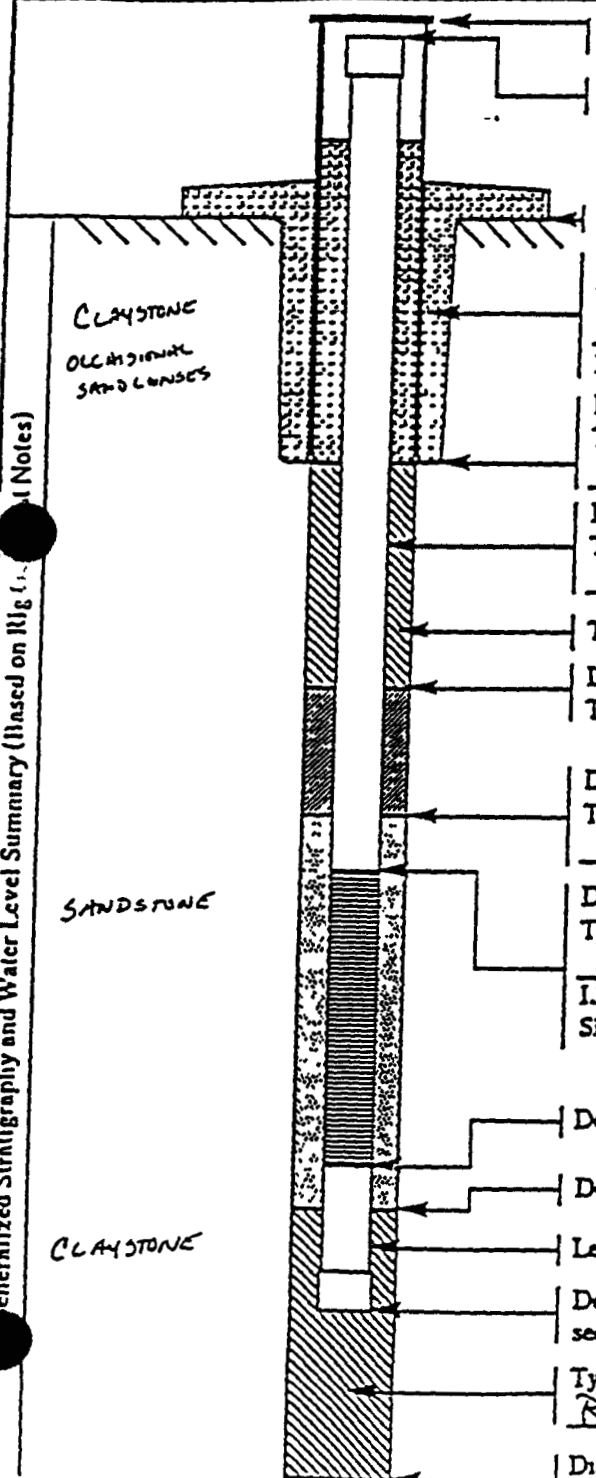
LOCATION OU2 | SCREENED INTERVAL

DATE COMPLETED 6-24-92 TOTAL HOLE DEPTH (FT) 165' | DEPTH (FT) 146.90 to 161.90

CHECKED BY _____ DATE _____ | LITHOLOGY SANDSTONE

NOTE: All measurements will be from ground surface. Centralizer depths (when applicable) will also be shown.

Surface Casing Used (Check 1). ✓ Yes ____ No (If Yes, See Form GT.3A for specific information)



Generalized Stratigraphy and Water Level Summary (Based on Rig Notes)

Height of top of protective casing (Ft)	2.45
Height of top of well casing (Ft)	2.00' ABOVE GRADE
Ground Elevation (Ft)	
I.D. of protective casing (In)	8"
Type of protective casing:	STEEL
Depth of protective casing (Ft)	2.5'
Depth of surface seal (Ft)	3.00'
Type of surface seal	PORTLAND CEMENT
I.D. of well casing (In)	2"
Type of well casing:	PVC
Type of backfill.	PUREGOLD VOLCLAY GROUT
Depth of top of seal (Ft)	140.80
Type of seal:	1/4 PUREGOLD VOLCLAY TABLETS
Depth of top of filter pack / bottom of seal (Ft)	144.90
Type of filter pack:	16-40 CSSI SILICA SAND
Depth of top of screened section (Ft)	146.90
Type of screened section:	PVC
I.D. of screened section (In)	2"
Size of screen openings (In)	0.10"
Depth of bottom of screened section (Ft)	161.90
Depth of bottom of filter pack (Ft)	164.70/165.0'
Length of plugged blank section - Sump (Ft)	2.80'
Depth of bottom of plugged blank section - Sump (Ft)	164.70'
Type of backfill below filter pack	REDROCK-SAND 0 3'
Diameter of hole (In)	6"
Depth of hole (Ft)	165.0'

NOTE: CENTRALIZERS @ 164', 145', 130', 110', 90', 70', 50', 30', 10'

2

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B217689103 98 5'-100 0', 34% sand, 66% silt and clay

CHEMICAL/PHYSICAL/GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 50 /2 00	5960	0			CL	Silty Clay (Topsoil) - Dark yellowish brown (10 YR 4/2) Plasticity mod , some gravel to 4 cm Becomes gravel at 0 10 ft , sub-angular Some CaCO3 >50% clay
				1 70 /2 00	5959	1			GC	Gravelly Silty Clay matrix Matrix dark yellowish brown (10 YR 4/2) Mod plasticity Gravel angular to sub-rounded, granules to 2 5 cm , mod to well graded Some sand and silt Some CaCO3 >50% gravel
					5958	2				
					5957	3				
					5956	4				
				1 60 /2 00	5955	5			GC	Gravel - as above Angular to rounded granules to 5 cm Some caliche rinds on gravel Gravel granules >50% gravel
				0 60 /1 00	5954	6			CL	Sandy Gravelly Clay Grayish orange (10 YR 7/4) Low plasticity 2 cm to granule size gravel Some sand >50% clay
				0 60 /1 00	5953	7			NO SAMPLE	NO SAMPLE
					5952	8			GC	Gravel Same as above (reference interval 4 0' - 6 0') >50% gravel
	711			1 60 /2 00	5951	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE DEP / GEOTECHNICAL SAMPLE	SAMPLE NUMB	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1 20 /1 00	5950	10			GC	Clayey Gravel Very pale orange (10 YR 8/2) Mod graded Granules to 4 cm, sub-angular to sub-rounded Some v f g to c g sand >50% gravel
				0 00 /1 00	5949	11			NO SAMPLE	NO SAMPLE
	5889BR1214			0 00 /2 00	5948	12			NO SAMPLE	NO SAMPLE
					5947	13				
				0 50 /2 00	5946	14			GC	Clayey Gravel Pale yellowish brown (10 YR 6/2) Gravel granules to 5 5 cm Poorly graded Some v f g to v c g sand Some silt >50% gravel
					5945	15				
	5889BR1618			1 40 /2 00	5944	16			GC	Same as above, gravel granule size to 3 cm >50% gravel
	5889BR1619				5943	17				
				1 50 /2 00	5942	18			GC	Same as above Gravel to 4 0 cm, trace carbonaceous material >50% gravel
					5941	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER NB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

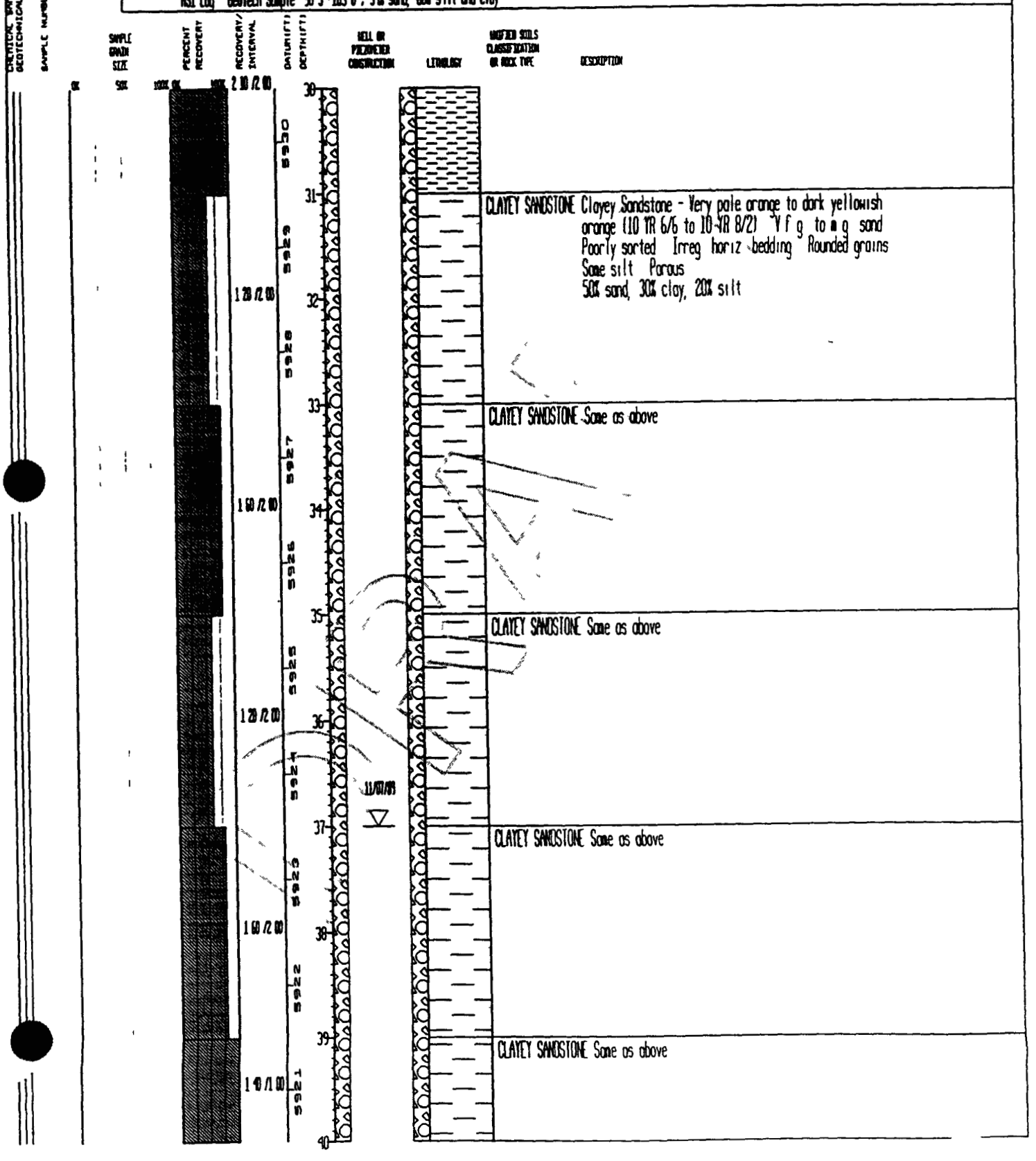
REMARKS Hollow Stem Auger 0 0-69 0' Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow
ASI Log GeoTech Sample B217689B103 98 5'-100 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE / GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5940	20			GC	Clayey Gravel to Gravelly Clay (10 YR 7/4) Mod plasticity Gravel granules to 2 cm (2 6 cm cobbles) Poorly graded angular to sub-angular (gc-cl) 50% gravel, 50% clay
				0 70 / 2 00	5939	21				
					5938	22			SANDY CLAYSTONE	Sandy Claystone - very pale orange (10 YR 8/2), grayish orange (10 YR 7/4) Highly weathered, highly friable V f g to f g sand 50% clay, 50% sand
				1 20 / 2 00	5937	23				
					5936	24			CLAYEY SANDSTONE	Clayey Sandstone Grayish orange to dark yellowish orange (10 YR 7/4 to 10 YR 6/6) Some CaCO3 V f g to f g rounded grains Highly weathered, friable >50% sand
				1 90 / 2 00	5936	25				
					5935	26			CLAYEY SILTSTONE	Clayey Siltstone to Clayey Sandstone - as above Some horiz laminated bedding visible Highly weathered, friable >50% silt
				0 80 / 2 00	5934	26				
					5933	27			SANDY CLAYSTONE	Sandy Claystone - Very pale orange (10 YR 8/2) to dark yellowish orange (10 YR 6/6) V f g sand, poorly graded (mod to well sorted), mod rounded to rounded, mod porous to porous, mod friable Horiz irreg laminated bedding >50% clay
				1 40 / 2 00	5932	28				
					5931	29			SANDY CLAYSTONE	Same as above, some carbonaceous material >50% clay
				2 10 / 2 00		30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow

ASI Log GeoTech Sample 98 5'-103 0', 34% sand, 66% silt and clay

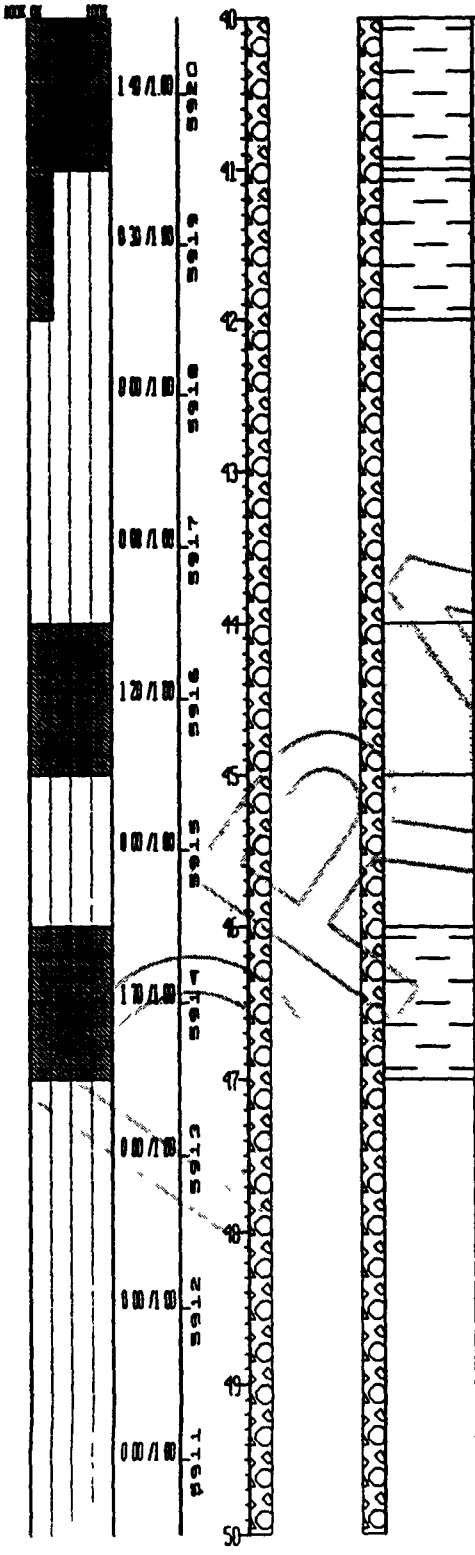


STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0 , 34% sand, 66% silt and clay

CHEMICAL SAF GEOTECHNICA | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYEY SANDSTONE	Clayey Sandstone - Very pale orange to dark yellowish orange (10 YR 8/2 to 10 YR 6/6) V f g to f g, mod graded, sorted, rounded grains Mod porous to porous Mod friable Crossbedded especially toward bottom of interval Some iron staining >60% sand
CLAYEY SANDSTONE	Same as above
NO SAMPLE	NO SAMPLE
NO SAMPLE	NO SAMPLE
SANDSTONE	Sandstone - Grayish orange to mod yellowish brown (10 YR 7/4 to 10 YR 5/4) Well sorted, rounded grains Med grained Porous Bedding not evident Some clay Friable Becomes more clayey, finer grained toward bottom of interval 90% sand
NO SAMPLE	NO SAMPLE
CLAYEY SANDSTONE	Clayey Sandstone to Sandy Claystone Grayish orange to mod yellowish brown (10 YR 7/4 to 10 YR 5/4) Mod friable, bedding not evident Mod porous, v f g to m g sand, rounded, mod sorted 50% clay, 50% sand
NO SAMPLE	NO SAMPLE
NO SAMPLE	NO SAMPLE
NO SAMPLE	NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5950 50	OLD WELL NUMBER	58-898R	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER 18	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS: Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow

AGI Log GeoTech Sample B217689103 99 5'-100 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE / DRY GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					50			NO SAMPLE	NO SAMPLE
				0 00 / 1 00	5910				
					51			NO SAMPLE	NO SAMPLE
					5909				
					52				
				0 00 / 1 00	5908				
					53				
					5907				
					54			SILTY CLAYSTONE	Silty Claystone - Med bluish gray (5 B 5/1) Irreg bedding, slightly friable Some dark yellowish orange Mottling, mod porous, some v f g sand 60% clay, 30% silt
				1 30 / 1 00	5906				
					55			SILTY CLAYSTONE	Same as above Some carbonaceous material visible
				1 30 / 1 00	5905				
					56			SILTY CLAYSTONE	Silty Claystone and Clayey Siltstone Irregularly interbedded (mottled) Yellowish gray to light olive gray (5 Y 8/1 to 5 Y 6/1) Mod friable, no apparent bedding Some cool, unconsol
				0 40 / 1 00	5904				
					57			SILTY CLAYSTONE	Same as above (reference interval 56 0' to 57 0')
					5903				
				1 50 / 2 00	58				
					5902				
					59			CLAYSTONE	Claystone - Olive gray (5 Y 4/1) Friable No apparent bedding, unconsol >70% clay
				1 00 / 1 00	5901				
					60				

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-898R	LOG OF BORING NUMBER
NORTH	749629	AREA	EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER	M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

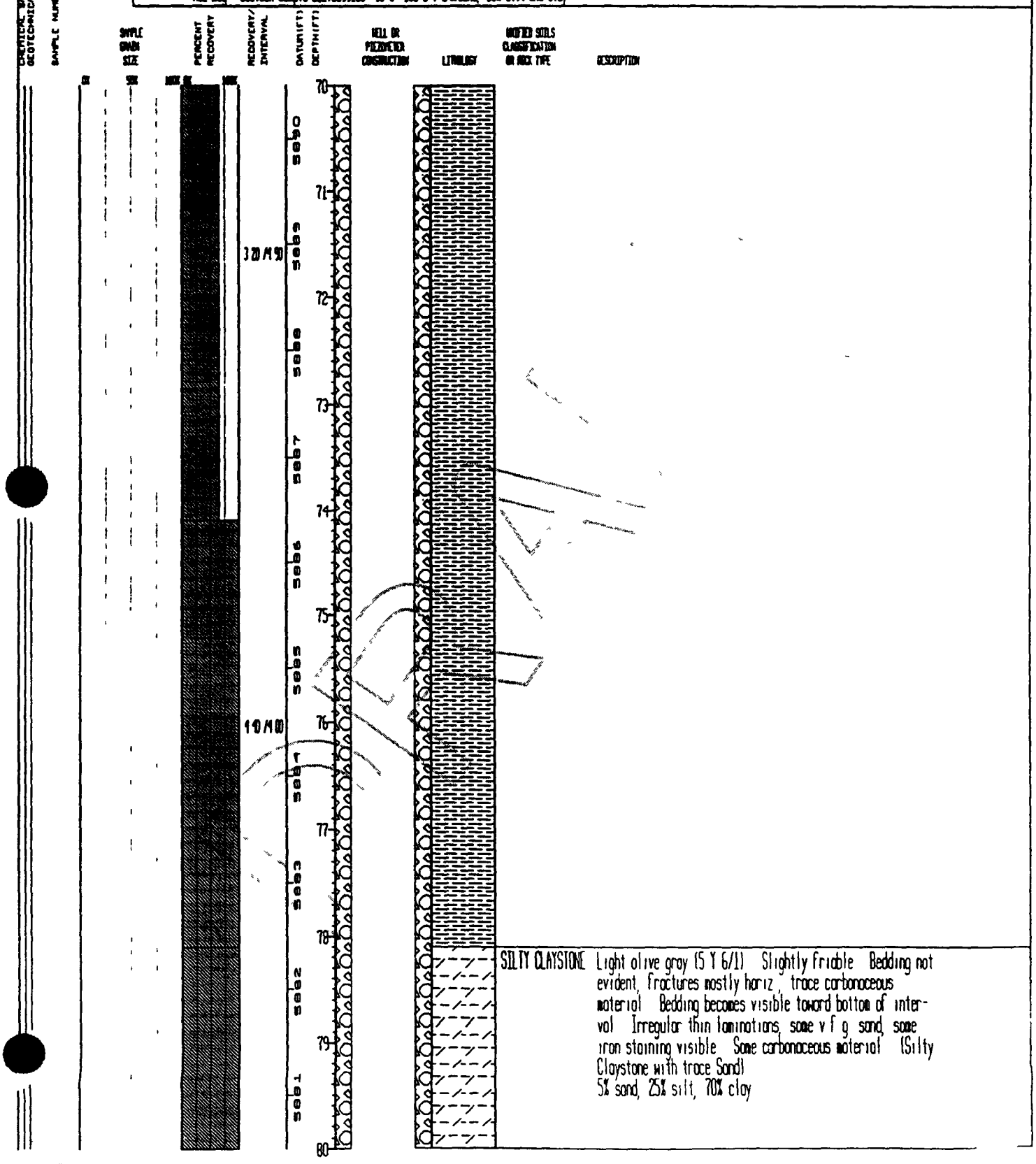
REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow
AGI Log GeoTech Sample 98 5'-100 0', 34% sand, 66% silt and clay

CHEMICAL OR GEOTECHNICAL SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100/100	60			CLAYSTONE	Claystone - Olive (5 Y 4/1) Mod to slightly friable No apparent bedding Core is unconsol , some silt, trace of carbonaceous material >60% clay
				61			CLAYSTONE	Same as above Some v f g - f g sand
			100/100	62			CLAYSTONE	Claystone - olive gray (5 Y 4/1) Mod - highly friable No apparent bedding Core is unconsol Trace of coal, trace of carbonaceous material, trace of silt Interval shows possible clast material
			90/100	63			CLAYSTONE	Same as above
			90/100	64			CLAYSTONE	Same as above
			90/100	65			CLAYSTONE	Same as above Trace of Fe staining
			90/100	66			NO SAMPLE	NO SAMPLE
			80/100	67			CLAYEY SANDSTONE	Top 4 in is same as above (reference interval 62 0' to 63 0') Base of interval is Clayey Sandstone light olive gray (5 Y 6/1) V f g - f g, sub-rounded, mod well sorted No apparent bedding Trace carbonaceous material
			120/100	68			CLAYSTONE	Same as above Possible horiz bedding planes Base of interval is unconsol
			160/100	69			NO SAMPLE	NO SAMPLE
			100/120	70			CLAYSTONE	Olive gray (5 Y 4/1) to light olive gray (5 Y 6/1) Mod to slightly friable, some silt, trace carbonaceous material Bedding not evident Fractures mostly horiz Some slickensides visible on one irregular 80 degree fracture Mildly calcareous (Claystone with trace Silt) >5% silt >70% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay



SILTY CLAYSTONE Light olive gray (5 Y 6/1) Slightly friable Bedding not evident, fractures mostly horiz , trace carbonaceous material Bedding becomes visible toward bottom of interval Irregular thin laminations, some v f g sand, some iron staining visible Some carbonaceous material (Silty Claystone with trace Sand)
5% sand, 25% silt, 70% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

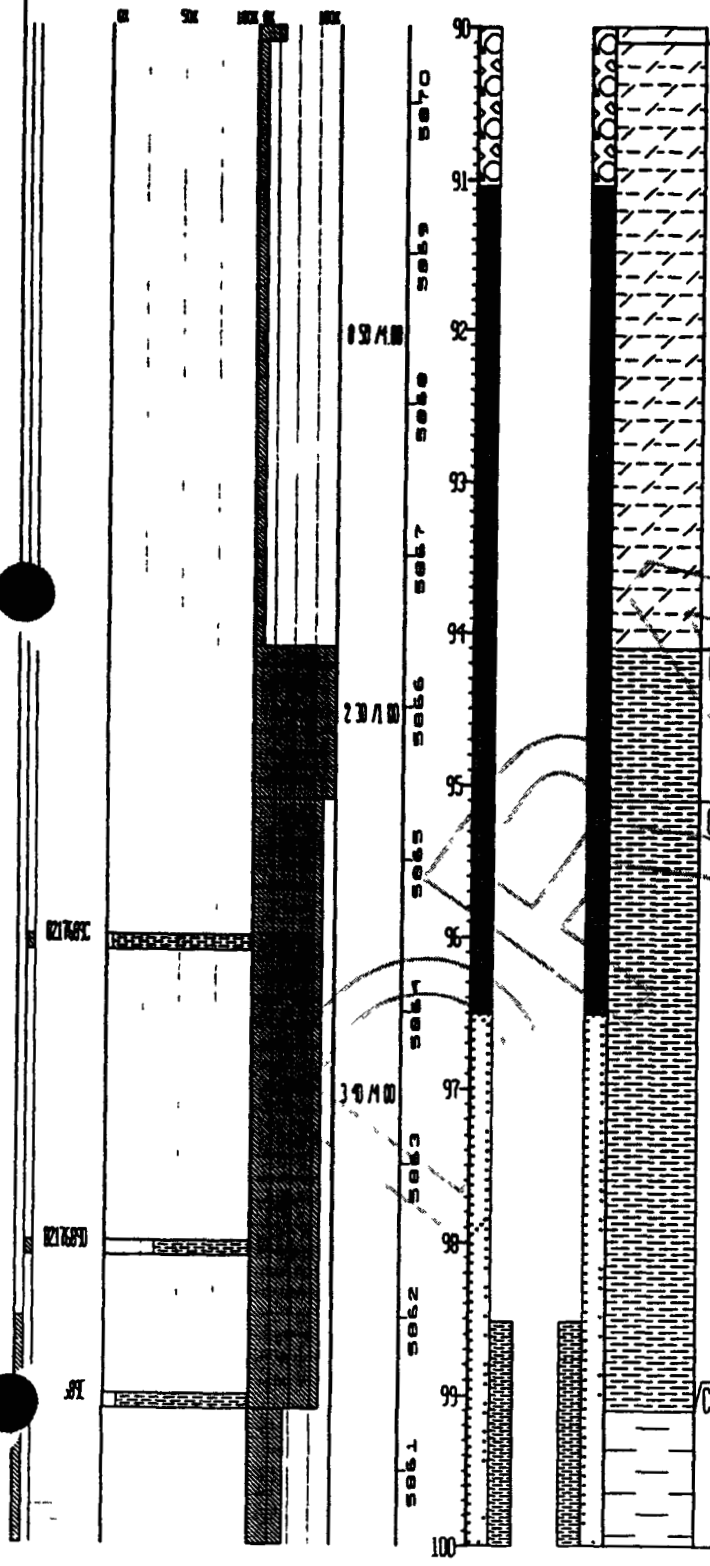
ASI Log GeoTech Sample B2176899103 98 5 -103 0', 34% sand, 66% silt and clay

CHEMICAL BAY GEOTECHNICAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%	4.10 /4.00	5880	80				
					5879	81				
					5878	82			SILTY CLAYSTONE	Light olive gray (5 Y 6/1) Mod to slightly friable Thinly laminated bedding visible, some crossbedding visible Some carbonaceous material, some iron staining One area of Sandy Claystone (calcareous) toward top of interval, approx 4 in long (Silty Claystone with some Sand) 10% sand, 20% silt, >50% clay
	B217689A				5877	83				
				3.20 /4.00	5876	84				
					5875	85				
					5874	86			SILTY CLAYSTONE	Same as above - bedding mostly horiz, thinly laminated Very thin silt laminations (<1 mm) Becomes less silty toward bottom of interval Slickensides on a near vertical irregular fracture toward bottom (Silty Claystone with some Sand) 10% sand, 20% silt, >50% clay
	B217689B				5873	87				
				1.30 /4.00	5872	88				
					5871	89				
						90				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT) 5960 50	OLD WELL NUMBER 58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN) 2 3/8 0 0	GEOLOGIST LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN) 4	DATE DRILLED 11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5 -103 0', 34% sand, 66% silt and clay



SILTY CLAYSTONE Olive gray (5 Y 4/1) Slightly friable Bedding not evident
30% silt, 70% clay

CLAYSTONE Olive gray (5 Y 4/1) Mod friable, bedding not evident Some slickensides present on fracture (open) Fracture angle 40 degrees
>70% clay

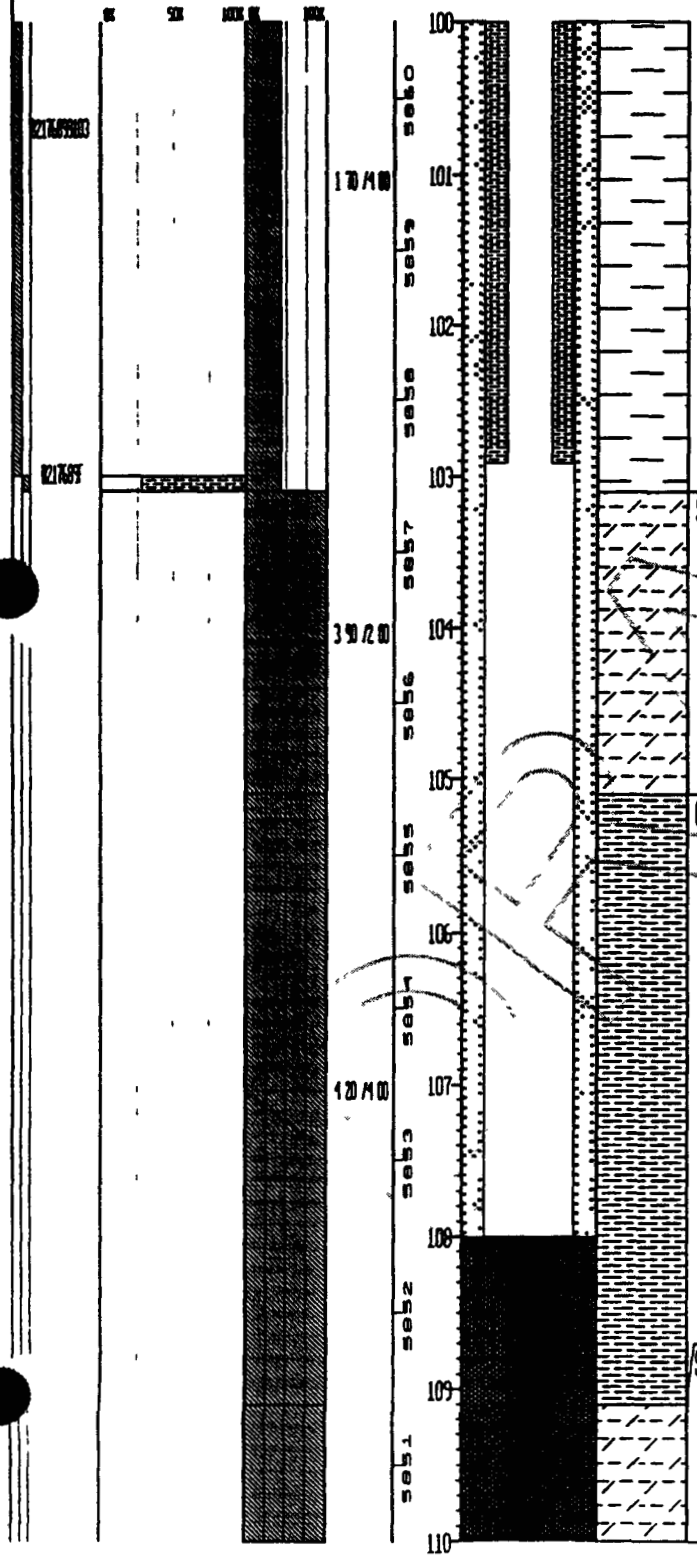
CLAYSTONE Same as above - color change to olive black (5 Y 2/1) Some carbonaceous material, especially toward center Bedding mostly horiz from fracture patterns Becomes Sandy Claystone at a distinct contact, yellowish gray (5 Y 8/1) Slightly friable Bedding irregular Sand v f g to f g, trace carbonaceous material
>70% clay to >50% clay

CLAYEY SANDSTONE Yellowish gray (5 Y 8/1) V f g to f g, poorly to mod graded Thinly laminated, irregular bedding (1 mm to 2 mm) Slightly dipping (20 degrees) Trace carbonaceous material
>60% sand

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay



SILTY CLAYSTONE Light olive gray (5 Y 6/1) to olive black (5 Y 2/1) Slightly to mod friable Bedding not evident Some carbonaceous material Slickensides visible on fracture Irregular fracture, trace iron staining Abundt carbonaceous material in localized areas Fracture angle 30 degrees
>60% clay

CLAYSTONE Olive gray (5 Y 4/1) Mod to highly friable Bedding not evident Some carbonaceous material Grades to very Silty Claystone, yellowish gray (5 Y 8/1) Slightly friable Massive bedding, trace carbonaceous material
>80% clay to >50% clay

SILTY CLAYSTONE Light olive gray (5 Y 6/1) Slightly friable Thin, laminated bedding in areas, mostly horiz Some v f g sand and silt in thin layers Some coal in thin layers (1 mm) Less silty toward bottom, slightly calcareous in some areas
>60% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER NB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0' Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow
AGI Log Geotech Sample B217689103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE OR GEOTECHNICAL SAMPLE

SAMPLE NUM

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM (FT)

DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

DEPTH (FT)	DATUM (FT)	RECOVERY/ INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
110	5850			
111	5849	1 0 / 1 0 0		
112	5848			
113	5847		CLAYSTONE	Same as above - olive gray (5 Y 4/1) to olive black (5 Y 2/1) Mod to slightly friable Bedding not apparent Some silt, trace carbonaceous material >80% clay
114	5846			
115	5845	1 2 0 / 1 0 0		
116	5844			
117	5843		CLAYSTONE	Same as above - Mod friable to friable High angle fractures (numerous) toward bottom of interval This area is highly friable (approx 6 in) Vertical slickensides on fractures Fracture angle 70 degrees to 80 degrees >80% clay
118	5842			
119	5841	3 7 0 / 1 0 0		
120				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER 18	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE DEPTH GEOTECHNICAL SAMPLE

SAMPLE NUMBER

SAMPLE GRAIN SIZE 0% 50% 100% 0% 100%

PERCENT RECOVERY

RECOVERY/INTERVAL

DATUM (FT)

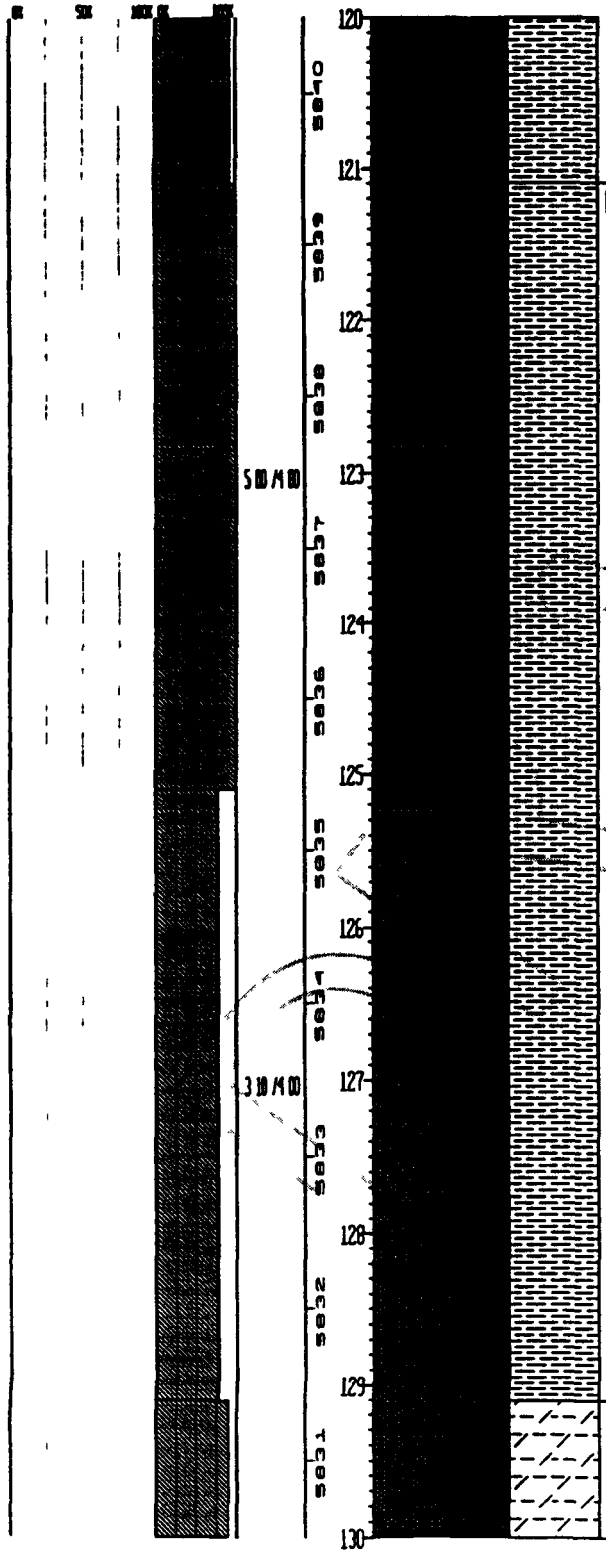
DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION



CLAYSTONE Brownish black (5 YR 2/1) Friable Some fractures Slickensides run vertically on fractures Fractures are irregular Color change to olive gray (5 Y 4/1) in middle of interval and back to brownish black toward bottom Trace carbonaceous material, trace iron staining Slickensides on fractures at bottom of interval are at a 15 degree angle to horiz Fracture angels 70 degrees and 40 degrees
>80% clay

SILTY CLAYSTONE Light olive gray (5 Y 6/1) Mod friable Bedding not evident Becomes less silty to Claystone, some silt at bottom of interval Color change to olive gray (5 Y 4/1)
>60% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89R	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER NB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASE Log Geotech Sample B217689B03 98 5'-103 0', 34% sand, 66% silt and clay

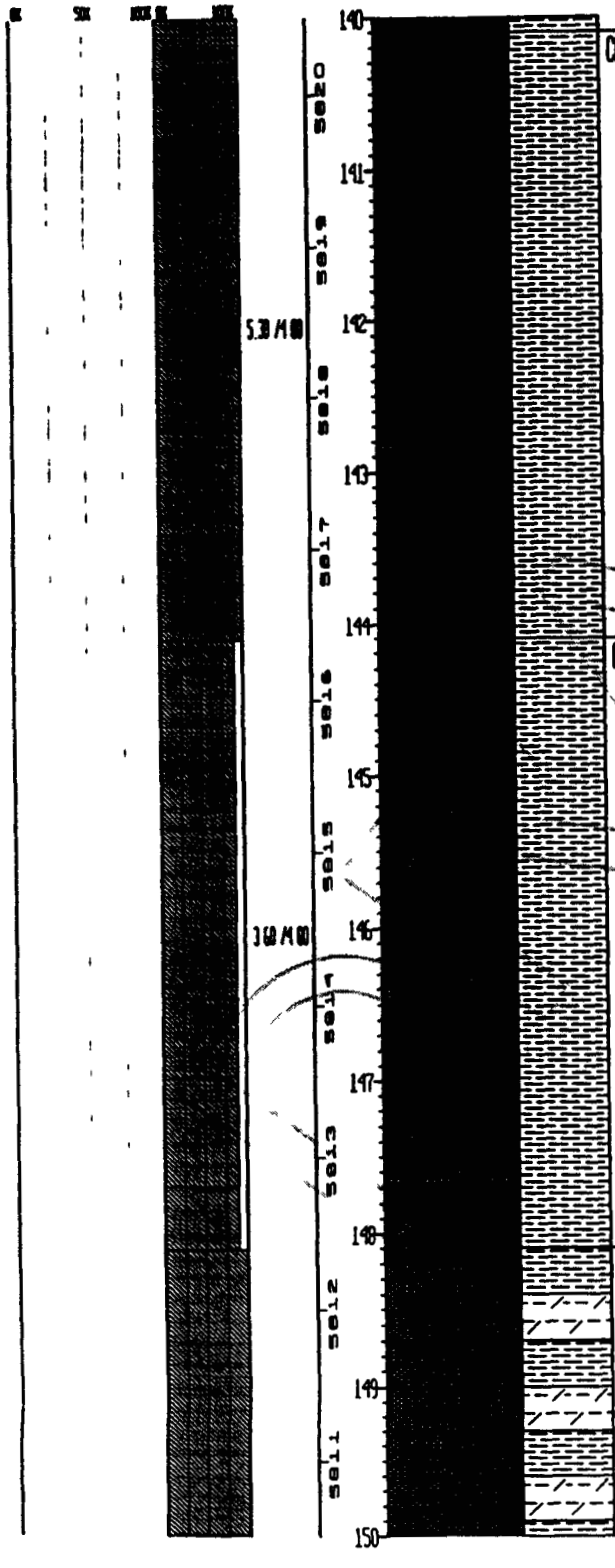
SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	MODIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			130				
		3 0 / 4 0	131				
			132				
			133			CLAYSTONE	Olive gray (5 Y 4/1) Mod friable Bedding not evident Some possible slickensides on high angle fractures Slicks orientation mostly vertical Grades to Silty Claystone near middle of interval, color change to light olive gray (5 Y 6/1) Trace carbonaceous material Vertical slickensides on high angle fracture toward bottom Fracture angles 80 degrees to 70 degrees >80% clay to >60% clay
		2 0 / 4 0	134				
			135				
			136				
			137			CLAYSTONE	Olive gray (5 Y 4/1) Mod to highly friable Bedding not evident, trace silt >80% clay
		3 0 / 3 0	138				
			139				
			140				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34%sand, 66% silt and clay

CHEMICAL SAMPLE DEP GEOTECHNICAL SAMPLE | SAMPLE NUMB | SAMPLE GRAIN SIZE | PERCENT RECOVERY | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



CLAYSTONE — Olive gray (5 Y 4/1) Mod to highly friable Bedding not evident, trace silt Grades to Silty Claystone (light olive gray (5 Y 6/1)) Mod to highly friable Bedding not evident Trace carbonaceous material, trace silt discoloration
>80% clay to >60% clay

CLAYSTONE — Olive gray (5 Y 4/1) Mod friable to friable Bedding not evident Some silt, slickensides visible on fracture, verticle orientation Trace carbonaceous material (Claystone with some Silt)
20% silt, 80% clay

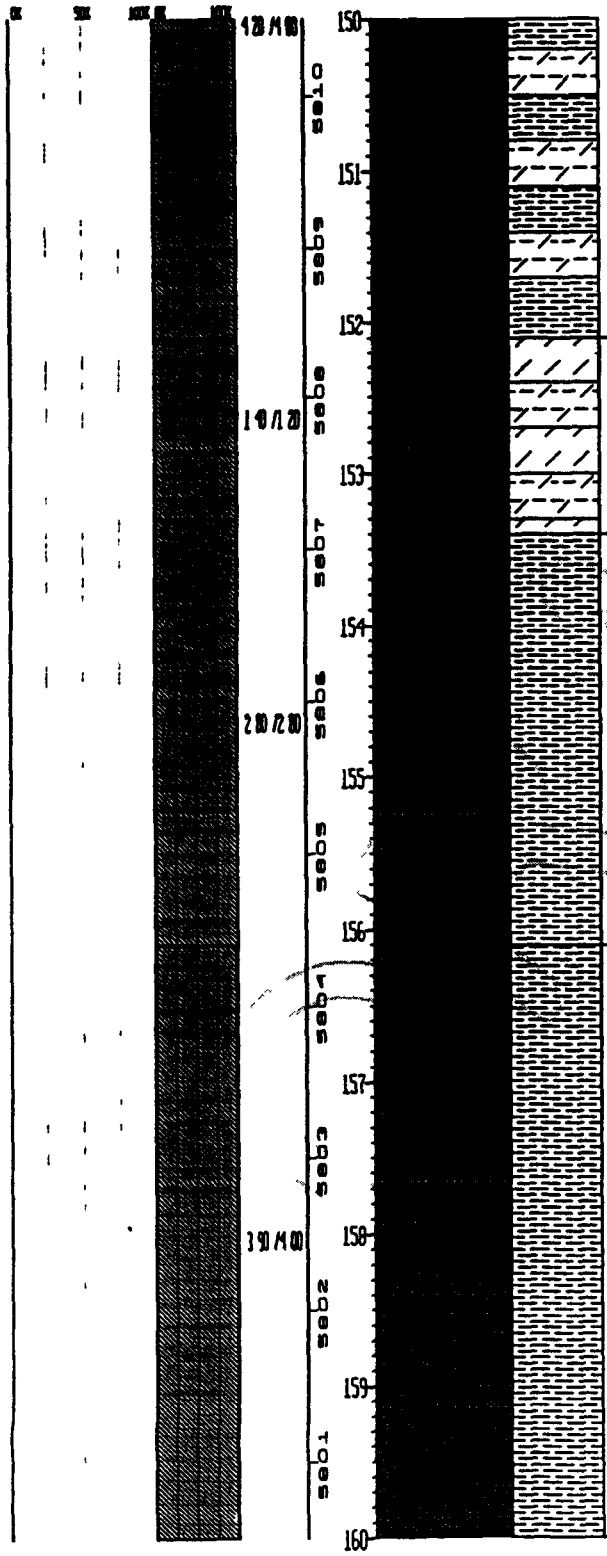
CLAYSTONE — Same as above - interbedded with Silty Claystone, olive gray (5 Y 4/1) Mod friable to friable Thinly laminated bedding with some layers of silt (<1 mm) Some small wedge sets visible (approx 1 5 cm) Bedding appears to have dip in some areas Bedding angle 20 degrees in some areas
>60% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0' Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE OR GEOTECHNICAL SAMPLE | SAMPLE NUM | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

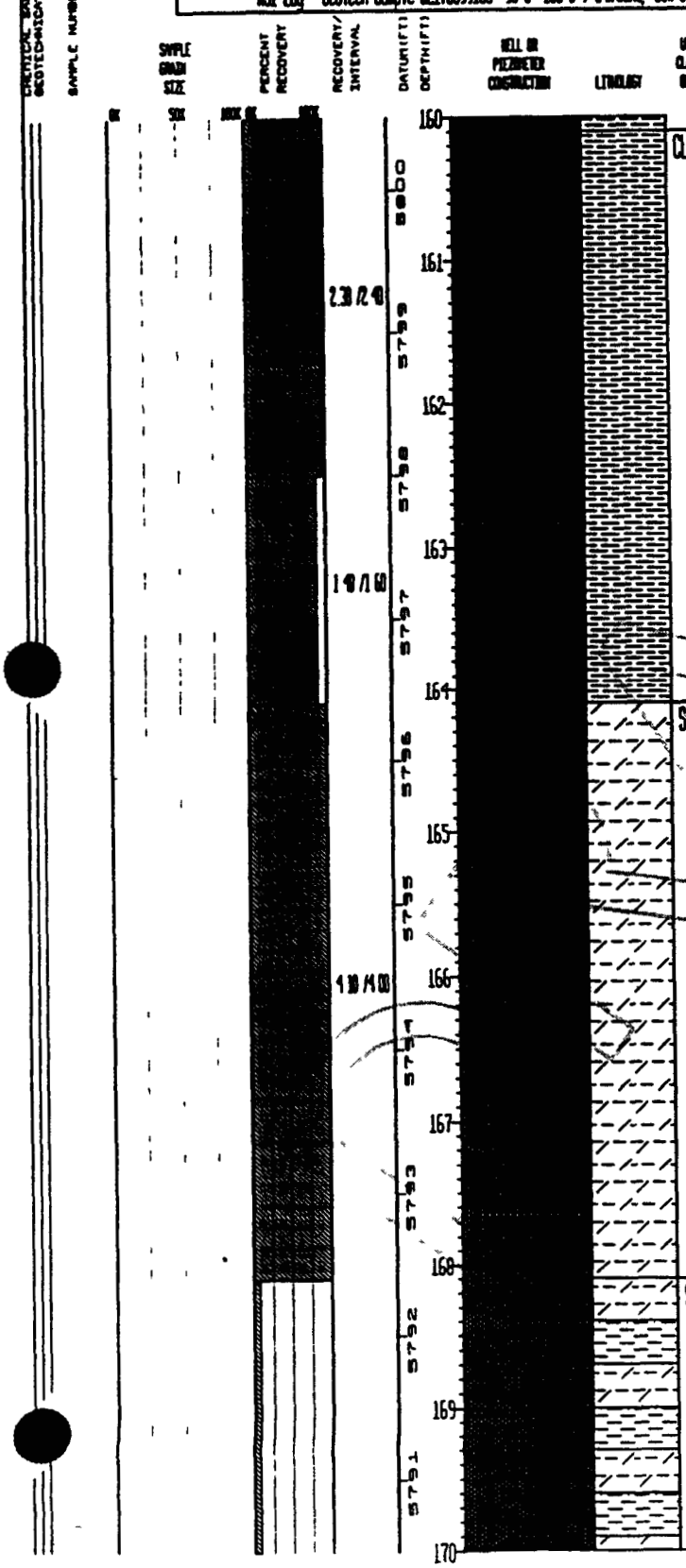


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTSTONE	Interbedded Siltstone and Silty Claystone - mod friable Bedding at low angle to horiz 30% silt, 60% clay
CLAYSTONE	Grades to Claystone - olive gray (5 Y 4/1) Mod friable Bedding not evident, some silt Fracture angles 30 degrees to 60 degrees >80% clay
CLAYSTONE	Same as above - bedding not evident >80% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay



CLAYSTONE Olive gray (5 Y 4/1) Mod friable Bedding not evident Some silt Becomes silty toward bottom >80% clay to >60% clay

SILTY CLAYSTONE Olive gray (5 Y 4/1) Mod friable Thinly laminated, irregular bedding visible, mostly in upper interval, gently sloping Trace carbonaceous material Some v f g sand, trace iron staining Healed fracture forms contact between above and v f g Sandy Claystone Fracture angle 50 degrees Bedding angle 15 degrees to 30 degrees 10-25% sand, 20% silt, >60% clay

SILTY CLAYSTONE Same as above and Sandy Claystone - pinkish gray (5 YR 8/1) to light olive gray (5 Y 6/1) Slightly friable Bedding not evident Trace carbonaceous material >60% clay

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	59-89R	LOG OF BORING NUMBER	
NORTH 749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689	
EAST 2086746	LOCATOR NUMBER NB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89		

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

AST Log GeoTech Sample B217689B103 98 5'-103 0', 34% sand, 66% silt and clay

SAMPLE GRAB SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			5790	170				
				171				
			5789					
				172				
		2 0 / 1 0 0	5788				CLAYSTONE	Olive black (5 Y 2/1) Friable Bedding not evident Some silt in localized areas, trace iron staining >80% clay
				173				
		0 0 / 0 0	5787				CLAYSTONE	Same as above - high angle fracture Bedding angle approx 80 degrees >80% clay
				174				
			5786					
				175				
		0 0 / 1 0	5785					
				176				
			5784					
				177				
		3 2 0 / 1 0 0	5783				CLAYSTONE	Same as above - Grades to Sandy Claystone, olive gray (5 Y 4/1) Slightly friable Bedding not evident V f g sand, some silt >60% clay
				178				
			5782				CLAYSTONE	Same as above - grading from more sandy to less sandy, color grades from olive gray (5 Y 4/1) to light olive gray (5 Y 6/1) Healed fracture toward bottom separates a sandier sequence Some thin laminations visible toward bottom of sequence (<1 mm), trace carbonaceous material >60% clay
				179				
			5781					
				180				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER M8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE DEP
GEOTECHNICAL SAMPLE
SAMPLE NUMB

SAMPLE GRAIN SIZE 0% 50% 100% 0% 100%

PERCENT RECOVERY

RECOVERY/INTERVAL: 4.50 /4.00; 1.20 /1.10; 1.70 /2.90; 4.70 /4.00

DATUM (FT): 5780, 5779, 5778, 5777, 5776, 5775, 5774, 5773, 5772, 5771

DEPTH (FT): 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

SILTY CLAYSTONE Olive gray (5 Y 4/1) Mod friable Bedding not evident, trace carbonaceous material High angle, open, fracture toward bottom of interval has slickensides 80 degrees off vertical Fracture angle 70 degrees
>70% clay

CLAYSTONE Olive black (5 Y 2/1) Friable Bedding not evident Trace silt, trace carbonaceous material, low angle open fracture Fracture angle 20 degrees
>80% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5950 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	208676	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

AGI Log GeoTech Sample B217689B03 SB 5 -103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE (C) GEOTECHNICAL SAMPLE (G)

SAMPLE NUM

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM (FT) DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

DEPTH (FT)	DATUM (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
190	5770	SILTY CLAYSTONE	Olive gray (5 Y 4/1) to olive black (5 Y 2/1) Friable Bedding appears mildly dipping (approx 10 degrees) and irregular from deposition of organic material Some carbonaceous material, thin (<1 mm) coal seams (Silty Claystone with some Carbonaceous Material) 10% silt, 7% carbonaceous, >60% clay
191			
192	5768		
193	5767	SILTY CLAYSTONE	Same as above - bedding not as evident Mod friable, low angle fracture at 30 degrees
194			
195	5765	SILTY CLAYSTONE	Olive gray (5 Y 4/1) Mod friable to friable Bedding laminated in thin layers, irregular Silt layers (<1 mm) Bedding has mild dip in lower part of sequence Some localized areas of Sandy Claystone, v f g sand Bedding angle 15 degrees to 20 degrees 20% sand, 30% silt, >50% clay
196			
197	5763		
198	5762	SANDY CLAYSTONE	Same as above - bedding more irregular, probably soft sediment deformation Some carbonaceous material middle of interval (Sandy Claystone with some Silt) >20% sand, 20% silt, >50% clay
199	5761		
200			

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA	EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER	NB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 8'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow
AGI Log Geotech Sample B217689103 98 5'-103 0', 34% sand, 66% silt and clay

SAMPLE NUMBER	CHEMICAL OR GEOTECHNIC	USCS FILE	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			GR SD	MUDSTONE SILTSTONE		5960 200				
					4 10 / 4 00	201				
						5959 202				
						5958			SILTY CLAYSTONE	Olive gray (5 Y 4/1) Slightly friable Bedding appears dipping from deposition of carbonaceous material (some carbonaceous material and coal seams (Klmm)) Healed Fracture provides sharp contact with a Cloyey Sandstone, light olive gray (5 Y 6/1) to pinkish gray (5 YR 8/1) Bedding thinly laminated, deformed (soft sediment) V f g sand, well sorted, mod porous Fracture angles 40 degrees to 45 degrees 20% silt, >60% clay
						203				
						5957				
					3 90 / 3 80	204				
						5956				
						205				
						5955				
						206				
						5954			SILTY CLAYSTONE	Same as above - grades to Claystone Claystone 0 7 in down Claystone friable, olive gray (5 Y 4/1) to olive black (5 Y 2/1) Bedding not evident, trace carbonaceous material >50% sand, >80% clay
						207				
						5953				
					2 10 / 2 00	208				
						5952				
						209				
						5951				
						210				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5950 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER N8	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0 on 10/25/89 by C M Morrow
AGI Log Geotech Sample B217689103 98 5'-103 0', 34% sand, 66% silt and clay

SAMPLE GRAB SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		2.00 /1.23	5750 210			SILTY CLAYSTONE	Olive black (5 Y 2/1) Slightly friable Bedding not evident, some carbonaceous material Low angle fracture Grades to Claystone as above, but friable Grades to v f g Sandy Claystone, light olive gray (5 Y 6/1) Slightly friable Bedding not evident, trace carbonaceous material Fracture angle <30 degrees >60% clay
			211				
		1.60 /1.77	5749				
			212				
			5748				
			213				
			5747			SILTY CLAYSTONE	Same as above - grades to Clayey Sandstone, v f g, then is mottled with clay, irregular mottles, light gray (5 Y 6/1) to olive gray (5 Y 4/1) Some bedding dipping at 45 degrees, some carbonaceous organic material Some thin laminations (approx 1 mm) visible, soft sediment deformation likely Above 45 degrees, fracture was healed with carbon Fracture angle 0 degrees to 45 degrees >50% sand
		2.00 /2.00	214				
			5746				
			215				
			5745				
			216			NO SAMPLE	NO SAMPLE
		0.00 /1.20	5744				
			217				
			5743			CLAYSTONE	Olive black (5 Y 2/1) Mod friable Bedding not evident Some carbonaceous material, some silt, grades to Silty Claystone and back to Claystone at bottom of interval Trace iron staining >50% clay
		3.20 /2.20	218				
			5742				
			219				
		0.00 /0.00	5741			NO SAMPLE	No sample - core missing
			220				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 220 1	GROUND ELEVATION (FT)	5960 50	OLD WELL NUMBER	58-89BR	LOG OF BORING NUMBER
NORTH	749629	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	LAH	B217689
EAST	2086746	LOCATOR NUMBER MB	BOREHOLE DIAMETER (IN)	4	DATE DRILLED	11/07/89	

REMARKS Hollow Stem Auger 0 0-69 0', Rotary Core 69 0'-220 1' 5-5/8" Surface casing set to 69 0' on 10/25/89 by C M Morrow

ASI Log GeoTech Sample B2176899103 98 5'-103 0', 34% sand, 66% silt and clay

CHEMICAL SAMPLE DET GEOTECHNICAL SAMPLE	SAMPLE NUMB	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED-SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5740	220				Total Drilled Depth = 220 1'
					5739	221				
					5738	222				
					5737	223				
					5736	224				
					5735	225				
					5734	226				
					5733	227				
					5732	228				
					5731	229				
						230				

APPENDIX C3.2
OU4 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 20	GROUND ELEVATION (FT) 5897 39	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	751569	AREA BUFFER ZONE	CASING DIAMETER (IN) 8.4	GEOLOGIST C D MURRAY	40093
EAST	2085093	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 8 00 .0	DATE DRILLED 01/14/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY K R MIYOSHI AND J C EVANS

CHEMICAL SAMPLE / GRADATIONAL / SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0 85 /1 00	5897	0			SW	Silty Sand with some gravel and trace clay (0 0-3 1') Yellowish brown (10 YR 5/6) Poorly graded sand, v f g to c g , sub-angular to sub-rounded, no caliche, pred quartz and feldspar Low plasticity fines, no visible bedding, moist Sandy zone at 3 0-3 1' 7% Gravel, 54% Sand, 35% Silt, 4% Clay No recovery (0 85-1 0'), (1 5-2 0'), (2 8-3 0')
BH0168AE			0 50 /1 00	5896	1				
BH0167AE			0 80 /1 00	5895	2				
			1 20 /1 20	5894	3			ML	Silt with some clay (3 1-6 4') Brownish yellow (10 YR 6/6), poorly graded, low plasticity fines, no visible bedding, moist, reworked bedrock Some Fe-oxide staining, friable 90% Silt, 10% Clay No Recovery (4 8-6 0')
BH0169AE				5893	4				
			0 60 /1 80	5892	5				
			1 00 /1 00	5891	6			SW	Gravelly Sand with some silt (6 4-6 9') Red (2 5 YR 4/6), well graded sand, v f g to c g , sub-angular to sub-rounded, pred quartz and feldspar, low plasticity fines, no visible bedding, moist 29% Gravel, 56% Sand, 15% Silt, 1% Clay
			0 90 /1 00	5890	7			ML	Clayey Silt with some sand (6 9-8 4') Yellowish brown (10 YR 5/4), poorly graded, sand, pred quartz, no visible bedding, moist, very stiff, some organic material, roots, trace of pebbles 9% Sand, 73% Silt, 18% Clay No Recovery (7 9-8 0')
			0 70 /1 00	5889	8			CLAYEY SILTSTONE	Top of Bedrock at 8 4' Clayey Siltstone (8 4-14 2') Brown (10 YR 5/3) to light yellowish brown (2 5 Y 6/4) Trace of fine sand, low plasticity fines, high amount of organic material (roots), mottled appearance, massive bedding, some Fe-oxide staining, moist 60% Silt, 40% Clay No Recovery (8 7-9 0')
			1 20 /1 20	5888	9				
BH0171AE					10				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 14 20	GROUND ELEVATION (FT) 5897 39	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH 751569	AREA BUFFER ZONE	CASING DIAMETER (IN)	GEOLOGIST	C D MURRAY	40093
EAST 2085093	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	01/14/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY K R MIYOSHI AND J C EVANS

CHEMICAL SAMPLE GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			10				
					5887					
				2 00 /2 00		11				
					5886					
						12				
					5885					
				2 20 /2 00		13				
					5884					
						14				
					5883					Total Depth Drilled 14 20
						15				
					5882					
						16				
					5881					
						17				
					5880					
						18				
					5879					
						19				
					5878					
						20				

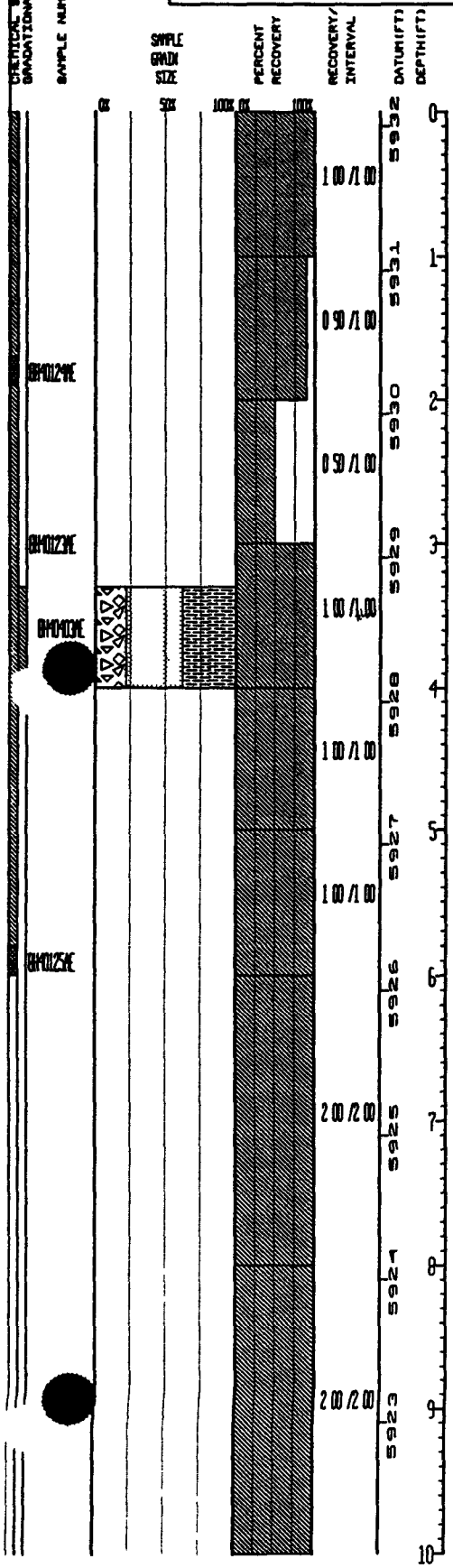
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 6 20	GROUND ELEVATION (FT)	5901 90	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	751520	AREA BUFFER ZONE	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	40293
EAST	2084904	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	01/20/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI (TE), CORE LOGGING BY J C EVANS (AE)

CHEMICAL GRADATION SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	100% GR 100%	1 20 /1 20	5901			CL	Sandy Clay with abundant silt and trace gravel (0 0-1 2') Yellowish brown (10 YR 5/6) to dark yellowish brown (10 YR 4/4) Clay is soft, moist, low plasticity fines Sand moderately to well graded, angular to sub-rounded, pred quartz, trace dark rock fragments, interval is sandier and rooted at top Gravel angular to 2 cm in length 2% Gravel, 29% Sand, 28% Silt, 41% Clay
CHM010NE				1 00 /1 00	5900			ML	Clayey Silt with some sand and trace gravel (1 2-2 9') Very dark gray (10 YR 3/1) to dark yellowish brown (10 YR 4/6), very stiff to hard, low plasticity fines Sand moderately graded, v f g to f g , sub-rounded, pred quartz, trace well rounded, frosted medium quartz grains Gravel sub-rounded, to 4 cm in length, moist, no visible bedding 2% Gravel, 19% Sand, 47% Silt, 32% Clay
CHM011NE				1 00 /1 00	5899				
				0 80 /1 00	5898			CL	Silty Clay with some gravel and trace sand (2 9-6 2') Grayish brown (10 YR 5/2) Low plasticity fines, with mottled limonite staining, no visible bedding, moist, trace scattered gravel, angular to sub-rounded, up to 2 cm in length 6% Gravel, 1% Sand, 28% Silt, 65% Clay No recovery (4 0-4 2')
				2 00 /2 00	5897				
CHM012NE					5896				
					5895				Total depth drilled 6 2'
					5894				Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 0 65' to 0 84' Silica Sand 0 84' to 1 33' Silica Flour 1 33' to 2 8' Bottom Porous Cup 1 67' Bentonite 2 8' to 3 1' Portland Cement 3 1' to 6 7' Total Depth Neutron Access Tube 6 4'
					5893				
					5892				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT)	5932 10	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	751256	AREA Buffer Zone	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	40393
EAST	2085447	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	01/29/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY C D MURRAY AND K R MIYOSHI



WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		OL	Organic Silt with abundant sand, some gravel and trace clay (0'0-0 6') Dark brown (10 YR 3/3) soil zone Poorly graded sand, v f g to m g, sub-angular to sub-rounded, pred quartz/feldspar, low plasticity fines, common roots/organic material, no visible bedding, moist 17% Gravel, 27% Sand, 54% Silt, 3% Clay
		ML	Sandy Silt with some gravel and trace of clay (0 6-6 0') Yellowish brown (10 YR 5/6) Well graded sand, v f g to c g, sub-angular, pred quartz and feldspar, no caliche, low plasticity fines, slight horiz bedding Trace of pebble size gravel scattered throughout Reworked bedrock, moist 13% Gravel, 40% Sand, 42% Silt, 5% Clay No recovery (1 9-2 0'), (2 5-3 0')
		SANDY SILTSTONE	Top of Bedrock at 6 0' Sandy Siltstone with a trace of clay (6 0-6 4') Olive yellow (2 5 Y 6/6), well sorted sand, v f g, sub-angular, pred quartz, argillaceous cement, no caliche, moist Some Fe-oxide staining, no visible bedding 49% Sand, 56% Silt, 3% Clay
		CLAYSTONE	Claystone with a trace of silt (6 4-11 0') Light olive brown (2 5 Y 5/6) Very stiff, caliche present in fractures, some Fe-oxide staining, faint horiz bedding, clay nodules present throughout Caliche filled fractures at 7 6' (10 degrees), moist 5% Silt, 95% Clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT) 5932 10	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	751256	AREA Buffer Zone	CASING DIAMETER (IN) 2 00	GEOLOGIST C D MURRAY	40393
EAST	2085447	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 01/29/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY C D MURRAY AND K R MIYOSHI

CHEMICAL SAMPLE DEPTH GRADATIONAL S/ DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE 0% 50% 100%

PERCENT RECOVERY 0% 100%

RECOVERY/ INTERVAL

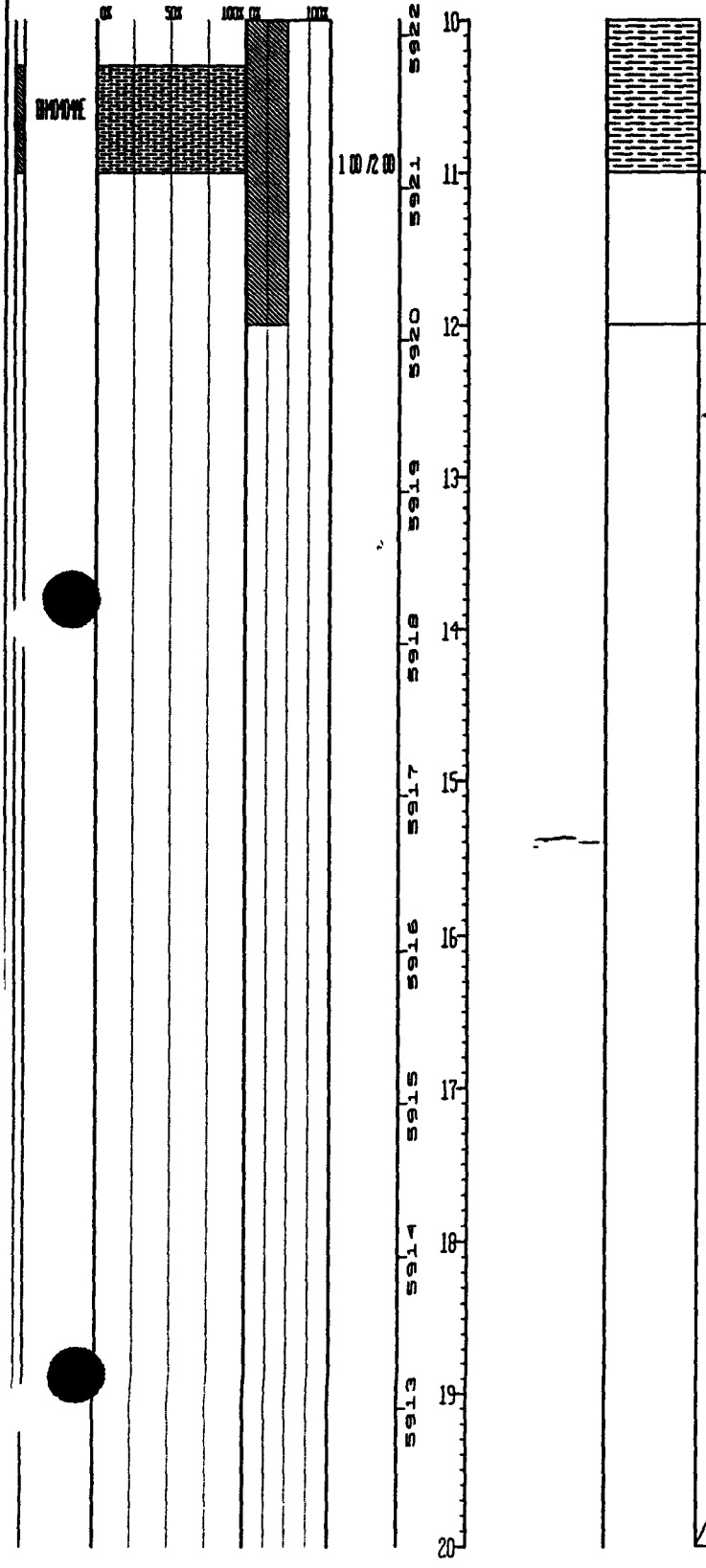
DATUM (FT) DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION



NO RECOVERY No recovery (11 0-12 0')

Total depth drilled 12 0'

Vadose Zone Monitoring Borehole Construction Listed Below
Portland Cement 1 0' to 2 8'
Bentonite 2 8' to 3 6'
Silica Sand 3 6' to 4 8'
Silica Flour 4 8' to 5 8'
Bottom Porous Cup 5 7'
Bentonite 5 8' to 6 2'
Portland Cement 6 2' to 11 8'
Total Depth Neutron Access Tube 11 5'

Total Depth Drilled 12 00

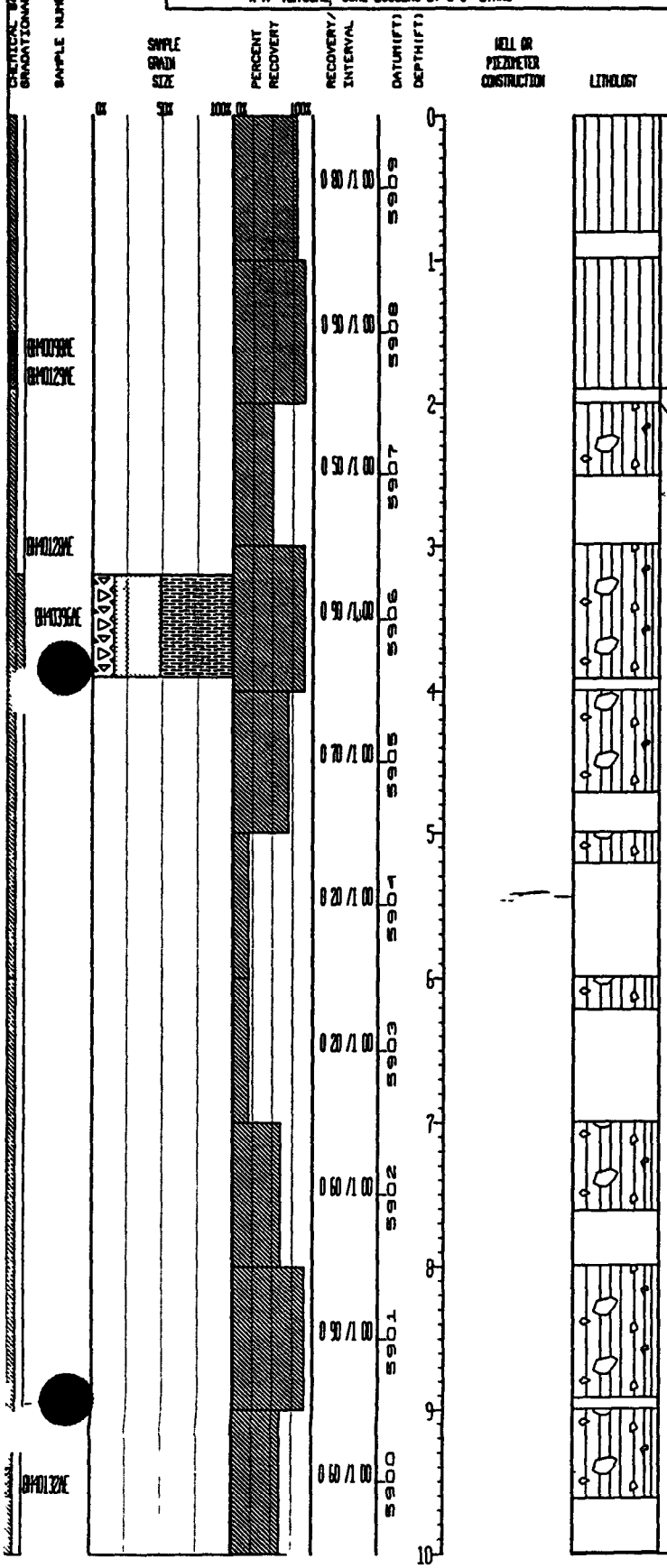
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 8 00	GROUND ELEVATION (FT)	5883 64	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	751541	AREA BUFFER ZONE	CASING DIAMETER (IN)	4.7	GEOLOGIST	K R MIYOSHI	40493
EAST	2085711	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	8.0	DATE DRILLED	01/08/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI (TE), CORE LOGGING BY J C EVANS (AE)

CHEMICAL SAMPLE TYPE AND DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CB	100% CR	100%					QL	Silty Clay with trace sand (0 0-4 7') Dark yellowish brown (10 YR 3/4) to olive brown (2 5 Y 4/3), very stiff to hard, low to medium plasticity fines, plant roots throughout interval, sand well sorted, well-rounded, pred f g , trace m g frosted quartz grains Top 0 5' of interval contains organic soil and trace gravel to 5 cm in length, dry to moist, no visible bedding 5% Sand, 38% Silt, 57% Clay No recovery (0 9-2 0'), (3 0-4 0')
	BH0456E			0 90 /2 00	5883	1				
					5882	2				
	BH0462E			1 00 /2 00	5881	3				
					5880	4				
	BH0463E			1 00 /2 00	5879	5			CLAYEY SANDSTONE	Clayey Sandstone with some silt (4 7-5 0') Top of Bedrock at 4 7' Yellow (10 YR 7/6) to brownish yellow (10 YR 6/6), pred v f g to f g , sub-rounded to rounded, trace very well-rounded, frosted m g quartz grains, approx 20% visible porosity, approx 5-10% argilloceous cement, moderately friable, moist 58% Sand, 17% Silt, 25% Clay
					5878	6			NO RECOVERY	No recovery (5 0-6 0')
				0 90 /2 00	5877	7			CLAYSTONE	Claystone with some silt (6 0-6 4') Dark gray (10 YR 4/1) to black (10 YR 2/1), very stiff to hard, parallel bedding at 15 degrees to horiz carbonaceous material and limonite staining along bedding planes, moist 10-20% Silt, 80-90% Clay
					5876	8			CLAYEY SANDSTONE	Clayey Sandstone with some silt (6 4-6 9') Same as reference interval (4 7-5 0') above
					5875	9			NO RECOVERY	No recovery (6 9-8 0)
					5874	10				Total Depth Drilled 8 00

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26 00	GROUND ELEVATION (FT) 5909 50	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	751491	AREA BUFFER ZONE	CASING DIAMETER (IN) 2 00	GEOLOGIST K R MIYOSHI	40593
EAST	2085558	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 01/26/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND A NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
ML	Clayey Silt with some sand and gravel (0 0-1 9') Light brownish gray (10 YR 6/2) with scattered brownish yellow (10 YR 6/8) mottling Scattered white (10 YR 8/1) calichegrains Stiff, moist, sand and gravel poorly graded, sub-angular to rounded Abundant grass roots from (0 0-0 3') Low plasticity fines 6% Gravel, 6% Sand, 53% Silt, 35% Clay No recovery (0 8-1 0')
NO RECOVERY	No recovery (1 9-2 0')
GM	Silty Gravel with some sand and clay (2 0-10 7') Matrix light yellowish brown (10 YR 6/4), scattered caliche grains, sand poorly graded, v f to m g, sub-angular to sub-rounded, dry, low plasticity fines, pred quartz/feldspar, no visible bedding, some reworked bedrock, pebble sized quartzite/lithic fragments 50% Gravel, 20% Sand, 21% Silt, 9% Clay No recovery (2 5-3 0'), (3 9-4 0'), (4 7-5 0'), (5 2-6 0') No recovery (6 2-7 0'), (7 6-8 0'), (8 9-9 0'), (9 6-10 0')

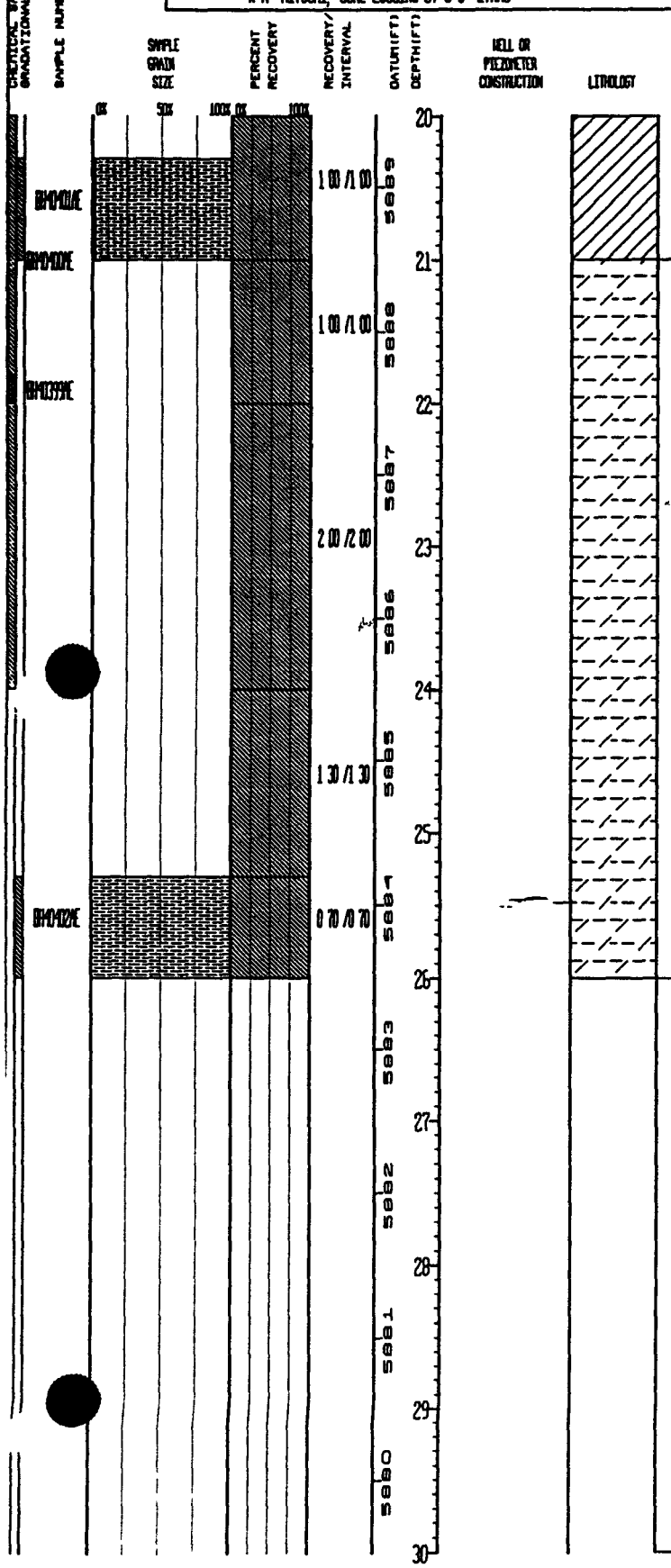
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26 00	GROUND ELEVATION (FT)	5909 50	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	751491	AREA BUFFER ZONE	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	40593
EAST	2085558	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	01/26/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND A NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH - BIRADATIONAL F - DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 70 / 1 00	5899	10				
	BM1039NE								NO RECOVERY	No recovery (10 7-11 0')
				1 00 / 1 00	5898	11			CL	Silty Clay (11 0-14 0') Mottled grayish brown (10 YR 5/2) and light yellowish brown (10 YR 6/4) with dark brown (10 YR 3/3) laminations from 12 5-14 0' Stiff with crude horiz bedding, moist, trace sand and gravel 30% Silt, 70% Clay
						12				
				2 00 / 2 00	5897	13				
					5896					
						14			GM	Silty Gravel with some sand and trace clay (14 0-16 5') Matrix yellowish brown (10 YR 5/4), sand poorly graded, v f to m g sub-angular to sub-rounded, low plasticity fines, no caliche pred quartz/feldspar, crude horiz bedding, dry 41% Gravel 19% Sand, 38% Silt, 2% Clay
	BM1039NE									
	BM1036NE			1 00 / 2 00	5895	15				No recovery (15 0-16 0')
					5894					
						16			CL	Silty Clay with some sand (16 5-21 0') Olive brown (2 5 Y 4/3) grading to grayish brown (2 5 Y 5/2) at base Soft, plant roots throughout interval, no visible bedding Sand poorly graded, sub-angular to sub-rounded, pred quartz trace rounded gravel, trace caliche, moist 13% Sand, 26% Silt, 61% Clay
				1 00 / 1 00	5893	17				
					5892					
	BM1034NE			1 00 / 1 00		18				
					5891					
				1 00 / 1 00		19				
					5890					
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26 00	GROUND ELEVATION (FT)	5909 50	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	751491	AREA BUFFER ZONE	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	40593
EAST	2085558	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	8 00 5-4885	DATE DRILLED	01/26/93	

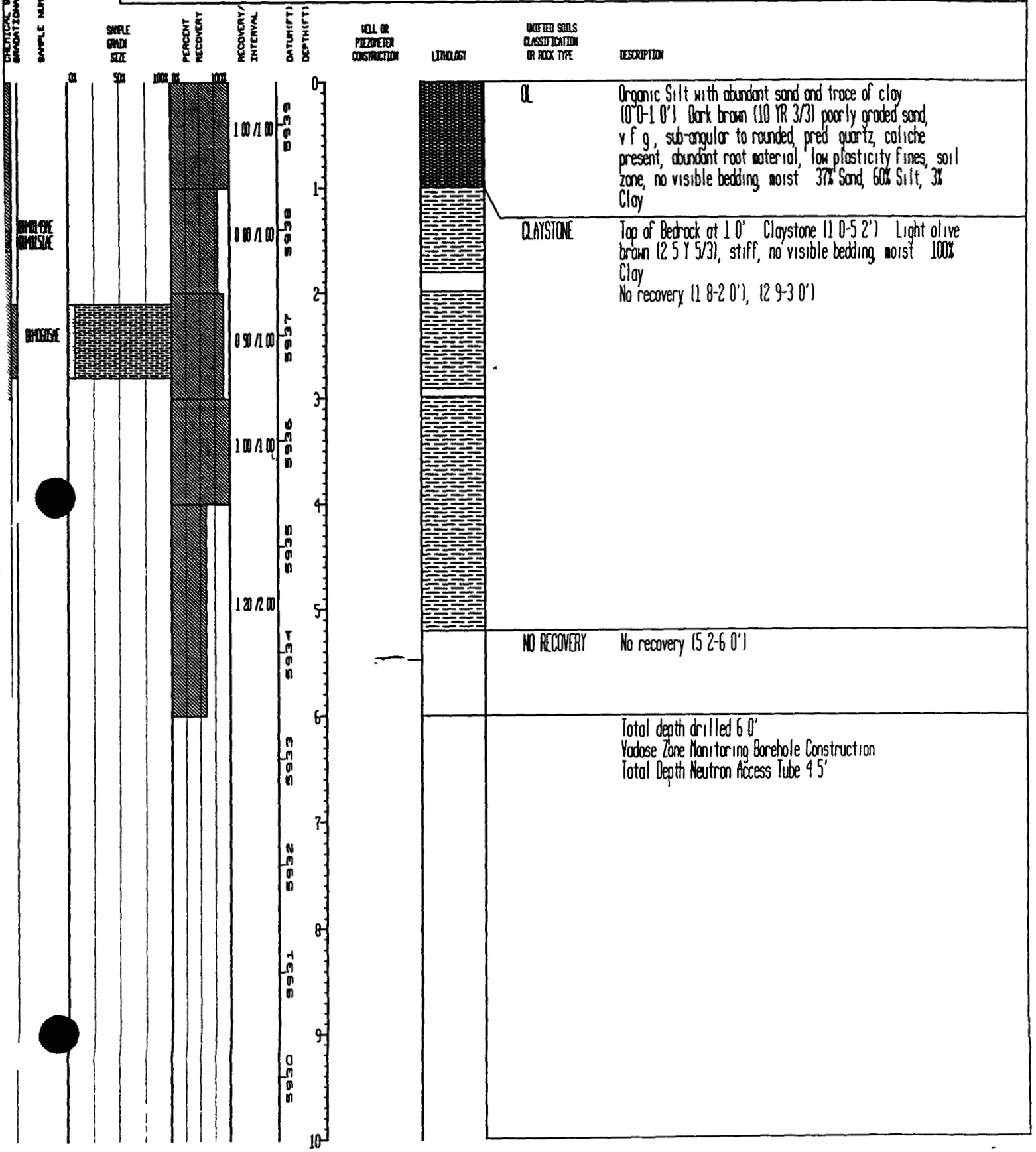
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND A NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Top of Bedrock at 21 0' Silty Claystone at (21 0-26 0') Light olive brown (2 5 Y 5/4) No sand present, predominately quartz, med plasticity fines, moist, approx 2% porosity, argillaceous cement, no caliche, some Fe-oxide staining, some organic material, some crude bedding toward bottom, small friable zone at 24 0' 20% Silt, 80% Clay
	Total depth drilled 26 0' Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 5 5' to 6 0' Silica Sand 6 0' to 8 4' Silica Flour 8 4' to 10 4' Bottom of Porous Cup 10 3' Bentonite 10 4' to 10 8' Silica Sand 10 8' to 15 9' Silica Flour 15 9' to 16 4' Bottom Porous Cup 16 3' Bentonite 16 4' to 16 8' Silica Sand 16 8' to 20 7' Bentonite 20 7' to 21 3' Portland Cement 21 3' to 26 3' Total Depth Neutron Access Tube 26 0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 6 00	GROUND ELEVATION (FT) 5939 40	PROJECT NUMBER 014 RFI/RI	LOG OF BORING NUMBER
NORTH	751206	AREA PA, Around Ponds	CASING DIAMETER (IN)	GEOLOGIST K R MIYOSHI	40693
EAST	2084477	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 02/26/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY C D MURRAY



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT)	5956 00	PROJECT NUMBER	004-RFI/RI	LOG OF BORING NUMBER
NORTH	751089	AREA BUFFER ZONE	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	40793
EAST	2084627	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/02/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SA	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 60 / 1 00	5956	0			ML	Sandy Silt with some gravel and trace clay (0 0-1 6') Very dark grayish brown (10 YR 3/2) Sand v f g, poorly graded, sub-angular, pred quartz, low plasticity fines, moist, trace (5%) plant roots 12% Gravel, 31% Sand, 55% Silt, 3% Clay No recovery (0 6-1 0')
				0 60 / 1 00	5955	1			NO RECOVERY	No recovery (1 6-2 0')
				0 60 / 1 00	5954	2			ML	Sandy Silt with some clay and trace gravel (2 0-6 9') Dark yellowish brown (10 YR 4/6) Sand f g to c g, poorly graded, sub-angular to sub-rounded, low plasticity fines, pred quartz, trace (5%) caliche, moist 5% Gravel, 28% Sand, 60% Silt, 7% Clay No recovery (2 6-3 0'), (3 9-4 0'), (4 7-5 0'), (5 7-6 0')
				0 90 / 1 00	5953	3				
				0 70 / 1 00	5952	4				
				0 70 / 1 00	5951	5				
				0 90 / 1 00	5950	6				
				0 70 / 1 00	5949	7			NO RECOVERY	No recovery (6 9-7 0')
				0 70 / 1 00	5948	8			ML	Gravelly Silt with some clay and sand (7 0-8 5') Brownish yellow (10 YR 6/6) Gravel poorly graded, sub-angular, pred c g, up to 6 cm in length Sand poorly graded, pred f g, low plasticity fines, dry abundant (30%) caliche 30% Gravel, 11% Sand, 36% Silt, 23% Clay No recovery (7 7-8 0')
				0 90 / 1 00	5947	9			SILTY CLAYSTONE	Top of Bedrock at 8 5' Silty Claystone with some sand (8 5-12 1') Light yellowish brown (2 5 Y 6/4) with olive yellow (2,5 Y 6/8) Fe-oxide staining Sand v f g to f g, well sorted, angular to sub-rounded, bedding consists of alternating sandy and clayey layers up to 0 4' thick, caliche present as fracture filling at 8 5', 9 2', and 10 1' 17% Sand, 20% Silt, 63% Clay No recovery (8 9-9 0'), (11 6-12 0')
				1 00 / 1 00		10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT)	5956 00	PROJECT NUMBER	004-RFI/RI	LOG OF BORING NUMBER
NORTH	751089	AREA BUFFER ZONE	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	40793
EAST	2084627	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/02/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI,
CORE LOGGING BY J C EVANS

CRITICAL SAMPLE DEPTH GRADATIONAL 6" DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM(FT)

DEPTH(FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

100% 0% 100%

1 60 /2 00

1 00 /1 00

5946 5945 5944 5943 5942 5941 5940 5939 5938 5937

10 11 12 13 14 15 16 17 18 19 20

SILTY CLAYSTONE Silty Claystone (12 1-13 0') Olive yellow (2 5 Y 6/6), non-friable, argillaceous cement, dry, no visible bedding, possibly bioturbated, trace Mg-oxide at 12 5'
30% Silt, 70% Clay

Total depth drilled 13 0'

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 2 7'-3 2'
Silica Sand 3 2'-5 2'
Silica Flour 5 2'-7 9'
Bottom Porous Cup 5 8'
Grout 7 9'-13 13'
Total Depth Neutron Access Tube 12 83'

Note Boring drilled to 12 0', poor recovery from 6 0-12 0' Moved rig 3' to the west, drilled to 6 0', resumed sampling from 6 0' to 13 0'
Note Boring drilled to 12 0', poor recovery from 6 0'-12 0' Moved rig 3' to west, drilled to 6 0', resumed sampling from 6 0'-13 0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 20	GROUND ELEVATION (FT)	5956 31	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	751078	AREA N OF POND 2078 N	CASING DIAMETER (IN)	6 3	GEOLOGIST	C O MURRAY	40893
EAST	2085100	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	12/15/92	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORE BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY AND CORE LOGGING BY C O MURRAY (AE)

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	100%	0 5956			SM	Gravelly Sand with some silt and clay (0 0-0 5') Very dark gray (5 YR 3/1) Gravel, angular, Sand f g to c g, poorly graded, grass and root fragments common, moist Gravel 25%, Sand 46%, Silt 15%, Clay 14%
	BH0010NE			8 80 /2 00	1 5955			GM	Sandy Gravel with some silt and a trace of clay (0 5-4 6') Very dark grayish brown (10 YR 3/2) Gravel 1-5 cm (fractured by drlg), subrounded Sand, f g to c g, rounded to angular, moderately graded, quartz and feldspar common, moist Gravel 63%, Sand 28%, Silt 6%, Clay 3% No recovery (0 8-2 0'), (2 7-3 0')
				0 70 /1 00	2 5954				
	BH0020NE			1 00 /1 00	3 5953				
					4				
	BH0022NE			0 60 /1 00	5 5952 5951			NO RECOVERY	No recovery (4 6-6 3')
				0 95 /2 00	6 5950			CLAYSTONE	Claystone with some silt (6 3-9 0') Top of Bedrock at 6 3' Light olive gray (5 YR 3/2) with light olive brown (5 Y 5/6) mottling, mod friable, massive bedding Moist Silt 10%, Clay 90% No recovery (7 0-7 8')
	BH0023NE				7 5949				
				1 20 /2 00	8 5948				
					9 5947			CLAYSTONE	Claystone with trace silt (9 0-11 2') Brownish gray (5YR 4/1) Moderately friable, massive bedding, moist Caliche present in some fractures Clay 95%, Silt 5%
					10				

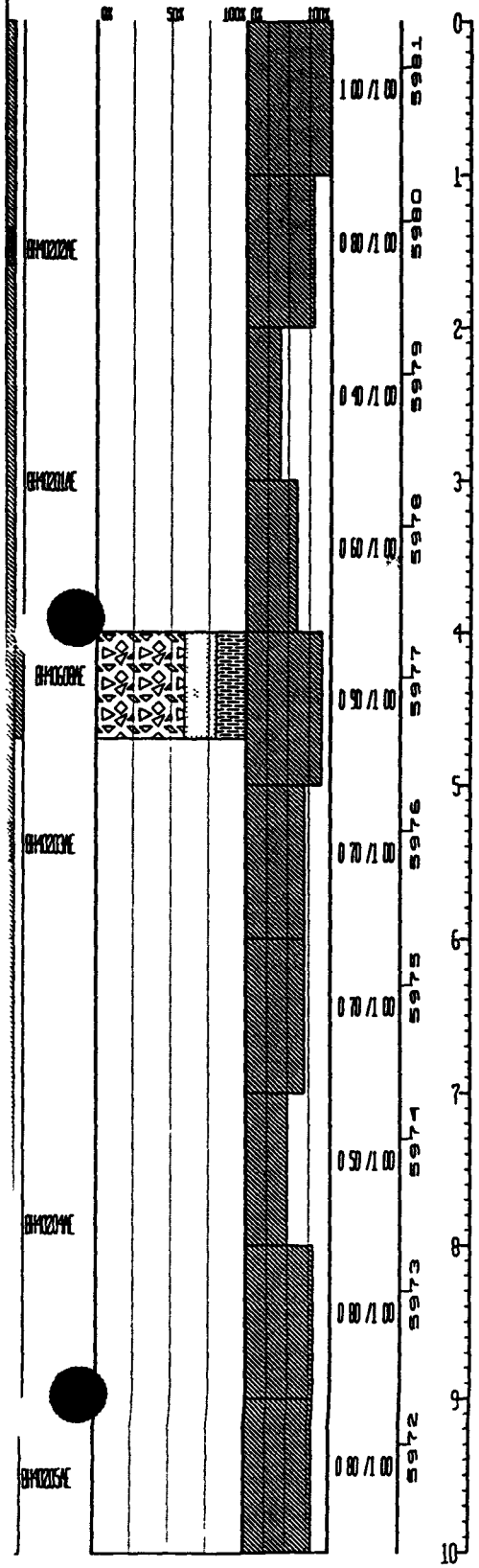
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 20	GROUND ELEVATION (FT)	5956 31	PROJECT NUMBER	0U4 AFI/RI	LOG OF BORING NUMBER
NORTH	751078	AREA N OF POND 2078 N	CASING DIAMETER (IN)		GEOLOGIST	C D MURRAY	40893
EAST	2085100	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	12/15/92	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORE BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY AND CORE LOGGING BY C D MURRAY (AE)

STRATIGRAPHIC BOUNDARY DEPTH & DEPTH GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SND	100% GR 100%	2 20 /2 20	5946 5945 5944 5943 5942 5941 5940 5939 5938 5937	10 11 12 13 14 15 16 17 18 19 20				Total Depth Drilled 11 20

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 50	GROUND ELEVATION (FT) 5981 30	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750962	AREA NW CORNER POND 207C	CASING DIAMETER (IN) 2 00	GEOLOGIST	C D MURRAY	40993
EAST	2084436	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	03/23/93	

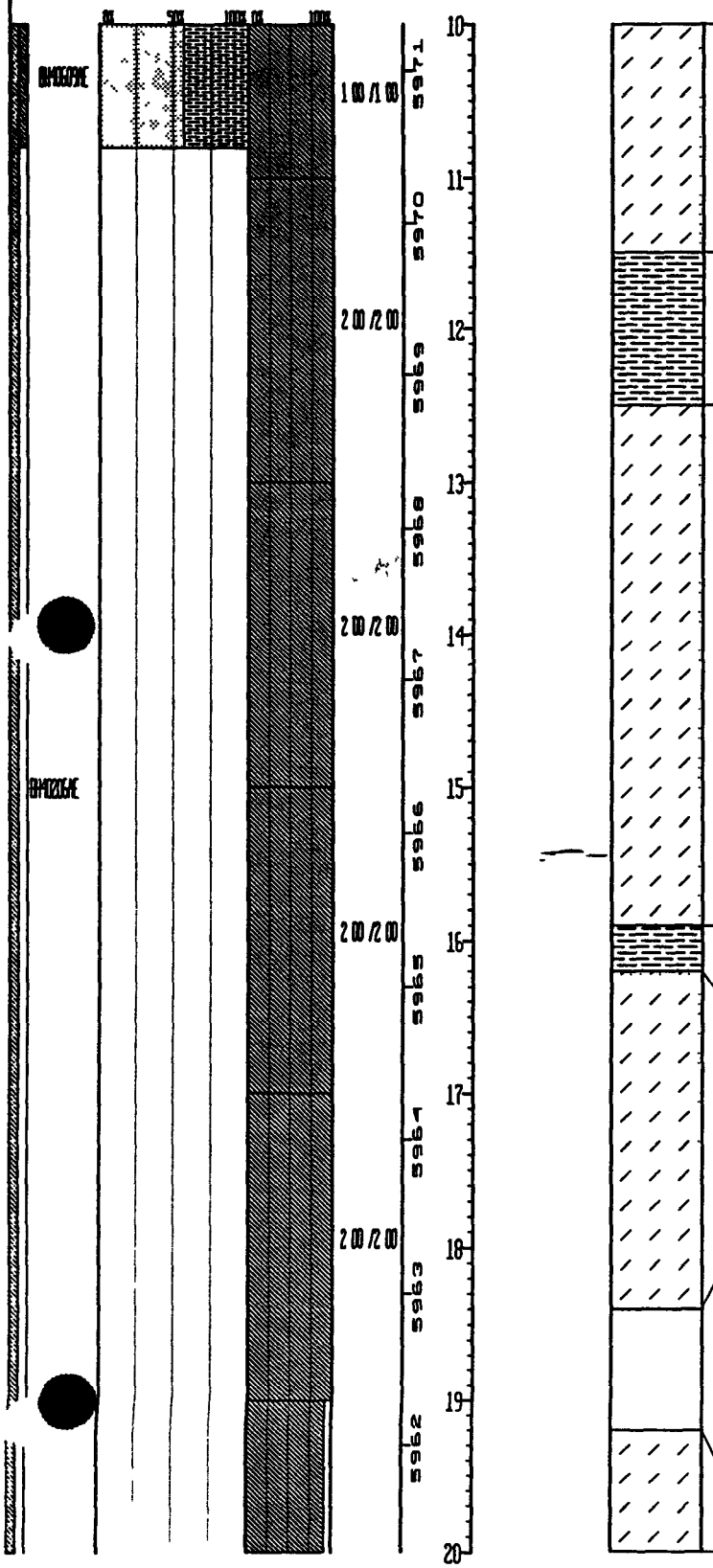
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY CORE LOGGING BY C D MURRAY AND J C EVANS (AE)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GC	Sandy Gravel with some clay and trace silt (0 0-1 8') Matrix dark yellowish brown (10 YR 3/4), moist Gravel 10 cm diameter common, 5 cm present Angular to sub-rounded, quartz and metamorphic grains common Sand f g to c g common, angular to sub-rounded, quartz and hornblend common Biotite present Gravel 56%, Sand 22%, Silt 3%, Clay 19%
NO RECOVERY	No recovery (1 8-2 0')
GM	Silty Sandy Gravel with trace clay (2 0-5 7') Matrix very dusky red (2 5 YR 2 5/2) Gravel and cobbles rounded to angular, (broken by drilling), commonly > 5 cm in diameter Sand f g to c g, very angular to sub-rounded, quartz and metamorphic grains abundant F g biotite common, moist Low plasticity Gravel 67%, Sand 15%, Silt 15%, Clay 3% No recovery (2 4-3 0'), (3 6-4 0'), (4 9-5 0')
NO RECOVERY	No recovery (5 7-6 0')
GM	Sandy Gravel with some silt and trace clay (6 0-6 7') Matrix dark brown (7 5 YR 3/4), slightly moist Cobbles and gravel, very angular and broken by drilling 10 cm-30 cm diameter Sand f g to c g, very angular to sub-angular, quartz and feldspar grains, clear quartz common, low plasticity fines Gravel 52%, Sand 29%, Silt 14%, Clay 5%
NO RECOVERY	No recovery (6 7-7 0')
GC	Sandy Gravel with some clay and trace silt (7 0-7 5') Matrix strong brown (7 5 YR 4/6) Cobbles and Gravel, 10-50 cm Sand very angular to sub-angular, quartz common, abundant f g, med plasticity fines, moist Gravel 61%, Sand 20%, Silt 6%, Clay 13%
NO RECOVERY	No recovery (7 5-8 0')
SM	Gravelly Sand with some silt (8 0-9 7') Yellowish brown (10 YR 5/6), moist, very angular to sub-angular, f g to c g, quartz and metamorphics common, moist Gravel 32%, Sand 48%, Silt 20% No recovery (8 8-9 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 50	GROUND ELEVATION (FT) 5981 30	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750962	AREA NW CORNER POND 207C	CASING DIAMETER (IN) 2 00	GEOLOGIST C D MURRAY	40993
EAST	2084436	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/23/93	

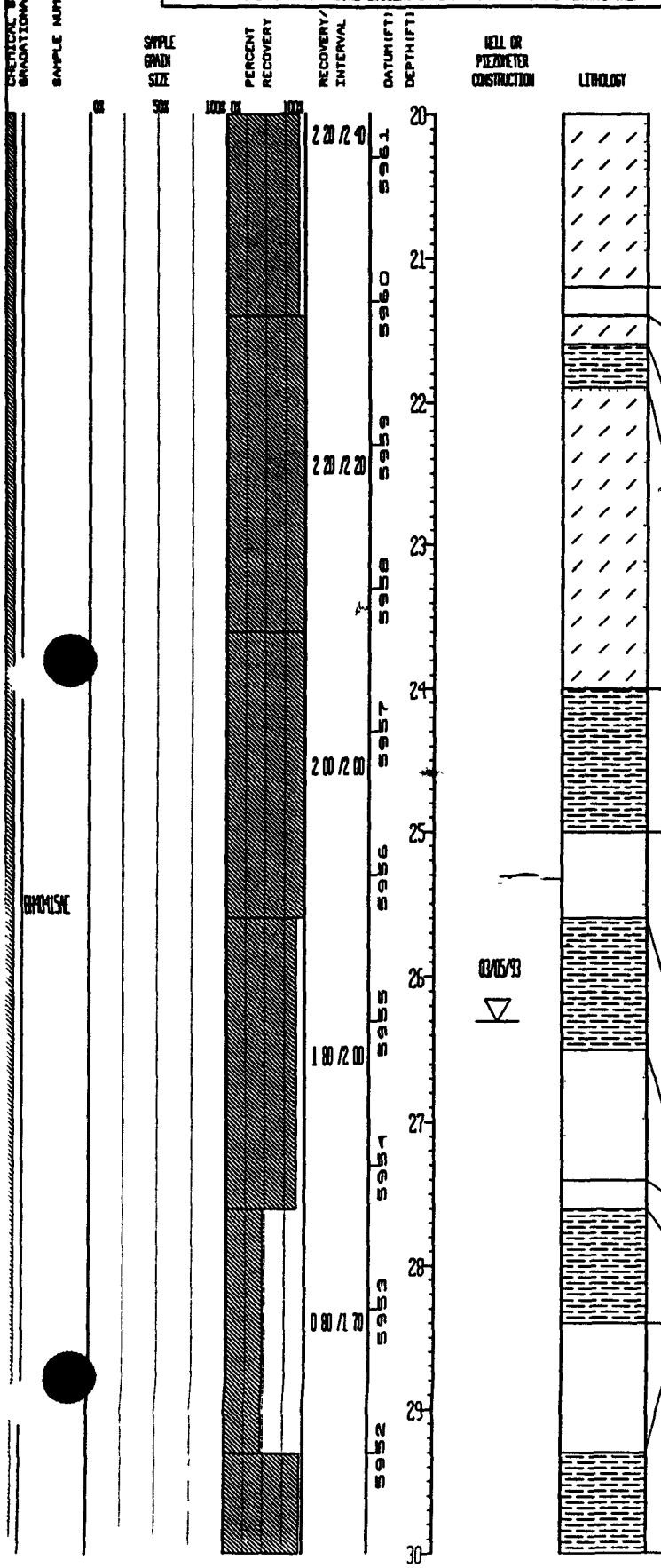
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY CORE LOGGING BY C D MURRAY AND J C EVANS (AE)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY SANDSTONE	Silty Sandstone with some clay (9 7-11 5') Top of Bedrock 9 7' Mottled light gray (10 YR 7/1) and brownish yellow (10 YR 6/8) Sand moderately to well sorted, sub-angular to rounded, v f g to f g quartz frosted, approx 15% porosity, approx 10% argillaceous cement, highly friable, faint horiz bedding, moist Sand 43%, Silt 40%, Clay 17% No recovery (9 8-10 0')
CLAYSTONE	Claystone with trace of sand (11 5-12 5') Light yellowish brown (2 5 Y 6/3) F g to v f g, well sorted, sub-rounded, frosted quartz grains Clay med plasticity, moist Fine Sand 3%, V f Sand 2%, Clay 95%
SILTY SANDSTONE	Silty Sandstone with some clay (12 5-15 9') White (10 YR 8/1) to very pale brown (10 YR 7/3) Sand moderately to well sorted, v f g to m g, sub-angular to rounded, frosted quartz grains Trace of dark minerals Approx 10% porosity, 10-15% argillaceous cement, highly friable, moist Slight horiz bedding Sand 58%, Silt 34%, Clay 8%
CLAYSTONE	Claystone with trace of sand (15 9-16 2') Same as reference interval 11 5-12 5' above
SILTY SANDSTONE	Silty Sandstone with some clay (16 2-18 4') Same as reference interval 12 5-15 9' above
SANDSTONE	Sandstone with some silt and trace clay (18 4-19 2') Very pale brown (10 YR 7/3), sand well sorted, v f g to m g, well rounded, frosted quartz grains, highly friable, 20-25% visible porosity, 2-3% argillaceous cement, no visible bedding, moist M g Sand 4%, V f g Sand 89%, Silt 6%, Clay 1%
SILTY SANDSTONE	Silty Sandstone with some clay (19 2-21 2') Same as reference interval 12 5-15 9' above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 50	GROUND ELEVATION (FT)	5981 30	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750962	AREA NW CORNER POND 207C	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	40993
EAST	2084436	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/23/93	

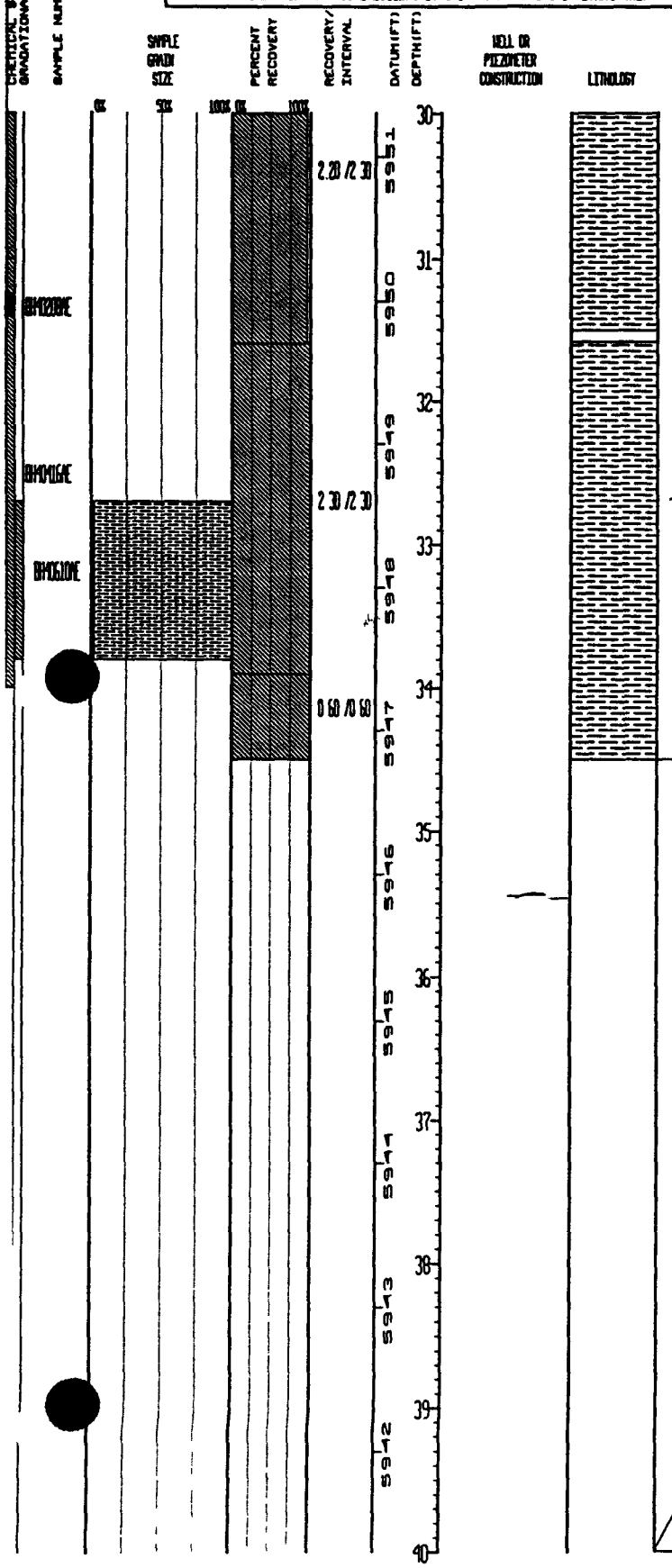
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY CORE LOGGING BY C D MURRAY AND J C EVANS (AE)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
NO RECOVERY	No recovery (21 2-21 4')
SILTY SANDSTONE	Silty Sandstone with some clay (21 4-21 6') Same as reference interval 12 5-15 9' above
CLAYSTONE	Claystone with trace of sand (21 6-21 9') Same as refrence interval 11 5-12 5' above
SILTY SANDSTONE	Silty Sandstone with some clay (21 9-24 0') Same as refrence interval 12 5-15 9' above
CLAYSTONE	Claystone with trace sand (24 0-25 0') Grayish brown (2 5 Y 5/2) Sand v f g to f g frosted quartz, well rounded Argillaceous cement, massive bedding Poor visible porosity, moist F g Sand 1%, V f g Sand 3%, Clay 96%
SANDSTONE	Sandstone with some silt and clay (25 0-25 6') Brownish yellow (10 YR 6/8), fine quartz sand, well sorted, sub-angular to rounded, 20-30% visible porosity, some clay cement, very friable, moist, no apparent bedding Sand 66%, Silt 17%, Clay 17%
CLAYSTONE	Claystone with some sand (25 6-26 5') Light gray (2 5 Y N/6), v f g to f g white quartz sand, angular to sub-angular, trace of dark minerals, wet, massive bedding Sand 23%, Clay 77%
SANDSTONE	Sandstone with some silt and clay (26 5-27 4') Same as refrence interval 25 0-25 6' above
NO RECOVERY	No recovery (27 4-27 6')
CLAYSTONE	Claystone with some sand (27 6-28 4') Same as reference interval 25 6-26 5' above
NO RECOVERY	No recovery (28 4-29 3')
CLAYSTONE	Claystone with trace sand (29 3-34 5') Light olive brown (2 5 Y 5/4) Sand v f g to f g, angular to sub-angular, some frosted, trace of dark minerals, wet Poor porosity, planar bedding with white sand and yellow Fe-oxide staining on surface F g Sand 1%, V f g Sand 3%, Clay 96% No recovery (31 5-31 6')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 50	GROUND ELEVATION (FT)	5981 30	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750962	AREA NW CORNER POND 207C	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	40993
EAST	2084436	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY CORE LOGGING BY C D MURRAY AND J C EVANS (AE)

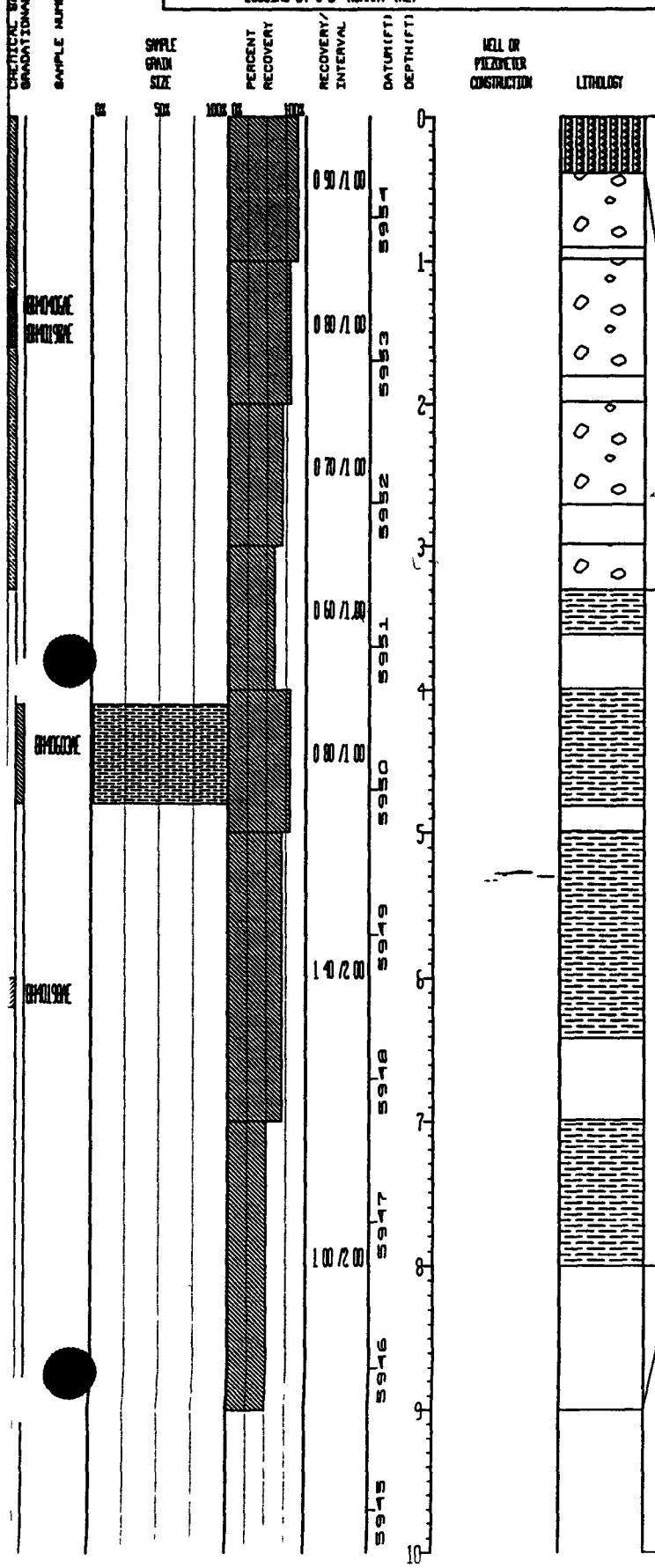


Total depth drilled 34 5'
Vadose Zone Monitoring Borehole Construction Listed Below
Silica Sand Base of sand at 11 2'
Silica Flour 11 2' to 12 2'
Bottom Porous Cup 12 0'
Bentonite 12 2' to 12 9'
Silica Sand 12 9' to 24 9'
Silica Flour 24 9' to 26 0'
Bottom Porous Cup 25 8'
Bentonite 26 0' to 27 0'
Portland Cement 27 0' to 34 3'
Total Depth Neutron Access Tube 34 2'

Total Depth Drilled 34 50

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 00	GROUND ELEVATION (FT) 5954 70	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	751047	AREA PA, N of Pond 2078	CASING DIAMETER (IN) 2 00 33	GEOLOGIST K R MIYOSHI	41293
EAST	2085182	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 02/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI CORE LOGGING BY C D MURRAY (AE)



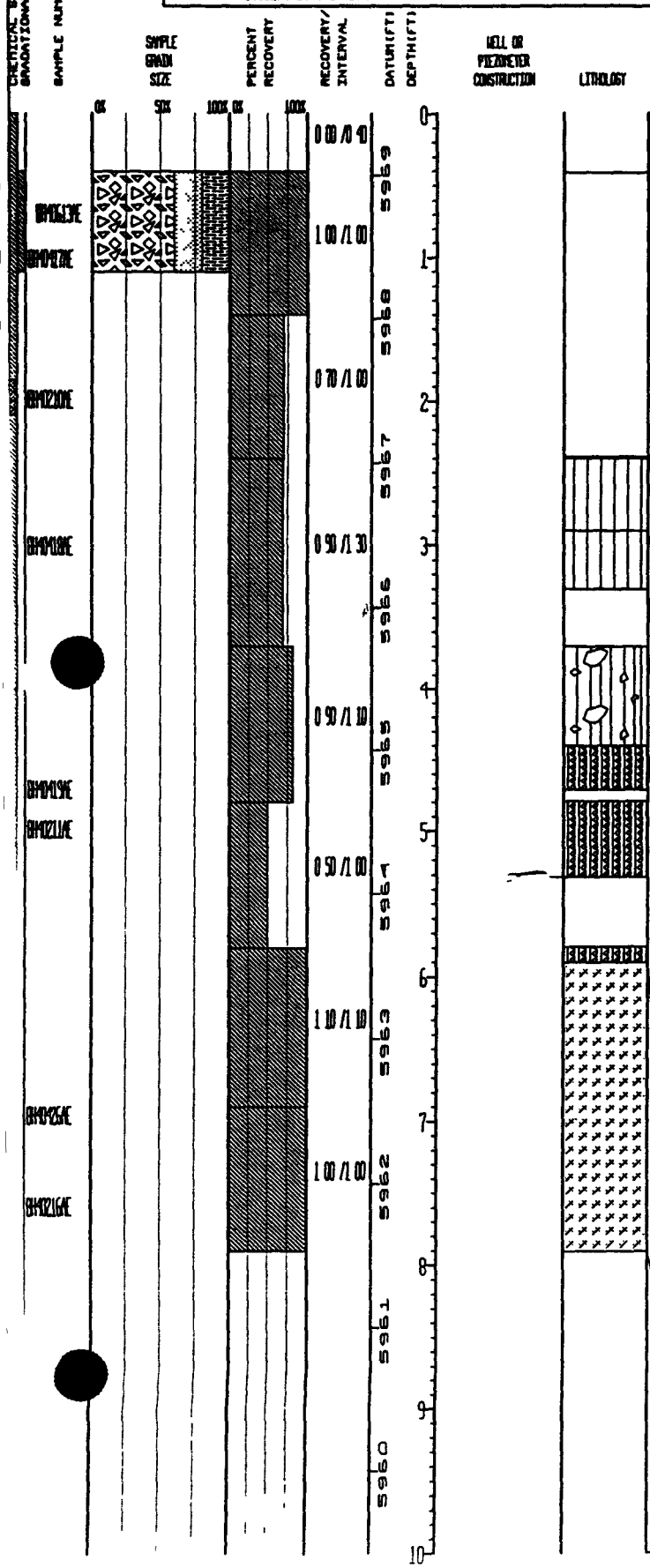
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Silty Sand with some gravel (0 0-0 4') Very dark brown (10 YR 2/2) Poorly graded Gravel sub-rounded quartz and granitic rock fragments Sand c g to f g, pred m g and f g sand, angular to sub-rounded, quartz, granitic and metamorphic rock fragments Common mica and root material Moist Gravel 9%, Sand 61%, Silt 30%
GP	Sandy Gravel with trace silt and clay (0 4-3 3') Dark grayish brown (10 YR 4/2) poorly graded gravel and cobbles, angular to sub-rounded, 5-60 mm common, broken by drilling - Granitic and metamorphic rock fragments Sand c g to f g, very angular to sub-angular quartz and granitic rock fragments Caliche present and roots Low plasticity clay Moist, no bedding Gravel 84%, Sand 12%, Silt 1%, Clay 3% No recovery (0 9-1 0'), (1 8-2 0'), (2 7-3 0')
CLAYSTONE	Claystone with some fine sand (3 3-8 0') Top of Bedrock at 3 3' Olive (5 Y 4/4) to dark gray (5 Y 4/1) with olive yellow (2 5 Y 6/6), Fe-oxide staining F g to v f g sand, rounded to well rounded quartz, non friable, very stiff Moist, massive bedding F g Sand 3%, V f g Sand 3%, Clay 94% No recovery (3 6-4 0'), (4 8-5 0'), (6 4-7 0')
NO RECOVERY	No recovery (8 0-9 0')

Total depth drilled 9 0'

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 0 8' to 1 2' Silica Sand 1 2' to 2 0'
Silica Flour 2 0' to 3 0' Bottom Porous Cup 2 8'
Bentonite 3 0' to 3 5' Portland Cement 3 5' to 6 8'
Total Depth Neutron Access Tube 6 8'

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 7 90	GROUND ELEVATION (FT) 5969 43	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER	
NORTH 750922	AREA PA, INSIDE POND 207A	CASING DIAMETER (IN) 2 00 5.9	GEOLOGIST C D MURRAY	41593	
EAST 2084771	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 5 00 3.5	DATE DRILLED 04/06/93		

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY J C EVANS

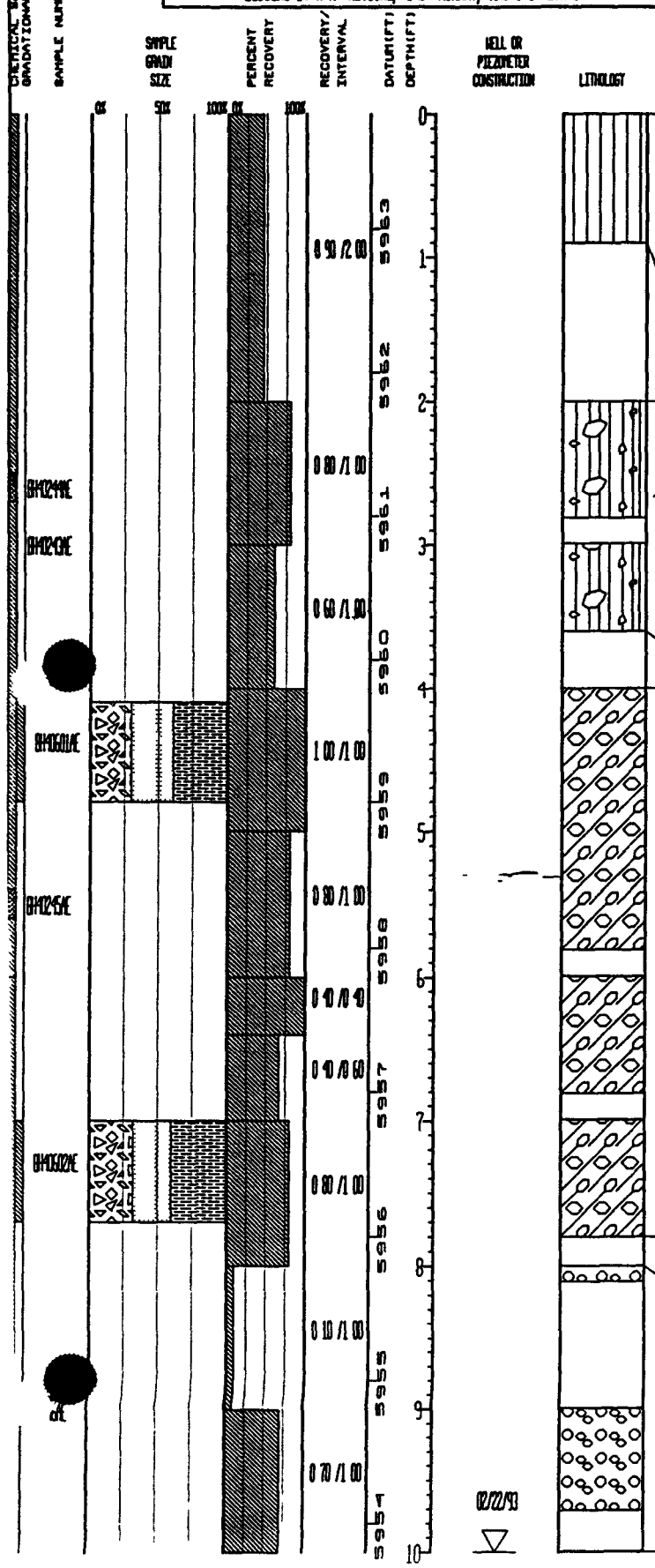


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	Asphalt (0 0-0 4')
	No recovery (0 4-2 4') All soil used for analytical samples
ML	Clayey Silt with some sand and trace gravel (2 4-2 9') Yellowish brown (5 YR 4/6) Sand poorly graded, pred v f g to f g, sub-angular, trace sub-rounded gravel Low plasticity fines, no visible bedding, moist 2% Gravel, 23% Sand, 45% Silt, 30% Clay
ML	Sandy Silt with some gravel and clay (2 9-3 3') Light gray (10 YR 7/1) to white (10 YR 8/1), stiff, slightly friable Sand f g to c g, moderately graded, sub-angular Gravel rounded, fine grained with some (20%) caliche Moist 10% Gravel, 39% Sand, 41% Silt, 10% Clay
NO RECOVERY	No recovery (3 3-3 7')
GM	Sandy Gravel with some silt and trace clay (3 7-4 4') Brownish yellow (10 YR 6/6) Sand well graded, f g to c g, sub-angular Gravel rounded, pred coarse, up to 6 cm in length, some caliche 80% Gravel, 10% Sand, 6% Silt, 4% Clay
SM	Silty Sand with some gravel and clay (4 4-5 9') Light gray (2 5 Y 7/2) Sand pred m g, moderately graded, sub-rounded, pred quartz Gravel rounded, pred fine, some up to 3 cm in length at base of interval Moist, no visible bedding, with 10% caliche 17% Gravel, 46% Sand, 26% Silt, 11% Clay No recovery (4 7-4 8'), (5 3-5 8')
SANDY SILTSTONE	Top of Bedrock at 5 9' Sandy Siltstone (5 9-7 9') Light yellowish brown (10 YR 6/4) Sand v f g to f g, well sorted, angular, pred quartz, slightly friable, abundant caliche-filled fractures, trace Fe-oxide staining, no visible bedding, pred argillaceous cement 17% Sand, 79% Silt, 4% Clay
	Total depth drilled 7 9'

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 2 0-2 5', Silica Sand 2 5'-3 2'
Silica Flour 3 2'-4 6', Bottom Porous Cup 4 5'
Bentonite 4 6'-7 9', Total Depth Neutron Access Tube 7 6'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 00	GROUND ELEVATION (FT) 5963 80	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750897	AREA E, 207 B N POND, PA	CASING DIAMETER (IN) 2 00 (12)	GEOLOGIST K R MIYOSHI	41793
EAST	2085228	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 02/22/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY K R MIYOSHI, C D MURRAY, AND J C EVANS



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
ML	Sandy Silt with some gravel and clay (0 0-0 9') Dark brown (10 YR 3/3), sand well graded, sub-angular to sub-rounded, f g to c g, pred quartz Gravel sub-rounded, up to 4 cm in length Trace plant roots, low plasticity fines, no visible bedding, moist 21% Gravel, 27% Sand, 42% Silt, 10% Clay
NO RECOVERY	No recovery (0 9-2 0')
GM/gw	Sandy Gravel with some silt and trace clay (2 0-3 6') Matrix dark brown (7 5 YR 4/3) Gravel sub-rounded to angular (drilling fractured), well graded, up to 6 cm in length, pred gray quartzite Sand f g to c g, well graded, angular to sub- angular, low plasticity fines, no visible bedding, moist 73% Gravel, 18% Sand, 8% Silt, 1% Clay No recovery (2 8-3 0')
NO RECOVERY	No recovery (3 6-4 0')
GC	Clayey Gravel with some sand and silt (4 0-7 8') Matrix very pale brown (10 YR 7/3) Gravel rounded to sub-rounded, coarse, up to 4 cm in length, gray quartzite Sand f g to c g, well graded, sub-angular to sub-rounded Medium plasticity fines, moist, abundant caliche (especially 6 3-6 8') 48% Gravel, 17% Sand, 14% Silt, 21% Clay No recovery (5 8-6 0'), (6 8-7 0')
NO RECOVERY	No recovery (7 8-8 0')
GW	Gravel with some sand and trace silt and clay (8 0-10 4') Matrix pale yellow (2 5 Y 7/2) Gravel coarse, up to 7 5 cm in length, well graded, rounded to sub-rounded, pred gray quartzite Sand f g to c g, well graded, low plasticity fines, with trace (5%) caliche, wet 85% Gravel, 10% Sand, 2% Silt, 3% Clay No recovery (8 1-9 0'), (9 7-10 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 00	GROUND ELEVATION (FT)	596 3 80	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	750897	AREA E, 207 8 N POND, PA	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R KIYOSHI	41793
EAST	2085228	LOCATOR NUMBER K10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/22/93	

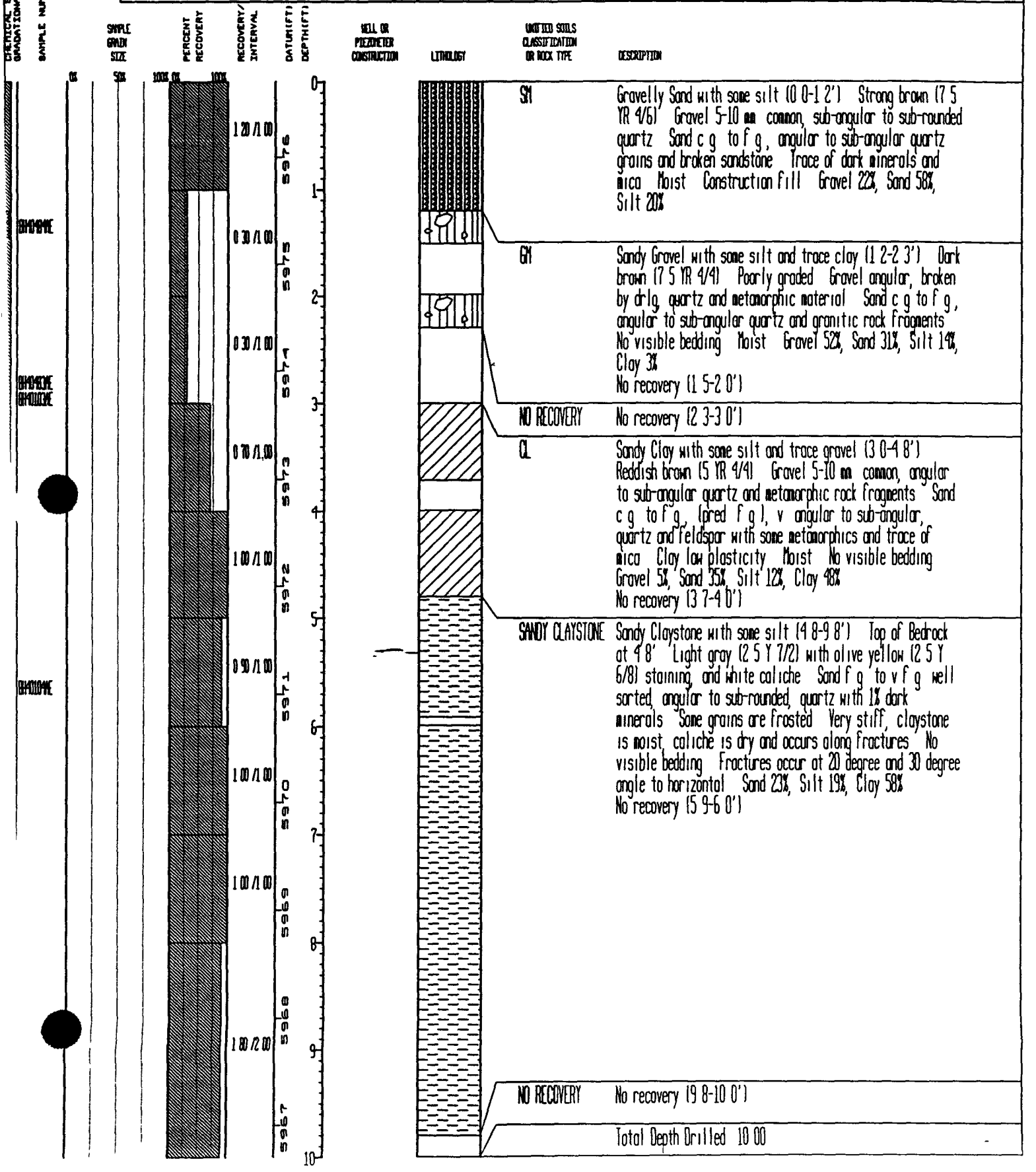
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R KIYOSHI, CORE LOGGING BY K R KIYOSHI, C D MURRAY, AND J C EVANS

CRITICAL SAMPLE DEPTH
GRADATIONAL
E DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0% 50%	100% 0% 100%	0 10 / 1 00	10				
			11			NO RECOVERY	No recovery (10 4-11 0') Driller reports very difficult drilling on cobbles Driller estimate Top of Bedrock at 12 3'
		0 00 / 1 00	12				
		0 00 / 1 00	13				
		0 00 / 1 00	14			CLAYEY SILTSTONE	Clayey Sandy Siltstone (14 0-16 2') Light yellowish brown (2 5 Y 6/3), sand well sorted, v f g to f g, sub-angular Medium stiff, non-friable, moist 12% Sand, 53% Silt, 35% Clay No recovery (14 1-16 0')
		0 10 / 1 00	15				
		0 00 / 1 00	16			NO RECOVERY	No recovery (16 2-18 0')
		0 20 / 2 00	17				
			18				Total depth drilled 18 00'
			19				Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 2 8-3 2' Silica Sand 3 2-4 2' Silica Flour 4 2'-5 0' Bottom Porous Cup 4 8' Bentonite 5 0'-5 6' Silica Sand 5 6'-10 6' Silica Flour Not Installed Bottom Porous Cup Not Installed Bentonite 10 6'-11 2' Grout 11 2'-17 9' Total Depth Neutron Access Tube 17 5'
			20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 00	GROUND ELEVATION (FT) 5976 70	PROJECT NUMBER 014 RFI/RI	LOG OF BORING NUMBER
NORTH	750982	AREA BLDG 788	CASING DIAMETER (IN)	GEOLOGIST C D MURRAY	42093
EAST	2084543	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 01/08/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY AND CORE LOGGING BY C D MURRAY (AE)



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 30	GROUND ELEVATION (FT)	5971 03	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750876	AREA Pond 207A	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42193
EAST	2094701	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/31/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS AND C D MURRAY (AE)

CHEMICAL SAMPLE / DEPTH & GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5971	0				Asphalt (0 0-0 5')
				0 00 /0 50					ML	Gravelly Silt with some clay and sand (0 5-3 7') Matrix dark reddish brown (2 5 YR 2 5/4) Gravel sub-rounded, well graded, up to 6 cm in diameter Sand well graded, angular to sub-rounded, f g to c g, pred quartz dry, low plasticity fines, no visible bedding 30% Gravel, 15% Sand, 39% Silt, 16% Clay
				0 70 /1 00	5970	1				
				0 70 /1 00	5969	2				No recovery (1 2-1 5'), (2 2-2 5'), (2 8-2 9')
				0 30 /0 40						
				0 80 /1 10	5968	3				
									NO RECOVERY	No recovery (3 7-4 0')
				0 80 /1 70	5967	4			GM	Sandy Gravel with some silt and trace clay (4 0-7 4') Matrix light olive brown (2 5 Y 5/4) Gravel rounded to angular (drilling fractured), well graded, up to 7 cm in diameter, pred gray quartzite Sand well graded, sub-angular, f g to c g, low plasticity fines, white caliche present at 7 0', dry 49% Gravel, 25% Sand, 21% Silt, 5% Clay
				0 80 /1 10	5966	5				No recovery (4 8-5 7'), (6 5-6 8')
				0 60 /0 60	5965	6				
				0 20 /0 20	5964	7				
				2 30 /2 30	5963	8			CLAYEY SANDSTONE	Clayey Sandstone with some silt (7 4-10 0') Top of Bedrock at 7 4' Light gray (10 YR 7/2) to light yellowish brown (10 YR 6/4) Sand v f g to f g, sub-angular to sub-rounded, well sorted Trace well rounded, frosted, m g quartz grains Approx 5-10% visible porosity, 10% argillaceous cement moderately friable, some thin horiz (ripple) bedding, some vertical, healed, caliche-filled fractures at 8 5', moist 47% Sand, 21% Silt, 32% Clay
					5962	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 30	GROUND ELEVATION (FT)	5971 03	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	750876	AREA Pond 207A	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42193
EAST	2094701	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/31/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS AND C D MURRAY (AE)

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		100%	2 10 / 2 60	5960	11			SANDY CLAYSTONE	Sandy Claystone with some silt (10 0-15 4') Yellowish brown (10 YR 5/8) to light gray 10 YR 6/1) Sand v f g to f g , sub-angular to sub-rounded, well sorted, pred quartz, slightly friable, argillaceous cement, abundant thin horiz laminations (possible ripples) Sand content increases upward, moist 25% Sand, 23% Silt, 52% Clay No recovery (12 0-12 5'), (13 9-14 2')
			1 40 / 1 70	5958	13				
			1 20 / 1 20	5956	15				
			0 90 / 0 90	5955	16			CLAYSTONE	Claystone with some silt (15 4-20 3') Olive brown (2 5 Y 4/3) with olive yellow (2 5 Y 6/8) mottling/laminations Soft to med stiff, horiz laminated, moist, non-friable 10% Silt, 90% Clay
			2 00 / 2 00	5953	18				
			2 00 / 2 00	5952	19				
					20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 30	GROUND ELEVATION (FT)	5971 03	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750876	AREA Pond 207A	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42193
EAST	2084701	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/31/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS AND C D MURRAY (AE)

CHEMICAL SAMPLE DEPTH
GRADATIONAL DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE 0% 50% 100%

PERCENT RECOVERY 0% 100%

RECOVERY/INTERVAL: 2 00 /2 00; 2 00 /2 00; 0 20 /0 20; 1 80 /1 80; 0 50 /0 50; 1 50 /1 50; 1 00 /1 00

DATUM (FT): 5951, 5950, 5949, 5948, 5947, 5946, 5945, 5944, 5943, 5942

DEPTH (FT): 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTSTONE	Siltstone with some clay and trace of sand (20 3-21 0') Light brownish gray (2 5 Y 6/2) Sand v f g subangular to subrounded, pred quartz with some feldspar and trace of mica well sorted, somewhat friable, moist, no apparent bedding 2% V f g Sand, 88% Silt, 10% Clay
CLAYSTONE	Claystone (21 0-22 0') Same as reference interval (15 4-20 3')
SILTSTONE	Siltstone with some clay and trace of sand (22 0-24 9') Light brownish gray (2 5 Y 6/2) Moist Same as reference interval (20 3-21 0')
CLAYEY SILTSTONE	Clayey Siltstone with some sand (24 9-25 5') Light yellowish brown (2 5 Y 6/4) Sand v f g, sub-angular, well sorted Med stiff, slightly friable, faint horiz bedding, moist 9% Sand, 64% Silt, 27% Clay
CLAYSTONE	Claystone with some silt (25 5-26 7') Same as reference interval 15 4'-20 3'
CLAYEY SILTSTONE	Clayey Siltstone with trace sand (26 7-27 9') Olive brown (2 5 Y 4/3) and light olive brown (2 5 Y 5/6) Sand v f g well sorted, horiz laminations marked by black material, suspect manganese nodule at 27 4' Stiff, non-friable, moist 5% Sand, 57% Silt, 38% Clay
CLAYSTONE	Claystone with some silt (27 9-31 3') Same as reference interval 15 4'-20 3'

BHMO30NE

BHMO33NE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 30	GROUND ELEVATION (FT)	5971 03	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750876	AREA Pond 207A	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42193
EAST	2084701	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/31/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS AND C O MURRAY (AE)

CHEMICAL GRADATIONAL DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	100% 0% 100%	2.00 /2.00	5941 5940 5939 5938 5937 5936 5935 5934 5933 5932	30 31 32 33 34 35 36 37 38 39 40				Total Depth Drilled 31 30

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 80	GROUND ELEVATION (FT) 5973 44		PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH 750797	AREA 207B NORTH/CENTER	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42293
EAST 2085093	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	04/15/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY KERRY MIYOSHI, CORE LOGGING BY J C EVANS

DEPTH (FT)	CHEMICAL, GRAPH, GRADATIONAL &	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0			OX			5973				Asphalt (0 0-0 7')
										Surficial soil samples (0 5-0 7')
1				100% OX	8 00 /0 70				GM	Silty Gravel with some sand and trace clay (0 7-5 5') Matrix brown (10 YR 5/3) Gravel pred c g, well graded, sub-rounded Sand f g to c g, well graded, pred quartz, no visible bedding, moist 77% Gravel, 10% Sand, 12% Silt, 1% Clay No recovery (1 6-2 7'), (4 1-4 7')
2					8 90 /2 00	5972				
3		BH025NE				5971				
4					1 40 /2 00	5970				
5						5969				
6					1 40 /1 70	5968			GM	Silty Gravel with some sand and trace clay (5 5-7 5') Matrix dark yellowish brown (10 YR 4/4) and reddish brown (2 5 YR 4/2) Gravel slightly finer than above, Sand same as above, with some (10%) caliche, moist 76% Gravel, 10% Sand, 13% Silt, 1% Clay No recovery (6 1-6 4')
7						5967				
8		BH025NE			1 30 /1 90	5966			GW/gm	Sandy Gravel with trace silt and clay (7 5-10 3') Matrix dark brown (7 5YR 3/2) Gravel f g to c g, up to 7 cm in length, well graded, angular, pred gray quartzite, moist 73% Gravel, 19% Sand, 5% Silt, 3% Clay No recovery (7 7-8 3'), (9 7-10 0')
9					1 40 /1 70	5965				
10						5964				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 80	GROUND ELEVATION (FT)	5973 44	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER	
NORTH 750797	AREA 2078 NORTH/CENTER	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	42293	
EAST 2085093	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	04/15/93		

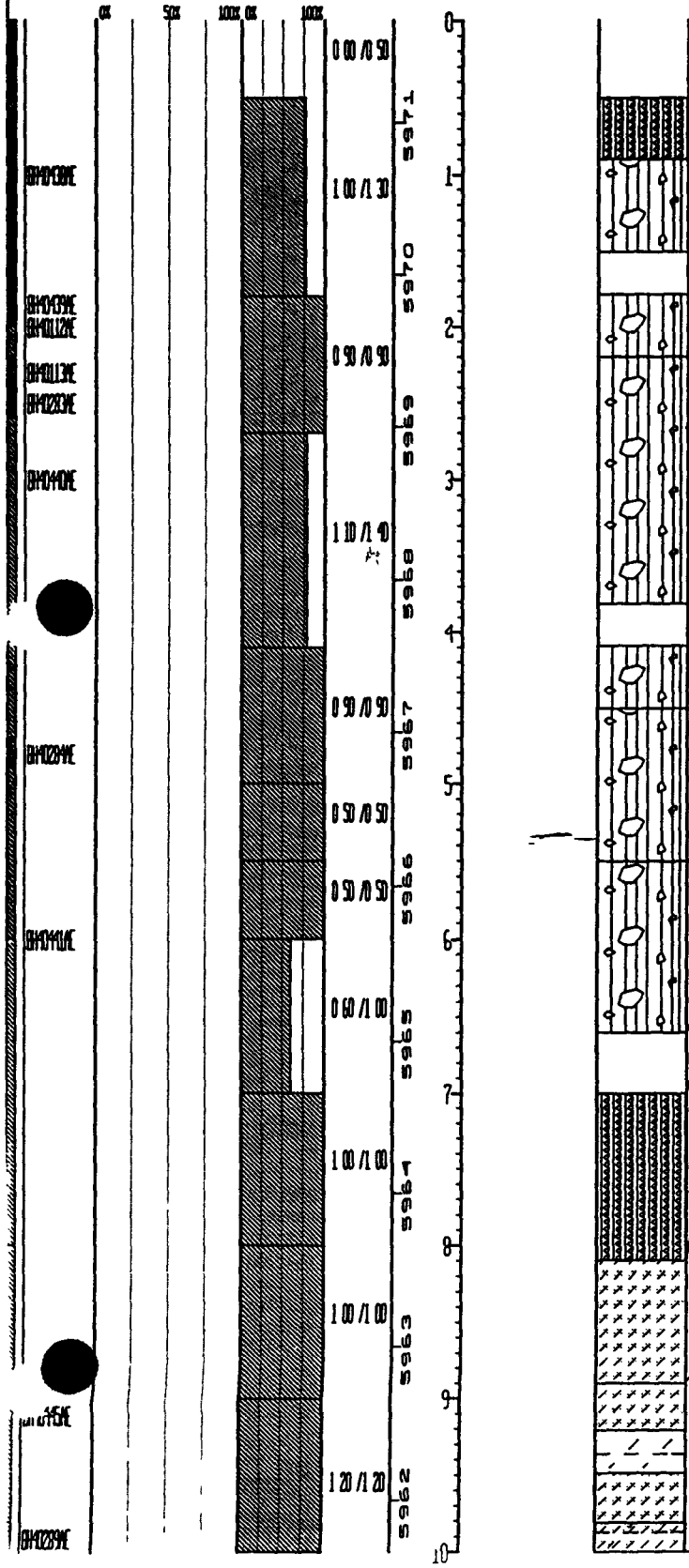
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY KERRY MIYOSHI, CORE LOGGING BY J C EVANS

CHEMICAL, PHYSICAL OR GRADATIONAL # DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						10				
				1 30 / 1 30	5963	11			GM	Silty Gravel with some sand and trace clay (10 3-11 9') Matrix dark yellowish brown (10YR 4/6) with some reddish brown (2 5YR 4/3) Gravel 1-4 cm, angular Sand f g to c g , well graded, no visible bedding 60% Gravel, 14% Sand, 23% Silt, 3% Clay
				0 60 / 0 60	5962	12			GC	Clayey Gravel with some sand and silt (11 9-12 8') Matrix very pale brown (10YR 7/3) Gravel and sand same as above reference interval (7 5-10 3'), with some (20%) caliche, dry 58% Gravel, 12% Sand, 12% Silt, 18% Clay
				0 90 / 0 90	5961	13				Total depth drilled 12 8' Note Bedrock not encountered Auger refusal at 12 8' Material is fill material, placed during pond berm construction
					5960	14				
					5959	15				
					5958	16				
					5957	17				
					5956	18				
					5955	19				
					5954	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 20	GROUND ELEVATION (FT) 5971 66	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750762	AREA PA, POND 207A	CASING DIAMETER (IN) 2 00	GEOLOGIST K R MIYOSHI	42493
EAST	2084681	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED WITH 2 LYSIMETERS AND SINGLE NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS (AE)

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE NUMBER / SAMPLE GRAIN SIZE / PERCENT RECOVERY / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	Asphalt (0 0-0 5')
SM	Gravelly Sand with some silt and trace clay (0 5-0 9') Light brown (7 5 YR 6/3) Sand f g to c g, well graded, sub-angular, Gravel f g, dry 38% Gravel, 46% Sand, 14% Silt, 2% Clay
GM/gw	Silty Gravel with trace clay and sand (0 9-2 2') Reddish brown (2 5 YR 4/3) Gravel c g, up to 6 cm, well graded, sub-angular, dry, no visible bedding 85% Gravel, 5% Sand, 6% Silt, 4% Clay No recovery (1 5-1 8')
GM/gw	Sandy Gravel with some silt and trace clay (2 6-4 5') Light gray (2 5 Y 7/2) Gravel pred c g, same as above Sand f g to c g, well graded, sub-angular, dry, abundant caliche 2 6-2 7' 75% Gravel, 14% Sand, 4% Silt, 7% Clay No recovery (3 8-4 1')
GM	Sandy Gravel with some silt and trace clay (4 5-5 5') Light gray (2 5 Y 7/2) Gravel pred f g, mod graded Sand same as above, dry 44% Gravel, 41% Sand, 11% Silt, 4% Clay
GM/gw	Sandy Gravel with some silt and trace clay (5 5-6 6') Gravel c g, same as reference interval (2 6-4 5') above
NO RECOVERY	No recovery (6 6-7 0')
SM	Gravelly Sand with some silt and trace clay (7 0-8 1') Brownish yellow (10 YR 6/6) Sand moderately graded, f g to c g, sub-rounded, pred quartz, wet 16% Gravel, 67% Sand, 15% Silt, 2% Clay
SANDY SILTSTONE	Top of Bedrock at 8 1' Sandy Siltstone with some clay (8 1-8 9') Light gray (10 YR 7/1) Sand v f g to f g, well sorted, rounded, approx 2-3% visible porosity, approx 20% argillaceous cement, slightly friable, no visible bedding, with vertical, caliche-filled fractures from 8 3-8 7', moist 39% Sand, 49% Silt, 12% Clay
SANDY SILTSTONE	Sandy Siltstone interbedded with Clayey Siltstone (8 9-10 2') Light gray (10 YR 7/1) with reddish yellow (7 5 YR 6/8) Fe-oxide staining Sandy siltstone same as above, silty claystone visually estimated as 30% Silt, 70% Clay With caliche-filled vertical fractures, trace Mg-oxide coating on fractures

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 20	GROUND ELEVATION (FT) 5971 66	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	750762	AREA PA, POND 207A	CASING DIAMETER (IN) 2 00	GEOLOGIST K R MIYOSHI	42493
EAST	2084681	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED WITH 2 LYSIMETERS AND SINGLE NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI (TE) CORE LOGGING BY J C EVANS (AE)

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						10				Total depth drilled 10 2'
					5961					Vadose Zone Monitoring Borehole Construction Listed Below
						11				Bentonite 1 9'-2 2'
					5960					Silica Sand 2 2'-2 9'
										Silica Flour 2 9'-4 0'
										Bottom Porous Cup 3 8'
										Bentonite 4 0'-4 5'
						12				Silica Sand 4 5'-6 5'
					5959					Silica Flour 6 5'-7 2'
										Bottom Porous Cup 7 1'
										Bentonite 7 2'-9 8'
										Total Depth Neutron Access Tube 9 5'
						13				
					5958					
						14				
					5957					
						15				
					5956					
						16				
					5955					
						17				
					5954					
						18				
					5953					
						19				
					5952					
						20				

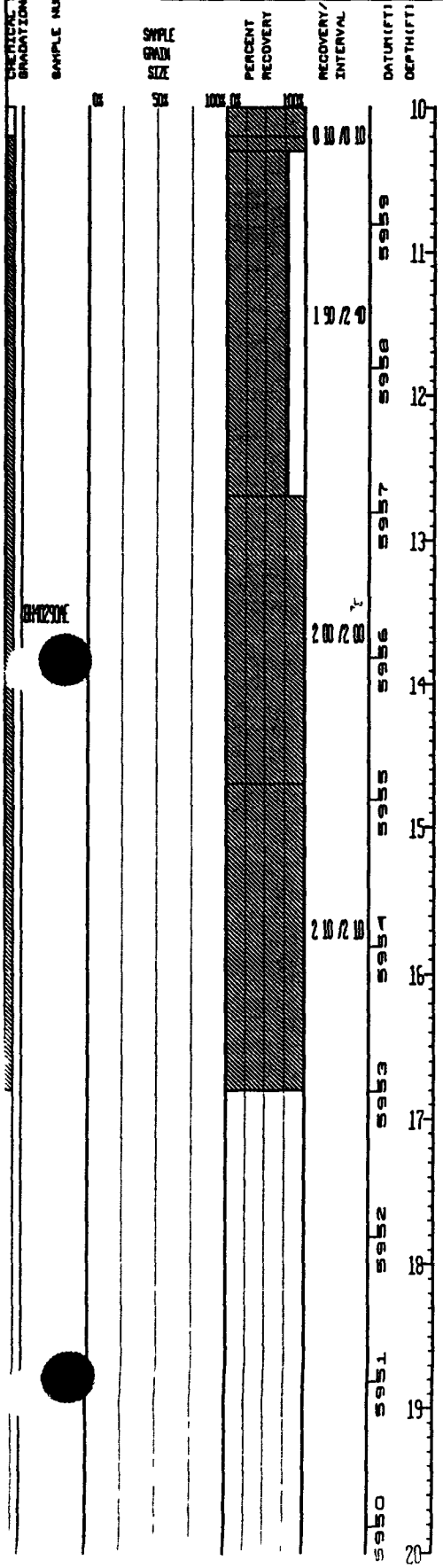
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 80	GROUND ELEVATION (FT) 5969 81	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	750748	AREA PA, POND 207A	CASING DIAMETER (IN)	GEOLOGIST K R MIYOSHI	42593
EAST	2084826	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 12 00	DATE DRILLED 03/26/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI, CORELOGGING BY J C EVANS

CHEMICAL & GRADATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 00 /0 50		0				Asphalt (0 0-0 5')
	BH0446AE			1 00 /1 00	5969	1			GW/gm	Sandy Gravel with some silt and trace clay (0 5-0 9') Dark brown (7 5 YR 4/2) Gravel f g , angular Sand f g to c g , moist 73% Gravel, 20% Sand, 6% Silt, 1% Clay
	BH0291AE			0 50 /0 50	5968	2			GM	Silty Gravel with some silt and clay (0 9-2 0') Dark reddish brown (2 5 YR 3/4) Gravel c g , rounded to angular (drilling fractured), well graded Sand f g to c g , well graded, sub-angular to sub-rounded, pred quartz, dry 65% Gravel, 14% Sand, 13% Silt, 8% Clay
	BH0447AE			1 00 /1 00	5967	3			GW/gm	Sandy Gravel with some silt and trace clay (2 0-7 6') Brownish yellow (10 YR 6/6) Gravel up to 7 cm in length, pred gray quartzite, same as interval (0 9-2 0') above 74% Gravel, 18% Sand, 6% Silt, 2% Clay No recovery (5 8-5 9')
	BH0448AE			0 60 /0 60	5966	4				
	BH0458AE			0 70 /0 70	5965	5				
	BH0292AE			0 80 /0 80	5964	6				
	BH0449AE			0 70 /0 80	5963	7				
	BH0459AE			0 30 /0 30	5962	8				
	BH0451AE			0 40 /0 40	5961	9				
				1 00 /1 40	5960	10			NO RECOVERY	No recovery (7 6-8 0')
				0 10 /0 10					SILTY CLAYSTONE	Top of Bedrock at 8 0' Silty Claystone (8 0-12 2') Grayish brown (10 YR 5/2) with yellowish brown (10 YR 5/8) staining Non-friable, no visible bedding, with abundant caliche at 8 3', from 8 9-9 7', at 10 3', and 11 4' Trace Mg-oxide staining on microfractures, dry 30% Silt, 70% Clay No recovery (8 8-8 9')
				0 70 /0 80						
				1 30 /1 30						
	BH0294AE									

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 80	GROUND ELEVATION (FT) 5969 81	PROJECT NUMBER 014 RFI/RI	LOG OF BORING NUMBER
NORTH	750749	AREA PA, POND 207A	CASING DIAMETER (IN)	GEOLOGIST K R MIYOSHI	42593
EAST	2084826	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 12 00	DATE DRILLED 03/26/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI, CORELOGGING BY J C EVANS

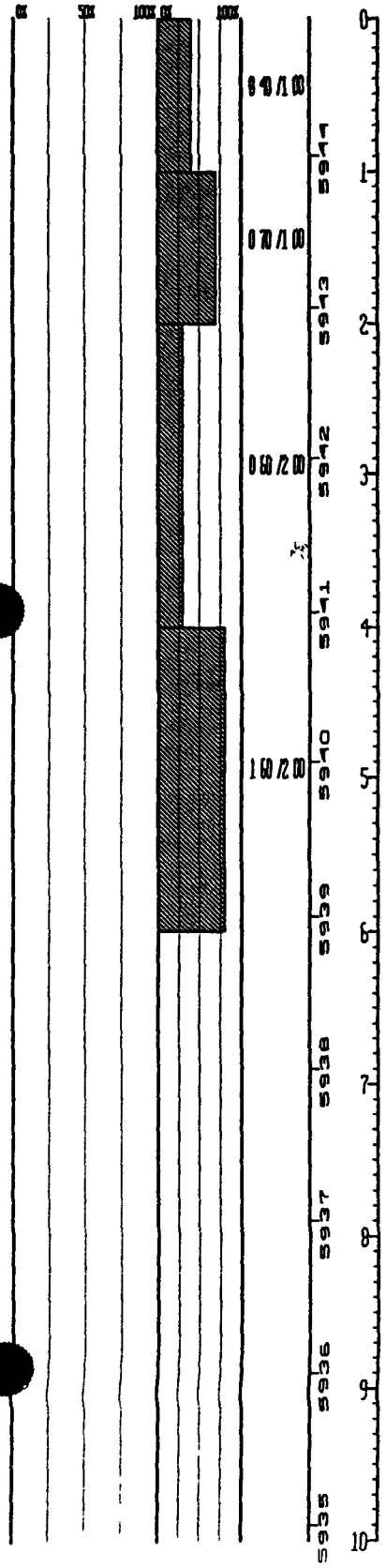


WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		NO RECOVERY	No recovery (12 2-12 7')
		SANDY SILTSTONE	Sandy Siltstone with some clay (12 7-12 9') Light gray (10 YR 7/1) with yellowish brown (10 YR5/6) staining Sand v f g , sub-rounded, well sorted Faint horizontal bedding Mg-oxide staining on microfractures Fractures at 0 and 90 degrees, dry 21% Sand, 63% Silt, 16% Clay
		SILTY CLAYSTONE	Silty Claystone with some sand (12 9-15 2') Light gray (10 YR 7/1) with yellowish brown (10 YR 5/6) staining Slightly friable, no visible bedding Sand v f g , sub-rounded, well sorted, Fe-oxide filled fracture at 14 1' Mg-oxide coating on microfractures throughout interval Note grout chips at 14 8' 10% Sand, 30% Silt, 60% Clay
		SANDY SILTSTONE	Sandy Siltstone with some clay (15 2-16 8') Same as reference interval (12 7-12 9') above
			Total Depth Drilled 16 80

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 6 00	GROUND ELEVATION (FT) 5944 90	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	751154	AREA PA, N OF POND 207A	CASING DIAMETER (IN)	GEOLOGIST C D MURRAY	42693
EAST	2084649	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 02/03/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY AND CORE LOGGING BY CLAUDE MURRAY (AE)

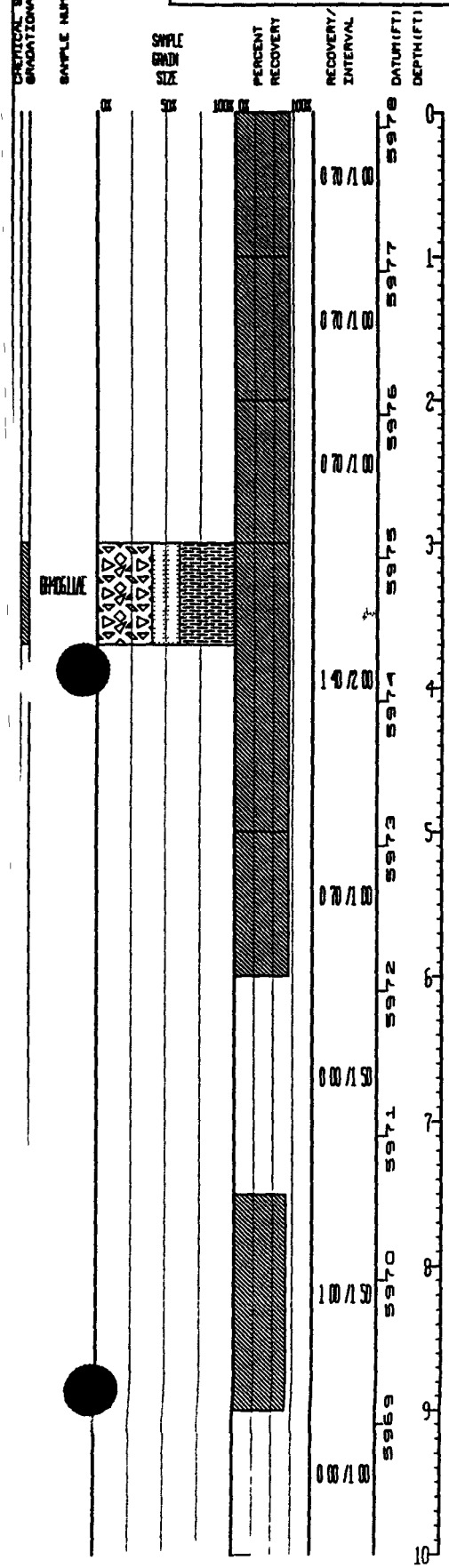
CHEMICAL SAMPLE DEPTH
GRADATIONAL DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE 0% 50% 100%
PERCENT RECOVERY 0% 100%
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY



RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0 40 /1 00	5944	0	OL	Organic Silt with abundant sand and some clay (0 0-0 4') Black (10 YR 2/1) Pred f g sand, angular to sub-rounded, quartz with granitic and metamorphic grains Wood and plant material common Low plasticity clay Moist No bedding 40% Sand, 45% Silt, 15% Clay
		1	NO RECOVERY	No recovery (0 4-1 0')
0 70 /1 00	5943		SILTSTONE	Top of Bedrock at 1 0' Siltstone with some sand and clay (1 0-2 6') Pale olive (5 Y 6/3) with yellowish brown (10 YR 5/8) Fe-oxide staining Caliche marbleing present Sand f g to v f g, sub-angular to rounded, well sorted, pred quartz with trace of mica and dark minerals, argillaceous cement Moist Massive bedding 62% Silt, 17% Sand, 21% Clay No recovery (1 7-2 0')
		2		
0 60 /2 00	5942	3		
			NO RECOVERY	No recovery (2 6-4 0')
	5941	4	CLAYSTONE	Claystone with some sand and silt (4 0-5 6') Light olive brown (2 5 Y 5/4) with olive yellow (2 5 Y 6/8) staining Sand f g to v f g, well sorted, sub-rounded to rounded quartz with trace of dark minerals, moist, no visible bedding 18% Sand, 12% Silt, 70% Clay
1 60 /2 00	5940	5		
	5939	6	NO RECOVERY	No recovery (5 6-6 0')
	5938	7		Total Depth Drilled 6 00
	5937	8		
	5936	9		
	5935	10		

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT) 5978 10	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750612	AREA PA, S POND 207C	CASING DIAMETER (IN) 2 00	GEOLOGIST K R MIYOSHI	42893
EAST	2084452	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/04/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY K R MIYOSHI AND K W PACHECO



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GW	Sandy Gravel with some silt and trace clay (0 0-2 4') Matrix dark yellowish brown (10 YR 4/4), sand well graded, angular to sub-angular, low plasicity fines, trace of caliche, pred quartz/feldspar/lithic fragments, gravel to 30 mm, moist, no visible bedding 55% Gravel, 28% Sand, 15% Silt, 2% Clay No recovery (0 7-1 0'), (1 7-2 0')
GW	Sandy Gravel with some silt and trace clay (2 4-4 4') Matrix brown (7 5 YR 5/4), sand well graded, angular to sub-angular low plasticity fines, no caliche, pred quartz/feldspar/lithic fragments with red clay, gravel to 30 mm, moist, no visible bedding 74% Gravel, 17% Sand, 7% Silt, 2% Clay No recovery (2 7-3 0')
NO RECOVERY	No recovery (4 4-5 0')
GC	Clayey Gravel with some sand and silt (5 0-5 7') Matrix white (10 YR 8/2), sand poorly graded, angular to sub-rounded, moderate to high plasticity fines, abundant caliche, pred quartz/caliche, no visible bedding, some Fe-oxide staining 52% Gravel, 13% Sand, 7% Silt, 28% Clay
NO RECOVERY	No recovery (5 7-7 5')
SANDY CLAYSTONE	Top of Bedrock estimated at 7 2' Sandy Claystone with trace silt (7 5-10 5') Pale yellow (2 5 YR 7/4), sand well sorted, sub-angular, v f g to f g sand, high plasticity fines, mildly calcareous, pred quartz, moist to wet, some Fe-oxide staining, no visible bedding, soft 30% Sand, 3% Silt, 67% Clay No recovery (8 5-10 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT)	5978 10	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750612	AREA PA, S POND 207C	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	42893
EAST	2084452	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/04/93	

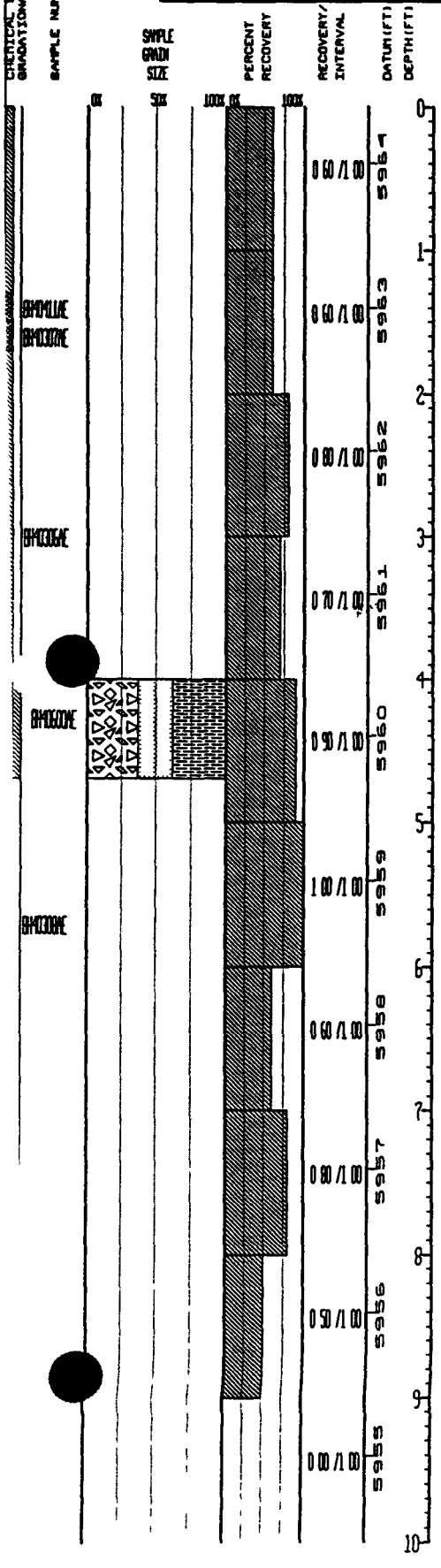
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY K R MIYOSHI AND K W PACHECO

CHEMICAL SP GRADATIONA	SAMPLE NUMB	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5968	10				
				0 50 /2 00	5967	11			NO RECOVERY	No recovery (10 5-12 0')
					5966	12				Total Depth Drilled 12 00
					5965	13				
					5964	14				
					5963	15				
					5962	16				
					5961	17				
					5960	18				
					5959	19				
						20				

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 2 2' to 2 9'
Silica Sand 2 9' to 5 1'
Silica Flour 5 1' to 6 4'
Bottom Porous Cup 5 8'
Bentonite 6 4' to 7 4'
Portland Cement 7 4' to 11 95'
Total Depth Neutron Access Tube 11 95'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 00	GROUND ELEVATION (FT)	5964 40	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750704	AREA PA, E OF B POND	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	43193
EAST	2085229	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/15/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY KERRY MIYOSHI, CORE LOGGING BY K R MIYOSHI AND K W PACHECO



WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GW	Sandy Gravel with some silt and trace clay (0 0-1 6') Dark yellowish brown (10 YR 4/4) Sand well graded, sub-angular to angular, v f g to c g, low plasticity fines, pred quartz feldspar, moist, horiz bedding, some organic material, caliche nodules 63% Gravel, 24% Sand, 12% Silt, 1% Clay No recovery (0 6-1 0')
		NO RECOVERY	No recovery (1 6-2 0')
		GM	Sandy Gravel with some silt and trace clay (2 0-3 7') Strong brown (7 5 YR 4/6) Poorly graded, angular to sub-angular, v f g to c g, low plasticity fines, pred quartz/feldspar, moist, no visible bedding 65% Gravel, 17% Sand, 14% Silt, 4% Clay No recovery (2 8-3 0')
		NO RECOVERY	No recovery (3 7-4 0')
		GM	Sandy Gravel with some silt and clay (4 0-5 5') Yellowish brown (10 YR 5/8) Sand poorly graded, v f g to c g, angular to sub-angular, low plasticity fines, highly calcerous, pred quartz, moist, no visible bedding 36% Gravel, 36% Sand, 20% Silt, 8% Clay No recovery (4 9-5 0')
		SM	Gravelly Sand with some silt and trace clay (5 5-8 5') Yellowish brown (10 YR 5/8) Sand poorly graded, v f g to c g, angular to sub-angular, low plasticity fines, mildly calcerous, quartz/feldspar, moist, no visible bedding 36% Gravel, 55% Sand, 8% Silt, 1% Clay No recovery (6 6-7 0'), (7 8-8 0')
		NO RECOVERY	No recovery (10 0-16 0') Top of Bedrock estimated at 10 5' Drillers report "pushing large cobble into soft bedrock"

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 00	GROUND ELEVATION (FT)	5964 40	PROJECT NUMBER	004 RFT/RI	LOG OF BORING NUMBER
NORTH	750704	AREA PN, E OF B POND	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	43193
EAST	2085229	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/15/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY KERRY MIYOSHI, CORE LOGGING BY K R MIYOSHI AND K W PACHECO

CRITICAL DEPTH / GRADATIONAL DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM (FT)

DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

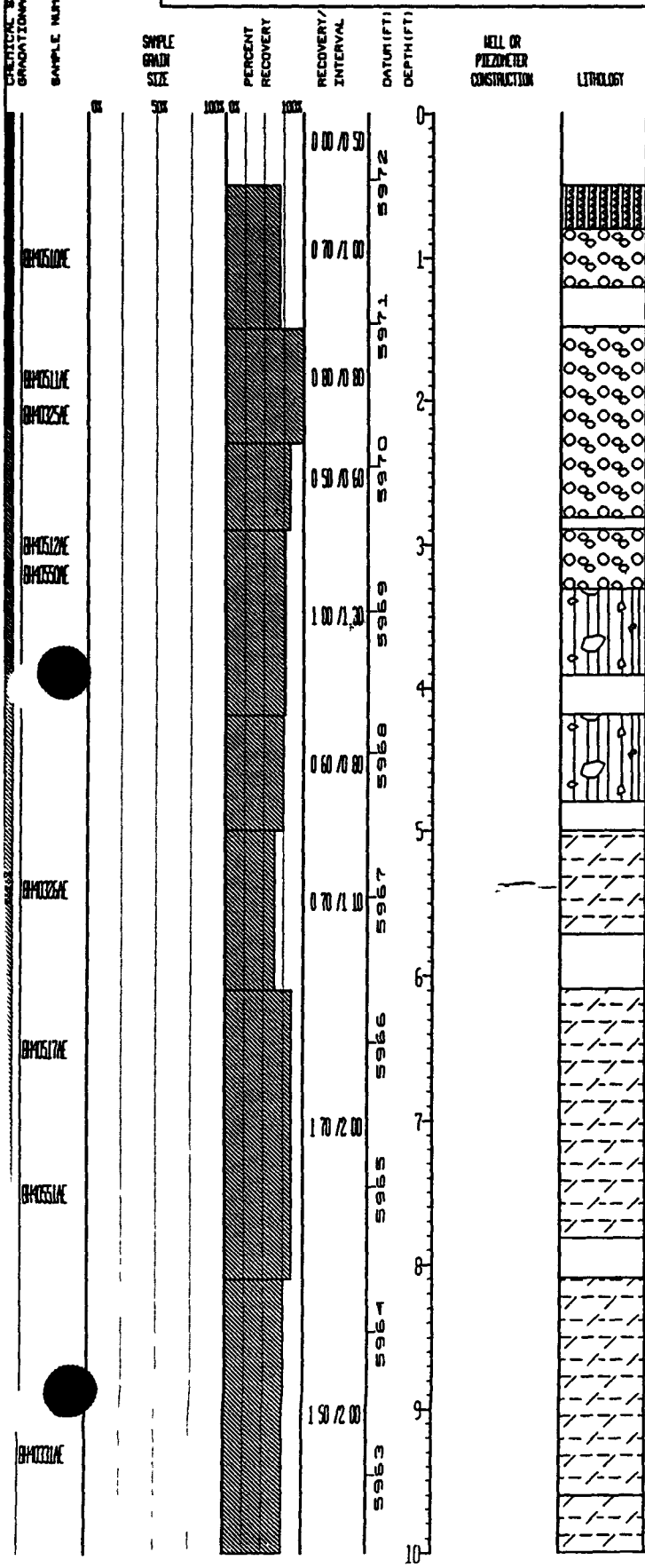
DEPTH (FT)	DATUM (FT)	RECOVERY/ INTERVAL	PERCENT RECOVERY	SAMPLE GRAIN SIZE
10	5954	0 00 /1 00	100%	50%
11	5953	0 00 /1 00	100%	0%
12	5952			
13	5951	0 00 /2 00		
14	5950			
15	5949	0 00 /2 00		
16	5948			
17	5947			
18	5946			
19	5945			
20				

Total depth drilled 16 0'

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 3 0' to 3 5'
Silica Sand 3 5' to 4 5'
Silica Flour 4 5' to 5 2'
Bottom Porous Cup 5 0'
Bentonite 5 2' to 6 0'
Silica Sand 6 0' to 7 2'
Silica Flour 7 2' to 8 0'
Bottom Porous Cup 7 8'
Native Soil 8 0' to 10 2'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 60	GROUND ELEVATION (FT) 5972 46	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750563	AREA PA, Inside Pond 207A	CASING DIAMETER (IN)	GEOLOGIST K R MIYOSHI	43393
EAST	2084680	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/18/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI, CORELOGGING BY J C EVANS



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
,	Asphalt (0 0-0 5')
SM	Gravelly Sand with some silt and trace clay (0 5-0 8') Dark yellowish brown (10 YR 4/4) Sand v f g to c g, poorly graded, angular to sub-angular, pred quartz, moist 18% Gravel, 61% Sand, 17% Silt, 4% Clay
GW	Sandy Gravel with trace silt and clay (0 8-3 3') Matrix pale yellow (2 5 YR 7/4) Gravel c g, up to 7 cm in length, well graded, sub-angular Sand well graded, pred quartz, abundant caliche from 0 8-1 2' Dry 84% Gravel, 10% Sand, 4% Silt, 2% Clay No recovery (1 2-1 5'), (2 8-2 9')
GM	Sandy Gravel with some silt and clay (3 3-4 8') Matrix light yellowish brown (2 5 Y 6/3) Gravel pred f g, Sand same as above, dry 53% Gravel, 29% Sand, 9% Silt, 9% Clay No recovery (3 9-4 2')
NO RECOVERY	No recovery (4 8-5 0')
SILTY CLAYSTONE	Top of Bedrock at 5 0' Silty Claystone with some sand (5 0-11 8') Olive yellow (2 5 YR 6/6) with reddish yellow (7 5 YR 6/8) Fe-oxide staining Slightly friable Sand v f g to f g, well sorted, sub-angular to sub-rounded, argillaceous cement, moist, crude, thin horizontal bedding, ironstone concretions at 7 7', 8 5', and 11 0' Abundant caliche from 5 0-5 5' 7% Sand, 37% Silt, 56% Clay No recovery (5 7-6 1'), (7 8-8 1'), (9 6-10 1')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 60	GROUND ELEVATION (FT)	5972 46	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750563	AREA PA, Inside Pond 207A	CASING DIAMETER (IN)		GEOLOGIST	K R MIYOSHI	43393
EAST	2084680	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/18/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS

DEPTH I.E. DEPTH

CHEMICAL TEST GRADATIONAL SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/ INTERVAL

DATUM(FT) DEPTH(FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

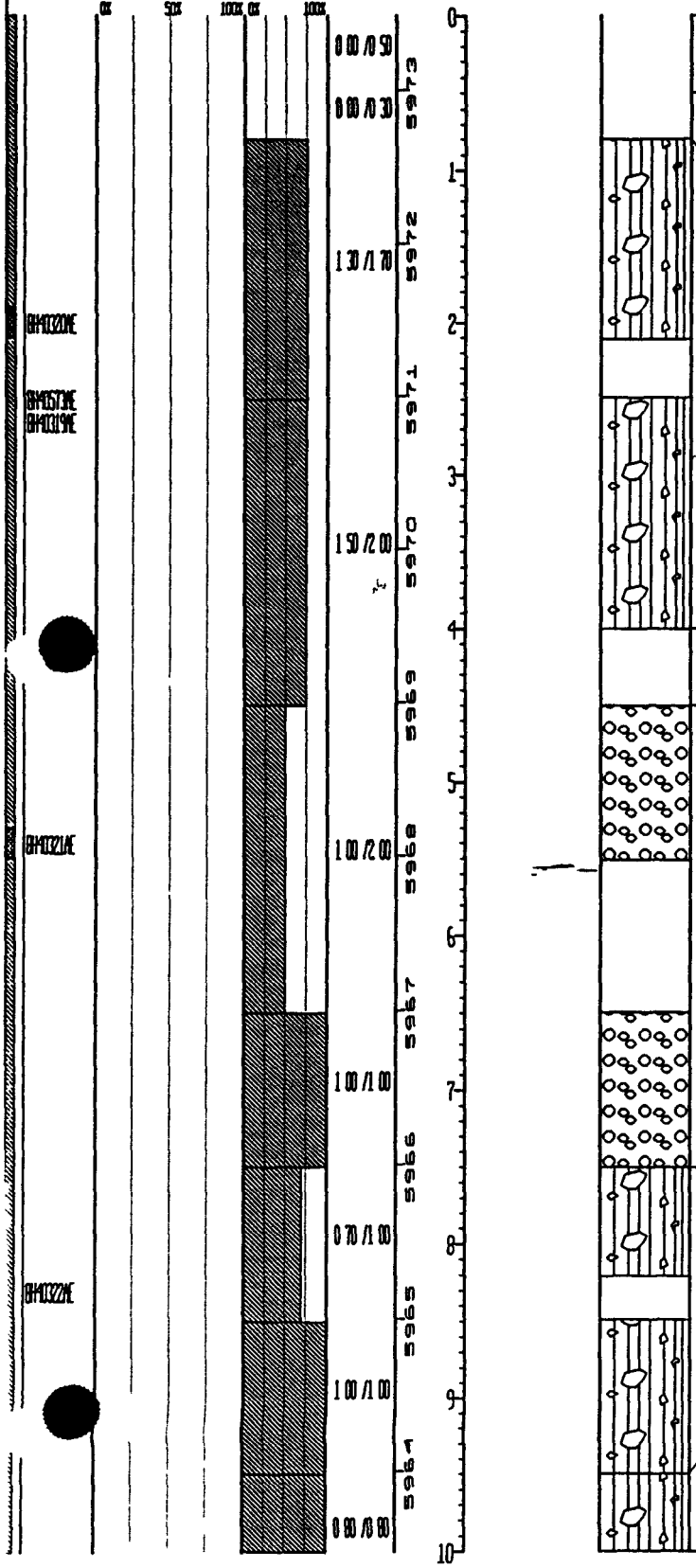
DESCRIPTION

DEPTH(FT)	DATUM(FT)	RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
10	5962			
11	5961	1 50 /2 00		
12	5960		SILTY CLAYSTONE	Silty Claystone with trace sand (11 8-13 6') Light gray (2 5 Y N7) Non-friable, dry, no visible bedding-possibly bioturbated, trace (2%) Mg-oxide staining 3% Sand, 29% Silt, 68% Clay
13	5959	1 50 /1 50		No recovery (12 0-12 1')
14	5958			Total Depth Drilled 13 60
15	5957			
16	5956			
17	5955			
18	5954			
19	5953			
20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 30	GROUND ELEVATION (FT) 5973 48	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750602	AREA PA, B POND (S AND C)	CASING DIAMETER (IN)	GEOLOGIST	K W PACHECO	43493
EAST	2085097	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	04/21/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K W PACHECO, CORELOGGING BY J C EVANS

CHEMICAL GRADATION | SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	Asphalt (0 0-0 5')
	Soil to analytical sample (0 5-0 8')
GM	Sandy Gravel with some silt and trace clay (0 8-4 0') Matrix very pale brown (10 YR 7/3) Gravel pred c g, up to 7 cm in length, sub-rounded Sand f g to c g, with some (20%) caliche in matrix and as coating on gravel, moist 68% Gravel, 14% Sand, 12% Silt, 5% Clay No recovery (2 1-2 5')
NO RECOVERY	No recovery (4 0-4 5')
GW/gm	Sandy Gravel with trace silt and clay (4 5-7 5') Matrix dark brown (7 5 YR 4/3) Gravel same as above Sand well graded, f g to c g, sub-angular, trace (5%) caliche, moist, no visible bedding 83% Gravel, 10% Sand, 5% Silt, 2% Clay No recovery (5 5-6 5')
GM	Sandy Gravel with some silt and clay (7 5-9 5') Matrix reddish brown (5 YR 4/4) Gravel pred 1-4 cm, well graded, sub-rounded to angular (drilling fractured), pred gray quatrzite Sand same as above, moist 53% Gravel, 25% Sand, 13% Silt, 9% Clay No recovery (8 2-8 5')
GM	Sandy Gravel with some silt and trace clay (9 5-10 7') Same as reference interval 0 8-4 0' above, with some (10%) caliche

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 11 30	GROUND ELEVATION (FT) 5973 48	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750602	AREA PA, B POND (S AND C)	CASING DIAMETER (IN)	GEOLOGIST K W PACHECO	43493
EAST	2085097	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 04/21/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY K W PACHECO, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / HOLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT) / DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	1 00 / 1 00	5963 / 10			CL	Sandy Clay with some silt (10 7-11 3') White (2 5 Y N8/) Sand pred m g , moderately graded, sub-angular, no visible bedding, dry Abundant (80%) caliche, low plasticity fines 23% Sand, 8% Silt, 69% Clay
					5962 / 11				
					5961 / 12				Total depth drilled 11 3'
					5960 / 13				Note Bedrock not encountered Auger refusal at 11 3' Material is fill material, placed during pond berm construction
					5959 / 14				
					5958 / 15				
					5957 / 16				
					5956 / 17				
					5955 / 18				
					5954 / 19				
					20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT)	5972 42	PROJECT NUMBER	004-AFI/RI	LOG OF BORING NUMBER
NORTH	750521	AREA P4, POND 207A	CASING DIAMETER (IN)	2 00	GEOLOGIST	K R MIYOSHI	43693
EAST	2084727	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/24/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH GRADATION	SAMPLE NO.	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					0				Asphalt (0 0-0 5')
				0 60 / 0 60	5972			GM	Sandy Gravel with some silt and clay (0 5-0 8') Matrix yellowish brown (10 YR 5/4) Gravel f g , poorly graded, sub-rounded Sand well graded, dry 51% Gravel, 25% Sand, 15% Silt, 10% Clay
				1 00 / 1 00	1 5971			GM	Sandy Gravel with some silt and clay (0 8-6 0') Matrix very pale brown (10 YR 7/4) Gravel pred c g , up to 7 cm in length, rounded to angular (drilling fractured), well graded, pred gray quartzite Sand well graded, f g to c g , sub-rounded, dry, abundant caliche from 0 8-1 1' 70% Gravel, 15% Sand, 9% Silt, 6% Clay
				0 90 / 0 90	2 5970				
				0 30 / 0 80	3 5969				No recovery (3 5-5 0')
				0 00 / 1 20	4 5968				
				1 00 / 1 00	5 5967				
				0 70 / 1 00	6 5966			GM	Sandy Gravel with some silt and trace clay (6 0-6 7') Matrix yellowish brown (10 YR 6/4) Gravel f g , poorly graded, angular Sand same as above, dry 60% Gravel, 27% Sand, 9% Silt, 4% Clay
				0 30 / 0 60	7 5965			NO RECOVERY	No recovery (6 7-7 0')
								GW	Sandy Gravel with trace silt and clay (7 0-9 7') Same as reference interval 0 8-6 0' above 90% Gravel, 6% Sand, 2% Silt, 2% Clay No recovery (7 3-7 6'), (8 4-9 0')
				0 80 / 1 40	8 5964				
					9 5963				
				0 70 / 1 00	10			NO RECOVERY	No recovery (9 7-10 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT) 5972 42	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750521	AREA PA, POND 207A	CASING DIAMETER (IN) 2 00	GEOLOGIST K R MIYOSHI	43693
EAST	2084727	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/24/93	

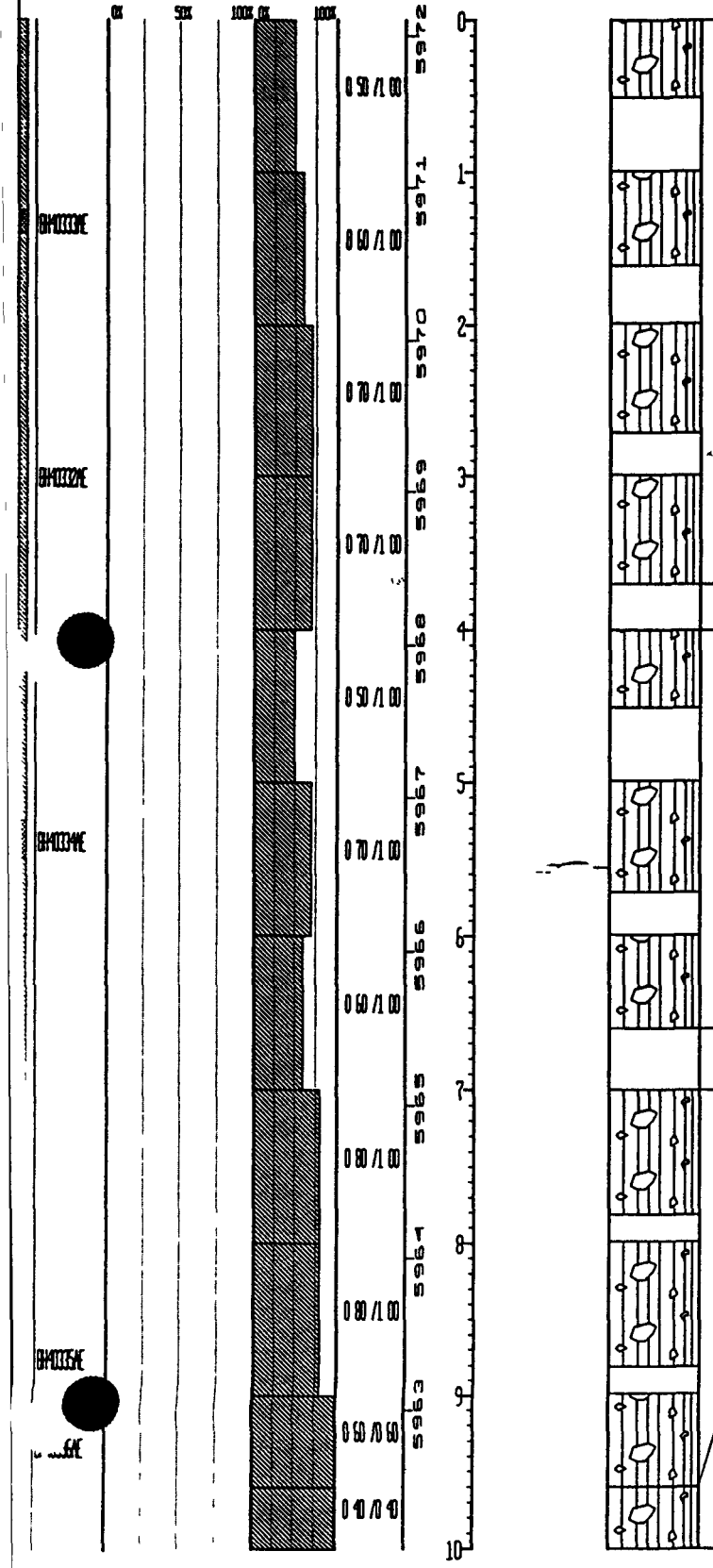
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS LYSIMETER/NEUTRON ACCESS TUBE RIG GEOLOGY BY K R MIYOSHI, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 80 /0 80	5962	10			SILTY CLAYSTONE	Top of Bedrock at 10 0' Claystone (10 0-13 0') Light gray (10 YR 7/1) and yellow (10 YR 7/6) Non-friable, dry, with crude horizontal bedding, ironstone concretions present from 10 0-10 4', Mg-oxide coating on microfractures from 11 2-11 6' 10% Silt, 90% Clay
	BH0563E BH0525E			1 20 /1 20	5961	11				
				1 00 /1 00	5960	12				
	BH0347E					13				Total depth drilled 13 0'
					5959					Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 3 0' to 4 0' Silica Sand 4 0' to 7 3' Silica Flour 7 3' to 8 0' Bottom Porous Cup 7 9' Bentonite 8 0' to 8 6' Silica Sand 8 6' to 10 0' Bentonite 10 0' to 12 9' Total Depth Neutron Access Tube 12 6'
					5958	14				
					5957	15				
					5956	16				
					5955	17				
					5954	18				
					5953	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 17 00	GROUND ELEVATION (FT) 5972 10	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750688	AREA PA, E OF POND 207A	CASING DIAMETER (IN) 2 00	GEOLOGIST C D MURRAY	43793
EAST	2084908	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 02/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS 2 LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / GRADATION / SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE / PERCENT RECOVERY / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GM/gw	Gravel with some sand and silt and trace clay (0 0-3 7') Grayish brown (10 YR 5/2) Gravel c g , up to 5 cm in length, sub-rounded, poorly graded Sand f g to c g , moderately graded, sub-angular, pred quartz, moist 81% Gravel, 12% Sand, 6% Silt, 1% Clay No recovery (0 5-1 0'), (1 6-2 0'), (2 7-3 0')
NO RECOVERY	No recovery (3 7-4 0')
GM	Sandy Gravel with some silt and trace clay (4 0-6 6') Dark reddish brown (2 5 YR 3/4) Gravel c g , up to 7 cm in length Sand same as above, moist 72% Gravel, 15% Sand, 10% Silt, 3% Clay No recovery (4 5-5 0'), (5 7-6 0')
NO RECOVERY	No recovery (6 6-7 0')
GM	Sandy Gravel with some silt and trace clay (7 0-9 6') Yellowish brown (10 YR 5/6) Gravel same as above Sand f g to c g , well graded, sub-angular to sub-rounded, pred quartz, moist 66% Gravel, 21% Sand, 8% Silt, 5% Clay No recovery (7 8-8 0'), (8 8-9 0')
GM	Sandy Gravel with some silt and trace clay (9 6-11 3') Same as reference interval (7 0-9 6') above 62% Gravel, 23% Sand, 9% Silt, 6% Clay No recovery (10 3-11 0')

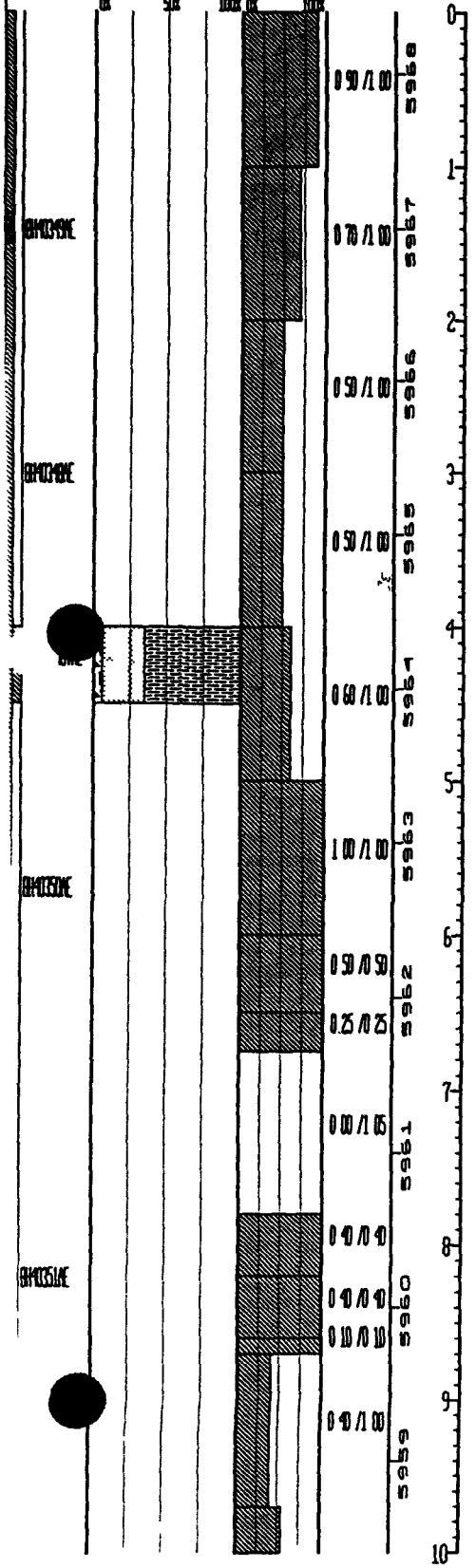
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 17 00	GROUND ELEVATION (FT)	5972 10	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750688	AREA PA, E OF POND 207A	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	43793
EAST	2084908	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/23/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS 2 LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY J C EVANS

CHEMICAL / GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	100% OK 100%	0 30 / 1 00	5962	10				
				0 80 / 1 00	5961	11				
	BH10SM4E			0 75 / 1 00	5960	12			CLAYSTONE	Top of Bedrock at 11 3' Claystone with some silt and trace sand (11 3-16 9') Light gray (10 YR 7/1) and brownish yellow (10 YR 6/8), grading to gray (10 YR 5/1) from 15 8 to 16 9' Non-friable, no visible bedding - possibly bioturbated, with caliche nodules and fractures filling from 14 1-14 7' Mg-oxide coating on microfractures from 15 0-16 9' 11% Sand, 4% Silt, 85% Clay No recovery (11 8-12 0'), (12 75-13 0'), (14 7-15 0')
				1 70 / 2 00	5959	13				
	BH10SM4E				5958	14				
					5957	15				
				1 90 / 2 00	5956	16			NO RECOVERY	No recovery (16 9-17 0') Total depth drilled 17 0'
					5955	17				Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 1 6'-2 1' Silica Sand 2 1'-3 7' Silica Flour 3 7'-4 6' Bottom Porous Cup 4 5' Bentonite 4 6'-5 1' Silica Sand 5 1'-9 8' Silica Flour 9 8'-10 9' Bottom Porous Cup 10 8' Bentonite 10 9'-11 5' Grout 11 5'-17 0' Total Depth Neutron Access Tube 16 6'
					5954	18				
					5953	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 30	GROUND ELEVATION (FT)	5968 40	PROJECT NUMBER	014 RFT/RI	LOG OF BORING NUMBER
NORTH	750463	AREA PA, east of ponds	CASING DIAMETER (IN)	2 00	GEOLOGIST	J C EVANS	44093
EAST	2085223	LOCATOR NUMBER R10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/09/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND ONE NEUTRON ACCESS TUBE RIG GEOLOGY BY J C EVANS, CORE LOGGING BY J C EVANS



LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	ML	Sandy Silt with some clay and gravel (0 0-0 9') Pale brown (10 YR 6/3), very stiff, low plasticity fines Sand well graded, v f g to c g , sub-angular to rounded, pred quartz, trace (3%) scattered white caliche grains, dry 12% Gravel, 31% Sand, 34% Silt, 22% Clay
	NO RECOVERY	No recovery (0 9-1 0')
	SM	Silty Sand with some clay and trace gravel (1 0-1 5') Very pale brown (10 YR 7/3) Sand v f g to f g , mod graded, angular to sub-rounded, pred quartz, low plasticity fines, dry, no visible bedding 2% Gravel, 70% Sand, 20% Silt, 8% Clay
	GM	Silty Gravel with some sand and trace clay (1 5-3 5') Reddish brown (5 YR 5/3) to dark red (2 5 YR 3/6) Gravel rounded to angular (drilling fractured), up to 7 cm in length, well graded, pred gray quartzite Sand m g to f g , moderately sorted, angular to sub-rounded, low plasticity fines, moist 78% Gravel, 7% Sand, 11% Silt, 4% Clay No recovery (1 7-2 0'), (2 5-3 0')
	NO RECOVERY	No recovery (3 5-4 0')
	GW/gw	Sandy Gravel with some silt and trace clay (4 0-6 0') Brownish yellow (10 YR 6/6) Gravel rounded to sub-rounded, well graded, up to 7 cm in length Sand well graded, f g to c g , sub-angular to rounded, pred quartz, low plasticity fines, caliche abundant (40%) from 4 5 to 4 8') 76% Gravel, 16% Sand, 7% silt, 1% Clay No recovery (4 6-5 0')
	GM	Sandy Gravel with some silt and trace clay (6 0-6 5') Brownish yellow (10 YR 6/8) Gravel well graded, pred fine grained, sub-angular, gray quartzite and metamorphic rock fragments Sand well graded, f g to c g 63% gravel, 27% Sand, 9% Silt, 1% Clay
	GW/gw	Sandy Gravel (6 5-10 4') Same as reference interval (4 0-6 0') above No recovery (6 75-7 8'), (9 1-9 7')

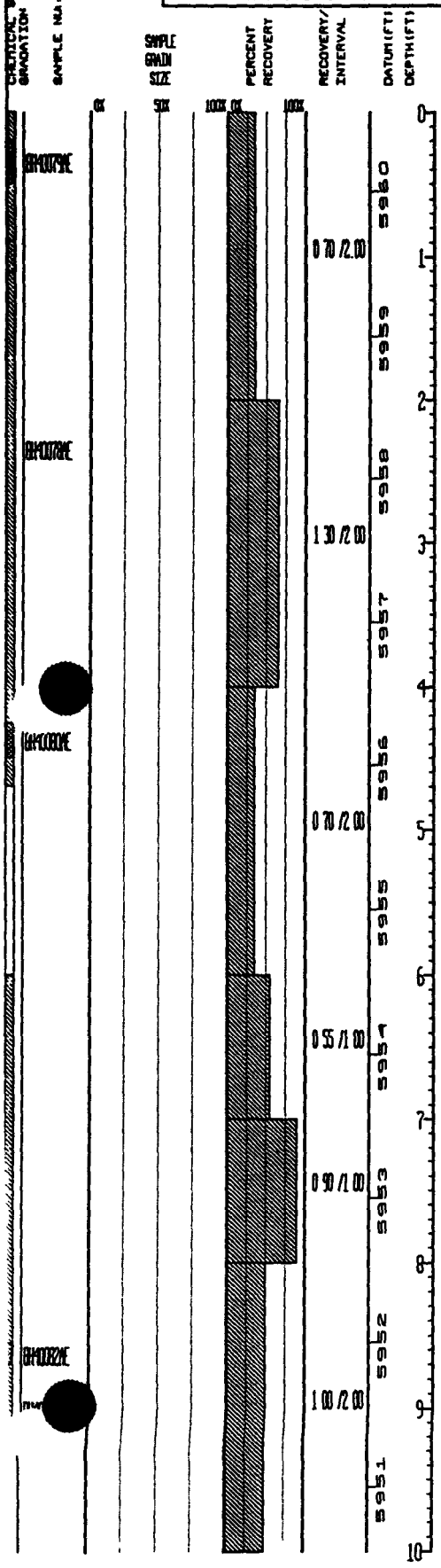
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 30	GROUND ELEVATION (FT)	5958 40	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	750463	AREA PA, east of ponds	CASING DIAMETER (IN)	2 00	GEOLOGIST	J C EVANS	44093
EAST	2085223	LOCATOR NUMBER H10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/09/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS TWO LYSIMETERS AND ONE NEUTRON ACCESS TUBE RIG GEOLOGY BY J C EVANS, CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / TILE DEPTH	SAMPLE NUMBER	SAMPLE GRADI SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 70 / 1 30	5958	10			NO RECOVERY	No recovery (10 4-11 0')
				0 60 / 1 00	5957	11			CL	Sandy Clay with some silt and trace gravel (11 0-11 4') Light gray (10 YR 7/1) to white (10 YR 8/1) Soft, low plasticity fines Sand pred m g , also v f g to c g sub-angular, moderately sorted, wet, with abundant (40%) caliche 4% Gravel, 36% Sand, 18% Silt, 42% Clay
				1 00 / 1 00	5956	12			CLAYSTONE	Claystone (11 4-15 6') Top of Bedrock at 11 4' Light gray (10 YR 6/1) to gray (10 YR 5/1) with yellow (10 YR 7/6) staining Very stiff to stiff, moist, non-friable, no visible bedding, Fe-oxide and manganese coating on scattered fractures from 12 5-15 6' Healed, Fe-oxide filled, vertical fractures at 14 5' and 15 2' Highly fractured from 14 0-15 6' 10% Silt, 90% Clay No recovery (11 6-12 0')
				1 00 / 1 00	5955	13				
				1 00 / 1 00	5954	14				
				0 60 / 1 30	5953	15				
					5952	16			NO RECOVERY	No recovery (15 6-16 3')
					5951	17				Total depth drilled 16 3' Vadose Zone Monitoring Borehole Construction Listed Below Bentonite 2 7'-3 4' Silica Sand 3 4'-4 4' Silica Flour 4 4'-7 1' Bottom Porous Cup 5 6' Bentonite 7 1'-8 8' Silica Sand 8 8'-10 3' Silica Flour 10 3'-11 2' Bottom Porous Cup 11 0' Bentonite 11 2'-11 8' Grout 11 8'-16 2' Total Depth Neutron Access Tube 15 9'
					5950	18				
					5949	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 50 40	GROUND ELEVATION (FT)	5960 55	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750435	AREA E OF 2078 S	CASING DIAMETER (IN)		GEOLOGIST	JCE/KWP	44193
EAST	2085601	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/30/93	

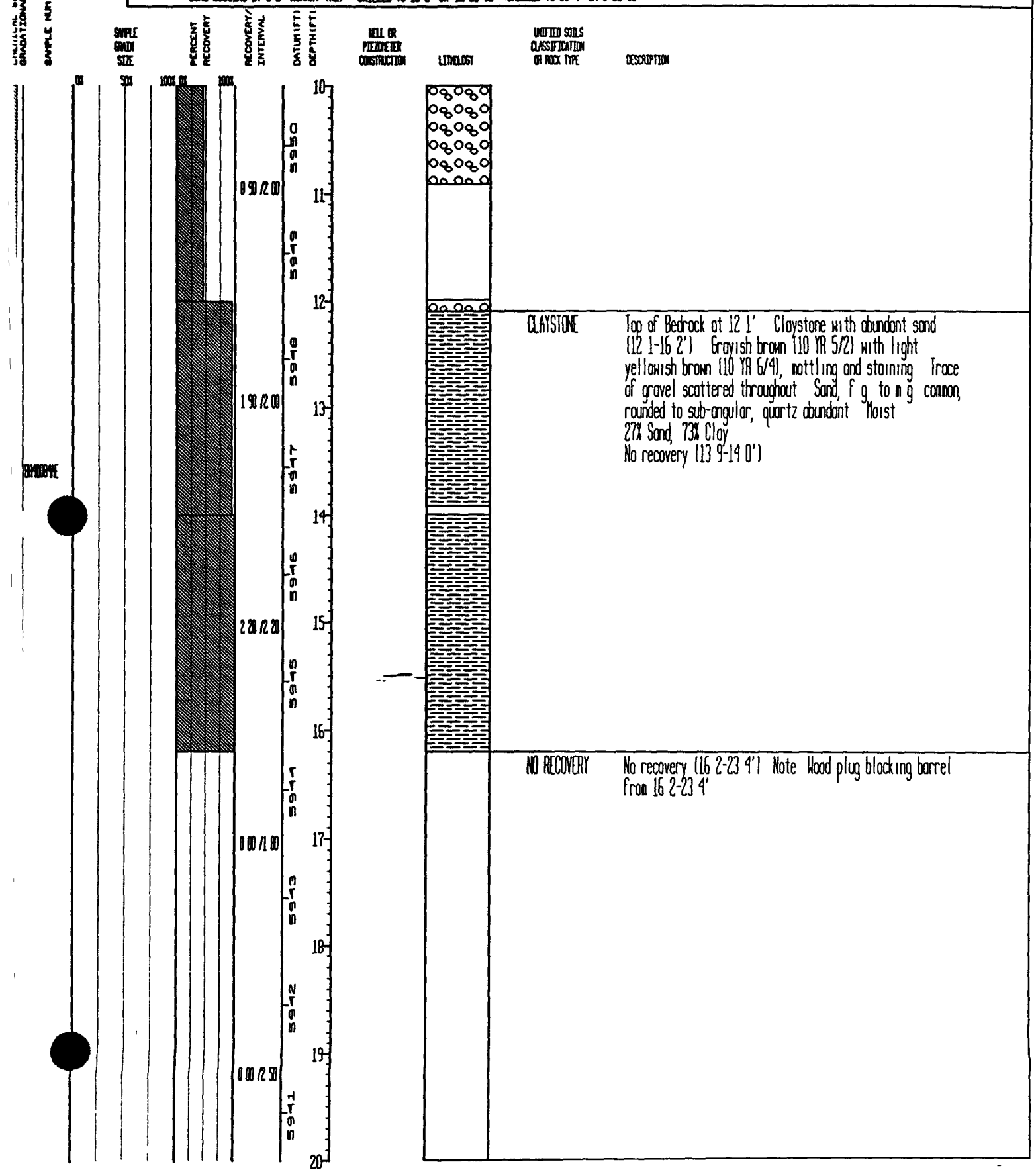
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 DRILLED TO 50 4' ON 3-31-93



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GM	Sandy Gravel with some silt and trace of clay (0 0-0 7') Matrix very dark grayish brown (10 YR 3/2) Gravel 1-2 cm sub-rounded Sand m g to c g, angular to sub-rounded, moderately graded, abundant quartz and common hornblend and biotite, moist 62% Gravel, 26% Sand, 10% Silt, 2% Clay
NO RECOVERY	No recovery (0 7-2 0')
GW	Sandy Gravel with trace of silt and clay (2 0-12 1') Matrix dark reddish brown (2 5 YR 3/4) to brownish yellow (10 YR 6/6) Gravel 1-5 cm (fractured by drilling) Sand f g to c g, moderately graded, angular to sub-rounded, quartz common with trace of hornblend and biotite, argillaceous cement Moist, fair porosity 64% Gravel, 30% Sand, 3% Silt, 3%Clay No recovery (3 3-4 0'), (4 7-6 0'), (6 55-7 0'), (7 9-8 0') No recovery (9 0-10 0'), (10 9-12 0')

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 50 40	GROUND ELEVATION (FT)	5960 55	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER	
NORTH 750435	AREA C OF 2078 S	CASING DIAMETER (IN)		GEOLOGIST	JCE/KWP	44193	
EAST 2085601	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/30/93		

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 <DRILLED TO 50 4' ON 3-31-93



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 50 40	GROUND ELEVATION (FT)	5960 55	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	750435	AREA E OF 2078 S	CASING DIAMETER (IN)		GEOLOGIST	JCE/KWP	44193
EAST	2085601	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/30/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 DRILLED TO 50 4' ON 3-31-93

CHEMICAL DEPTH / GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5940	20				
						21				
				0 00 /2 00	5939					
						22				
					5938					
				0 00 /0 90		23				
					5937				CLAYSTONE	Claystone with some silt and trace of v f g sand (23 4-33 4') Gray (5 Y 5/1) to dark olive gray (5 Y 3/2), with light olive brown (2 5 Y 5/6) staining along fractures, slickenslides V f g sand sub-rounded to rounded, quartz Fractures common at 20-30 degrees from horiz , very poor porosity, very stiff, non-friable, no bedding, moist 1% Sand, 10% Silt, 89% Clay No recovery (24 1-24 2'), (24 6-25 0'), (31 5-31 6')
				0 70 /0 80		24				
				0 40 /0 80	5936					
						25				
					5935					
				2 20 /2 20		26				
	BH4D29ME				5934					
						27				
					5933					
						28				
				2 20 /2 20	5932					
						29				
					5931					
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	50 40	GROUND ELEVATION (FT)	5960 55	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	750435	AREA	E OF 2078 S	CASING DIAMETER (IN)		GEOLOGIST	JCE/KWP	44193
EAST	2085601	LOCATOR NUMBER	N10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	03/30/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 DRILLED TO 50 4' ON 3-31-93

CHEMICAL / GRADATION SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100%	2 10 / 2 20	5930	30				
						31				
					5928	32				
			100%	2 20 / 2 20	5927	33				
						34				
				2 20 / 2 20	5926	35				
					5925	36				
				2 10 / 2 10	5924	37				
					5923	38				
				0 50 / 1 00	5922	39				
					5921	40				

CLAYSTONE

Claystone with some silt and trace of v f g sand (33' 4-40 0') Gray (5 Y 5/1) to dark olive gray (5 Y 3/2) with light olive brown (2 5 Y 5/6) staining along fractures V f g sand, sub-rounded to rounded quartz with a trace of mica Non-friable, moist, no bedding Fractures common from 10 to 40 degrees 1% Sand, 10% Silt, 89% Clay
No recovery (39 3-39 4')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 50 40	GROUND ELEVATION (FT) 5960 55	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750435	AREA E OF 207B S	CASING DIAMETER (IN)	GEOLOGIST JCE/KWP	44193
EAST	2085601	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/30/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 DRILLED TO 50 4' ON 3-31-93

CHEMICAL GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			40			SILTY CLAYSTONE	Silty Claystone with trace of v f g sand (40 0-50 4') Dark gray (2 5 Y N4) with olive yellow (2 5 Y 6/8) staining on fractures and slickensides Very friable in areas, very stiff, moist, very faint horiz bedding Some vertical 90 degrees fractures, and common 30-50 degrees fractures and slickenslides throughout 2% Sand, 39% Silt, 59% Clay
				2 20 /2 20	5920	41				
					5919	42				
				2 20 /2 20	5918	43				
					5917	44				
	BH4057ONE			2 20 /2 20	5916	45				
					5915	46				
					5914	47				
				2 20 /2 20	5913	48				
					5912	49				
				2 20 /2 20	5911	50				

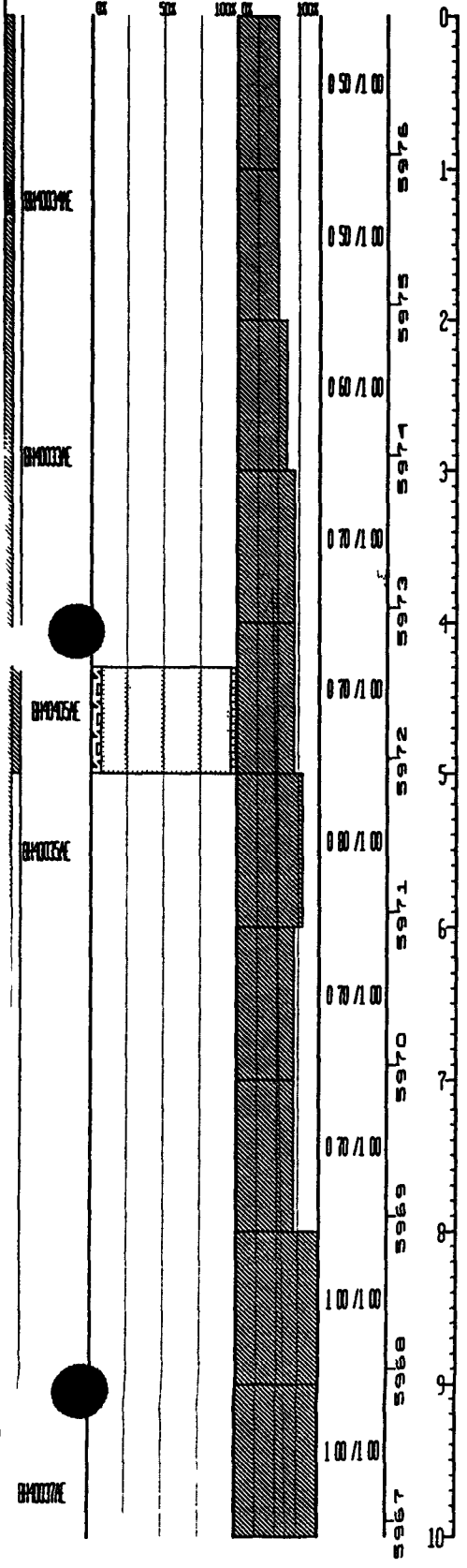
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 50 40	GROUND ELEVATION (FT) 5960 55	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750435	AREA E OF 2078 S	CASING DIAMETER (IN)	GEOLOGIST JCE/KWP	44193
EAST	2085601	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 03/30/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE) AND K W PACHECO (TE), CORE LOGGING BY C D MURRAY (AE) DRILLED TO 16 2' ON 12-21-92 DRILLED TO 50 4' ON 3-31-93

CHEMICAL GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			50				
					5910					Total depth taped at 50 2', but measured core indicates 50 4', discrepency due to hole cave in at bottom of hole
						51				
					5909					
						52				
					5908					
						53				
					5907					
						54				
					5906					
						55				
					5905					
						56				
					5904					
						57				
					5903					
						58				
					5902					
						59				
					5901					
						60				Total Depth Drilled 50 40

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT)	5976 90	PROJECT NUMBER	0141 RFT/RI	LOG OF BORING NUMBER
NORTH	750286	AREA PA, S OF POND 207A	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	44393
EAST	2084665	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/08/93	

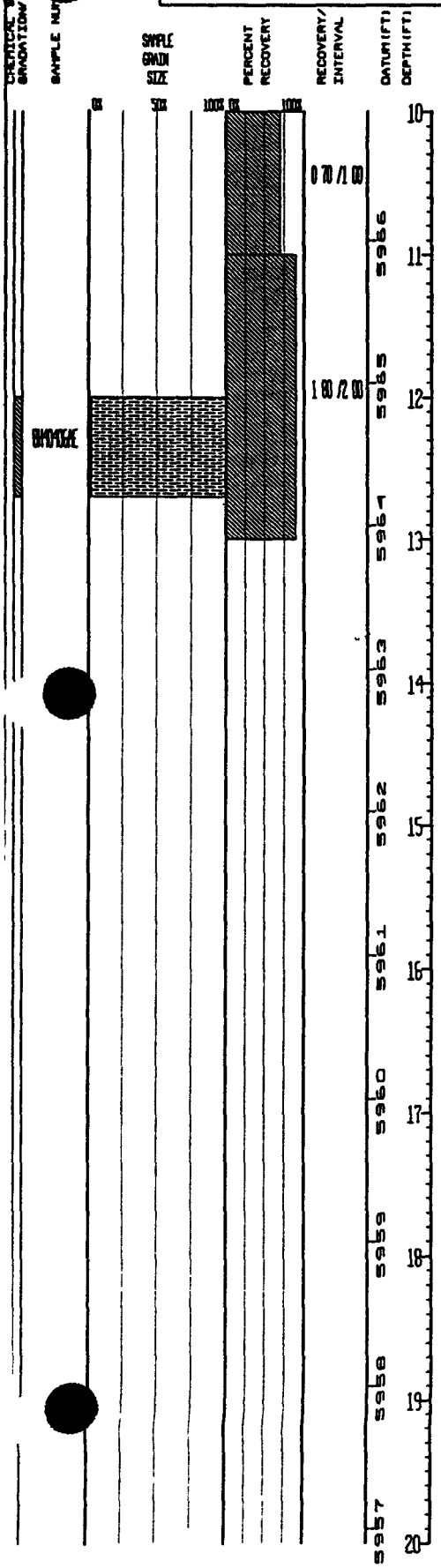
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS 2 LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY J C EVANS



WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GM	Sandy Gravel with some silt and trace clay (0 0-5 8') Matrix pale brown (10 YR 6/3) Gravel f g to c g , well graded, subrounded, some up to 7 cm in length Sand f g to c g , sub-angular to sub-rounded, moist, trace (3%) caliche throughout interval, possible fill material 64% Gravel, 24% Sand, 8% Silt, 4% Clay No recovery (0 5-1 0'), (1 5-2 0'), (2 6-3 0'), (3 7-4 0') No recovery (4 8-5 0')
		NO RECOVERY	No recovery (5 8-6 0')
		GW	Sandy Gravel with trace silt and clay (6 0-7 5') Matrix strong brown (7 5 YR 5/6) Gravel pred 1 0-4 0 cm in length, sub-angular, poorly graded, pred gray quartzite Sand same as reference interval 0 0-5 8' above, moist 74% Gravel, 21% Sand, 4% Silt, 1% Clay No recovery (6 7-7 0')
		CLAYSTONE	Top of Bedrock at 7 5' Claystone with trace sand and silt (7 5-12 8') Light gray (10 YR 7/1) to grayish brown (10 YR 5/2) with brownish yellow (10 YR 6/8) Non-friable, with thin horizontal bedding, core very fractured at 8 2-8 6', 9 2-9 6', and 11 3-11 7' Caliche present from 8 5-8 7' Trace Mg-oxide staining 5% Sand, 5% Silt, 90% Clay No recovery (7 7-8 0'), (10 7-11 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 00	GROUND ELEVATION (FT)	5976 90	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH	750286	AREA PA, S OF POND 207A	CASING DIAMETER (IN)	2 00	GEOLOGIST	C D MURRAY	44393
EAST	2084665	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	02/08/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BOREHOLE COMPLETED AS 2 LYSIMETERS AND NEUTRON ACCESS TUBE RIG GEOLOGY BY C D MURRAY, CORE LOGGING BY J C EVANS



WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

NO RECOVERY — No recovery (12 8-13 0')

Total depth drilled 13 0'

Note Borehole 44393 originally drilled to 12 0', abandoned, moved 3' south and redrilled This log represents redrilled core Sample BH040405AE (4 3-5 0') taken from original borehole

Vadose Zone Monitoring Borehole Construction Listed Below
Bentonite 2 2'-2 5'
Silica Sand 2 5'-3 0'
Silica Flour 3 0'-4 2'
Bottom Porous Cup 4 0'
Bentonite 4 2'-4 6'
Silica Sand 4 6'-6 7'
Silica Flour 6 7'-7 8'
Bottom Porous Cup 7 6'
Bentonite 7 8'-8 2'
Grout 8 2'-13 4'
Total Depth Neutron Access Tube 12 9'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 20	GROUND ELEVATION (FT) 5970 05	PROJECT NUMBER OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750305	AREA SOLAR PONDS/PA	CASING DIAMETER (IN)	GEOLOGIST C D MURRAY	44593
EAST	2085199	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 12/14/92	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORE BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY (AE) CORE LOGGING BY J C EVANS (AE)

CHEMICAL SAMPLE DEPTH / GRADATION / SAMPLE NUMBER / SAMPLE GRAIN SIZE / PERCENT RECOVERY / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

0% 50% 100% 0% 100%

BH0002AE

BH0001AE

BH0003AE

BH0005AE

BH0004AE

0 80 /2.20

0 80 /2 00

0 90 /1 00

0 80 /0 80

0 20 /0 20

1 50 /2 00

1 50 /2 00

5970 5969 5968 5967 5966 5965 5964 5963 5962 5961

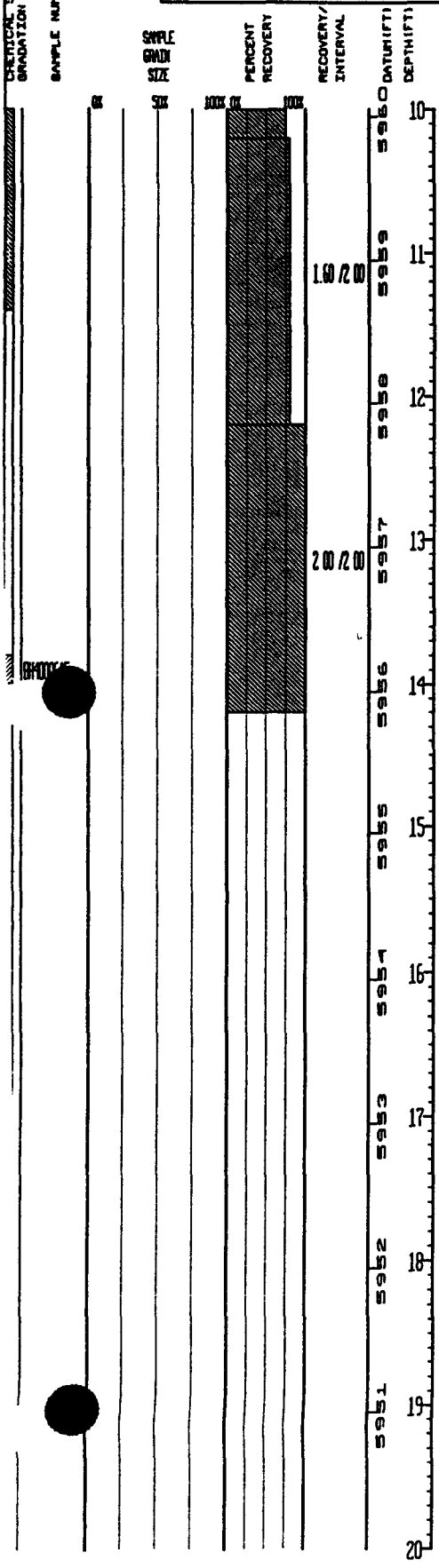
0 1 2 3 4 5 6 7 8 9 10

12/15/92

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Gravelly Sand with some silt and trace clay (0 0-0 8') Brown (7 5 YR 5/2) Sand f g to c g, angular Gravel 0 6-1 3 cm, sub-rounded Gravel 29%, Sand 62%, Silt 7%, 2% Clay
NO RECOVERY	No recovery (0 8-2 2')
SM	Gravelly Sand with some silt and trace clay (2 2-2 5') Very dark grayish brown (10 YR 3/2) Sand f g to c g, sub-angular, feldspathic Gravel 0 6-1 3 cm, sub-rounded to angular Gravel 35%, Sand 55%, Silt 10%
SM	Gravelly Sand with some silt and trace clay (2 5-4 5') Dark reddish brown (2 5 YR 3/3) Gravel 0 6-1 3 cm angular to sub-angular Sand f g to c g, feldspathic, angular, poorly sorted Gravel 22%, Sand 66%, Silt 6%, Clay 2% No recovery (3 0-4 2')
SP	Sand with some gravel, trace of silt and clay (4 5-5 1') Yellowish brown (10 YR 5/6) Gravel, rounded, moderately graded Sand sub-angular poorly graded Gravel 8%, Sand 86%, Silt 4%, Clay 2%
NO RECOVERY	No recovery (5 1-5 2')
SP	Sand with some silt and trace clay (5 2-5 9') Strong brown (7 5 YR 5/6) Sand poorly graded, sub-angular to very angular, very calcareous (caliche) Abundant quartz and feldspar, trace of biotite and hornblend Sand 92%, Silt 7%, Clay 1%
GM	Sandy Gravel with some clay and silt (5 9-6 2') Strong brown (7 5 YR 4/6) Gravel 1-4 cm, fractured by drilling, sub-rounded to sub-angular Sand moderately graded, sub-angular to very-angular Abundant quartz, and feldspar, trace biotite, hornblend, calcite cement Gravel 44%, Sand 46%, Silt 5%, Clay 5%
SW	Gravelly Sand with trace silt and clay (6 2-9 5') Mod graded, strong brown (7 5 YR 5/6) Gravel mod graded, rounded, 1-3 cm diameter, fractured by drilling Sand f g, to c g, well-graded, sub-rounded to angular Quartz and feldspar abundant with trace of biotite and hornblend CaCO3 common Gravel 29%, Sand 67%, Silt 3%, Clay 1% No recovery (7 7-8 2')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 20	GROUND ELEVATION (FT) 5970 05	PROJECT NUMBER 004 RFI/RI	LOG OF BORING NUMBER
NORTH	750305	AREA SOLAR PONDS/PA	CASING DIAMETER (IN)	GEOLOGIST C D MURRAY	44593
EAST	2065199	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 12/14/92	

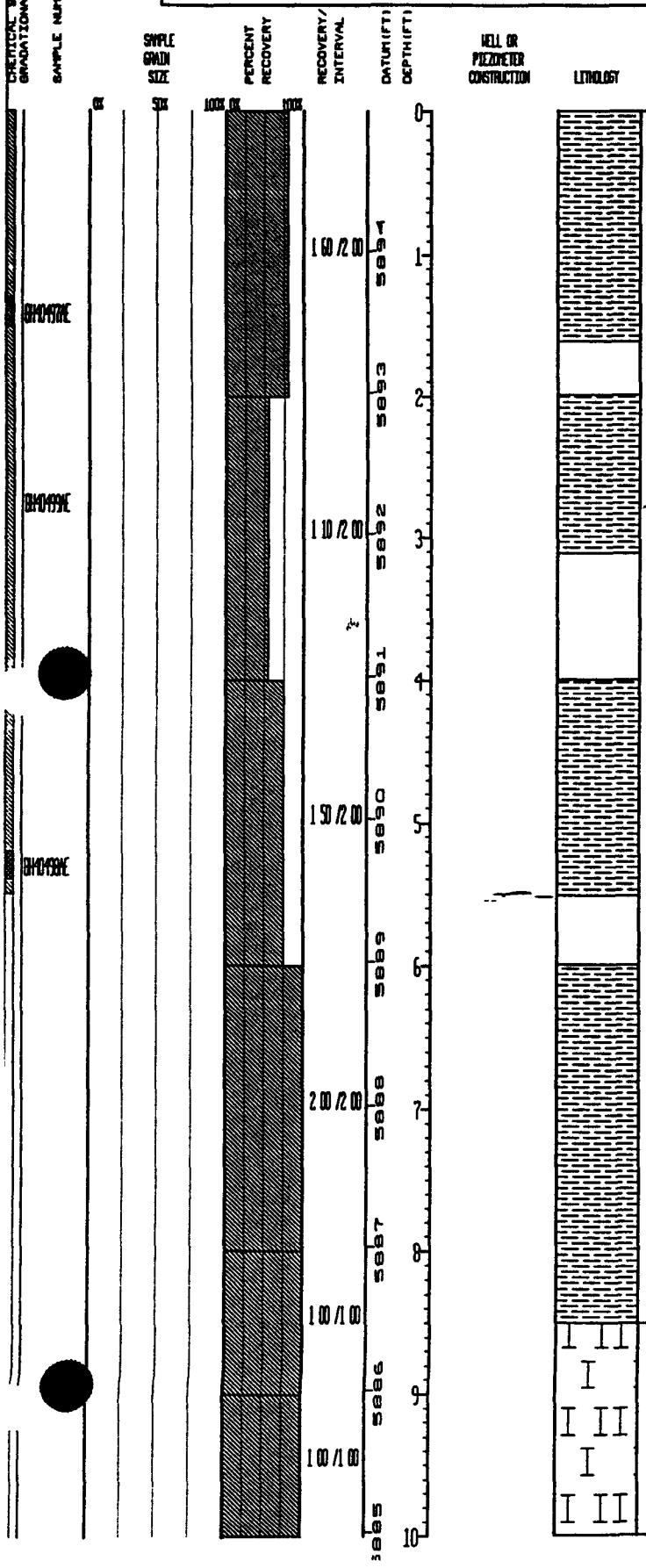
REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORE BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY (AE) CORE LOGGING BY J C EVANS (AE)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
NO RECOVERY	No recovery (9 7-10 2')
SM	Sand with some gravel and silt with trace clay (10 2-11 4') Gravel poorly graded, 1-3 cm sub-rounded Sand mod graded, sub-angular to angular, f g to c g Abundant quartz and feldspar Some biotite and hornblend Abundant calcite cement Gravel 12%, Sand 78%, Silt 8%, Clay 2%
CLAYSTONE	Claystone with some sand and silt (11 4-14 2') Top of Bedrock 11 4' Light olive gray (5 Y 5/2) to dusky yellow (5 Y 6/4) and light olive brown (5 Y 5/6) mottled Bedding appears massive, well-sorted, calcite present, non-friable, moist Sand moderately sorted, sub-rounded, clear fractured quartz grains with trace of dark metamorphic grains Trace of scattered fine gravel Sand 9%, Silt 10%, Clay 81% No recovery (11 8-12 2')
	Total Depth Drilled 14 20

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 00	GROUND ELEVATION (FT)	5894 97	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	751480	AREA Buffer Zone	CASING DIAMETER (IN)		GEOLOGIST	J C EVANS	44693
EAST	2085999	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	01/21/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE), CORE LOGGING BY C D MURRAY (AE)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone (0 0-8 5') Olive (5 Y 5/3) to light olive brown (2 5 Y 5/6) mottling and staining Massive bedding, moist Clay 100% No recovery (1 6-2 0'), (3 1-4 0'), (5 5-6 0')
IRONSTONE	Ironstone (8 5-10 0') Dark reddish brown (2 5 YR 4), leaf imprints, hard to very hard, dry

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 00	GROUND ELEVATION (FT) 5894 97	PROJECT NUMBER 0U4 RFI/RI	LOG OF BORING NUMBER
NORTH	751480	AREA Buffer Zone	CASING DIAMETER (IN)	GEOLOGIST J C EVANS	44693
EAST	2085999	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED 01/21/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY J C EVANS (AE), CORE LOGGING BY C D MURRAY (AE)

CHEMICAL SAMPLE DEPTH / GRADATION SAMPLE DEPTH / SAMPLE NUMBER

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 1 30 /2.00; 2 00 /2 00

DATUM (FT): 5884, 5883, 5882, 5881, 5880, 5879, 5878, 5877, 5876, 5875

DEPTH (FT): 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

CLAYSTONE

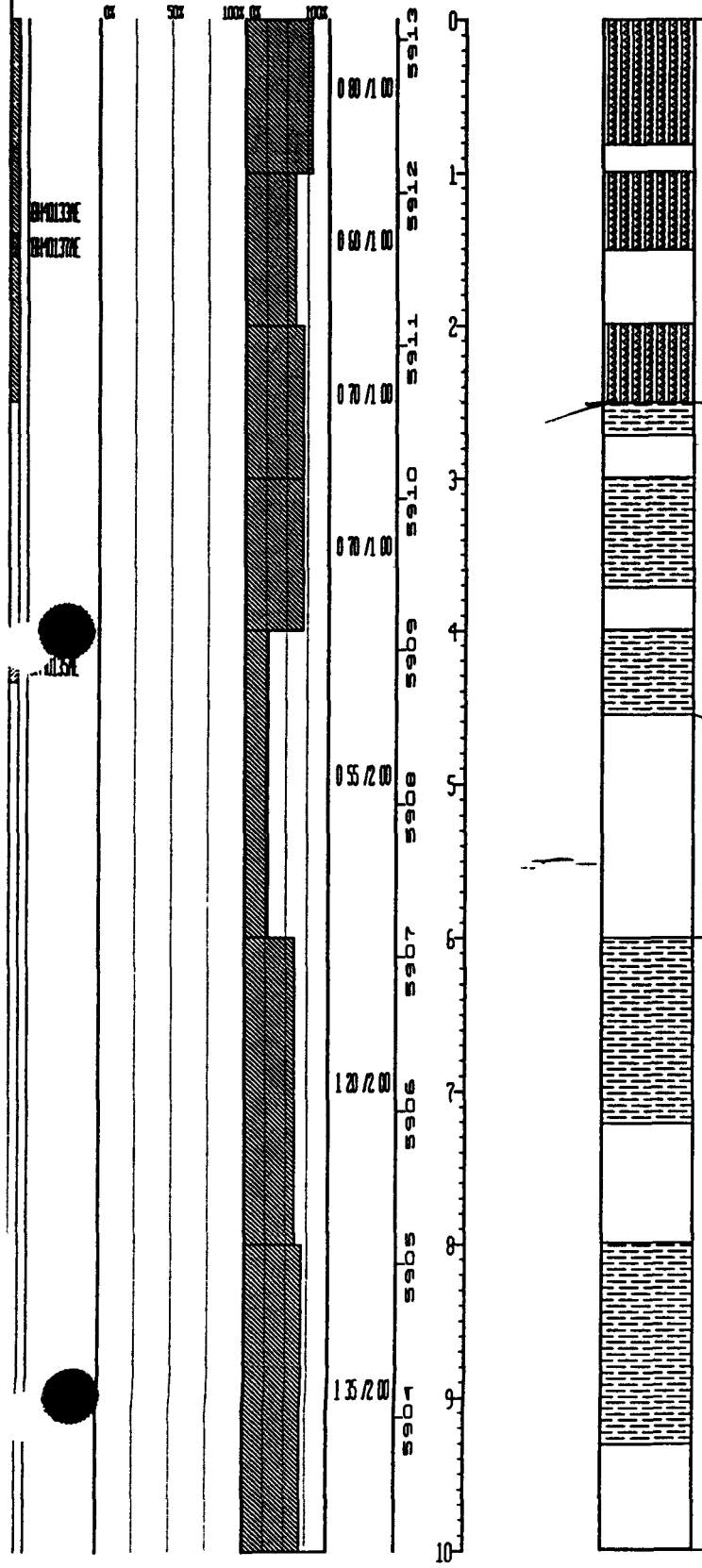
Claystone with some sand (10 0-14 0') Light olive gray (5 Y 6/2) Massive bedding, core broken up from 10 0 to 11 3' Probably from drlg Leaf imprint at 13 8' Sand f g, well sorted, mostly quartz with trace of dark metamorphic minerals, angular to sub-angular Trace sub-horiz limonite coated fractures and vertical, mineral coated (manganese) fractures from 12 2-12 8' Sand 13%, Clay 87%
No recovery (11 3-12 0')

Total Depth Drilled 14 00

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT) 5913 13	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	751198	AREA Buffer Zone	CASING DIAMETER (IN)	GEOLOGIST	C D MURRAY	44793
EAST	2086072	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	01/12/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY (AE), CORE LOGGING BY J C EVANS (AE)

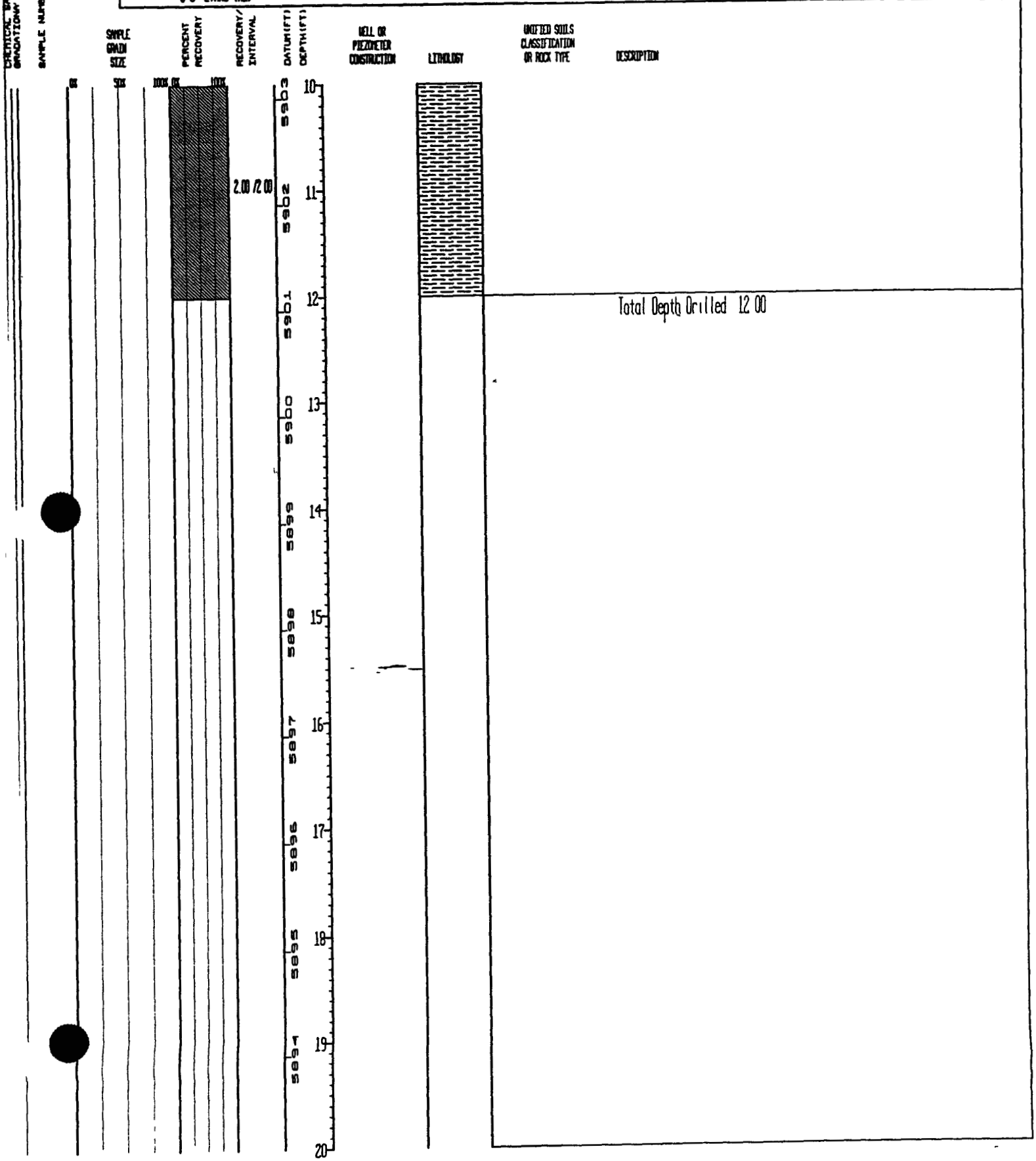
CHEMICAL GRADATION | SAMPLE NUMBER | SAMPLE GRAIN SIZE | PERCENT RECOVERY | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Silty Sand with some clay and gravel (0 0-2 5') Dark yellowish brown (10 YR 4/4), low to medium plasticity fines Sand and gravel well graded, sub-angular to sub-rounded, pred quartz, no visible bedding, abundant roots 8% Gravel, 41% Sand, 31% Silt, 20% Clay No recovery (0 8-1 0'), (1 5-2 0')
CLAYSTONE	Claystone with some silt (2 5-4 55') Top of Bedrock at 2 5' Yellowish-brown (10 YR 5/4) to dark gray (10 YR 4/1), mottled with scattered white (5 YR 8/1) calcium carbonate (caliche) from 3 5 to 4 55', very stiff to hard, no visible bedding, interval dry, interval is highly weathered bedrock 20% Silt, 80% Clay No recovery (2 7-3 0'), (3 7-4 0')
NO RECOVERY	No recovery (4 55-6 0')
CLAYSTONE	Claystone with some silt (6 0-12 0') Mottled light grayish brown (2 5 Y 6/2) and olive yellow (2 5 Y 6/8) from 6 0 to 8 9' and dark olive gray (5 Y 3/2) from 8 9 to 12 0' Core becomes less weathered with depth, medium stiff to stiff, trace carbonaceous material, some vertical, anastomosing, limonite-filled fractures at 11 5', moist, faint horizontal bedding 10-20% Silt, 80-90% Clay No recovery (7 2-8 0'), (9 3-10 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 00	GROUND ELEVATION (FT)	5913 13	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH	751198	AREA Buffer Zone	CASING DIAMETER (IN)		GEOLOGIST	C D MURRAY	44793
EAST	2086072	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	01/12/93	

REMARKS HOLLOW STEM AUGER AND CONVENTIONAL CORING BORING PLUGGED AND ABANDONED RIG GEOLOGY BY C D MURRAY (AE), CORE LOGGING BY J C EVANS (AE)



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 40	GROUND ELEVATION (FT)	5964 10	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750857	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)	7 4	GEOLOGIST	J D BROOKSHIRE	46593
EAST	2085002	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 60 6.3	DATE DRILLED	11/08/93	

REMARKS HOLLOW STEM AUGERING SAMPLES COLLECTED BY SPLIT SPOON SAMPLER DRIVEN 140 LB HAMMER BOREHOLE PLUGGED AND A BANDONED RIG GEOLOGY BY J D BROOKSHIRE CORE LOGGING BY J C EVANS

SAMPLE NUMBER	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		5964	0			Asphalt (0 0-0 7')
	0 00 /0 80					Surficial Soil Sample (0 7-0 8')
		5963	1		GM	Sandy Gravel with some silt and trace clay (0 8-1 4') Matrix dark brown (7 5 YR 3/3) Gravel c g, up to 6 cm in length, sub-rounded Sand f g to m g, pred quartz with trace feldspar and dark minerals, moist 50% Gravel, 30% Sand, 16% Silt, 4% Clay
	1 85 /1 95	5962	2		GM	Sandy Gravel with some silt and trace clay (1 4-4 25') Matrix brownish yellow (10 YR 6/6) Sand and gravel same as reference interval (0 8-1 4') above, dry 43% Gravel, 42% Sand, 11% Silt, 4% Clay No recovery (2 65-2 75')
		5961	3			
	1 50 /2.00	5960	4		NO RECOVERY	No recovery (4 25-4 75')
	0 90 /1 00	5959	5	11/08/93	GM	Sandy Gravel with some silt and trace clay (4 75-7 25') Matrix reddish yellow (7 5 YR 6/8) Gravel f g to c g, some cobbles up to 7 cm in length, gray quartzite and granite rock fragments Sand f g to m g, sub-angular, moist to wet Water encountered at 5 75' 45% Gravel, 39% Sand, 10% Silt, 6% Clay No recovery (5 65-5 75'), (6 45-6 75')
	0 70 /1 00	5958	6			
	0 50 /1 00	5957	7		NO RECOVERY	No recovery (7 25-7 75')
	0 30 /1 00	5956	8		CLAYSTONE	Top of Bedrock at 7 75' Claystone with some silt (7 75-16 4') Light olive brown (2 5 Y 5/3) to light brownish gray (2 5 Y 6/2) with yellowish brown (10 YR 5/8) mottling, no visible bedding Fe-oxide staining on fracture surfaces throughout interval, white caliche nodules present at 9 2' and 11 8' Slightly silty from 11 3-11 55' and 15 0-15 2', trace Mg-oxide staining, moist 10% Silt, 90% Clay No recovery (8 05-8 75'), (11 55-11 75')
	1 00 /1 00	5955	9			
			10			

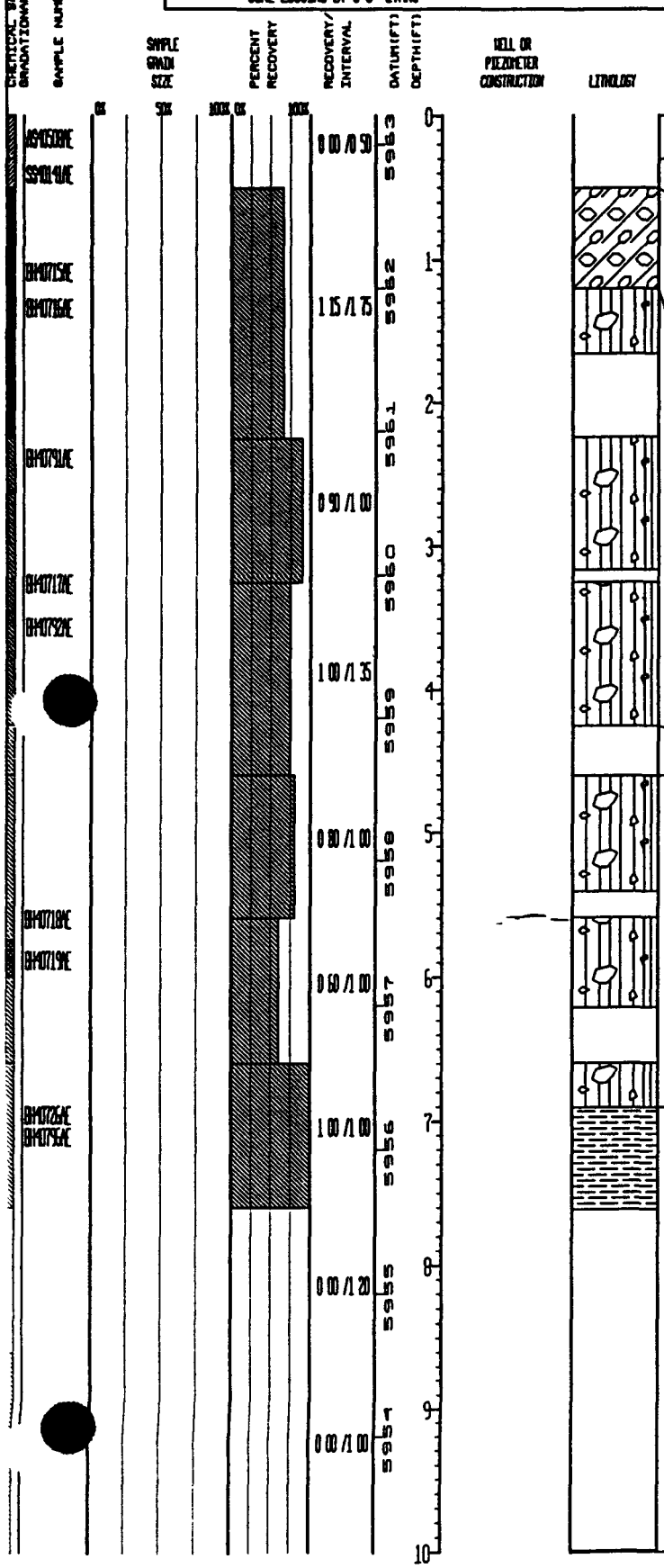
STATE PLANE COORDINATE	TOTAL DEPTH (FT) 16 40	GROUND ELEVATION (FT) 5964 10	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH 750857	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)	GEOLOGIST	J D BROOKSHIRE	46593
EAST 2085002	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	11/08/93	

REMARKS HOLLOW STEM AUGERING SAMPLES COLLECTED BY SPLIT SPOON SAMPLER DRIVEN 140 LB HAMMER BOREHOLE PLUGGED AND A BANDONED RIG GEOLOGY BY J D BROOKSHIRE CORE LOGGING BY J C EVANS

CHEMICAL & GRADATION	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH4D712NE			1 00 /1 00	5954	10				
				1 00 /1 00	5953	11				
				1 00 /1 00	5952	12				
				1 30 /1 30	5951	13				
	BH4D713NE				5950	14				
				1 25 /1 25	5949	15				
				1 10 /1 10	5948	16				
					5947	17				Total Depth Drilled 16 40
					5946	18				
					5945	19				
						20				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 14 80	GROUND ELEVATION (FT) 5963 20	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH 750953	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)	GEOLOGIST	J D BROOKSHIRE	46693
EAST 2085073	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	11/09/93	

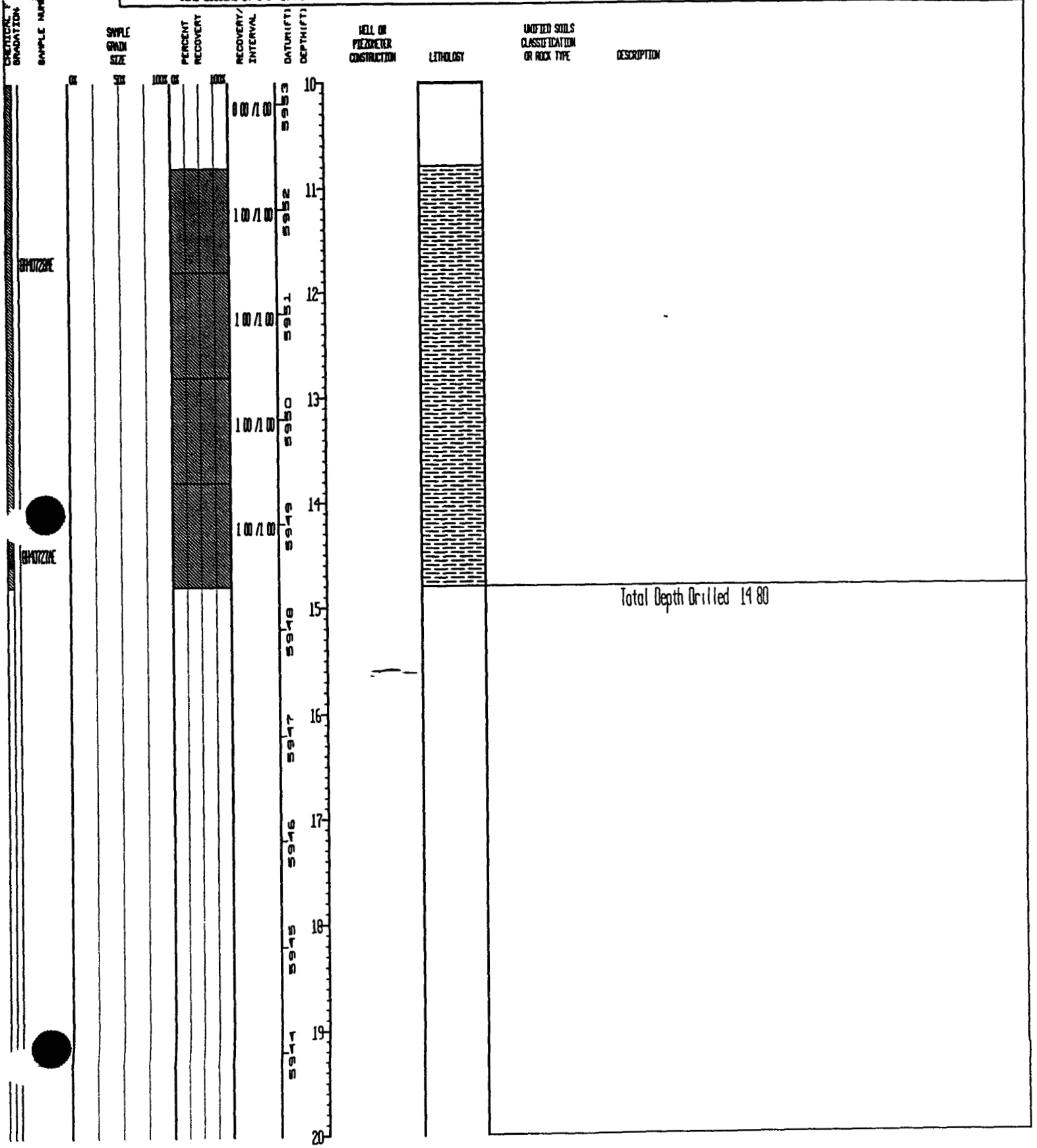
REMARKS HOLLOW STEM AUGERING, SPLIT SPOON SAMPLER DRIVEN BY A 140 LB HAMMER BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J D BROOKSHIRE
CORE LOGGING BY J C EVANS



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	Asphalt (0 0-0 3')
	Surficial Soil Sample (0 3-0 5')
GC	Clayey Gravel with some sand and silt (0 5-1 2') Matrix dark reddish brown (2 5 YR 3/3) Gravel f g to c g, pred c g, sub-rounded, pred gray quartzite Sand f g to c g, sub-angular, pred quartz with some feldspar, low plasticity fines, moist 54% Gravel, 15% Sand, 10% Silt, 21% Clay
GM	Sandy Gravel with some silt and clay (1 2-4 25') Matrix very pale brown (10 YR 7/4) gravel c g, up to 7 cm in length, sub-rounded Sand f g to c g, sub-angular to sub-rounded, pred quartz with some feldspar Moist 42% Gravel, 38% Sand, 12 % Silt, 8% Clay No recovery (1 65-2 25'), (3 15-3 25')
NO RECOVERY	No recovery (4 25-4 6')
GM	Sandy Gravel with some silt and trace clay (4 6-6 9') Matrix brownish yellow (10 YR 6/6) to pale yellow (2 5 Y 7/3) Gravel and sand same as reference interval (1 2-4 25') above Trace caliche present, especially as grain coating on gravel Moist 44% Gravel, 38% Sand, 13% Silt, 5% Clay No recovery (5 4-5 6'), (6 2-6 6')
CLAYSTONE	Top of Bedrock at 6 9' Claystone (6 9-14 8') Light brownish gray (10 YR 6/2) to brownish yellow (10 YR 6/6) Contorted, high angle bedding visible in lower part of interval (contorted bedding due to claystone being squeezed past cobble into sampler) Caliche nodule at 7 3', Fe-oxide concretion at 11 6', trace Mg-oxide staining, moist 100% Clay No recovery (7 6-10 8')

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 14 80	GROUND ELEVATION (FT)	5963 20	PROJECT NUMBER	014 RFI/RI	LOG OF BORING NUMBER
NORTH 750953	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)		GEOLOGIST	J D BROOKSHIRE	46693
EAST 2085073	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN)	8 00	DATE DRILLED	11/09/93	

REMARKS HOLLOW STEM AUGERING, SPLIT SPOON SAMPLER DRIVEN BY A 140 LB HAMMER BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J D BROOKSHIRE
CORE LOGGING BY J C EVANS



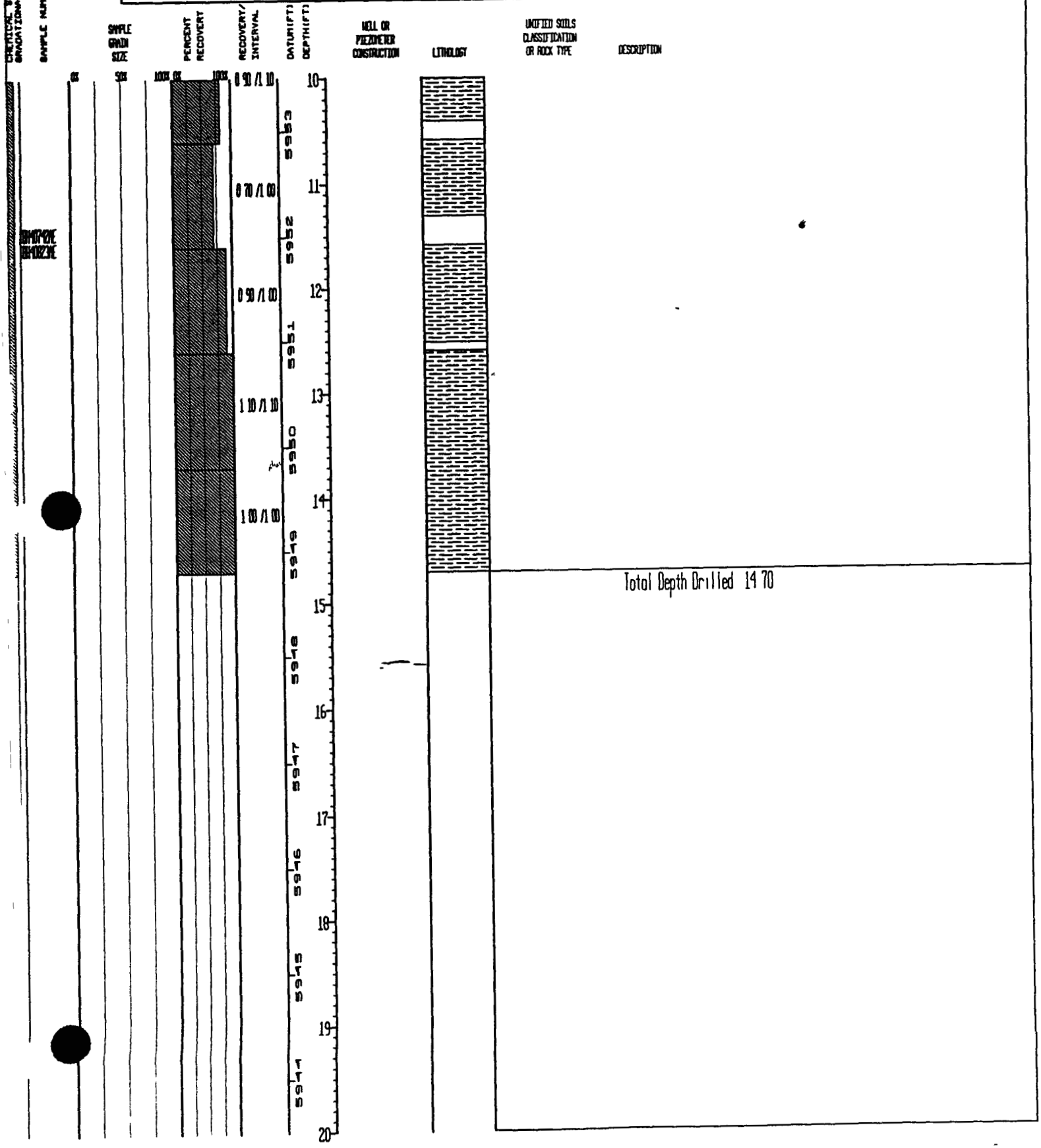
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 70	GROUND ELEVATION (FT) 5963 50	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH	750888	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)	GEOLOGIST	J D BROOKSHIRE	46793
EAST	2035113	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 3 00	DATE DRILLED	11/10/93	

REMARKS SAMPLES COLLECTED WITH SPLIT SPOON SAMPLER DRIVEN WITH 140 LB HAMMER, AUGERS NOT USED BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J D BROOKSHIRE CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	AS4050 9E			0 00 /0 60	5963	0				Asphalt (0 0-0 4')
	SS4014 2E									Surficial soil sample (0 4-0 6')
	BH4072 9E					1			GM	Sandy Gravel with some silt and clay (0 6-2 6') Matrix dark brown (7 5 YR 4/3) Gravel pred f g, sub-rounded to angular (drilling fractured), pred gray quartzite Sand f g to c g, low plasticity fines, dry 50% Gravel, 23% Sand, 16% Silt, 11% Clay No recovery (1 6-2 5')
	BH4073 0E			1 00 /1 90	5962					
						2				
	BH4079 7E				5961					
				0 70 /1 00		3			CL	Gravelly Clay with some sand and silt (2 6-4 7') White (10 YR 8/1) to light gray (10 YR 7/1) Predominately (50%) caliche Gravel angular (drilling fractured), gray quartzite Sand f g to c g, trace plant roots, low plasticity fines, dry 35% Gravel, 9% Sand, 6% Silt, 50% Clay No recovery (3 2-3 5')
	BH4079 8E				5960					
				1 00 /1 00		4				
	BH4073 1E				5959					
				0 70 /1 00		5			CL	Clay with some silt and trace sand and gravel (4 7-6 2') White (10 YR 8/1) Predominately (85%) caliche, low plasticity fines, dry 4% Gravel, 3% Sand, 8% Silt, 85% Clay No recovery (5 2-5 5')
	BH4073 2E				5958					
	BH4073 3E			0 70 /1 00		6				
					5957				NO RECOVERY	No recovery (6 2-6 5')
				1 00 /1 00		7			CLAYSTONE	Top of Bedrock at 6 5' Claystone with some silt (6 5-14 7') Grayish brown (2 5 Y 5/2) with brownish yellow (10 YR 6/8) mottling Non-friable Caliche fracture filling and nodules from 6 5 to 10 0' Fe-oxide fracture filling from 12 6 to 14 4' Mg-oxide fracture filling at 13 1' Interval silty from 12 6 to 13 5' Crystalline fracture fill material (anhydrite?) from 9 5 to 9 7' Moist, core intensely fractured from 10 3 to 14 7' 5% Silt, 95% Clay No recovery (9 4-9 5'), (10 4-10 6'), (11 3-11 6') No recovery (12 5-12 6')
	BH4074 0E				5956					
	BH4080 2E			1 00 /1 00		8				
	BH4074 1E				5955					
				0 90 /1 00		9				
					5954	10				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 14 70	GROUND ELEVATION (FT) 5963 50	PROJECT NUMBER	004 RFI/RI	LOG OF BORING NUMBER
NORTH 750888	AREA PA, 207B NORTH POND	CASING DIAMETER (IN)	GEOLOGIST	J D BROOKSHIRE	46793
EAST 2035113	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 3 00	DATE DRILLED	11/10/93	

REMARKS SAMPLES COLLECTED WITH SPLIT SPOON SAMPLER DRIVEN WITH 140 LB HAMMER, AUGERS NOT USED BOREHOLE PLUGGED AND ABANDONED RIG GEOLOGY BY J D BROOKSHIRE CORE LOGGING BY J C EVANS



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 9 80	GROUND ELEVATION (FT) 5964 70	PROJECT NUMBER	OU4 RFI/RI	LOG OF BORING NUMBER
NORTH 750656	AREA PA, 207B CENTER POND	CASING DIAMETER (IN)	GEOLOGIST	J D BROOKSHIRE	47093
EAST 2085047	LOCATOR NUMBER L10	BOREHOLE DIAMETER (IN) 8 00	DATE DRILLED	11/17/93	

REMARKS HOLLOW STEM AUGERING SAMPLES COLLECTED WITH SPLIT SPOON SAMPLER DRIVEN BY A 140 LB HAMMER BOREHOLE PLUGGED AND ABANDONED

RIG GEOLOGY BY J D BROOKSHIRE CORE LOGGING BY J C EVANS

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Sample Number	Recovery/Interval	Unified Soils Classification or Rock Type	Description
AS40512AE	0 00 /0 70		Asphalt (0 0-0 5')
SS40145AE			Surficial soil sample (0 5-0 7')
BH0771AE, BH0772AE	1 50 /2 00	SM	Gravelly Sand with some silt and clay (0 7-1 2') Dark brown (7 5 YR 3/2) to yellowish brown (10 YR 5/6) Sand f g to c g, sub-angular to sub-rounded Gravel f g, low plasticity fines, dry 31% Gravel, 42% Sand, 19% Silt, 8% Clay
BH0815AE, BH0824AE	1 00 /1 00	GM	Sandy Gravel with some silt and clay (1 2-3 7') Matrix light gray (10 YR 7/2) Gravel c g, up to 6 5 cm in length, pred gray quartzite Sand f g to c g, abundant (30%) caliche from 2 7-3 4', low plasticity fines, dry 55% Gravel, 30% Sand, 9% Silt, 6% Clay No recovery (2 2-2 7')
BH0773AE, BH0816AE	1 10 /1 10	GM/gw	Sandy Gravel with trace silt and clay (3 7-4 8') Matrix very pale brown (10 YR 7/4) Gravel c g, up to 6 cm in length, sub-rounded, pred gray quartzite Sand f g to c g, well graded, dry 75% Gravel, 19% Sand, 5% Silt, 1% Clay
BH0774AE	1 00 /1 00	GM/gw	Sandy Gravel with trace silt and clay (4 8-7 8') Matrix brownish yellow (10 YR 6/6) Gravel f g to c g, up to 7 cm in length Sand f g to c g, moist to wet, water encountered at 6 0' 65% Gravel, 26% Sand, 5% Silt, 4% Clay
BH0775AE, BH0817AE	1 00 /1 00		
BH0776AE	1 00 /1 00		
	0 00 /1 00	NO RECOVERY	No recovery (7 8-9 8')
	0 00 /1 00		
			Total Depth Drilled 9 80

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Well or piezometer construction: 11/17/93

Datum (FT): 5964, 5963, 5962, 5961, 5960, 5959, 5958, 5957, 5956, 5955

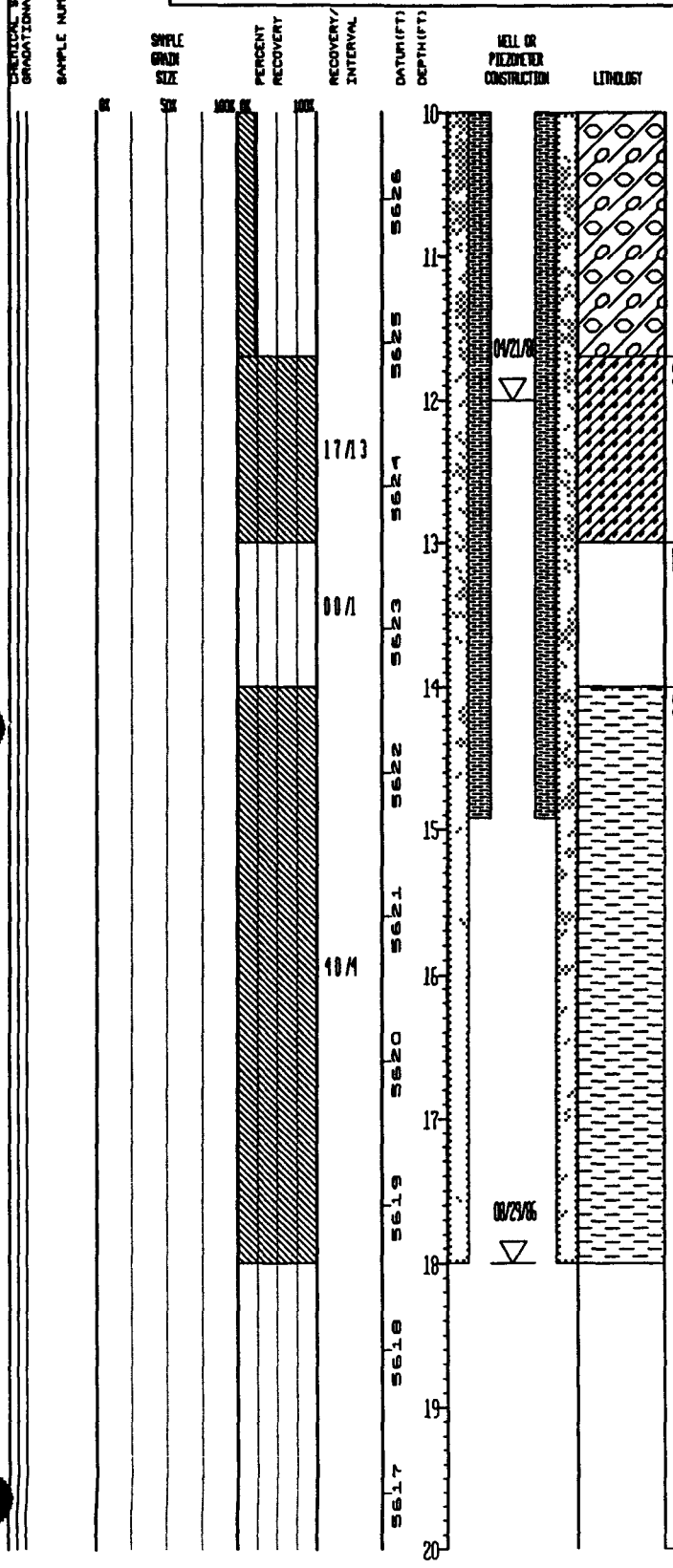
APPENDIX C3.3
OU6 HISTORICAL INVESTIGATIONS BORING LITHOLOGY AND MONITORING WELL CONSTRUCTION LOGS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18	GROUND ELEVATION (FT)	5636 6	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753409	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT	4-86
EAST	2093878	LOCATOR NUMBER U13	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	04/21/86	

REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%	15/15	5636	0			CL	SANDY CLAY, dark yellowish brown (10 YR 4/2), mod plast , some gravel, some roots
						1			SC	Clayey Sand, very pale orange (10 YR 8/2), sub-angular-sub-rounded, poorly graded, increasing clay fraction at bottom 3 2 in of interval, sand is VFG-FG
				15/15	5635	2			SC	Same as above mod yellowish brown (10 YR 5/4), sand is FG-CG, slightly calc
					5634	3			CH	Clay, dark yellowish brown (10 YR 4/2), mod -high plast , some possible root holes (1-4 mm diameter) w/trace of desiccated carb material in holes, abundant iron staining filling micro-fractures, some roots, trace of gravel, some sand
				00/1	5633	4			NO SAMPLE	Removed Aug 13, 1986 by Ward Hurst Sample sent to Chen & Associates
									NO SAMPLE	
				00/25	5632	5				
					5631	6	02/23/87 ▽			
					5630	7			CL	CLAY, dark yellowish brown (10 YR 4/2), est mod plast , some sand MG-FG, v slightly calc
				18/15	5629	8				
					5628	9			GC	Clayey Gravel, dark yellowish brown (10 YR 4/2), sub-angular-sub-rounded, poorly graded, max size = 7 cm
				08/37	5627	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18		GROUND ELEVATION (FT)	5636 6	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753439	AREA BUFFER EAST		CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT	4-86
EAST	2093878	LOCATOR NUMBER	U13	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	04/21/86	
REMARKS	Hollow Stem Auger							



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	Gravelly Clayey Sand, dark yellowish orange (10 YR 6/6), angular-sub-angular, mod graded, sand size = VFG-FG, max gravel size = 7 cm (at base of interval), iron staining as mottles
NO SAMPLE	
SANDY CLAYSTONE	Top of Bedrock Sandy Claystone, light gray (N7) and grayish orange (10 YR 7/4), mod-high plast , sand is VFG-FG, trace of iron staining as mottles and nodules

WELL 4-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS _____

ELEVATION GROUND LEVEL 5645'
TOP OF CASING 5646.75'

DRILLING SUMMARY.

TOTAL DEPTH Well: 14.92' Hole: 18.00'
BOREHOLE DIAMETER 7¼"
DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Doyle Styles)
RIG Mobile B-57
BIT(S) Blade bit
DRILLING FLUID None
SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	3.52'	C1	___	___	___
3.52'	14.92'	S1	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

CASING. C1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed

SCREEN S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.020" wire wrap screen, 0.25' welded bottom cap

CENTRALIZERS Centralizer placed approximately mid-point on screened interval.

FILTER MATERIAL 12-20 silica sand
2.40' - 18.00'

CEMENT Portland Type I
0.00' - 1.95'

OTHER 3/8" bentonite pellets
1.95' - 2.40'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	4/24	1440	4/24	1600
GEOPHYS. LOGGING	—	—	—	—
CASING				
2" stainless	4/24	1725	4/24	1730
FILTER PLACEMENT	4/24	1730	4/24	1810
CEMENTING	4/25	1010	4/25	1020
DEVELOPMENT	8/29	1606	8/29	1606
OTHER				
Bentonite	4/25	1000	4/25	1010

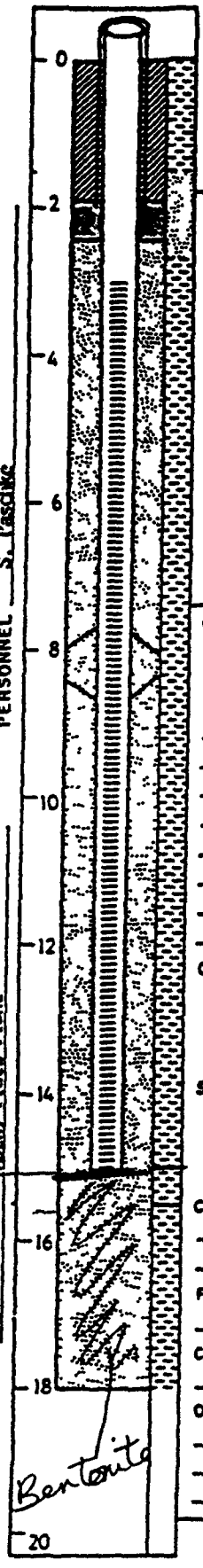
WELL DEVELOPMENT

See Well Development Summary Sheet

COMMENTS:

Water encountered at 12.00' during drillin

Top of stainless steel casing: 1.75'

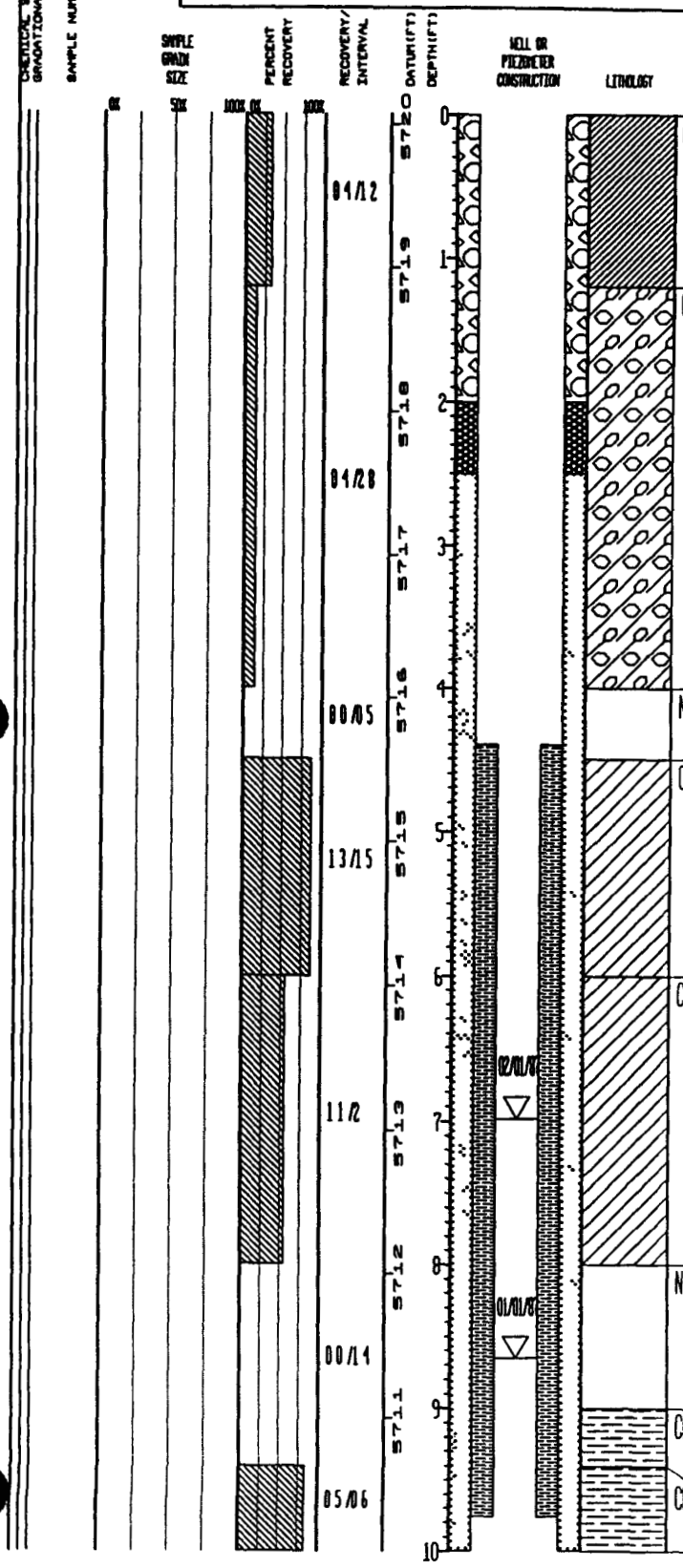


PROJECT 10677.06222 Rocky Flats Plant
PERSONNEL S. Paschke
LOCATION Golden, CO

— Sloan Rd 15.5' on drafted well log incorrectly
14.90' QAF / Ka

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGIST

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5720 07	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753697	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	5-86
EAST	2089803	LOCATOR NUMBER 013	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	04/21/86	
REMARKS	Hollow Stem Auger Cave from TD to 13 0'						



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CH	Silty Clay, pale to dk yellowish brown (10 YR 4/2) Est plast mod to high Abundant roots and grass Trace of VFG sand
GC	Clayey Gravel, no predom color Angular to sub-rounded Poorly graded Max size 6 cm Matrix dk yellowish brown (10 YR 4/2) Silty clay Trace sand VFG to VCG
NO SAMPLE	
CL	GRAVELLY CLAY, dk yellowish brown (10 YR 4/2) Est plast mod to high Some roots and grass Gravel angular to sub-angular Mod to well graded 6 cm Trace sand
CL	Clay, grayish orange to dk yellowish orange (10 YR 7/4 to 6/6) Est plast mod Some sand and gravel Sand VFG to granules, gravel to 1 cm
NO SAMPLE	
CLAYSTONE	Top of Bedrock As above Color dk yellowish brown (10 YR 4/2)
CLAYSTONE	As above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5720 07	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753697	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	5-86
EAST	2089803	LOCATOR NUMBER 013	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	04/21/86	
REMARKS	Hollow Stem Auger Core from 10 to 13 0'						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

0% 50% 100% 0% 100%

DEPTH(FT)	DATUM(FT)	RECOVERY/ INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
10	5710	00/11	NO SAMPLE	
11	5709	05/09	CLAYSTONE	Pale yellowish brown (10 YR 6/2) to dk yellowish orange (10 YR 6/6) Some silt Some iron oxide concretions
12	5708	12/12	CLAYSTONE	Same as above
13	5707			
14	5706			
15	5705			
16	5704			
17	5703			
18	5702			
19	5701			
20				

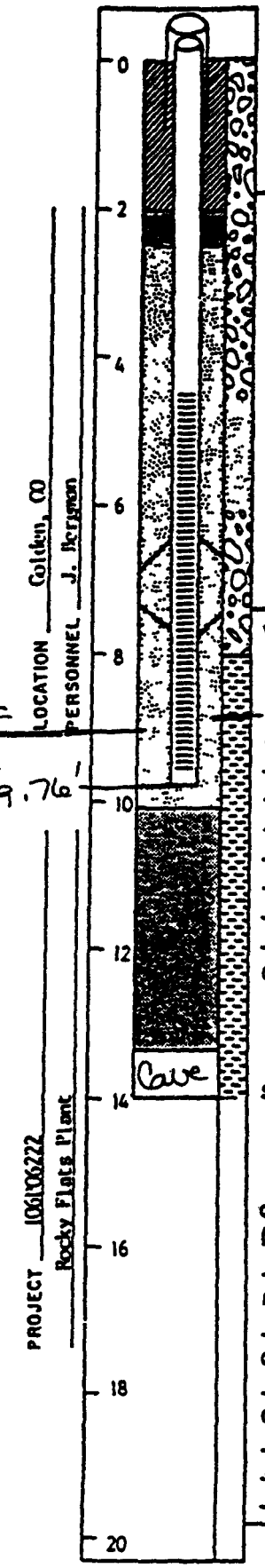
09/08/86 ▽

WELL 5-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: _____

ELEVATION GROUND LEVEL 5714'
TOP OF CASING 5716.50'



DRILLING SUMMARY:

TOTAL DEPTH Well: 9.76' Hole: 14.0'
BOREHOLE DIAMETER 7¼"
DRILLER Boyles Brothers Drilling Co.
15265 W. 5th Avenue
Golden, CO (Tony Robinson)
RIG Acker
BIT(S) Bull nose bit
DRILLING FLUID None
SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN.

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.0'	4.47'	C1			
4.40'	9.76'	S1			

CASING. C1 2" I.D. Sch 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel.
6.54' - 7.71'

FILTER MATERIAL 32-42 silica sand
2.50' - 10.02'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
10.02' - 13.30'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	9/4	1500	9/4	1635
GEOPHYS. LOGGING.	—	—	—	—
CASING.				
2" stainless	9/5	1040	9/5	1045
FILTER PLACEMENT	9/5	1045	9/5	1050
CEMENTING	9/5	1100	9/5	1105
DEVELOPMENT	9/8	1515	9/8	1515
OTHER				
Bentonite	9/5	1050	9/5	1055
	9/5	1035	9/5	1040

WELL DEVELOPMENT

See Well Development Summary Sheets

COMMENTS:

No water encountered during drilling

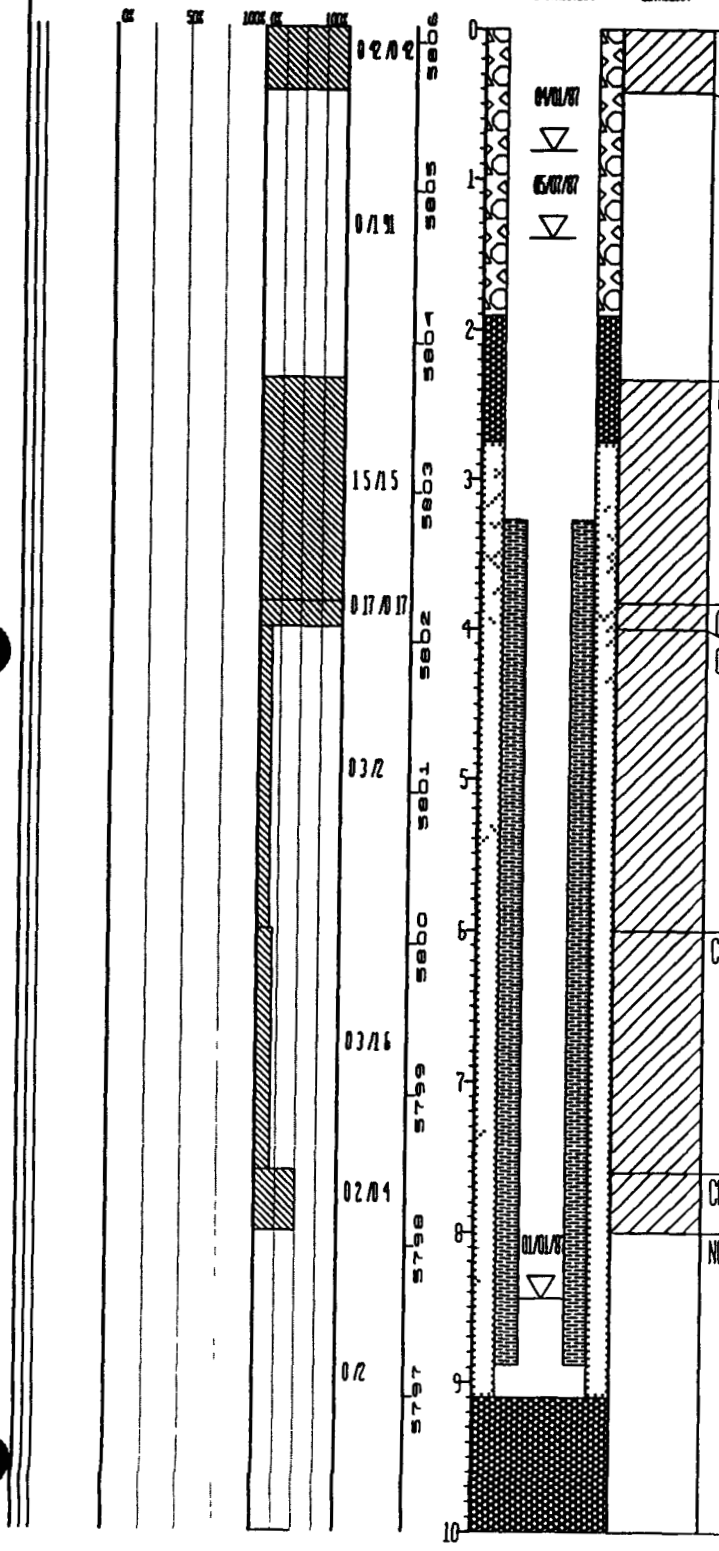
Top of stainless steel casing: 2.50'

Cave from TD to 13.30'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5806 1	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753590	AREA BUFFER NORTH	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	6-86
EAST	2086681	LOCATOR NUMBER N13	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	09/04/86	

REMARKS Hollow Stem Auger Cave from TD to 12 9'

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

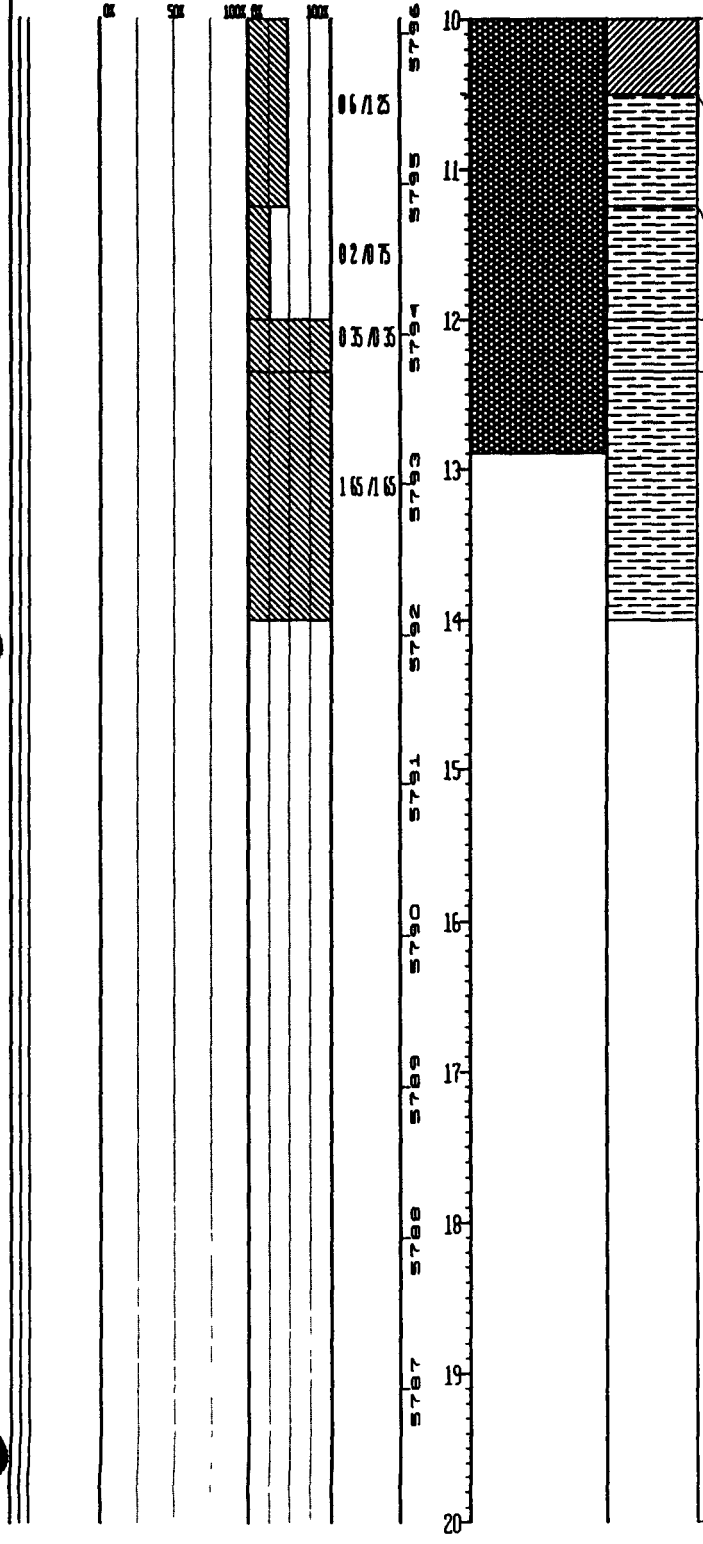


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	CLAY, pale yellowish brown (10 YR 6/2), moderate plasticity (est), some silt and roots
NO SAMPLE	
CL	CLAY, pale yellowish brown (10 YR 6/2), low to moderate plasticity, some silt and gravel, some plant debris in upper 0 3 ft
CL	Same as above
CL	Same as above
CL	CLAY as above with decrease in gravel fraction with depth
CL	Same as above
NO SAMPLE	

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5806 1	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753590	AREA BUFFER NORTH	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	6-86
EAST	2086681	LOCATOR NUMBER N13	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	09/04/86	

REMARKS Hollow Stem Auger Cave From TD to 12 9'

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION



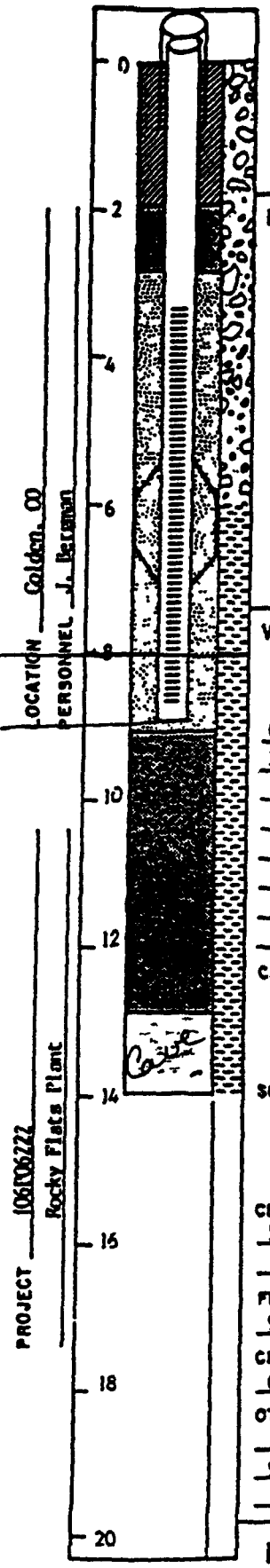
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CH	Clay, light brownish gray (5 YR 6/1), moderately high plasticity, cobble at 10 0 ft, decrease in silt fraction with depth and color change below 11 25 ft to medium light gray (N6)
CLAYSTONE	Top of Bedrock Light brownish gray (5YR 6/1) decrease in silt fraction with depth and color change below 11 25 feet to medium light gray (N6)
CLAYSTONE	Same as above
CLAYSTONE	Same as above
CLAYSTONE	Same as above Note No water encountered while drilling

WELL 6-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS _____

ELEVATION GROUND LEVEL 5814'
TOP OF CASING 5816.50'



0 Qvc
K
r - 8.88'

DRILLING SUMMARY:

TOTAL DEPTH Well: 8 88' Hole 14 0'
BOREHOLE DIAMETER 7¼"
DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Tony Robinson)
RIG Acker
BIT(S) Bull nose bit
DRILLING FLUID None
SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS. GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.0'	3.28'	C1	___	___	___
3 28'	8.88'	S1	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

CASING. C1 2" I D Sch. 5, type 316 stainless steel, threaded and flush jointed.

SCREEN S1 2" I.D Sch. 5, type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0 25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel
5.47' - 6 65'

FILTER MATERIAL 32-42 silica sand
9.10' - 2 75'

CEMENT Portland Type I
0.00' - 1.91'

OTHER 3/8" bentonite pellets
1.91' - 2.75'
9.10' - 12.90'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	9/4	0930	9/4	1140
GEOPHYS. LOGGING	—	—	—	—
CASING				
2" stainless	9/4	1310	9/4	1312
FILTER PLACEMENT	9/4	1312	9/4	1315
CEMENTING	9/4	1340	9/4	1345
DEVELOPMENT	9/8	1515	9/8	1515
OTHER				
Bentonite	9/4	1315	9/4	1320
	9/4	1305	9/4	1310

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

No water encountered during drilling.

Top of stainless steel casing: 2.50'

Cave from TD to 12.90'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15	GROUND ELEVATION (FT)	5712 19	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753323	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	11-86
EAST	2090035	LOCATOR NUMBER R13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	9/05/86	
REMARKS	Hollow Stem Auger						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2/1	5712	0			CH	Clay, pale brown, (5YR 5/2), high plasticity, some silt and roots
				1/1	5711	1				
					5710	2			GC	Clayey Gravel, dominantly light grey (N7), matrix is pale brown (5YR 5/2), sub-angular, moderately graded, max size, 4 cm, some silt, trace of roots
					5709	3			GC	1 cobble, very light gray (N7), rounded, approx 7 cm diam NOTE Lithology is inferred
				03/12	5708	4				
					5707	5				
					5706	6				
					5705	7				
				08/08	5704	8			CL-	GRAVELLY CLAY, dark yellowish brown (10YR 4/2), moderate to low plasticity (est), some silt, trace of sand
				0/05					NO SAMPLE	
				05/1	5703	9			CL	CLAY, dark yellowish brown (10YR 4/2) moderate plasticity, some silt, color grades to yellowish grey (5 YR 7/2) below 9 5 ft
				05/05		10			*CLAYSTONE	Top of Bedrock Dark yellowish brown (10YR 4/2) moderate plasticity, some silt, color

5712.9 9.5
5703.4

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15	GROUND ELEVATION (FT)	5712 19	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753323	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	11-86
EAST	2090035	LOCATOR NUMBER R13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	9/05/86	
REMARKS	Hollow Stem Auger						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
										grades to yellowish gray (5 YR 7/2) below 9 5 ft
				0 5/0 5	5702	10			CLAYSTONE	Same as above
				1 5/1	5701	11			SILTY SANDSTONE	Interval grades to Silty Sandstone, very light gray (N8), bedding not apparent, well weathered, moderate to slightly friable, very fine grained sand, abundant silt, iron staining both locally and on fractures
				1 5/1 5	5700	12			SILTY SANDSTONE	Same as above
				0 8/1	5699	13			SILTY SANDSTONE	Same as above
				1/1	5698	14			SILTY SANDSTONE	Same as above NOTE No water encountered while drilling
					5697	15				
					5696	16				
					5695	17				
					5694	18				
					5693	19				
						20				

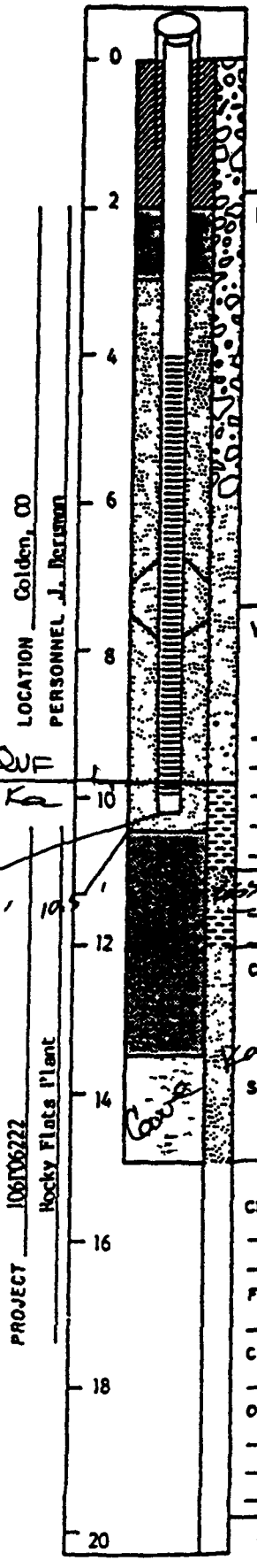
WELL 11-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS. _____

ELEVATION GROUND LEVEL 5723'

TOP OF CASING 5725.50'



DRILLING SUMMARY.

TOTAL DEPTH Well: 10.25' Hole: 15.00'

BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Tony Robinson)

RIG Acker

BIT(S) Bull nose bit

DRILLING FLUID None

SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.0'	3.94'	C1	___	___	___
3.94'	10.25'	S1	___	___	___

CASING. C1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel
6.32' - 7.51'

FILTER MATERIAL 32.42 silica sand
3.00' - 10.50'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 3.00'
10.50' - 13.75'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	9/5	1315	9/5	1600
GEOPHYS. LOGGING	—	—	—	—
CASING				
2" stainless	9/6	1020	9/6	1025
FILTER PLACEMENT	9/6	1025	9/6	1030
CEMENTING	9/6	1045	9/6	1050
DEVELOPMENT	9/8	1500	9/18	1000
OTHER				
Bentonite	9/6	1030	9/6	1035
	9/6	1015	9/6	1020

WELL DEVELOPMENT

See Well Development Summary Sheets

COMMENTS:

No water encountered during drilling

Top of stainless steel casing: 2.50'

Cave from TD to 13.75'

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	16	GROUND ELEVATION (FT)	5777 88	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	752345	AREA BUFFER EAST		CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	12-86
EAST	2087891	LOCATOR NUMBER	012	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	09/06/86	
REMARKS	Hollow Stem Auger							

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		OX	100% OX	11/2	5777	0			CL	SILTY CLAY, dark yellowish brown (10 YR 4/2), est plast mod Abundant surficial grass and root material Some VF to FG sand
						1				
							10/13/86			
					5776	2			CL	SILTY GRAVELLY CLAY, dark yellowish brown (10 YR 4/2), est plast mod Gravel angular to sub-rounded, mod well graded, (1 cm to 5 cm), some spotty iron staining More gravel toward bottom Trace root material
				19/2	5775	3	09/08/86			
							09/25/86			
					5774	4				
									NO SAMPLE	
				0/17	5773	5				
						6			GW	Clayey Gravel, cannot determine gravel color Mod well graded granules to 6 5 cm sub-angular to sub-rounded Matrix mod yellowish brown (10 YR 5/4) Some silt
				04/03	5772					
									NO SAMPLE	
				0/14	5771	7				
									GC	Clayey Gravel, no predom gravel color Angular to sub-angular Poorly graded Max size 5 5 cm Matrix dark yellowish brown (10 YR 4/2) Some silt and VFG sand
				07/06	5770	8				
									GC	Clayey Gravel, no predom gravel color sub-angular to rounded Mod well graded Granules to 6 cm Matrix grayish orange (10 YR 7/4) Est plasticity mod to high Some silt and sand VFG to VCG
				15/2	5769	9				
					5768	10				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 16	GROUND ELEVATION (FT)	5777 88	PROJECT NUMBER	667 11	LOG OF BORING NUMBER	
NORTH 75245	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA		12-86
EAST 2087894	LOCATOR NUMBER 012	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	09/06/86		
REMARKS Hollow Stem Auger							

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	100% 100%	14/1	5767	10			GC	Clayey Gravel, no predom gravel color sub-angular to rounded Mod well graded Granules to 6 cm Matrix grayish orange (10 YR 7/4) Est plast mod, some silt and sand, VFG to VCG
				14/1	5766	11			SILTY CLAYSTONE	Top of Bedrock Light olive gray (5 Y 6/1) to dark yellowish orange (10 YR 6/6) Est plast mod Possible highly weathered claystone Some iron staining
				15/2	5765	12			SILTY CLAYSTONE	Same as above
				19/2	5764	13				
					5763	14			CLAYSTONE	Light brownish gray (5 YR 6/1) to light brown (5 YR 5/6) Est plast mod to high Some iron staining and iron concretions Some carb material
					5762	15				
					5761	16				
					5760	17				
					5759	18				
					5758	19				
						20				

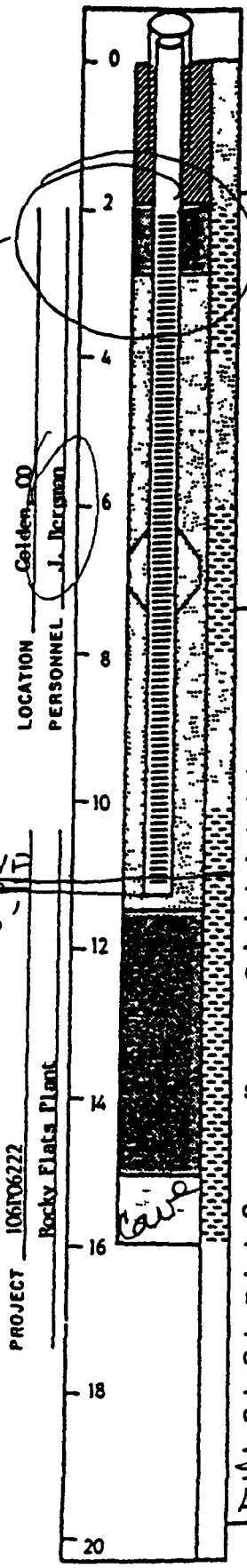
WELL 12-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: _____

ELEVATION GROUND LEVEL 5788'

TOP OF CASING 5790 50'



DRILLING SUMMARY

TOTAL DEPTH Well: 11.30' Hole: 16.00'

BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co
15865 W. 5th Avenue
Golden, CO (Tony Robinson)

RIG Acker

BIT(S) Bull nose bit

DRILLING FLUID None

SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0 0'	–	2 04'	C1		
2 04'	–	11.3'	S1		

CASING C1 2" I D Sch 5 type 316 stainless steel threaded and flush joined.

SCREEN S1 2" I.D. Sch 5 type 316 stainless steel, threaded and flush joined 0.010" wire wrap screen 0.25' welded bottom cap.

CENTRALIZERS Type 3¼ stainless steel
6 18' – 7 36'

FILTER MATERIAL 32-42 silica sand
2 40' – ~~11.30'~~ ~~11.50'~~ 11.50'

CEMENT Portland Type I
0 00' – 2.00'

OTHER 3/8" bentonite pellets
2.00' – 2.40'
~~11.30' – 11.50'~~ 15.10
11.50' – 15 10'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING 7¼" auger	9/6	1315	9/6	1500
GEOPHYS. LOGGING	—	—	—	—
CASING 2" stainless	9/6	1655	9/6	1600
FILTER PLACEMENT	9/6	1700	9/6	1730
CEMENTING	9/6	1735	9/6	1740
DEVELOPMENT.	9/8	1345	9/9	1505
OTHER Bentonite	9/6	1730	9/6	1735
	9/6	1650	9/5	1655

WELL DEVELOPMENT

See Well Development Summary Sheets

COMMENTS.

Water encountered at 9.0' during drilling

Top of stainless steel casing 2 50'

Cave from TD to 15 10'

HYDRO-SEARCH RENO-DENVER CONSULTING HYDROLOGISTS-GEOLOGIST

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 5	GROUND ELEVATION (FT)	5837 22	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751869	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	13-86
EAST	2086055	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/20/86	
REMARKS	Hollow Stem Auger						

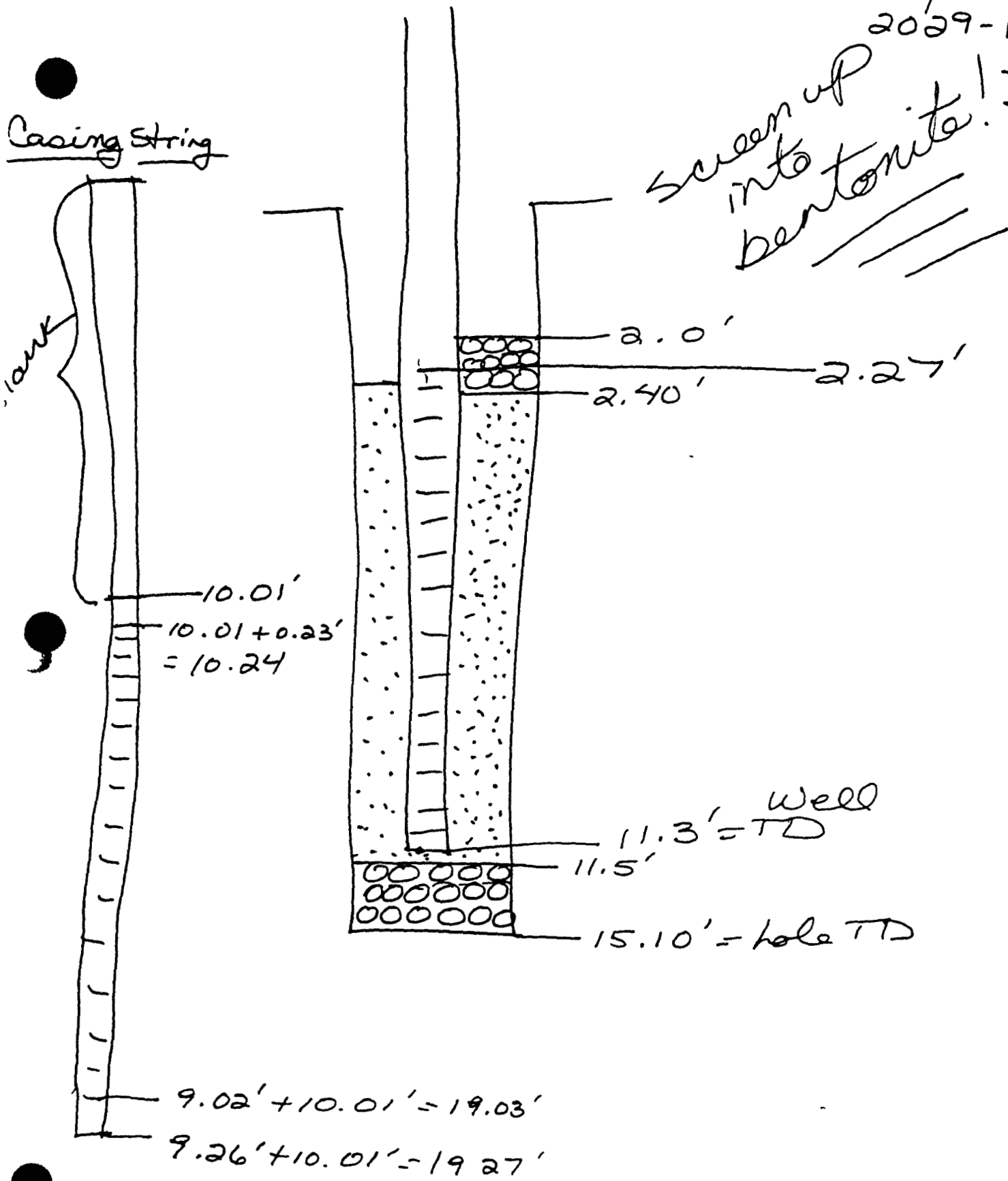
CHEMICAL SAMPLE DEPTH / BACKGROUND SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT) / DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				16/5	5837			CH	Clay, light brownish gray (5 YR 6/1), moderately high plasticity, some sand and gravel
				16/3	5832	08/20/86		CH	Same as above Two larger pebbles occur at approx 7 8 ft
				03/1	5830	11/26/86		CH	Clay, light gray (N 7), high plasticity, some silt, possibly highly weathered bedrock
				15/15	5828			CLAYSTONE	Top of Bedrock Light gray (N 7), high plasticity, some silt, possibly highly weathered bedrock

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 15 5	GROUND ELEVATION (FT)	5837 22	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751869	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	13-86
EAST	2086055	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/20/86	

REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	100% 0% 100%	17/25	5827	10				
					5826	11			CLAYSTONE	Same as above
					5825	12				
					5824	13			CLAYSTONE	Moderate yellowish brown (10 YR 5/4), moderate plasticity, some silt, some iron staining locally Silt fraction increases at 13 0 ft
				25/25	5823	14				
					5822	15				
					5821	16				
					5820	17				
					5819	18				
					5818	19				
						20				

4/17/87
2029-13-06



~~19.7 - 11.3 = 8.4'~~ 19.27' - 10.24' = 9.03' = SI length

TD = 11.3 - 9.03' = 2.27' to top of screen

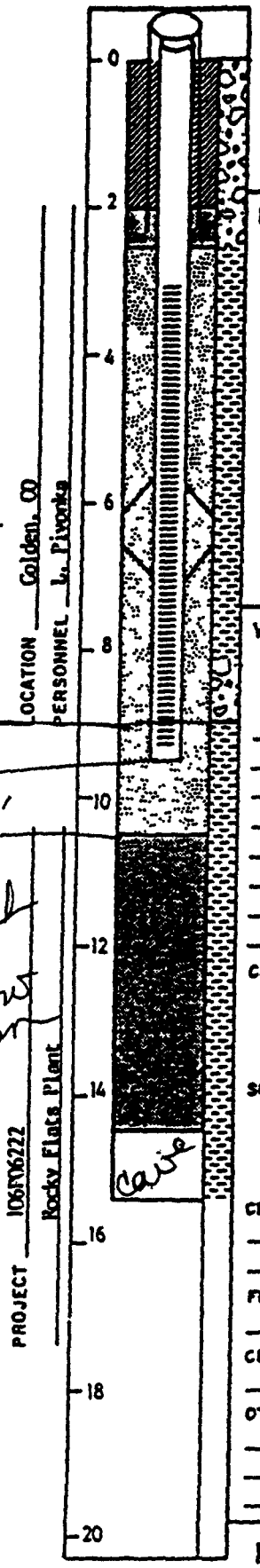
Find Loc.

WELL 13-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS N. 751857 E. 2086051

ELEVATION GROUND LEVEL 5838'
TOP OF CASING 5840.51'



20' QVF
Ka
10'
=9.5'
10.5'

too much sand below screen

DRILLING SUMMARY.

TOTAL DEPTH Well: 9.50' Hole: 15.50'
BOREHOLE DIAMETER 7¼"
DRILLER Bowles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Jim Horn)
RIG Mobile B-57
BIT(S) Bull nose bit
DRILLING FLUID None
SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN					
0.00'	3.09'	C1			
3.09'	9.50'	S1			

CASING: C1 2" I.D. Sch 5 type 316 stainless steel threaded and flush jointed.

SCREEN S1 2" I.D. Sch 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
5.79' - 6.96'

FILTER MATERIAL 16-40 silica sand
2.50' - 10.50'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
10.50' - 14.50'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING:				
7¼" auger	8/20	1230	8/20	1340
GEOPHYS. LOGGING.	—	—	—	—
CASING				
2" stainless	8/20	1607	8/20	1609
FILTER PLACEMENT	8/20	1609	8/20	1623
CEMENTING	8/20	1630	8/20	1641
DEVELOPMENT	9/3	1035	9/3	1035
OTHER				
Bentonite	8/20	1623	8/20	1625
	8/20	1605	8/20	1607

WELL DEVELOPMENT

See Well Development Summary Sheets

COMMENTS.

Water encountered at 5.6' during drillin

Top of stainless steel casing: 2.51'

Cave from TD to 14.50'

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGIS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085841	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Recovery/Interval	Datum (FT)	Unified Soils Classification or Rock Type	Description
43/47	5844, 5843, 5842, 5841, 5840	CH	Silty Clay, mod yellowish brown (10 YR 5/4) and light brownish gray mottled (5 YR 6/1) Some VFG sand, some gravel near surface, avg size 2 cm Trace CaCO3 in stringers Est plasticity mod to high
43/33	5839, 5838, 5837	CH	Same as above Sand VFG to VCG Also has some root materials Some iron staining (spotty)
34/25	5836, 5835	CH	Same as above Trace gravel, to 5 5 cm

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085841	LOCATOR NUMBER MLI	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIEVE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%			10				
				85/85	sb34	11			CL	SILTY CLAY, grayish orange (10 YR 7/4) to very light gray (N 8) Est plast low to mod
				22/1	sb33	12			SILTY CLAYSTONE	Top of Bedrock Grayish orange (10 YR 7/4) to very light gray (N 8) Est plast low to mod
					sb32	13			SILTY CLAYSTONE	Same as above
				33/1	sb31	14				
					sb30	15				
					sb29	16				
					sb28	17	09/08/86 ▽		SILTY CLAYSTONE	Pale yellowish brown (10 YR 6/2) Est plast low to mod Trace iron staining, trace carb material
				13/1	sb27	18			SILTY CLAYSTONE	Same as above
					sb26	19	09/05/86 ▽			
					sb25	20				

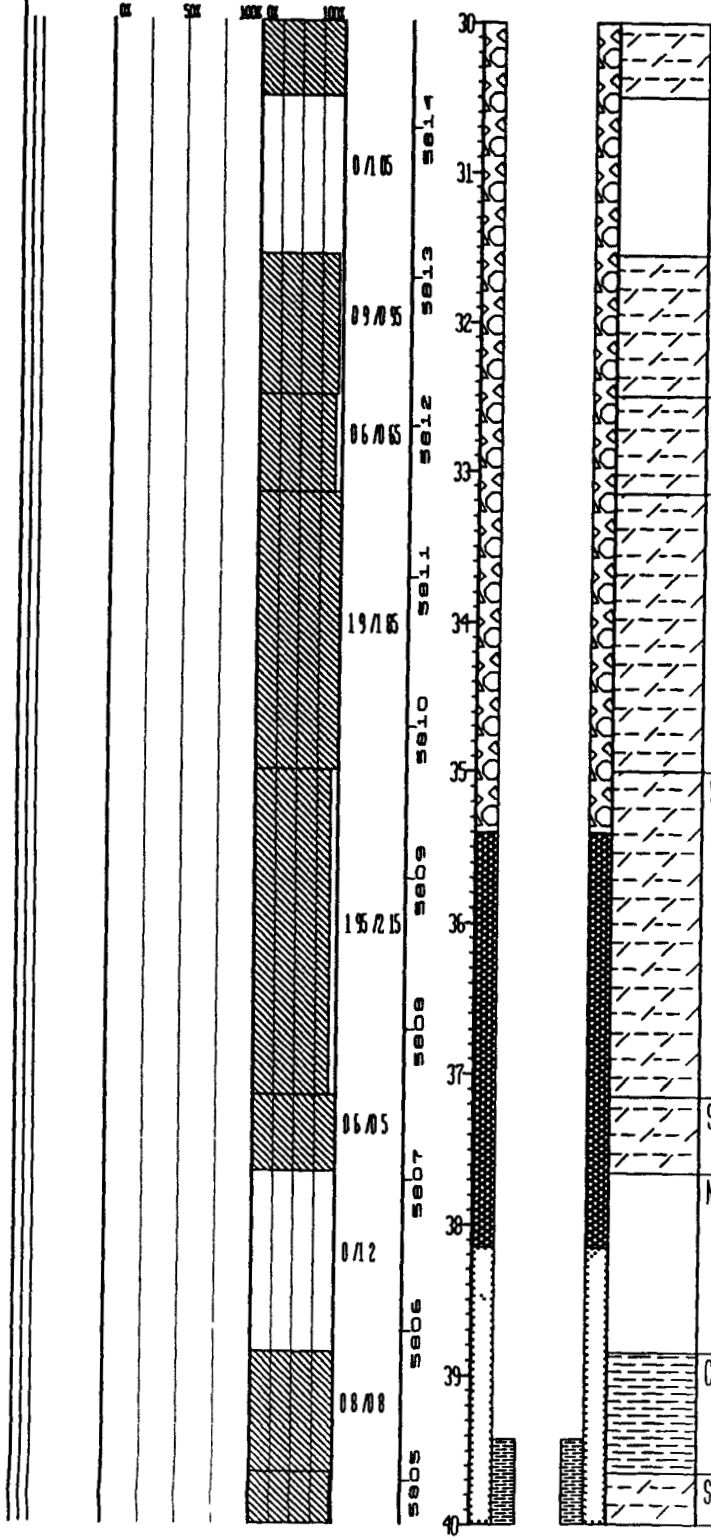
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085841	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				19/5	5824	20				
						21				
					5823	22				
					5822	23	09/09/86 ▽			NO SAMPLE
				0/0 29						
					5821	24				SILTY CLAYSTONE Dark yellowish brown (10 YR 4/2) to brownish gray (5 YR 4/1) Est plast low to moderate
				09/22	5820	25				
					5819	26				SILTY CLAYSTONE Light brownish gray to brownish gray Highly weathered, mod to highly friable Bedding appears massive Some grayish orange (10 YR 7/4) siltier areas
				33/25	5818	27				
					5817	28				SILTY CLAYSTONE Same as above, trace iron staining
					5816	29				
				25/25	5815	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085841	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	
REMARKS	Hollow Stem Auger/NC Core						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
NO SAMPLE	
SILTY CLAYSTONE	Light olive gray (5 Y 6/1), slightly weathered, slightly friable Bedding appears massive
SILTY CLAYSTONE	Same as above
SILTY CLAYSTONE	Same as above, silt fraction decreases in middle of interval, but increases again at bottom
SILTY CLAYSTONE	Same as above
SILTY CLAYSTONE	Same as above, some carbonaceous material (probably wood fragment)
NO SAMPLE	
CLAYSTONE	Light olive gray (5 Y 6/1) Slightly weathered, slightly friable Bedding appears massive Trace iron staining around tiny pieces (VCG sized) of probable iron
SILTY CLAYSTONE	Light olive gray (5 Y 6/1) Slightly weathered, slightly friable

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA	SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LMA	14-86
EAST	2085841	LOCATOR NUMBER	NLL	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

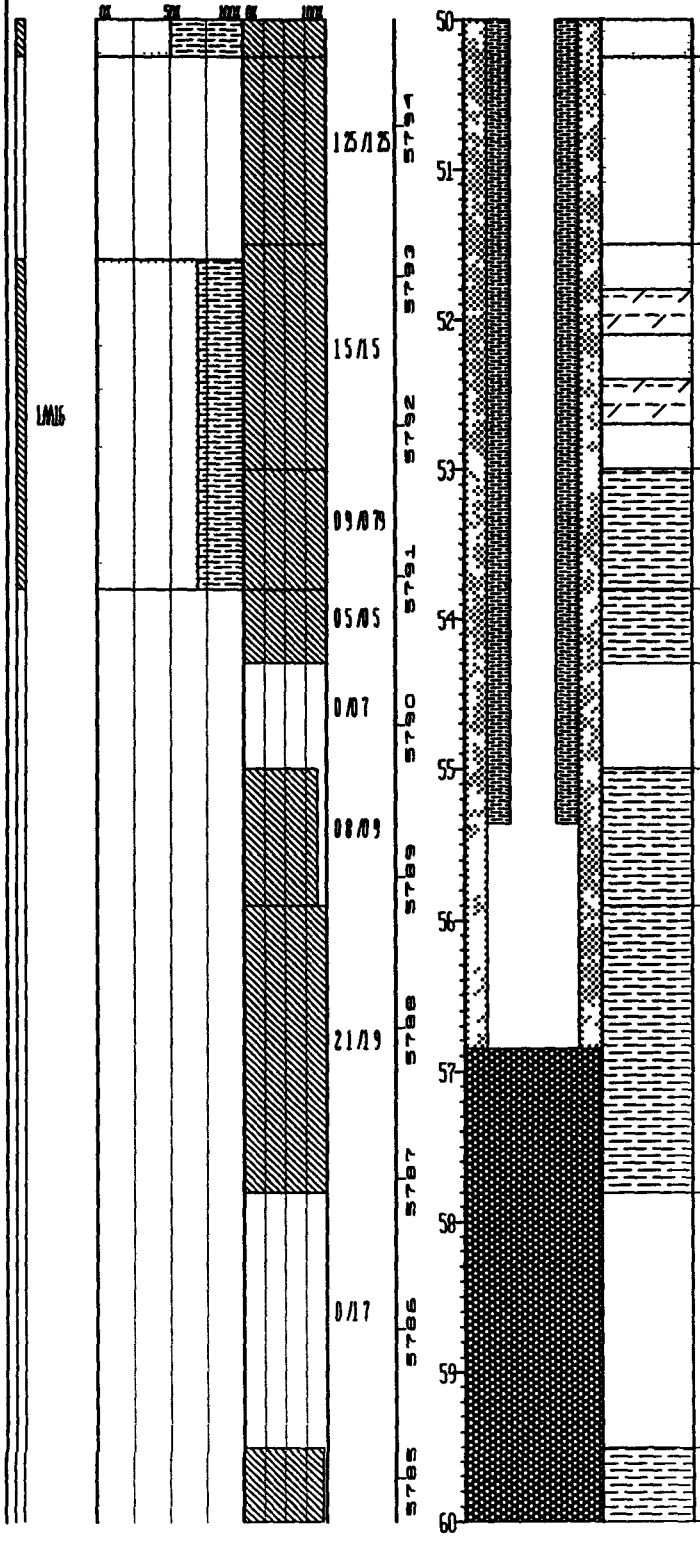
REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / BROADTIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SDS MDST/CLY LDST								Bedding appears massive
				1.6/1.65	sab4	40				
						41			SILTY CLAYSTONE	Same as above Top 4 in of interval is olive black (5 Y 2/1) The rest is same as above Trace carb material Slightly siltier
				1.2/1.18	sab3	42				
	62163			0.5/0.52	sab2	43			SILTY CLAYSTONE	Yellowish gray (5 Y 8/1) Slightly weathered, slightly friable Massive bedding Some VFG sand
				3.6/3.5	sab0	44			SILTY CLAYSTONE	Same as above Begins to show thin-layered bedding (< 1 mm) toward bottom of interval Some carb material, probably wood fragments
					5799	45				
	62161				5798	46				
				1.85/1.85	5797	47			SILTSTONE	Pinkish gray (5 YR 8/1) Slightly weathered, slightly friable Thin layered bedding (< 1 mm to 1 in), some VFG sand in layers Thin layers of carb material approx 1 to 2 mm One of these layers cuts through bedding at 50 degrees
				0.65/0.65	5796	48				
	LM15					49			SILTSTONE	Same as above
				1.3/1.25	5795	50			SANDSTONE	VFG w/abundant carb material

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085841	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

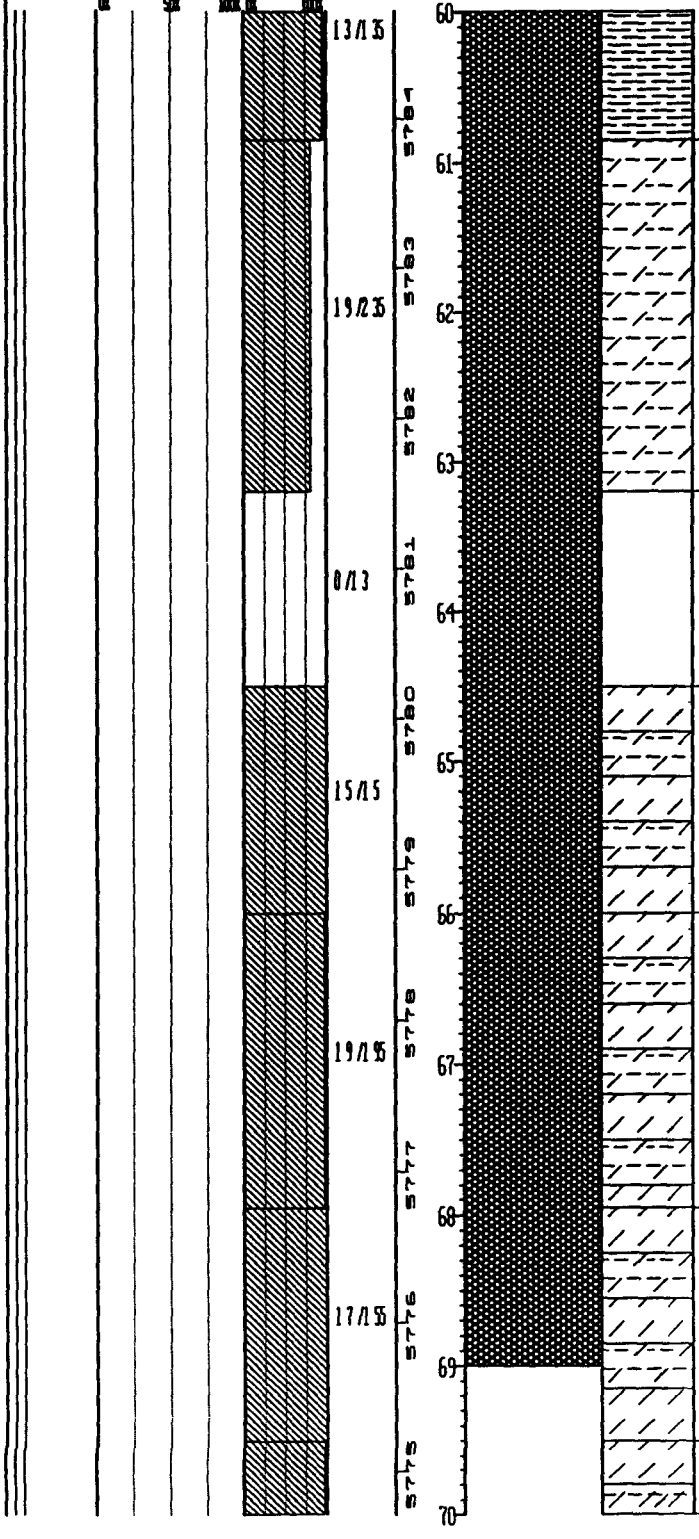


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SANDSTONE	Pinkish gray (5 YR 8/1) Mod weathered, slightly to mod friable Thin layered bedding, some cross bedding, visible (horizontal to approx 25 degrees) Some carb material toward bottom of interval Some VFG sand Trace iron staining
SANDSTONE	Same as above interbedded with very thin layers of Silty Claystone One 4 in section of med grained Sandstone
CLAYSTONE	Brownish gray to olive gray (5YR 4/1 to 5Y 4/1), mod weathered, slightly friable, bedding not evident
CLAYSTONE	Same as above
NO SAMPLE	
CLAYSTONE	Brownish gray to olive gray (5 YR 4/1 to 5 Y 4/1), mod weathered, slightly friable, bedding not evident Some silt, trace VFG sand in very small bodies Trace iron staining
CLAYSTONE	Same as above, some silt
NO SAMPLE	
CLAYSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5	GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751868	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	14-86
EAST	2085842	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



SILTY CLAYSTONE	Brownish gray (5 YR 4/1) Mod weathered, mod friable Core too broken to determine bedding Trace iron staining
NO SAMPLE	
SILTSTONE	Interbedded Siltstone and Silty Claystone, pinkish gray (5 YR 8/1) to olive gray (5 Y 4/1) Thin layers 1 mm to 5 mm Bedding horizontal to 30 degrees Mod weathered, slightly friable Some VF G sand in silt layers Some iron staining
SILTSTONE	Same as above
SILTSTONE	Same as above
SILTSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 74 5		GROUND ELEVATION (FT)	5844 71	PROJECT NUMBER	667 11
NORTH	751868	AREA SOLAR POND		CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA
EAST	2085841	LOCATOR NUMBER	M11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/28/86

REMARKS Hollow Stem Auger/NC Core

LOG OF BORING NUMBER

14-86

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

RECOVERY/INTERVAL	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
1 85/1 9	70		
	71		
1 8/1 9	72	SILTY CLAYSTONE	Light olive gray to olive gray (5 Y 6/1 to 4/1) Slightly weathered, mod to slightly friable Bedding not evident Some carbonaceous material and leaf prints Silt lense 1 in X 2 in near top, grayish orange to med brown (10 YR 7/4 to 5 YR 2/4)
	73		
0 7/0 64	73	SILTY CLAYSTONE	Same as above No silt lense
0/0 55	74	NO SAMPLE	
	75		
	76		
	77		
	78		
	79		
	80		

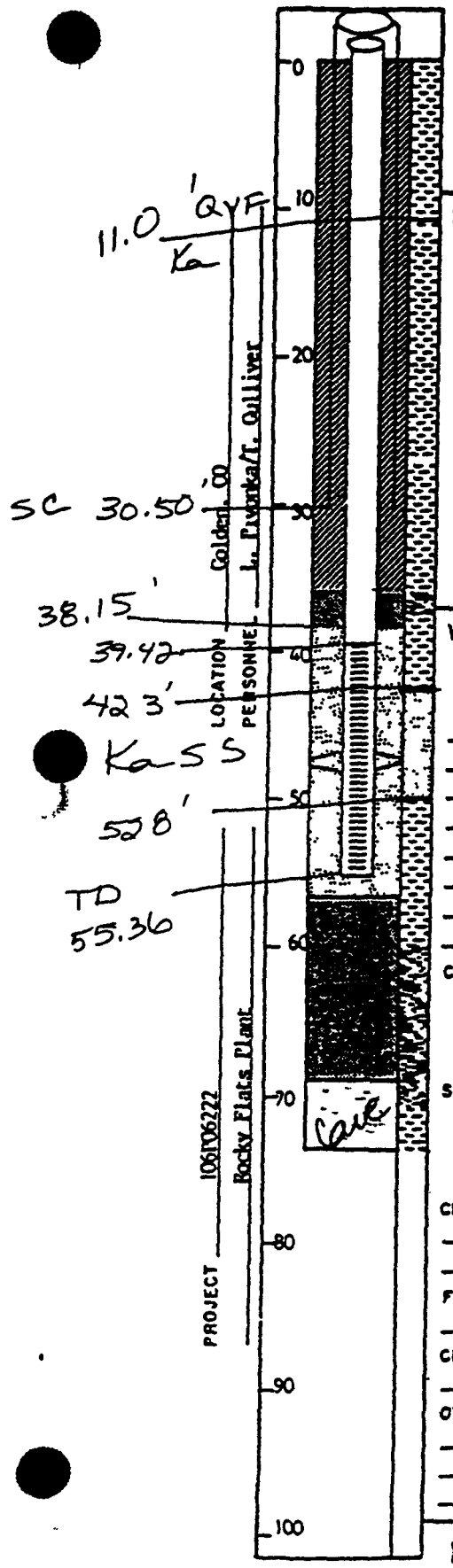
Elevation scale: 5774, 5773, 5772, 5771, 5770, 5769, 5768, 5767, 5766, 5765

WELL 14-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS N. 751855.6 E 2085838

ELEVATION GROUND LEVEL 5846'
TOP OF CASING 5848 22'



DRILLING SUMMARY.

TOTAL DEPTH Well: 55.36' Hole: 74.00'

BOREHOLE DIAMETER 0.00' - 30 50': 7¼"
30.50' - 74.00': 4 3/4"

DRILLER Boyles Brothers Drilling Co
15865 W. 5th Avenue, Golden, CO
(Jim Horn, Paul Wiebe)

RIG 17.00' - 30.50' Mobile B-57, 30.50' - 74.00': Failing 1500

BIT(S) 0.00' - 30 50': Blade bit; 30.00' - 74.00': Christensen 3 3/4", Tricone 4 3/4" reamer

DRILLING FLUID 0 00' - 30 50': None
30.50' - 74.00': air/water mist

SURFACE CASING 5" x 33 16 steel w/locking Cap

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	8/19	1300	8/19	1610
NC core	8/29	0838	8/29	1343
Reaming	9/3	0900	9/3	0917
GEOPHYS. LOGGING	—	—	—	—
CASING				
5" steel	8/19	1625	8/20	1008
2" stainless	9/3	1100	9/3	1105
FILTER PLACEMENT	9/3	1105	9/3	1200
CEMENTING	9/3	1200	9/3	1230
DEVELOPMENT	9/5	1130	9/17	1100
OTHER				
Bentonite	9/3	1200	9/3	1202
	9/3	0925	9/3	1020
Packer testing	9/2	1100	9/2	1700
Cementing 5" steel	8/20	1008	8/20	1030

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	30 50'	C1			
0.00'	39 42'	C2			
39.42'	55.36'	S1			

CASING C1 5" I.D. steel surface casing.
C2 2" I.D. Sch. 5, type 316 stainless steel, threaded and flush jointed.

SCREEN S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
46.79' - 48.02'

FILTER MATERIAL 32-42 silica sand: 38 15' - 55.36'; 16-20 silica sand 55.36' - 56 85'

CEMENT Portland Type I
0 00' - 35.40'

OTHER 3/8" bentonite pellets
35 40' - 38 15'
56 85' - 69 00'

WELL DEVELOPMENT

See Well Development Summary Sheet

COMMENTS:

No water encountered during drilling

Top of stainless steel casing 2 22'

Cave from TD to 69 00'

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGIST

too much screen + sand - SI too large

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18	GROUND ELEVATION (FT)	5845 61	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751865	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	15-86
EAST	2065815	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/18/86	

REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				17/5	5845	0			CL	SILTY CLAY, dusky yellowish brown (10 YR 2/2) Est plast moderate Root material exists in top 1 8 ft Some sand and gravel exist throughout interval Sand VFG to coarse Gravel from approx 1 cm to 5 5 cm Sub-angular to rounded Matrix slightly calcareous in localized areas
					5844	1				
						2				
					5843	3				
					5842	4				
				14/1	5841	5	08/18/86 08/18/86		CL	GRAVELLY SILTY CLAY, dark yellowish brown (10 YR 4/2) Est plast moderate Gravel angular to sub-rounded Mod well graded 1 cm to 6 cm Some sand, VFG to coarse Some staining in matrix
					5840	6				
					5839	7	08/18/86		CH	Silty Clay, brownish gray (5 YR 4/2) grading to dark yellowish brown (10 YR 4/2) Est plast mod to high Becomes gravelly toward bottom Angular to sub-angular Grading not visible in matrix Sand FG to granules Trace carb material
				89/2	5838	8				
					5837	9			CL	GRAVELLY SILTY CLAY, dark yellowish brown (10 YR 4/2) Est plast moderate Gravel angular to sub-rounded Mod well graded Max size 5 cm Some sand VFG to VCG
				185/25	5836	10				

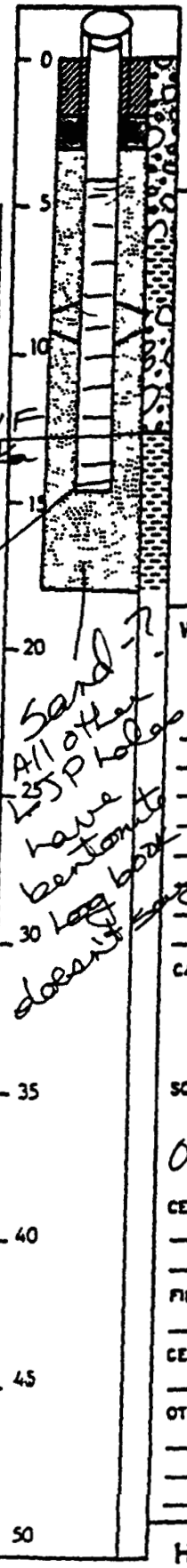
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18	GROUND ELEVATION (FT)	5845 61	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751865	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LMA	15-86
EAST	2085815	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	7 1/4	DATE DRILLED	08/18/86	

REMARKS Hollow Stem Auger

CRITICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			10				
				0.6/1	5835	11			CL	GRAVELLY SILTY CLAY, dark yellowish brown (10 YR 4/2) Est plast moderate Gravel angular to sub-rounded Mod well graded Max size 3 cm Some sand VFG to VCG
	LM13			0.5/1	5834	12			GC	Clayey Sandy Gravel Cannot determine gravel color Sub-angular to sub-rounded Mod well sorted to 4 5 cm Matrix dark yellowish brown (10 YR 4/2) to light gray (N 7) Est plast low to mod Sand VFG to coarse Some silt
				0.3/0.5	5833	13			SILTY CLAYSTONE	Top of Bedrock Light brownish gray (5 YR 6/1) Est plast mod to high
				0.6/0.8	5832				SILTY CLAYSTONE	Same as above
				1.3/1.7	5831	14			SILTY CLAYSTONE	Grayish brown (5 YR 3/2) Est plast moderate Trace carb material Trace VFG sand
					5830	15				
				3/2.5	5829	16			SILTY CLAYSTONE	Pale yellowish brown (10 YR 6/2) Est plast mod Some iron staining throughout matrix Some black carb material
					5828	17				
					5827	18				
					5826	19				
						20				

WELL 15-86

WELL CONSTRUCTION SUMMARY



LOCATION Golden, Co

PERSONNEL D. Pivonka

PROJECT 106106222 Rocky Flats Plant

12.5' QVF

TD 14.44

Sand - ? All other LSP holes have bentonite log book doesn't say

LOCATION or COORDS:

ELEVATION GROUND LEVEL 5847'

TOP OF CASING 5849 69'

DRILLING SUMMARY:

TOTAL DEPTH Well: ~~14.69'~~ 14.44 Hole: 18.00'

BOREHOLE DIAMETER 7½"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Jim Horn)

RIG Mobile B-57

BIT(S) Bull nose bit

DRILLING FLUID None

SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	4.09'	C1
4.09'	14.69'	S1

CASING: C1 2" I.D. Sch. 5 type 316 stainless steel threaded and flush jointed.

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed. ~~0.010"~~ 0.020" wire wrap screen 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel
8.34' - 9.52'

FILTER MATERIAL 12-20 silica sand
3.00' - 18.00'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 3.00'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING. 7½" auger	8/18	1405	8/18	1705
GEOPHYS. LOGGING	—	—	—	—
CASING. 2" stainless	8/18	1705	8/18	1707
FILTER PLACEMENT	8/18	1707	8/18	1720
CEMENTING	8/18	1725	8/18	1730
DEVELOPMENT	8/27	1205	9/9	1000
OTHER Bentonite	8/18	1720	8/18	1722

WELL DEVELOPMENT

See Well Development Summary Sheet

COMMENTS:

Water encountered at 6.5' during drilling

Top of stainless steel casing: 2.69'

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGISTS

SI too deep

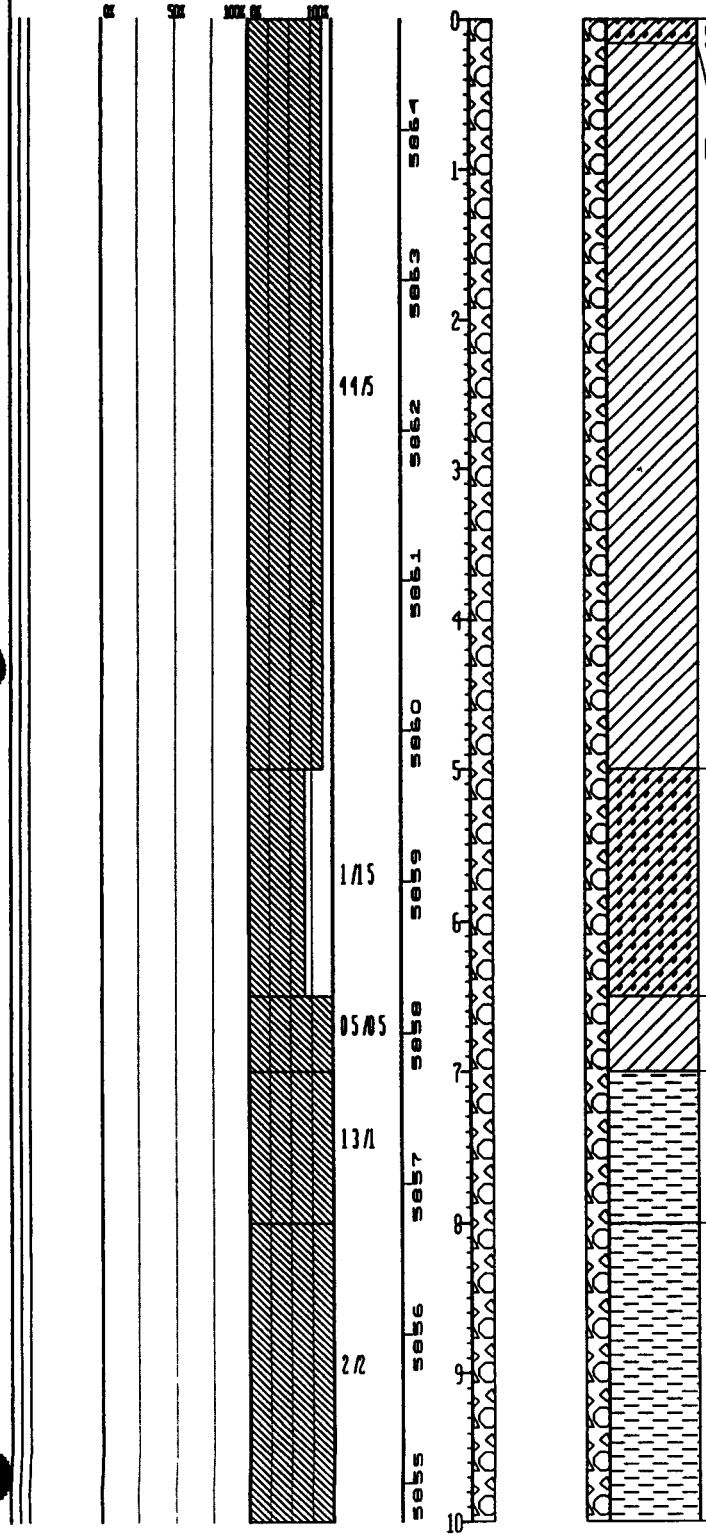
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 64		GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11
NORTH	751762	AREA SOLAR POND		CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT
EAST	2085263	LOCATOR NUMBER	M11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86

REMARKS Hollow Stem Auger/NC Core

LOG OF BORING NUMBER

16-86

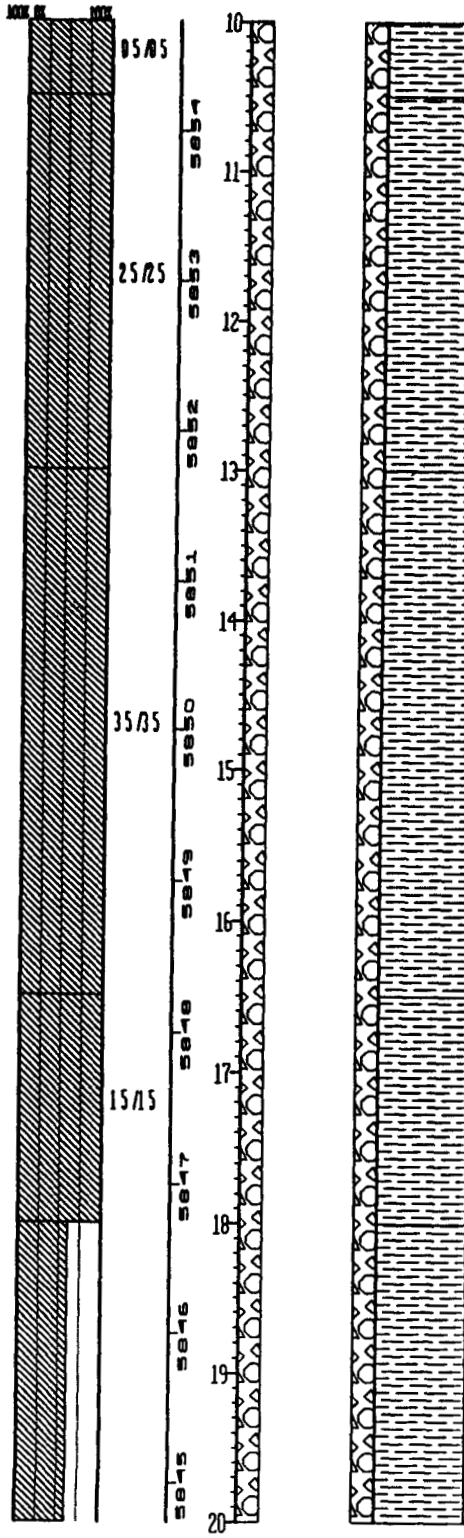
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



Unified Soils Classification or Rock Type	Description
SC	Gravelly Clayey Sand, pale yellowish brown (10YR 6/2), angular to sub-angular, mod grading, max gravel size = 3 cm, some roots and grass at surface, slightly calc
CL	GRAVELLY SANDY CLAY, (possibly highly weathered claystone - well consolidated), brownish gray (5YR 4/1), mod plast, max gravel size 5 cm, trace of iron staining as concretions (two approx 1 cm diameter) and mottles, trace of calcite in upper part of interval, increased sand fraction in bottom 2 in of interval
SC	Gravelly Clayey Sand - grayish orange (10YR 7/4), sub-angular to sub-rounded, mod to well graded, FG - CG sand, max gravel size = 6 cm, some silt
CL	SANDY CLAY - light olive gray (5Y 6/1), est mod plast, iron staining as nodules and mottles, trace of gravel, sand is FG - MG
SANDY CLAYSTONE	Top of Bedrock Olive gray (5Y 4/1)
SANDY CLAYSTONE	Same as above, light olive gray (5Y 6/1)

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 64	GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751762	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT	16-86
EAST	2085263	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86	
REMARKS	Hollow Stem Auger/NC Core						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50%) | PERCENT RECOVERY (100% 0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Light olive gray (5Y 6/1), mod to high plast, trace of iron staining as mottles, floury texture
CLAYSTONE	Same as above, trace of calcite
CLAYSTONE	Top 1 ft same as above Bottom of interval same as above, yellowish gray (5Y 8/1), more consolidated texture
CLAYSTONE	Top 1 ft same as above Bottom of interval same as above, light gray (N7), floury texture
CLAYSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	64	GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751762	AREA	SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT	16-86
EAST	2085263	LOCATOR NUMBER	NLL	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / RADIATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	ROCK CR	WOOD						
				3/5	5844	20				
						21				
					5843	22				
					5842	23			CLAYSTONE	Olive gray (5Y 4/1), mod-high plast , some iron staining as mottles, trace carb material, floury texture
					5841	24				
				1/3	5840	25				
					5839	26			NO SAMPLE	
				0/0 1	5838	27			SILTY CLAYSTONE	Olive gray (5Y 4/1), bedding is non apparent, well weathered, mod friable, some iron staining as mottles, some carb material esp in top of interval, base of interval is highly fractured at undeterminable angles, trace of calc material in fractures, some white non calc mineralization
				2 1/2 1	5837	28				
					5836	29			SILTY CLAYSTONE	Same as above, floury texture at top of interval
					5835	30				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 64	GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11	LOG OF BORING NUMBER	
NORTH 751762	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT		16-86
EAST 2085263	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86		
REMARKS Hollow Stem Auger/NC Core							

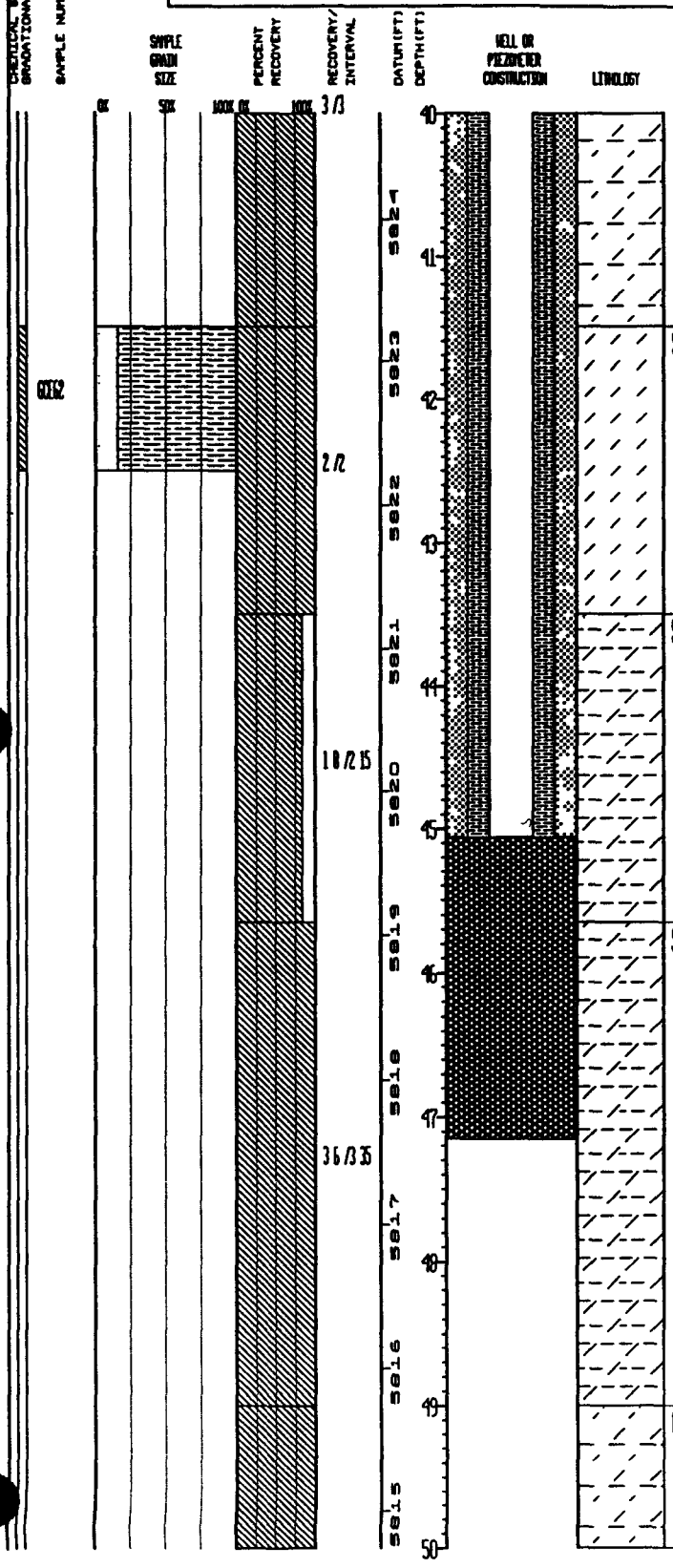
CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	4.7/4.7	5834	30				
						31				
					5833	32				
					5832	33				
				0.8/0.8	5831	34			CLAYSTONE	Olive gray (5Y 4/1), non-apparent bedding, highly weathered, mod friable, trace of carb material, core is broken up
				0/1.2	5830	35			NO SAMPLE	
				0.7/0.6	5829	36			CLAYSTONE	Same as above, not broken core
									CLAYSTONE	Same as above
				2.1/2.3	5828	37			CLAYEY SILTSTONE	Olive black (5Y 2/1), apparent horizontal laminar bedding, mod weathered, mod to poor friability, some carb material
					5827	38				
					5826	39			CLAYEY SILTSTONE	Same as above, some coal material, slab shows disturbed bedding, some possible burrows, thin interbeds of clay (horizontal, <1 mm)
				3/3	5825	40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 64		GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11
NORTH	751762	AREA SOLAR POND		CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT
EAST	2085263	LOCATOR NUMBER	M11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86

REMARKS Hollow Stem Auger/NC Core

LOG OF BORING NUMBER

16-86



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY SANDSTONE	VFG to FG, light olive gray (5Y 5/2), massive bedding (from slab), well weathered, mod to poorly friable, mod to well sorted, sand fraction has higher FG near 43 5 ft
SILTY CLAYSTONE	Olive gray (5Y 4/1), non - apparent bedding, well weathered, mod friable, trace of iron staining as mottles, trace carb material, fracture at 60 degrees
SILTY CLAYSTONE	Same as above 70 degree fracture showing slickenslides
CLAYEY SILTSTONE	Light olive gray (5Y 6/1), non - apparent bedding, highly weathered, mod to poorly friable, some carb material, trace of iron staining as mottles At approx 50 ft increase of clay fraction At approx 52 ft decreased clay fraction Slab shows 60 degree fracture that has <1 mm

STATE PLANE COORDINATE
NORTH 751762
EAST 2085263
TOTAL DEPTH (FT) 64
AREA SOLAR POND
LOCATOR NUMBER K11
GROUND ELEVATION (FT) 5864 74
CASING DIAMETER (IN) 2 ID
BOREHOLE DIAMETER (IN) 7 5
PROJECT NUMBER 667 11
GEOLOGIST OAT
DATE DRILLED 08/25/86
LOG OF BORING NUMBER

16-86

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				51/6	5814–5811	50–54				coal seam, bedding appears to show possible drag or fracture, is possibly a slump structure Bedding on bottom of fracture is approx horizontally laminated, above fracture is distorted with clay and silt clasts Another fracture at 40 degrees with some organic material along fracture
				03/04	5810	54			SILTY CLAYSTONE	Olive gray (5Y 4/1), non - apparent bedding, highly weathered, mod to poorly friable, some carb material, trace of iron staining as mottles
				09/11	5810–5809	55			SILTY CLAYSTONE	Same as above
				0/35	5809–5806	56–59			NO SAMPLE	
					5806–5805	59–60			CLAYEY SILTSTONE	Light olive gray (5Y 6/1), non - apparent bedding, highly weathered, mod - poorly friable, trace of carb material

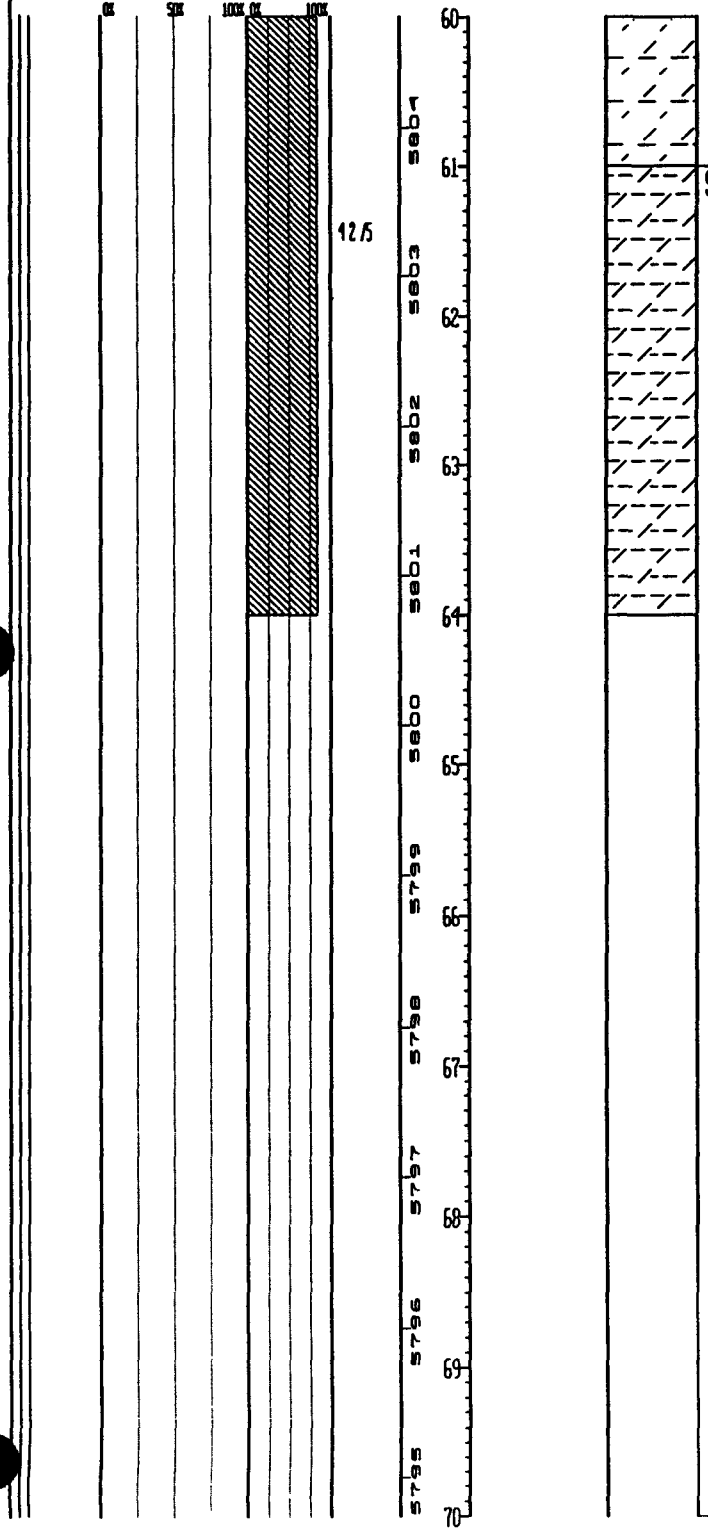
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 64		GROUND ELEVATION (FT)	5864 74	PROJECT NUMBER	667 11
NORTH	751762	AREA SOLAR POND		CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT
EAST	2085263	LOCATOR NUMBER	M11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	08/25/86

REMARKS Hollow Stem Auger/NC Core

LOG OF BORING NUMBER

16-86

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



42/5

SILTY CLAYSTONE Olive gray (5Y 4/1), apparent massive bedding, well weathered, mod friable, some carb material, floury texture at base of interval NOTE Well bore has 10-20 silica sand from 47 15' to 64'

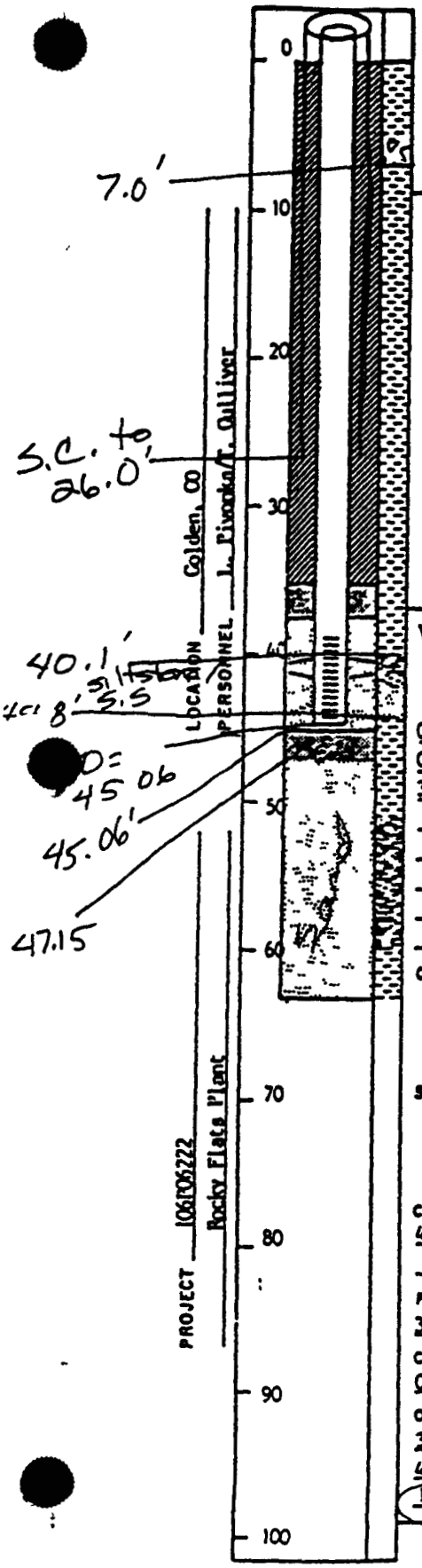
WELL 16-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N. 751747.4 E. 2685240

ELEVATION GROUND LEVEL 5868'

TOP OF CASING 5870.10'



DRILLING SUMMARY:

TOTAL DEPTH Well: 45.06' Hole: 64.00'

BOREHOLE DIAMETER 0.00' - 26.00': 7¾" 26.00'-45.00': 4 3/4" 45.00'-64.00': 3 7/8"

DRILLER Boyles Brothers Drilling Co. 15865 W. 5th Avenue, Golden, CO

Jim Horne, Paul Wiebe

RIG 0.00'-26.00' Mobile B57, 26.00'-64.00' Failing 1500

BIT(S) 0.00'-26.00' Blade bit 26.00'-64.00' Christensen carbide, tricone 4 3/4 reamer

DRILLING FLUID 0.00'-26.00' None 26.00'-64.00' air/water mist

SURFACE CASING 5" x 28.55' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	26.00'	C1				
0.00'	39.06'	C2				
39.06'	45.06'	S1				

CASING. C1 5" I.D. steel surface casing

C2 2" I.D., Sch. 5, Type 316 stainless steel, threaded and flush jointed

SCREEN: S1 2" I.D., Sch. 5, Type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel 40.49' - 41.73'

FILTER MATERIAL 32-42 silica sand 37.65' - 45.06'

CEMENT Portland Type I 0.00' - 35.25'

OTHER 3/8" bentonite pellets 35.25' - 37.65'

45.06' - 47.15'

10-20 silica sand: 47.15' - 64.00'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¾" auger	8/15	1330	8/15	1530
NC core	8/25	0920	8/25	1200
Reaming	8/27	1700	8/27	1725
GEOPHYS. LOGGING	—	—	—	—
CASING.				
5" steel	8/18	0907	8/18	1110
2" stainless	8/28	1012	8/28	1014
FILTER PLACEMENT	8/28	1018	8/28	1030
CEMENTING	8/28	1130	8/28	1135
DEVELOPMENT.	9/2	1725	9/18	1240
OTHER				
Bentonite	8/28	1040	8/28	1041
	8/28	0945	8/28	0948
Packer testing	8/27	0900	8/27	1645
Cementing 5" steel	8/18	0918	8/18	0938

WELL DEVELOPMENT

See well Development Summary Sheet

COMMENTS:

No water encountered during drilling

Top of stainless steel casing: 2 10'

NC core 26.00' - 64.00'

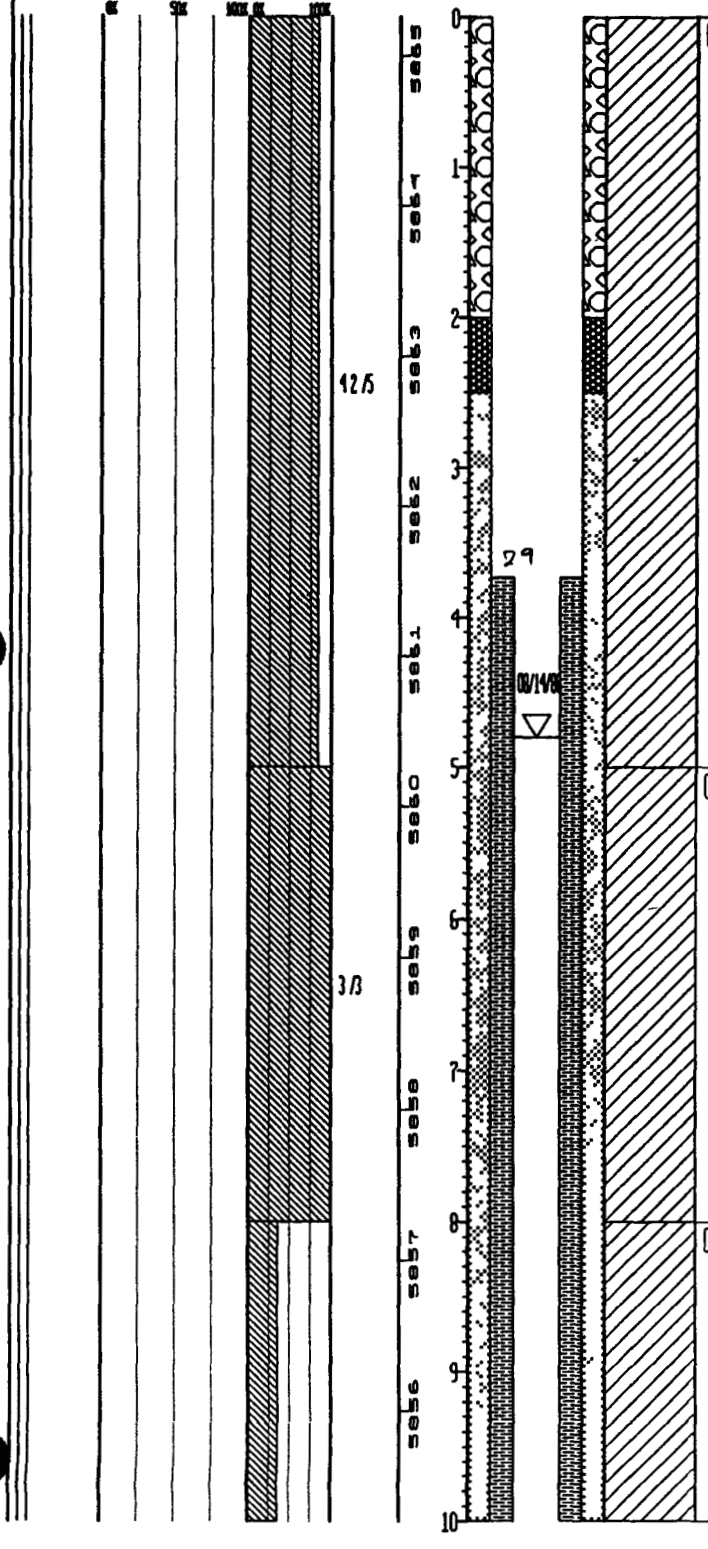
Reamed from 26.00' - 45.00'

HYDRO-SEARCH RENO-DENVER

CONSULTING HYDROLOGISTS-GEOLOGISTS

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 20	GROUND ELEVATION (FT) 5865 26	PROJECT NUMBER 667 11	LOG OF BORING NUMBER
NORTH	751754	AREA SOLAR POND	CASING DIAMETER (IN) 2 ID	GEOLOGIST DCB	17-86
EAST	2085245	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED 08/14/86	
REMARKS Hollow Stem Auger					

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE 0% 50% 100%
PERCENT RECOVERY 0% 100%
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	CLAY - pale yellowish brown (10YR 6/2) to grayish brown (5YR 3/2), moderate plasticity (est), some gravel and sand, some silt, trace of roots in upper 0 5 ft Sand fraction increases from approx 2 ft to approx 12 5 ft CG and VCG
CL	Same as above, slightly calcareous in interval from approx 5 ft to 6 ft
CL	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 20	GROUND ELEVATION (FT)	5865 26	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751754	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	17-86
EAST	208526	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/14/86	

REMARKS Hollow Stem Auger

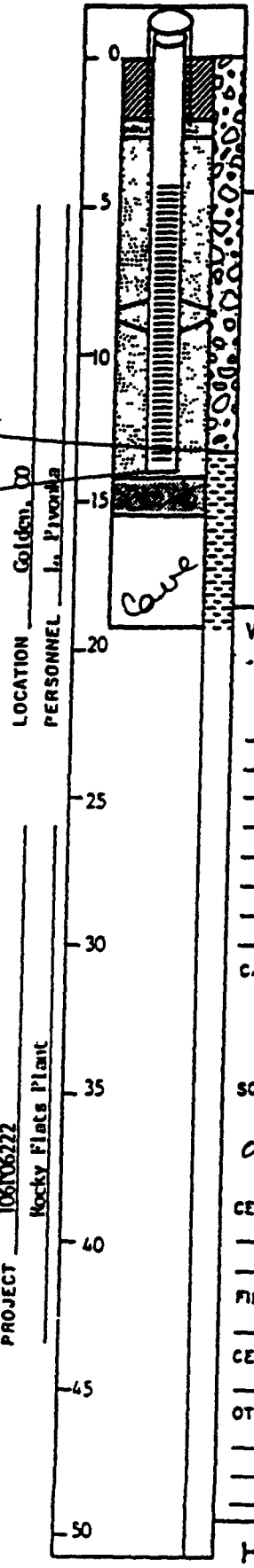
CHEMICAL SAMPLE DEPTH / RADIATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100% OR 100%	18/5	5855	10				
					5854	11				
					5853	12				
				1/1	5852	13			CLAYSTONE	Top of Bedrock Color grades to mottled yellowish gray (5Y 7/2) to light gray (N7) at approx 12 5 ft possibly highly weathered claystone, dominantly light gray (N7) below 13 0 ft
									CLAYSTONE	Same as above
				1/1	5851	14			CLAYSTONE	Same as above
					5850	15			CLAYSTONE	Light gray (N7), bedding not apparent, highly weathered, moderately friable, iron staining locally and on fractures, slight silt component
				25/3	5849	16				
					5848	17				
					5847	18			CLAYSTONE	Same as above
				15/2	5846	19				
						20				

WELL 17-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS ~~76~~
N. 751398 E. 2095242.

ELEVATION GROUND LEVEL 5869'
TOP OF CASING 5870 69'



LOCATION Golden, CO
PERSONNEL L. Pivonka
PROJECT 106T06222 Rocky Flats Plant

DRILLING SUMMARY:

TOTAL DEPTH Well: 13.98' Hole: 19.20'
BOREHOLE DIAMETER 7¼"
DRILLER Boyles Brothers Drilling Co.
15865 W 5th Avenue
Golden, CO (Jim Horn)
RIG Mobile B-57
BIT(S) Bull nose bit
DRILLING FLUID None
SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	3.73'	C1	___	___	___
3.73'	13.98'	S1	___	___	___

CASING C1 2" I.D Sch 5 type 316 stainless steel threaded and flush jointed.

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, ~~0.010"~~ 0.020" wire wrapped screen, 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
7.97' - 9.09'

FILTER MATERIAL ~~10-20~~ 12-20 silica sand
2.50' - 14.00'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
14.00' - 15.25'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	8/14	0931	8/18	1020
GEOPHYS. LOGGING	—	—	—	—
CASING				
2" stainless	8/15	1037	8/15	1040
FILTER PLACEMENT	8/15	1040	8/15	1056
CEMENTING	8/15	1100	8/15	1110
DEVELOPMENT	9/2	1550	9/22	0920
OTHER				
Bentonite	8/15	1058	8/15	1100
	8/15	1025	8/15	1040

WELL DEVELOPMENT

See Well Development Summary Sheet

COMMENTS:

Water encountered at 4.8' during drilling

Top of stainless steel casing 1.69'

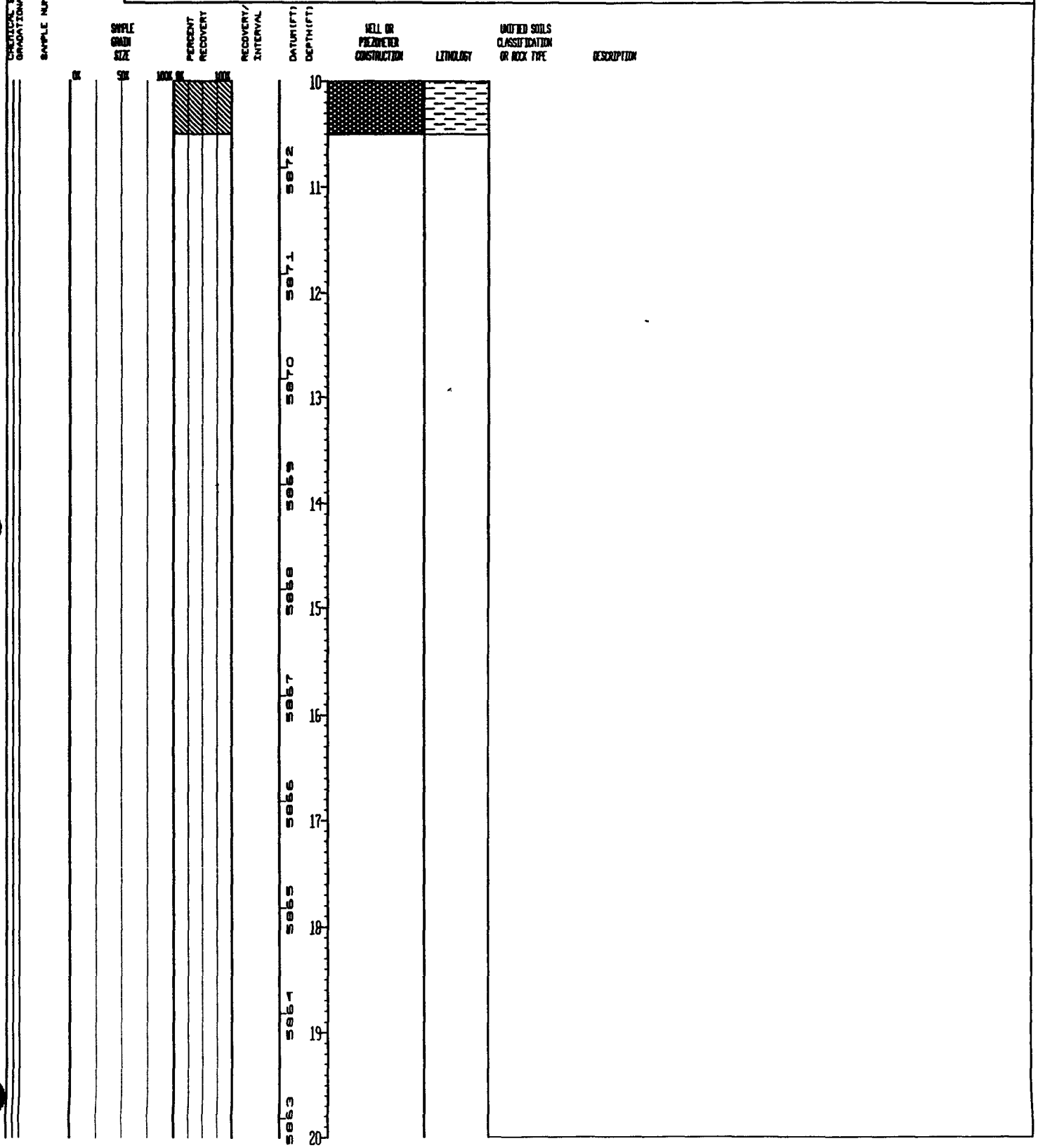
Cave from TD to 15.25'

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	10 5	GROUND ELEVATION (FT)	5882 82	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751534	AREA	SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	TSD	18-86
EAST	2085834	LOCATOR NUMBER	K11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/22/86	

REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				5/5	5882 5881 5880 5879 5878 5877 5876 5875 5874 5873	0 1 2 3 4 5 6 7 8 9 10			CL	SILTY CLAY - moderate brown (5YR 3/4), some roots, trace of fine to coarse sand, grades to a silty clay, dark yellowish brown (10YR 4/2), trace of roots and sand, trace of calcareous material and fine gravel, estimated plasticity = medium NOTE Core too mixed up to tell actual footage of core recovery
									CL	SILTY CLAY - pale yellowish brown (10YR 6/2), estimated medium to high plasticity, trace of limonite staining and calcite as mottles
				5.5/5.5					CH	Sandy Clay - fine, pale yellowish brown (10YR 6/2), estimated medium to high plasticity, abundant limonite staining (dark yellowish orange (10YR 6/6)), trace of organic material and roots NOTE Core too mixed up to tell actual footage of core recovery
									SANDY CLAYSTONE	Top of Bedrock Fine, pale yellowish brown (10YR 6/2), estimated medium to high plasticity, abundant limonite staining (dark yellowish orange (10YR 6/6)), trace of organic material and roots NOTE Core too mixed up to tell actual footage of core recovery NOTE No water encountered during drilling

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 5	GROUND ELEVATION (FT)	5882 82	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751534	AREA SOLAR POND	CASING DIAMETER (IN)	2 ID	GEOLOGIST	TSD	18-86
EAST	2085834	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/22/86	
REMARKS	Hollow Stem Auger						

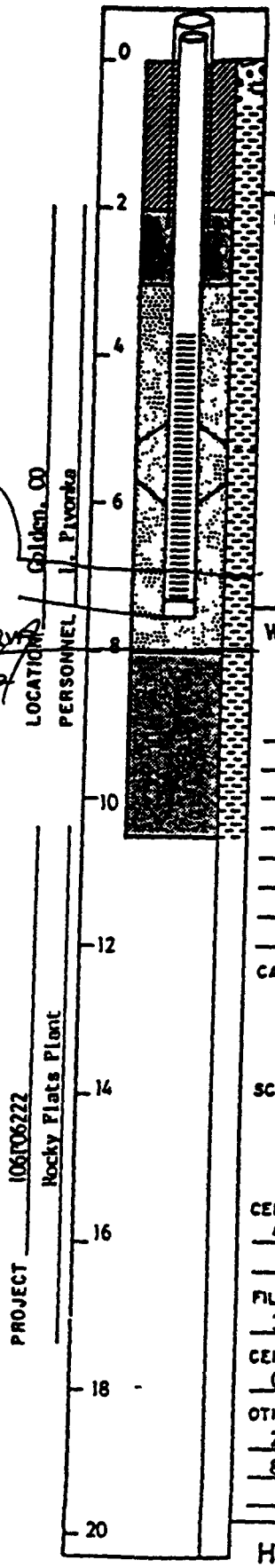


WELL 18-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS _____ ELEVATION GROUND LEVEL 5888'

TOP OF CASING 5890.65'



0' Qvf= Ka

D=7.5'

6.0' Qvf Ka

DRILLING SUMMARY.

TOTAL DEPTH Well: 7.50' Hole: 10 50'

BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co
15865 W. 5th Avenue
Golden, CO (Jim Horn)

RIG Mobile B-57

BIT(S) Bull nose bit

DRILLING FLUID None

SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	3.74'	C1	___	___	___
3.74'	7.50'	S1	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

CASING C1 2" I.D. Sch 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel
4.84' - 6.01'

FILTER MATERIAL 32-42 silica sand
3.00' - 8.00'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" Bentonite Pellets
2.00' - 3.00'
8.00' - 10.50'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	8/21	0937	8/21	1023
GEOPHYS. LOGGING	—	—	—	—
CASING				
2" stainless	8/26	0836	8/26	0837
FILTER PLACEMENT	8/26	0837	8/26	0840
CEMENTING	8/26	0842	8/26	0846
DEVELOPMENT	9/3	1015	9/3	1015
OTHER				
Bentonite	8/26	0840	8/26	0842
	8/26	0834	8/26	0835

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

No water encountered during drilling

Top of stainless steel casing: 2.65'

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGISTS

~~WELL TOO SHALLOW~~

NO - contact shown as 8' - should be 7.0'

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER	
NORTH 750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT		34-86
EAST 2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86		

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100% OR 100%	13/13	sb10	0			CL	CLAY, light gray (N7), mod plasticity, some roots, trace of gravel (5 5 cm), trace of sand
				0/07	sb9	1				NO SAMPLE
				03/03	sb8	2			CL	Same as above, moderate yellowish brown (10 YR 5/4), some silt, trace of twigs, some iron staining as mottles, slightly calcareous
				15/17	sb7	3			CL	Same as above, no roots or twigs, calcareous material esp in bottom of interval
				0/3	sb6	4				NO SAMPLE
					sb5	5				
					sb4	6				
				17/24	sb3	7			CL	Same as above
					sb2	8				
					sb1	9				
						10				NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA	EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER	N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0%	0/26	5900	10				
					5899	11				
					5898	12			GC	Clayey Gravel, matrix color is pale yellowish brown (10 YR 6/2), angular-sub-angular, mod graded, max size = 5 cm, some sand, trace of iron staining
				15/39	5897	13				
					5896	14				
					5895	15				
					5894	16			SILTY CLAYSTONE	Top of Bedrock Grayish orange (10 YR 7/4), laminar bedding @ 12 degrees, well weathered, mod friable, some gravel in top 3 in of interval, some iron staining as mottles
				18/21	5893	17				
					5892	18			CLAYSTONE	Light gray (N7), horizontally laminated, well weathered, mod friable, some iron staining, trace of silt
				17/17	5891	19				
						20			CLAYSTONE	Same as above Some silt, fractures at 70 degrees, trace of Mg

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 41	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / RADIATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100% OR 100%			20				staining
				17/18	sa90	21				
					sa89	22				
					sa88	23			CLAYSTONE	Yellowish gray (5 Y 8/1), massive bedding, well weathered, mod friability, iron staining as mottles, trace of Mg staining, some fractures at approx 70 and 10 degrees
				2/2	sa87	24				
					sa86	25			CLAYSTONE	Same as above
				2/2	sa85	26				
					sa84	27			CLAYSTONE	Same as above
				13/13	sa83	28				
					sa82	29			CLAYSTONE	Same as above, light brownish gray (5 YR 4/1), some carb material, esp at bottom of interval, fracture @ 60 degrees
				18/2	sa81	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Recovery/Interval	Depth (ft)	Unified Soils Classification or Rock Type	Description
17/2	30–31	CLAYSTONE	Same as above fractures at 90 and 70 degrees
12/1	32	CLAYSTONE	Light gray (N7), massively bedded, highly weathered, mod friable, some iron staining as mottles and along fracture planes, some silt, some carb material, fractures at 90 to 70 degrees, trace of calc material
06/06	33	CLAYSTONE	Same as above, Yellowish gray (5 Y 8/1), approx 20 degree fractures, no calc
18/2	34–35	CLAYSTONE	Same as above, Light gray (N7), trace of 70 to 90 degree fractures
17/14	36	CLAYSTONE	Same as above
1/1	37	CLAYSTONE	Same as above, fractures @ 20, 40, 85, and 60 degrees
0/02	38	NO SAMPLE	
	39–40	CLAYSTONE	Same as above, Light olive gray (5 Y 6/1) at top of interval to olive black (5 Y 2/1) at bottom of interval, trace of iron staining

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH
BRADITIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

RECOVERY/ INTERVAL	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
13/13	40		
	41		
	42	CLAYSTONE	Olive gray (5 Y 4/1), bedding non-apparent, well weathered, mod friable, some carb material, trace of coal (1-2 mm), trace of iron staining, some silt
18/18	43		
	44	CLAYSTONE	Same as above. Light olive gray (5 Y 6/1), bottom of interval contains abundant FG sand
12/12	45	SANDY CLAYSTONE	Light olive gray (5 Y 6/1), horizontal bedding approx 1/2-1 cm, highly weathered, mod friable, sand is VFG, trace of iron staining
08/08	46	SILTY CLAYSTONE	Olive gray (5 Y 4/1), 1-2 cm bedding interbedded with Claystone, Olive black (5 Y 2/1), 1-5 mm thick, well weathered, mod friable, some coal seams, 1/4-1 cm thick, parallel and cross-cutting bedding planes, iron staining associated with coal and as mottles
15/15	47		
1/07	48	SILTY CLAYSTONE	Light olive gray (5 Y 4/1), non-apparent bedding, well weathered, moderately friable, some iron staining as mottles, trace of carb material
	49	CLAYEY SANDSTONE	Light gray (N7), thinly bedded @ approx 10 degrees, well weathered, mod-highly friable, VFG-FG, trace of iron staining
	50		

08/28/86

UK

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	100	GROUND ELEVATION (FT)	5910 41	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA	EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER	M10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	UNK	0% 50% 100%	0% 100%	02/13	5860	50				
						51				
					5859	52				
				05/1	5858	53				CLAYEY SANDSTONE Same as above
				1/1	5857	54				CLAYEY SANDSTONE Same as above possible hummocky cross stratification
				13/13	5856	55				CLAYEY SILTSTONE Olive gray (5 Y 4/1), bedding non-apparent, highly weathered, mod friability, some VFG sand at bottom of interval, some iron staining as mottles, trace of carb material
					5855	56				SILTY CLAYSTONE Olive gray (5 Y 4/1), non-apparent bedding, highly weathered, mod friability, iron staining as mottles, some VFG sand, at approx 51 ft, VFG-FG sand body, approx 3 in thick, bedding @ 5-10 degrees
				3/37	5854	57				
					5853	58				
					5852	59				
					5851	60				SILTY CLAYSTONE Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	100	GROUND ELEVATION (FT)	5910 41	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA	EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER	N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

DEPTH	DATUM (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
60	5850				
61	5849			SILTY CLAYSTONE	Olive gray (5 Y 4/1), non-apparent bedding, highly weathered, mod friable, trace of iron staining as mottles, trace of carb material
62	5848				
63	5847			SILTY CLAYSTONE	Same as above
64	5846			SANDSTONE	Approx 6 in of VFG Sandstone, light olive gray (5 Y 6/1), beds are 1-2 cm, interbedded with Claystone, olive gray (5 Y 4/1), approx 3 mm thick
65	5845			SILTY CLAYSTONE	Same as above, increased silt fraction
66	5844				
67	5843				
68	5842				
69	5841				
70				SILTY CLAYSTONE	Same as above

SAMPLE NUMBER	ORIGINAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL
		0% 50%	100% 0% 100%	13/16
				19/16
				19/18
				5/5
				06/09

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER	
NORTH 750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86	
EAST 2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86		

REMARKS Hollow Stem Auger/NC Core

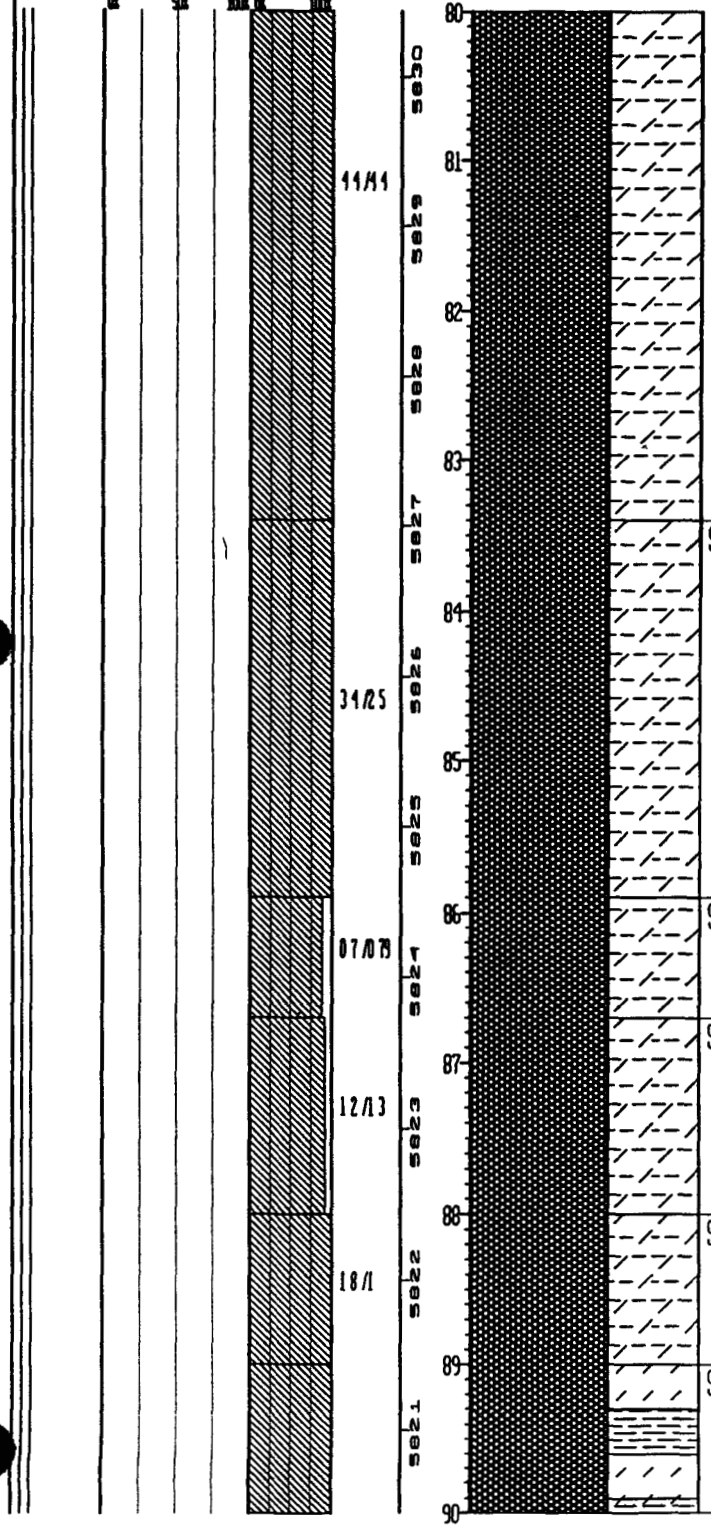
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

DEPTH (FT)	DATUM (FT)	RECOVERY/ INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
70				
	5840	06/08	SILTY CLAYSTONE	Light olive gray (5 Y 6/1), massive bedding, highly weathered, mod friability, trace of iron staining
71			SILTY CLAYSTONE	Same as above, Olive black (5 Y 2/1), trace of carb material
72	5839			
	5838	31/33		
73				
	5837			
74				
	5836		SILTY CLAYSTONE	Same as above, Olive gray (5 Y 4/1), trace of iron nodules
75		07/1		
	5835		SILTY CLAYSTONE	Same as above, Top 1 ft of interval, brownish gray (5 YR 4/1), no iron staining or nodules Bottom 2 ft of interval, Same as above- yellowish gray (5 Y 8/1), increased silt fraction, some fine grained sand, especially in lenses
76	5834			
		30/32		
77	5833			
78				
	5832	07/05	SILTY CLAYSTONE	Same as above, Olive gray (5 Y 4/1), decreased silt fraction, floury texture
79			SILTY CLAYSTONE	Same as above, bottom 2 ft of interval has consolidated texture
	5831			
80				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	206192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



SILTY CLAYSTONE	Olive black (5 Y 2/1), non-apparent bedding, well weathered, mod friability, some carb material, some iron staining as mottles, some micro-fractured
SILTY CLAYSTONE	Same as above, floury texture, no iron staining, micro-fractures non-apparent
SILTY CLAYSTONE	Same as above, Olive gray (5 Y 4/1), increased silt fraction, consolidated texture, some VF6 sand
SILTY CLAYSTONE	Same as above, Yellowish gray (5 Y 8/1)
SILTY SANDSTONE	VF6-F6, very light gray (N8), bedding from slab shows extensive vertical burrowing (2 1/2 in - 1/2 in long), bioturbated, thinly laminated, some cross-stratification, general bedding angle of 20 degrees, some horizontal clay interbeds (1/2 - 1 cm thick), well-mod weathered, mod-poor friability, sub-angular to sub-rounded, mod

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 100	GROUND ELEVATION (FT)	5910 44	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750173	AREA EAST TRENCHES	CASING DIAMETER (IN)	2	GEOLOGIST	DAT	34-86
EAST	2086192	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	4 3/4	DATE DRILLED	08/28/86	

REMARKS Hollow Stem Auger/NC Core

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%							
				3/3	sel20	90				to well sorted, trace of carb material, some clay
	UK				sel9	91				
					sel8	92				SILTY SANDSTONE VFG-FG, very light gray (N8), bedding is non-apparent \coating on core\, well-mod weathered, mod-poorly friable, sub-angular to sub-rounded, mod-well sorted, some carb material, some clay
				4/4	sel7	93				
					sel6	94				
					sel5	95				
				03/03	sel4	96				SILTY CLAYSTONE Dark greenish gray (5 GY 4/1), non-apparent bedding, highly weathered, mod friable, some carb material, trace iron staining as mottles and nodules
					sel3	97				SILTY CLAYSTONE Same as above
				37/37	sel2	98				
					sel1	99				
						100				

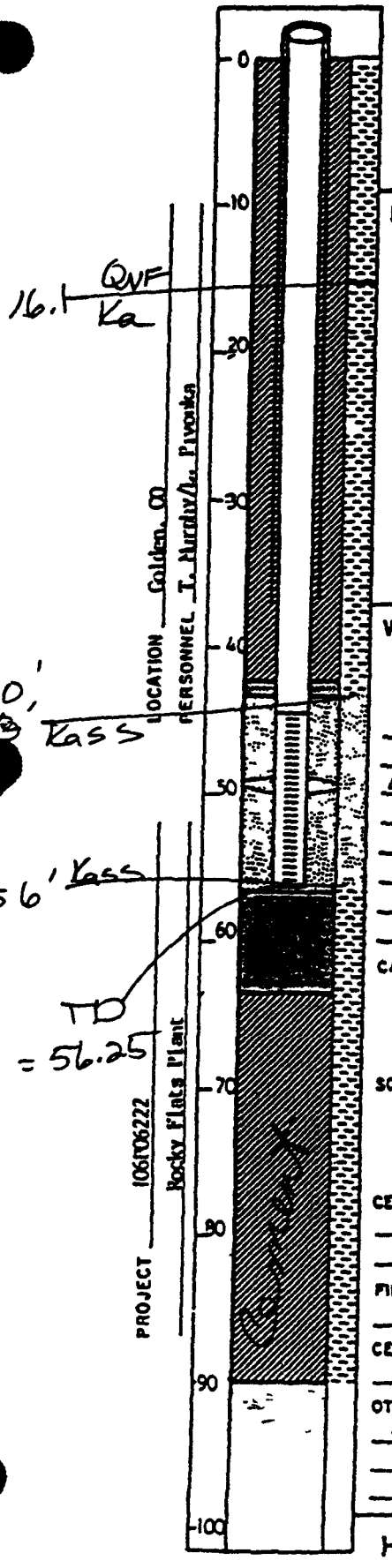
WELL 34-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N. 750161.6 E. 2286193

ELEVATION GROUND LEVEL 5910'

TOP OF CASING 5912.50'



DRILLING SUMMARY.

TOTAL DEPTH Well: 56.25' Hole: 100.00'

BOREHOLE DIAMETER 0.00' - 37.80': 7¼"
37.80' - 100.00': 4 3/4"

DRILLER Boyles Brothers Drilling Co
15865 W. 5th Avenue, Golden
(David Jarvie, Jim Horn)

RIG Mobile B-57

BIT(S) 0.00' - 37.80': Blade bit
37.80' - 100.00': Bull nose rock bit

DRILLING FLUID None

SURFACE CASING 5" x 40.8' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	-	37.80'	C1	___	-	___	___
0.00'	-	44.24'	C2	___	-	___	___
44.24'	-	56.25'	S1	___	-	___	___
___	-	___	___	___	-	___	___
___	-	___	___	___	-	___	___
___	-	___	___	___	-	___	___
___	-	___	___	___	-	___	___
___	-	___	___	___	-	___	___

CASING. C1 5" I.D. steel

C2 2" I.D., Sch. 5 type 316 stainless steel, threaded and flush jointed.

SCREEN. S1 2" I.D., Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
22.47' - 23.70'
49.01' - 50.26'

FILTER MATERIAL 32-42 silica sand
43.00' - 56.50'

CEMENT Portland Type I
0.00' - 42.00', 90.00' - 64.50'

OTHER 3/8" bentonite pellets
42.00' - 43.00'
56.50' - 64.50'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	8/20	1251	8/20	1545
4 3/4" core	8/26	1503	9/2	1202
GEOPHYS. LOGGING.	—	—	—	—
CASING				
5" steel	8/21	0800	8/21	1335
2" stainless	9/3	0845	9/3	0900
FILTER PLACEMENT	9/3	0900	9/3	1145
CEMENTING	9/2	1604	9/2	1716
DEVELOPMENT	9/5	1000	9/12	1015
OTHER				
Cementing 5" casing	8/21	1359	8/21	1456
Lower cement	9/3	1150	9/3	1210
Bentonite	9/3	0823	9/3	0845
	9/3	1145	9/3	1150
Packer test	8/29	1056	8/29	1725

WELL DEVELOPMENT

See Well Development Summary Sheet

COMMENTS:

Water encountered at 48.0' during drilling

Top of stainless steel casing: 2.50'

Cave from T.D. to 90.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18	GROUND ELEVATION (FT)	5909 2	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750179	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LMA	35-86
EAST	2086218	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/19/86	

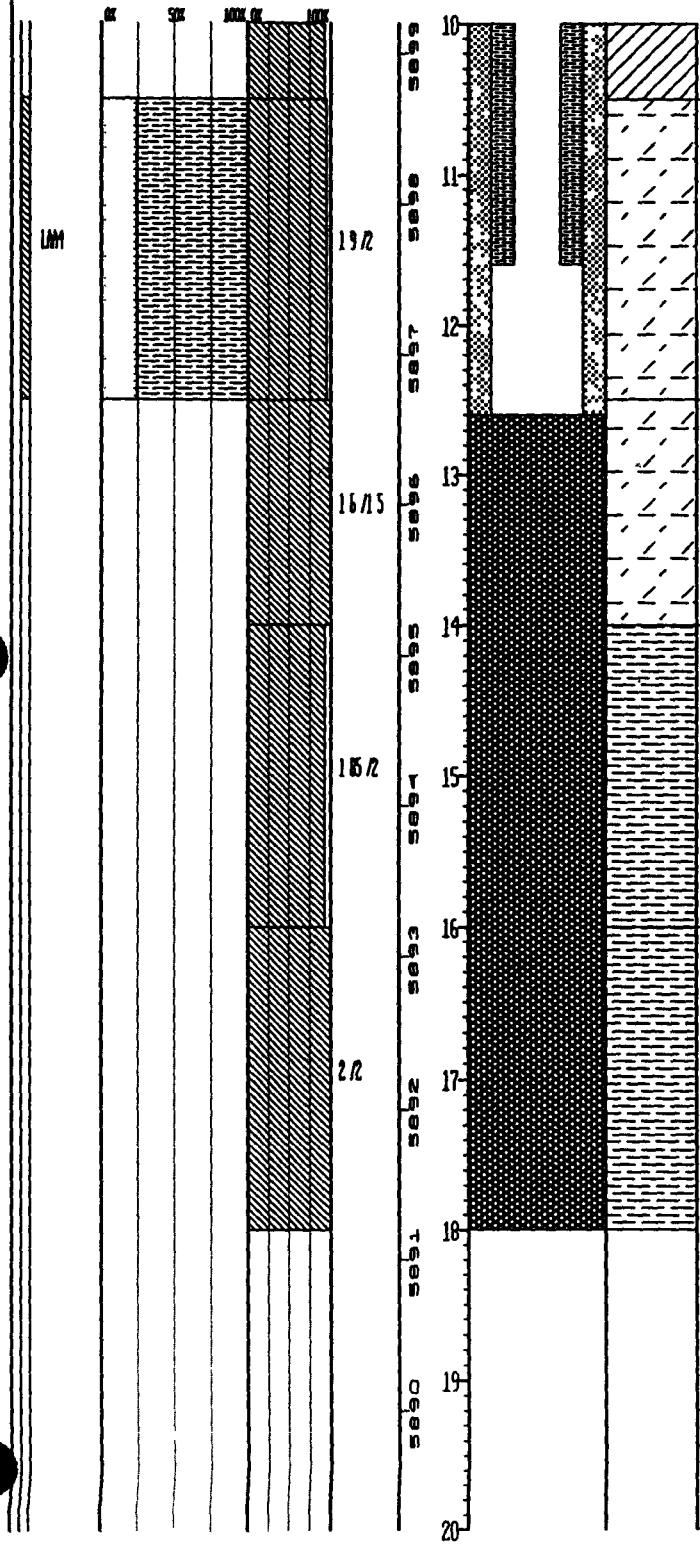
REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SIX	100% OR 100%	15/2	5906	0			CL	SILTY GRAVELLY CLAY, Very lt gray (N8) grading to mod yellowish brown (10 YR 5/4) Est plast mod to low Gravel angular to sub-rounded, mod well graded Granules to 2 5 cm Some sand, VFG Root material throughout interval
				07/075	5907	2			CL	Same as above
				0/1	5906	3				NO SAMPLE
				08/06	5905	4	08/17/87		CL	SILTY GRAVELLY CLAY Pale yellowish brown (10 YR 6/2), Est plasticity low to mod Gravel angular to sub-rounded, mod to well graded Some sand, VFG to coarse
				16/14	5904	5			CL	Same as above More VFG sand in matrix
				125/125	5902	7	09/03/86		CL	SILTY GRAVELLY CLAY Dk yellowish brown (10 YR 4/2) to grayish brown (5 YR 3/2) Gravel mod to well graded Max size 3 0 cm Sub-angular to sub-rounded Some sand VFG to granules, trace root material Very slightly calcareous matrix
				185/2	5900	9	09/03/86		CL	SANDY SILTY CLAY, Brownish gray (5 YR 4/1) Est plast low to mod, Sand VFG to granules, mostly VFG, Some gravel, max size measurable 2 cm Matrix slightly calcareous
						10				

5909.20
6.65
5902.55

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18	GROUND ELEVATION (FT)	5909 2	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750179	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	35-86
EAST	2086218	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/19/86	
REMARKS	Hollow Stem Auger						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



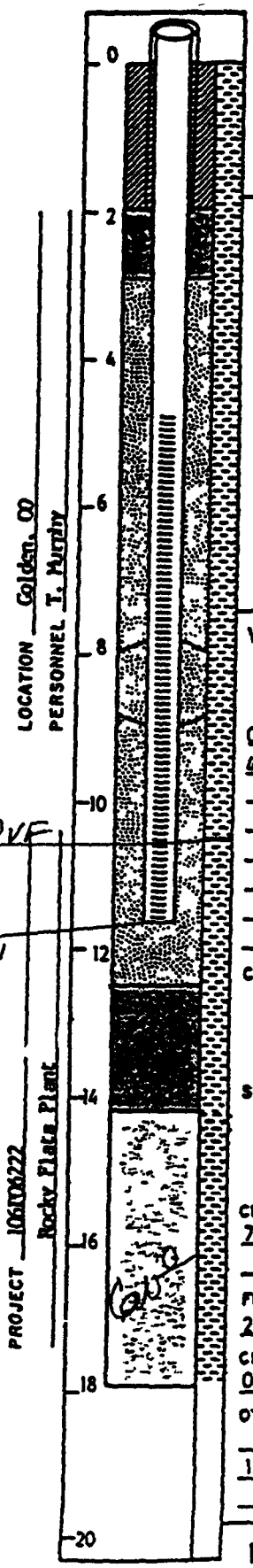
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYEY SILTSTONE	Top of Bedrock Very Lt gray (N8) to dark yellowish orange (10 YR 6/6) Bedding not evident Highly weathered, mod to slightly friable, CaCO3 mineralization in some small discontinuous fractures Trace root material
CLAYEY SILTSTONE	Same as above Grading to Claystone, dk yellowish orange (10 YR 6/6) Highly weathered Slightly to mod friable, CaCO3 in fractures Some in matrix, bedding not evident Some iron staining Trace silt
CLAYSTONE	Very pale orange (10 YR 8/2) to dk yellowish orange (10 YR 6/6) Highly weathered, slightly friable CaCO3 in fractures and some in matrix Iron oxide nodule (2 5 cm) present Some iron staining Trace carb material
CLAYSTONE	Lt olive gray (5 Y 6/1) Mod weathered, bedding not evident Slightly friable Some iron staining in fractures Trace CaCO3, trace carb material

WELL 35-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 758167.1 E 2086219

ELEVATION GROUND LEVEL 5910'
TOP OF CASING 5912.25'



105 QVF
Ka

TD
=11.60'

DRILLING SUMMARY.

TOTAL DEPTH Well: 11.60' Hole: 18.00'
BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Dave Jarvie)
RIG Mobile B-57
BIT(S) TS

DRILLING FLUID None

SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS. GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	– 4.86'	C1	___	– ___	___
4.86'	– 11.60'	S1	___	– ___	___
___	– ___	___	___	– ___	___
___	– ___	___	___	– ___	___
___	– ___	___	___	– ___	___
___	– ___	___	___	– ___	___
___	– ___	___	___	– ___	___
___	– ___	___	___	– ___	___

CASING: C1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed.
C2
C3
C4

SCREEN: S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen
S2
S3
S4 0.25' welded bottom cap.

CENTRALIZERS Type 304 stainless steel
7.80' – 8.85'

FILTER MATERIAL 16-40 silica sand
2.90' – 12.60'

CEMENT Portland Type I
0.00' – 1.95'

OTHER 3/8" bentonite pellets
1.95' – 2.90'
12.60' – 14.20'

CONSTRUCTION TIME LOG.

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING				
7¼" auger	8/19	1258	8/19	1558
GEOPHYS. LOGGING.	—	—	—	—
CASING.				
2" stainless	8/20	1012	8/20	1015
FILTER PLACEMENT	8/20	1015	8/10	1020
CEMENTING	8/20	1025	8/20	1040
DEVELOPMENT.	9/3	1000	9/11	1155
OTHER.				
Bentonite	8/20	1020	8/20	1025
	8/20	1008	8/20	1012

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

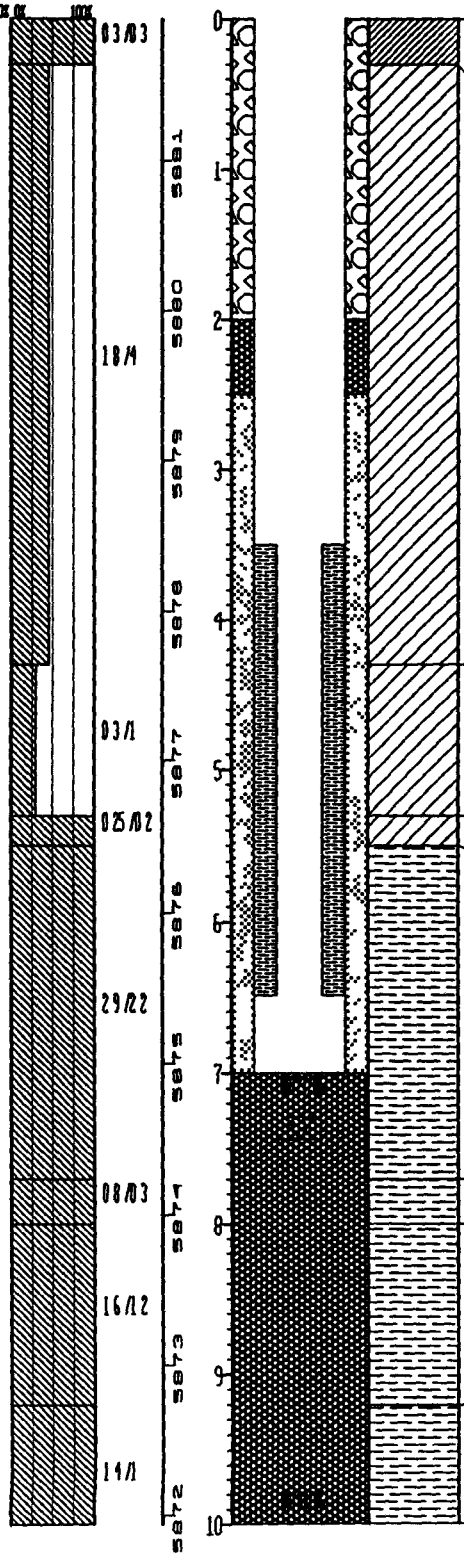
Water encountered at 8.0' during drilling

Top of stainless steel casing: 2.25'

Cave from TD to 14.20'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2	GROUND ELEVATION (FT)	5881 94	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	750397	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DAT	36-86
EAST	2086819	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/25/86	
REMARKS	Hollow Stem Auger						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY

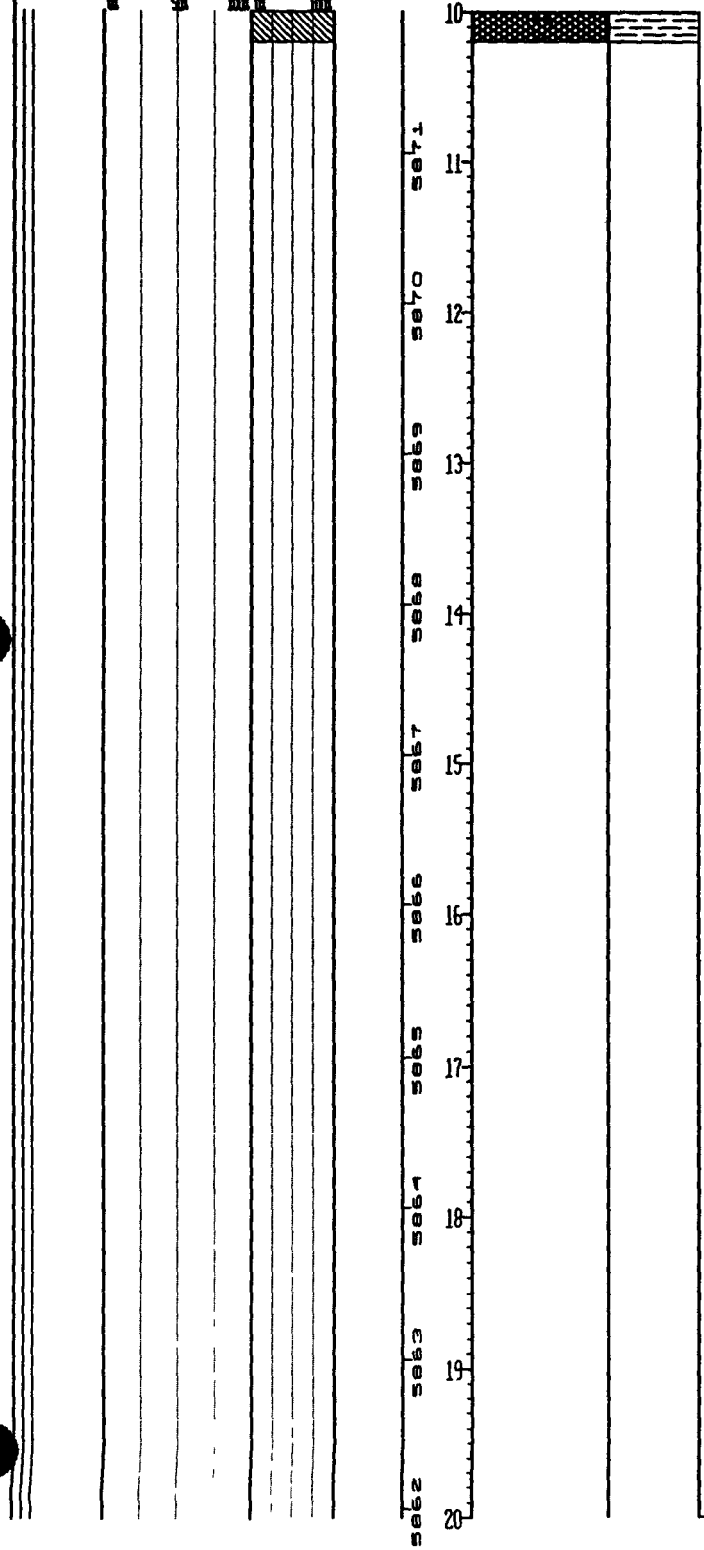


RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
03/03	CH	Sandy Clay, Pale yellowish brown (10 YR 6/2), mod-high plast , some roots, trace of gravel, slightly calc
18/4	CL	SANDY CLAY, multicolored- grayish brown (5 YR 3/2), moderate yellowish brown (10 YR 5/4), light gray (N8), mod plast , some calc material, trace of gravel increasing to some gravel at bottom of interval, bottom 2 in with abundant iron staining and concretions, some iron staining in top part of interval
03/1	CL	Same as above, floury texture
025/02	CL	Same as above
29/22	CLAYSTONE	Top of Bedrock Light olive gray (5 Y 8/1), est mod plast , some calc material, some iron staining as mottles, trace of sand
08/03	CLAYSTONE	Same as above, slightly calcitic
16/12	CLAYSTONE	Same as above, yellowish gray (5 Y 8/1), some silt, some VFG sand, floury texture, increased iron staining
14/1	CLAYSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 2	GROUND ELEVATION (FT)	5881 94	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751397	AREA EAST TRENCHES	CASING DIAMETER (IN)	2 10	GEOLOGIST	DAT	36-86
EAST	2086819	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	08/25/86	

REMARKS Hollow Stem Auger

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

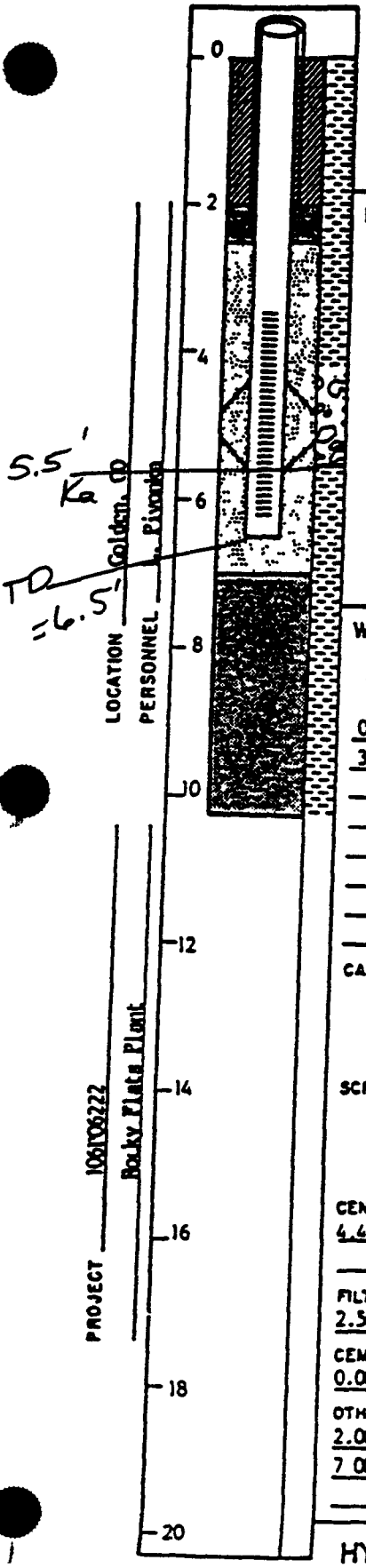


WELL 26-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS _____ ELEVATION GROUND LEVEL 5884'

TOP OF CASING 5886.00'



DRILLING SUMMARY.

TOTAL DEPTH Well: 6.50' Hole: 10.20'

BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co
15865 W. 5th Avenue
Golden, CO (Jim Horn)

RIG Mobile B-57

BIT(S) T-5

DRILLING FLUID None

SURFACE CASING 5" x 5' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	3.50'	C1			
3.50'	6.49'	S1			

CASING C1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed.

SCREEN, S1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
4.42' - 5.59'

FILTER MATERIAL 32-42 silica sand
2.50' - 7.00'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
7.00' - 10.20'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING 7¼" auger	8/25	1014	8/25	1520
GEOPHYS. LOGGING	—	—	—	—
CASING 2" stainless	8/25	1523	8/25	1525
FILTER PLACEMENT	8/25	1525	8/25	1530
CEMENTING	8/25	1533	8/25	1546
DEVELOPMENT	8/27	1120	9/3	1055
OTHER Bentonite	8/25	1530	8/25	1533
	8/25	1520	8/25	1523

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

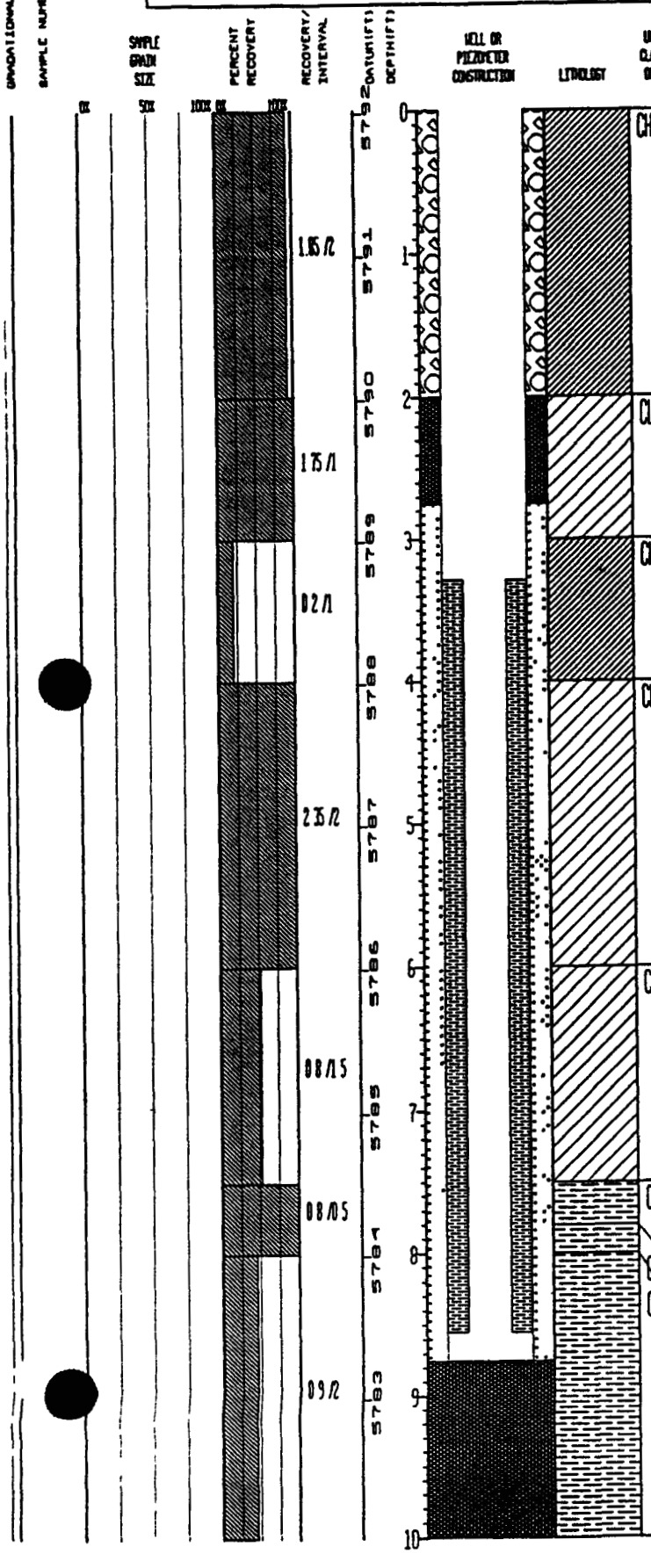
No water encountered during drilling

Top of stainless steel casing: 2.00'

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGISTS

Too much sand below well

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13	GROUND ELEVATION (FT)	5792 02	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751563	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	37-86
EAST	2088862	LOCATOR NUMBER P11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	09/22/86	
REMARKS	Hollow Stem Auger						



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CH	Silty Clay, pale yellowish brown (10 YR 6/2), Est plast mod to high, some roots and grass, trace gravel, granule size
CL	Same as above, with color change to dusky yellowish brown (10 YR 2/2) Trace roots
CH (ML)	Silty Clay, olive gray (5 Y 4/1) Est plast, mod -high, some sand VFG to FG
CL (SC)	SANDY CLAY, olive gray (5 Y 4/1) and dark yellowish orange (10 YR 6/6) Mottling Est plast mod, sand VFG to CG, Trace gravel to 3 5cm, trace CaCO3
CL	Same as above, lg piece of gravel 6 5cm
CLAYSTONE	Top of Bedrock Same as above, some CaCO3
CLAYSTONE	Same as above, some CaCO3
CLAYSTONE	Same as above, no gravel

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13	GROUND ELEVATION (FT)	5792 02	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	751563	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	37-86
EAST	2088862	LOCATOR NUMBER P11	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	09/22/86	

REMARKS Hollow Stem Auger

GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Depth (ft)	Recovery/Interval	Unified Soils Classification or Rock Type	Description
10		CLAYSTONE	Yellowish gray (5 Y 8/1), Est plast mod, trace CaCO3
11	0 65/2		
12	0 4/1	CLAYSTONE	Same as above with color change to light olive gray (5 Y 6/1) Trace carb material Note No water encountered during drilling
13			
14			
15			
16			
17			
18			
19			
20			

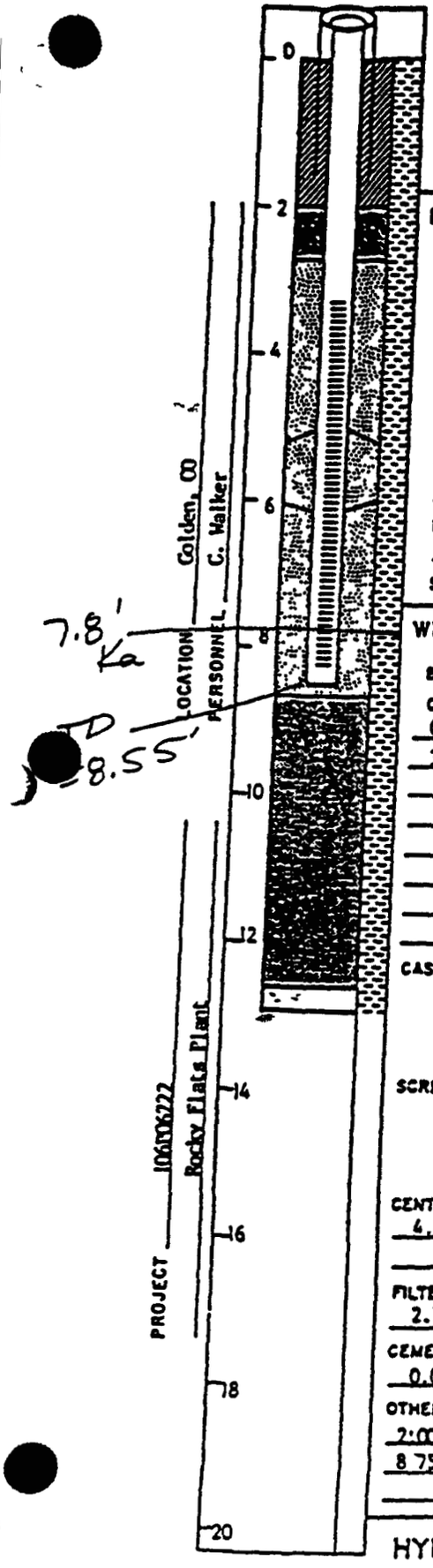
WELL 37-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 751561.3 E 2088854

ELEVATION GROUND LEVEL 5800'

TOP OF CASING 5802.08'



DRILLING SUMMARY:

TOTAL DEPTH Well: 8.55' Hole: 13.00'

BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Tony Robinson)

RIG Acker

BIT(S) Blade bit

DRILLING FLUID None

SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	3.29'	C1			
3.29'	8.55'	S1			

CASING: C1 2" I.D Sch 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: S1 2" I.D Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
4.86' - 6.05'

FILTER MATERIAL 32-42 silica sand
2.75' - 8.75'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite Pellets
2.00' - 2.75'
8.75' - 12.70'

CONSTRUCTION TIME LOG

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING.				
7¼" auger	9/22	1200	9/22	1305
GEOPHYS. LOGGING.	—	—	—	—
CASING.				
2" stainless	9/22	1528	9/22	1530
FILTER PLACEMENT:	9/22	1530	9/22	1545
CEMENTING	9/22	1547	9/22	1550
DEVELOPMENT	9/29	1130	9/29	1130
OTHER.				
Bentonite	9/22	1545	9/22	1547
	9/22	1523	9/22	1528

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

No water encountered during drilling

Top of stainless steel casing: 2.08'

Cave from TD to 12.70'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5728 13	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	752826	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LMA	38-86
EAST	2090281	LOCATOR NUMBER R12	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	09/08/86	
REMARKS	Hollow Stem Auger Cave from TD to 13 0'						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		GR SD	100% GR 100%		5728	0			CH	Silty Clay Dark yellowish brown (10YR 4/2), surface grass and roots present Moderately high plasticity Trace sand
				16/2	5727	1				screen top is 2 91' MS 1/19/94 (from well construction summary)
					5726	2			NO SAMPLE	
				0/0						
					5725	3			CL	Same as above Less roots and grass, some sub-rounded gravel, up to 2cm
				13/12	5724	4				
									GC	Large cobbles and gravel in sandy clay matrix Gravel grayish red (10R 4/2) to medium gray (N5) Angular to sub-angular Moderately graded Sandy clay matrix, moderately yellowish brown (10YR 5/4) Moderate plasticity
				16/2	5723	5				
					5722	6			CLAYSTONE	Top of Bedrock Dusky yellowish brown (10YR 2/2) High plasticity, some silt, trace sand One large cobble at top (7 cm) Some iron staining Some thin carbonaceous layers
				18/2	5721	7				
				02/02	5720	8			SILTY CLAYSTONE	Dark yellowish brown (10YR 4/2) Highly weathered Slightly friable Massive (?) bedding Some carbonaceous material
				15/12	5719	9			SILTY CLAYSTONE	Same as above
				06/06		10			SILTY CLAYSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14	GROUND ELEVATION (FT)	5728 13	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	752826	AREA BUFFER EAST	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	38-86
EAST	2090281	LOCATOR NUMBER R12	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	09/08/86	

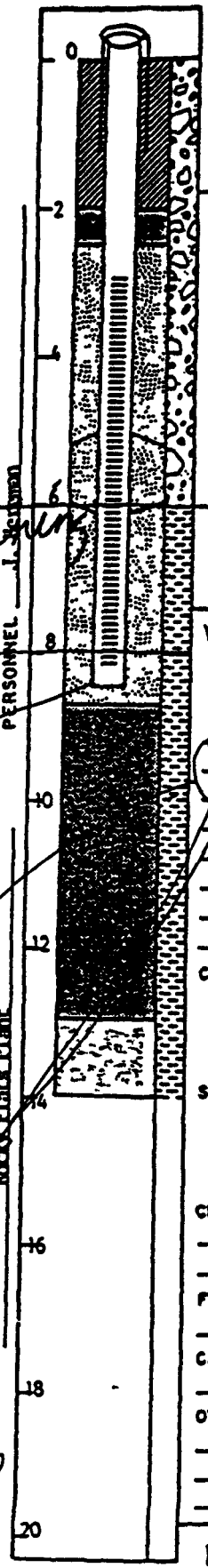
REMARKS Hollow Stem Auger Cave From TD to 13 0'

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Recovery/Interval	Datum (ft)	Depth (ft)	Unified Soils Classification or Rock Type	Description
0 7/1 3	5718	10	CLAYEY SILTSTONE	Dark yellowish brown (10YR 4/2) Highly weathered Slightly friable Massive bedding (?), some carbonaceous material Some iron stains
0 9/0 7	5717	11	CLAYEY SILTSTONE	Same as above
0 65/0 65	5716	12	CLAYEY SILTSTONE	Same as above, moderately friable
0 5/0 35			CLAYEY SILTSTONE	Same as above
0 9/1	5715	13	CLAYEY SILTSTONE	Same as above, slightly friable NOTE No water encountered while drilling
	5714	14		
	5713	15		
	5712	16		
	5711	17		
	5710	18		
	5709	19		
		20		

WELL 38-86

WELL CONSTRUCTION SUMMARY



LOCATION Golden, CO
PERSONNEL J. Hermon
PROJECT 106P06222 Rocky Flats Plant

LOCATION or COORDS:

ELEVATION GROUND LEVEL 5733'
TOP OF CASING 5735.50'

DRILLING SUMMARY:

TOTAL DEPTH Well: 8.50' Hole: 14.00'
BOREHOLE DIAMETER 7¼"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Tony Robinson)

RIG Acker
BIT(S) T5

DRILLING FLUID None

SURFACE CASING 5" x 4' steel w/ locking cap

WELL DESIGN:

BASIS GEOLOGIC LOG X GEOPHYSICAL LOG ___
CASING STRING(S): C=CASING S=SCREEN

0.00'	2.91'	C1	
0.00	8.50'	S1	

CASING. C1 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: S1 2" I.D Sch. 5 type 316 stainless steel, threaded and flush jointed, 0.010" wire wrap screen, 0.25' welded bottom cap

CENTRALIZERS Type 304 stainless steel
4.95' - 6.15'

FILTER MATERIAL 32-42 silica sand
2.50' - 8.75'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
8.75' - 13.00'

CONSTRUCTION TIME LOG.

TASK	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING:	1986		1986	
7¼" auger	9/8	1035	9/8	1200
GEOPHYS. LOGGING	—	—	—	—
CASING.				
2" stainless	9/8	1400	9/8	1415
FILTER PLACEMENT	9/8	1415	9/8	1420
CEMENTING	9/8	1425	9/8	1435
DEVELOPMENT	9/16	1314	9/22	1300
OTHER				
Bentonite	9/8	1420	9/8	1425
	9/8	1350	9/8	1400

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

No water encountered during drilling.

Top of stainless steel casing: 2.50'

Cave from TD to 13.00'

Which one were they screening

8.0 Ka

TD =8.5'

check

should be 2.91 4/17/87 AJP

HYDRO-SEARCH RENO•DENVER CONSULTING HYDROLOGISTS-GEOLOGISTS

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	13	GROUND ELEVATION (FT)	5882 69	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753142	AREA	LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	40-87
EAST	2084823	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	06/08/87	

REMARKS Hollow Stem Auger

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	GR SD	100% GR 100%	0.5/0.6	5882	0			CL	SILTY CLAY - light brownish gray (5YR 6/1) Abundant roots and grass Some iron staining throughout matrix
			0/3.4	5881	1				NO SAMPLE
				5880	2				
				5879	3	04/11/88			
				5878	4			GM	GRAVEL - medium gray (N5) angular to subangular well graded Some clay and silt Trace iron staining
			21/22	5877	5			ML	Clayey Gravelly Silt - light gray to light olive gray (N7 to 5Y 6/1) Gravel to 3 cm subrounded Abundant iron staining throughout matrix Could be highly weathered gravelly siltstone incomplete induration
				5876	6	11/03/88		CLAYEY SILTSTONE	Top of Bedrock Very pale orange to grayish orange (10YR 8/2 to 10YR 7/4) Massive bedding(?) Highly weathered Some calcareous mineralization, some iron staining Friable in places Trace carbonaceous material
			13/13	5875	7			CLAYEY SILTSTONE	Very pale orange to grayish orange (10YR 8/2 to 10YR 7/4) Massive bedding(?) Highly weathered Some calcareous mineralization, some iron staining Friable in places Trace carbonaceous material
			0/5	5874	8				NO SAMPLE
			25/25	5873	9			CLAYEY SILTSTONE	Same as above, more carbonaceous material at bottom occurring in very thin hairlike layers
					10				

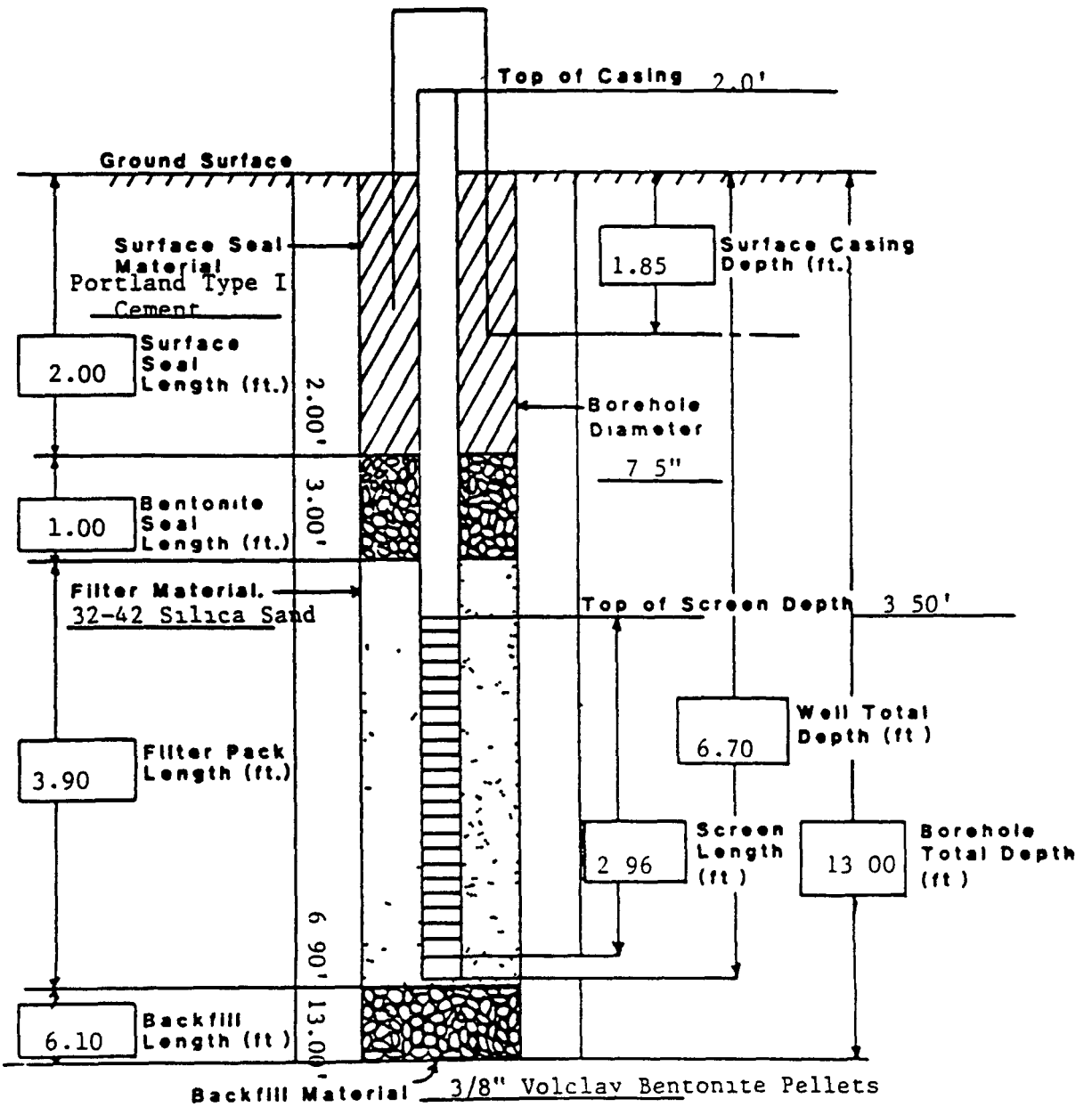
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13	GROUND ELEVATION (FT)	5882 69	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753142	AREA LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	40-87
EAST	2084823	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	06/08/87	

REMARKS Hollow Stem Auger

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				10				
			2/13	5872				CLAYEY SILTSTONE Same as above with color change to pale yellowish brown Extremely weathered, extremely friable
				11				
				5871				
			12/12	12				CLAYEY SILTSTONE Same as above NOTE No water encountered during drilling
				5870				
				13				
				5869				
				14				
				5868				
				15				
				5867				
				16				
				5866				
				17				
				5865				
				18				
				5864				
				19				
				5863				
				20				

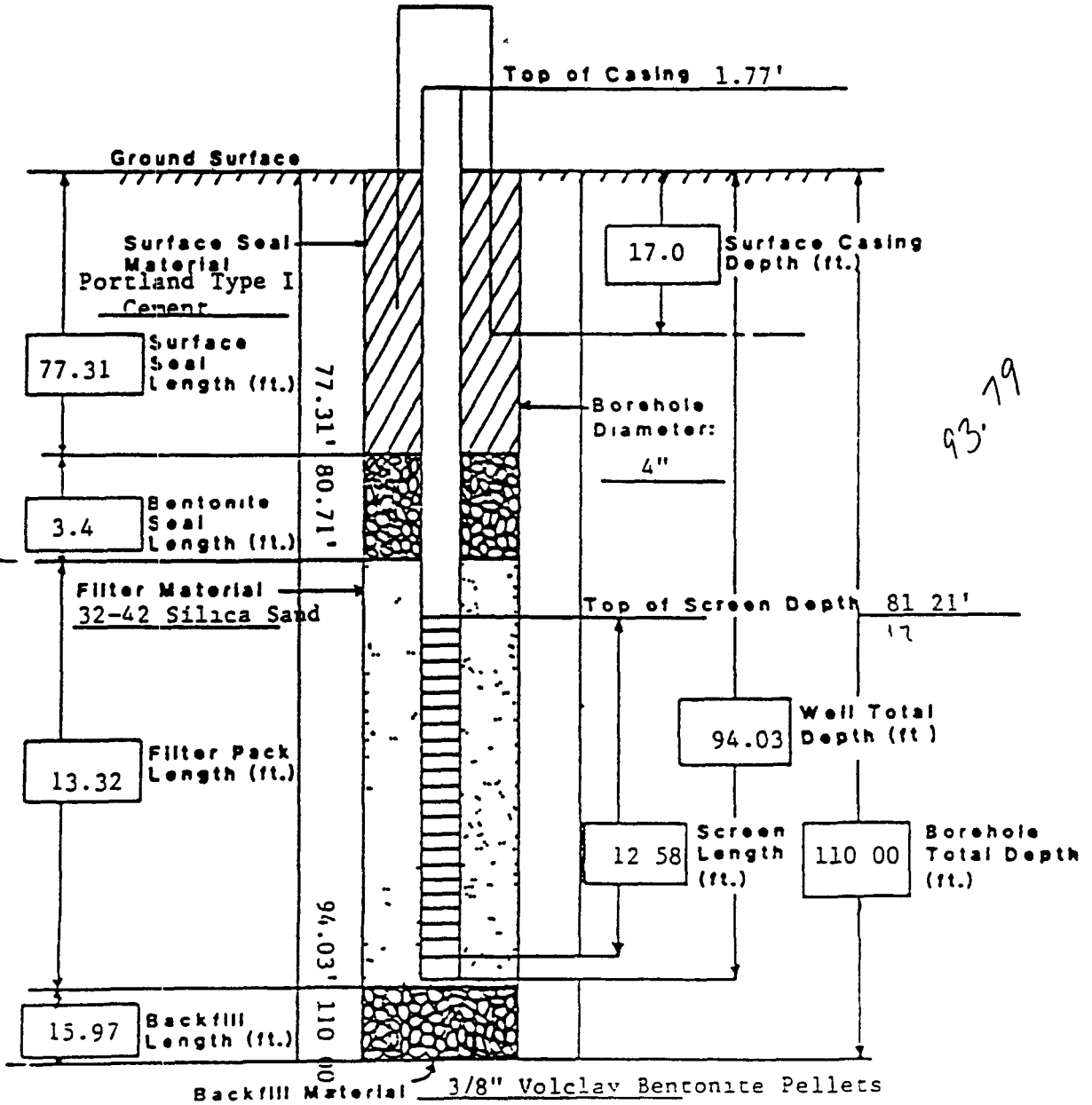
WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area
Well No 40-87
Coordinates N 40158.03 E 21727.76
Elevation Ground Surface 5882.69'
Total Depth Well 6.70'
Top of Casing 5884.69'
Borehole 13.00'
Formation of Completion Valley Fill Alluvium
Casing Material Sch 5, Type 316, TFJ Stainless Steel
Casing Diameter 2" ID
Screen Material 0.010" wire wrap, Type 316, TFJ Stainless Steel
Surface Casing Diameter 5" ID
Date Installed June 9, 1987
Approved By
Site Manager
Installed By J. Bergman
Geologist
CEARP Manager
Comments Centralizer at 3.96-5.15'



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area
Well No. 41-87BR
Coordinates N 40133.61 E 21725.75
Elevation Ground Surface 5882.78'
Total Depth: Well 94.03'
Top of Casing 5884.55'
Borehole 110.00'
Formation of Completion Arapahoe Formation
Casing Material Sch 5, Type 316, TFJ Stainless Steel
Casing Diameter 2" ID
Screen Material 0.010" wire wrap, Type 316, TFJ Stainless Steel
Surface Casing Diameter 5" ID
Date Installed August 3, 1987
Approved By
Installed By K.D. Holliway
Geologist
Site Manager
CEARP Manager
Comments Surface casing set to 17.0' by J.B. Bergman on June 9, 1987.



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5854 05	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753342	AREA LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	42-87
EAST	2085526	LOCATOR NUMBER M13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	06/10/87	
REMARKS	Hollow Stem Auger						

GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE 0% 50% 100%

PERCENT RECOVERY 0% 100%

RECOVERY/INTERVAL: 0 5/0 5; 0/1 5; 0 75/0 9; 0/1 1; 2 2/2 1; 0 65/0 8; 0/0 5; 2 5/2 5

DATUM (FT): 5854, 5853, 5852, 5851, 5850, 5849, 5848, 5847, 5846, 5845

DEPTH (FT): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

WELL OR PIEZOMETER CONSTRUCTION: 06/10/87

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	CLAY - dark yellowish brown (10YR 4/2), moderate plasticity, some silt and organic detritus At 0 3 ft interval grades to gravel, medium gray (N5), sub-angular, poorly graded
NO SAMPLE	
GC	Clayey Gravel - light gray (N7), angular to sub-angular, poorly graded, some sand and silt
NO SAMPLE	
CL	GRAVELLY SILTY CLAY - mottled, light olive gray (5Y 6/1), dark yellowish orange (10YR 6/6), moderate plasticity, some fine sand
SILTSTONE	Top of Bedrock Grayish orange (10YR 7/4), bedding not discernable (massive?), highly weathered, moderately friable, localized inclusions of white carbonate mineralization 2 mm and less in size
NO SAMPLE	
CLAYSTONE	Light gray (N7), mottled grayish orange (10YR 7/4), bedding not discernable (massive?), highly weathered, moderately friable, localized inclusions of white carbonate mineralization 2 mm and less in size

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 4	GROUND ELEVATION (FT)	5854 05	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	753342	AREA LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB	42-87
EAST	2085526	LOCATOR NUMBER M13	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	06/10/87	
REMARKS	Hollow Stem Auger						

GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE 0% 50% 100%

PERCENT RECOVERY 0% 100%

RECOVERY/INTERVAL

DATUM (FT) | DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

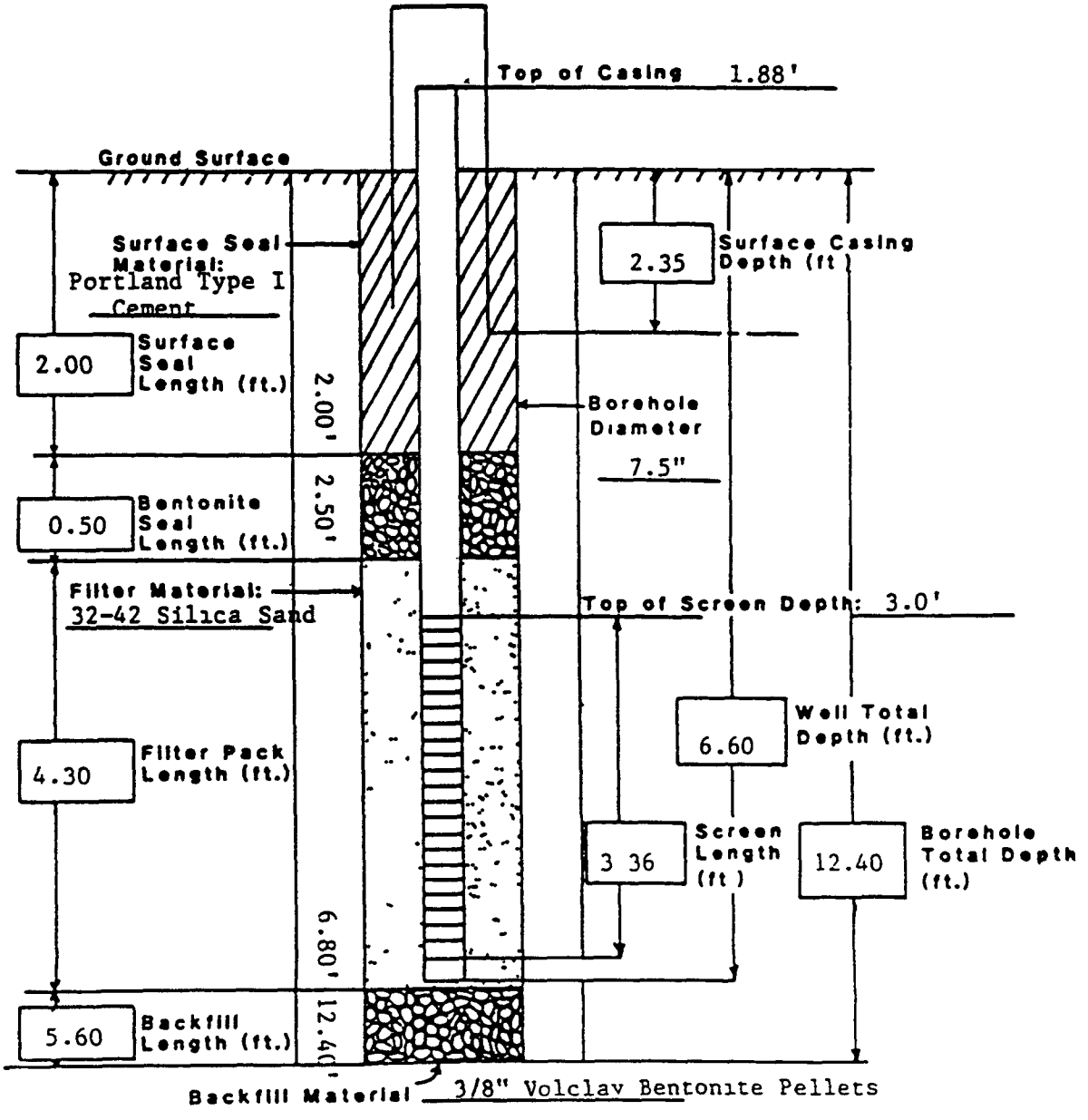
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

Recovery/Interval	Depth (ft)	Unified Soils Classification or Rock Type	Description
	10	CLAYSTONE	As above with a gradational change to siltstone with depth
1.05/2.1	11	SILTSTONE	Iron oxide staining occurs on fractures Fractures are curvilinear
0.4/0.4	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area
Well No 42-87
Coordinates N 40355.10 E 22430.99
Elevation Ground Surface 5854.05'
Total Depth: Well 6.60'
Top of Casing 5855.93'
Borehole 12.40'
Formation of Completion Valley Fill Alluvium
Casing Material Sch 5, Type 316, TFJ Stainless Steel
Casing Diameter 2" ID
Screen Material 0.010" wire wrap, Type 316, TFJ Stainless Steel
Surface Casing Diameter 5" ID
Date Installed June 10, 1987
Approved By
Site Manager
Installed By J. Bergman
Geologist
CEARP Manager
Comments



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 23 6	GROUND ELEVATION (FT)	5882 42	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH 753145	AREA LANDFILL	CASING DIAMETER (IN)	15 0 0	GEOLOGIST RTT	B206989
EAST 2094835	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED 04/19/89	

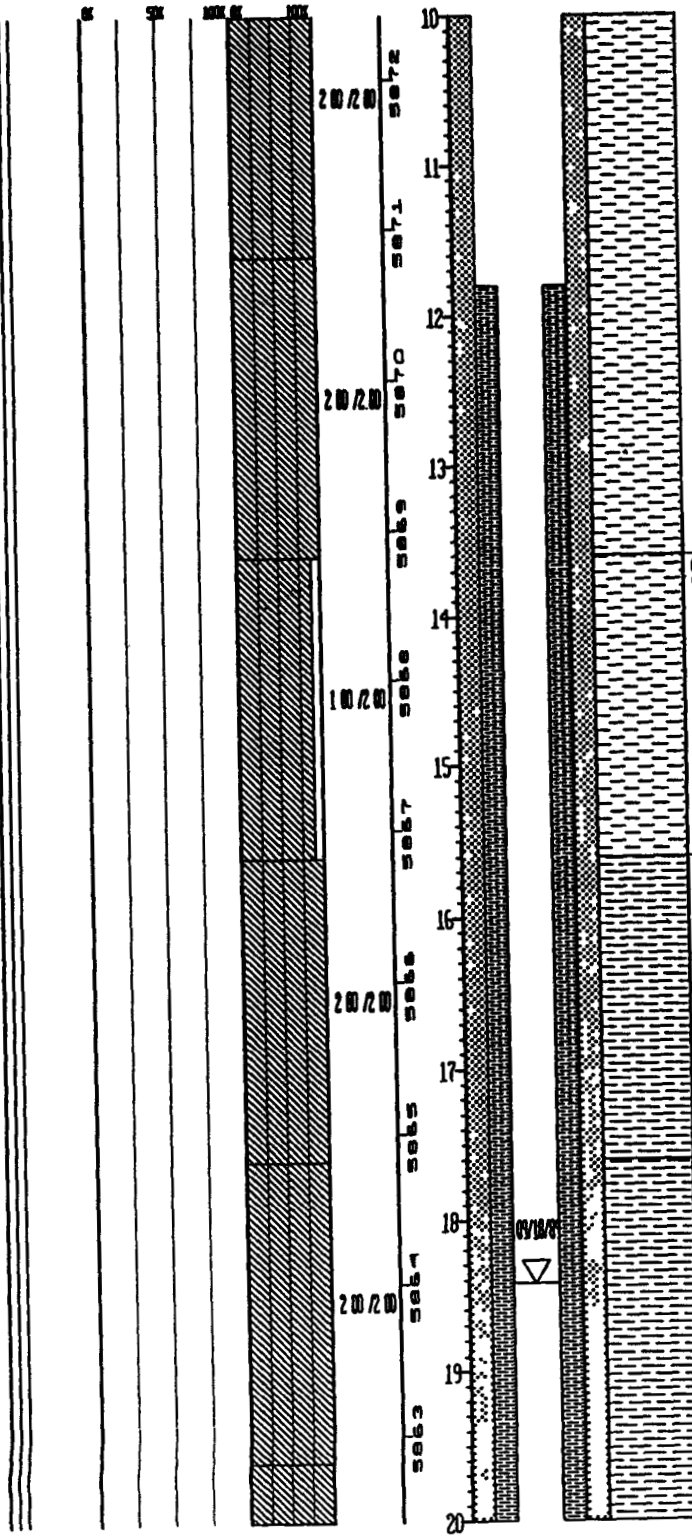
REMARKS Hollow Stem Auger Weston Log

CRITICAL SAMPLE DEPTH / PROPORTIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) / DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1 50 / 1 50	5882			CL	Clay - grayish brown (5 YR 3/2) Topsoil Some gravel (1 75 cm to 2 50 cm), sub-rounded and sub-angular Low plasticity, weakly cemented, poorly consol , abundt roots, moist
					5881			CL	Clay - Pale brown (5 YR 5/2) to pale yellowish brown (10 YR 6/2) Some gravel, numerous roots Med plasticity, weakly cemented, poorly consol , moist
				2 00 / 2 00	5880			CL	Clay - mod brown (5 YR 3/4) Some gravel to gravelly at bottom of sample Gravel (1 25 cm to 2 50 cm), sub-angular to sub-rounded Med plasticity, mod cemented, med stiff, moist to very moist at 3 4' to 3 6'
				2 00 / 2 00	5879			CL	Clay - pale yellowish brown (10 YR 6/2) to pale brown (5 YR 5/2) Some granitic and quartzite gravel Gravelly lense at 4 1' to 4 3', (0 75 cm to 1 50 cm), sub-rounded to sub-angular Few scattered roots, slightly oxide-stained med plasticity, mod cemented, mod consol , moist
				2 00 / 2 00	5878			CL	Sandy Clay - same as above F g sand
				2 00 / 2 00	5877			SANDY CLAYSTONE	Pale yellowish brown (10 YR 6/2) and light brown (5 YR 5/6) F g sand (3 0 phi to 2 5 phi), weakly cemented, low plasticity, lignite pockets, massive, homogeneous, med hard, oxide stained, weathered, slightly moist
				2 00 / 2 00	5876			SANDY CLAYSTONE	Same as above
					5875				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 23 6	GROUND ELEVATION (FT)	582 42	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753145	AREA LANDFILL	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	RIT	B206989
EAST	2084835	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/19/89	

REMARKS Hollow Stem Auger Weston Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SIMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

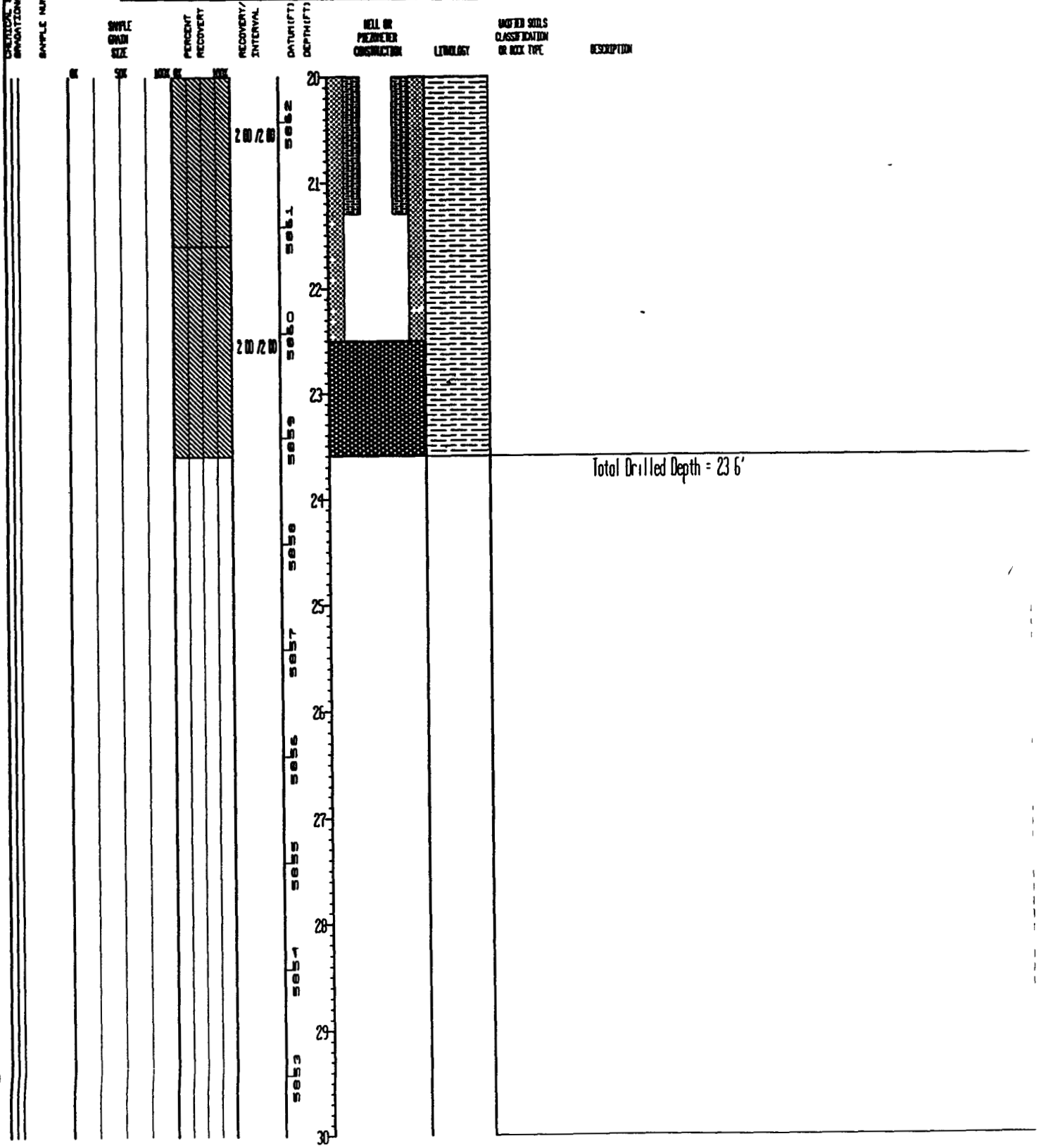


SANDY CLAYSTONE Pale yellowish brown (10 YR 6/2) to grayish orange pink (5 YR 7/2) and pale brown (5 YR 5/2) F g sand (3 5 phi to 2 5 phi), well sorted Low plasticity, weakly cemented, massive, homogeneous, poorly consol , med hard, weathered, slightly moist

CLAYSTONE Med light gray (N 6/0) Massive, homogeneous, mod cemented, med hard to hard, med plasticity, occasional thin oxide streaks or strings, blocky, slightly weathered, slightly moist

CLAYSTONE Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 23 6	GROUND ELEVATION (FT)	5882 42	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753145	AREA LANDFILL	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	RTT	B206989
EAST	2084835	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/19/89	
REMARKS	Hollow Stem Auger Weston Log						



Total Drilled Depth = 23 6'

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 14-24-89

Location Rocky Flats Plant; Land Fill Area

Well No. B206989

Coordinates N 40160.69 E 21739.67 (RFP)

Elevation: Ground Surface 5882.42'

Total Depth: Well 22.5'

Top of Casing 5884.32'

Borehole 23.6'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC

Casing Diameter 4 1/2" O.D.

Screen Material Schedule 40 10-slotted PVC

Surface Casing Diameter 8 5/8" O.D.

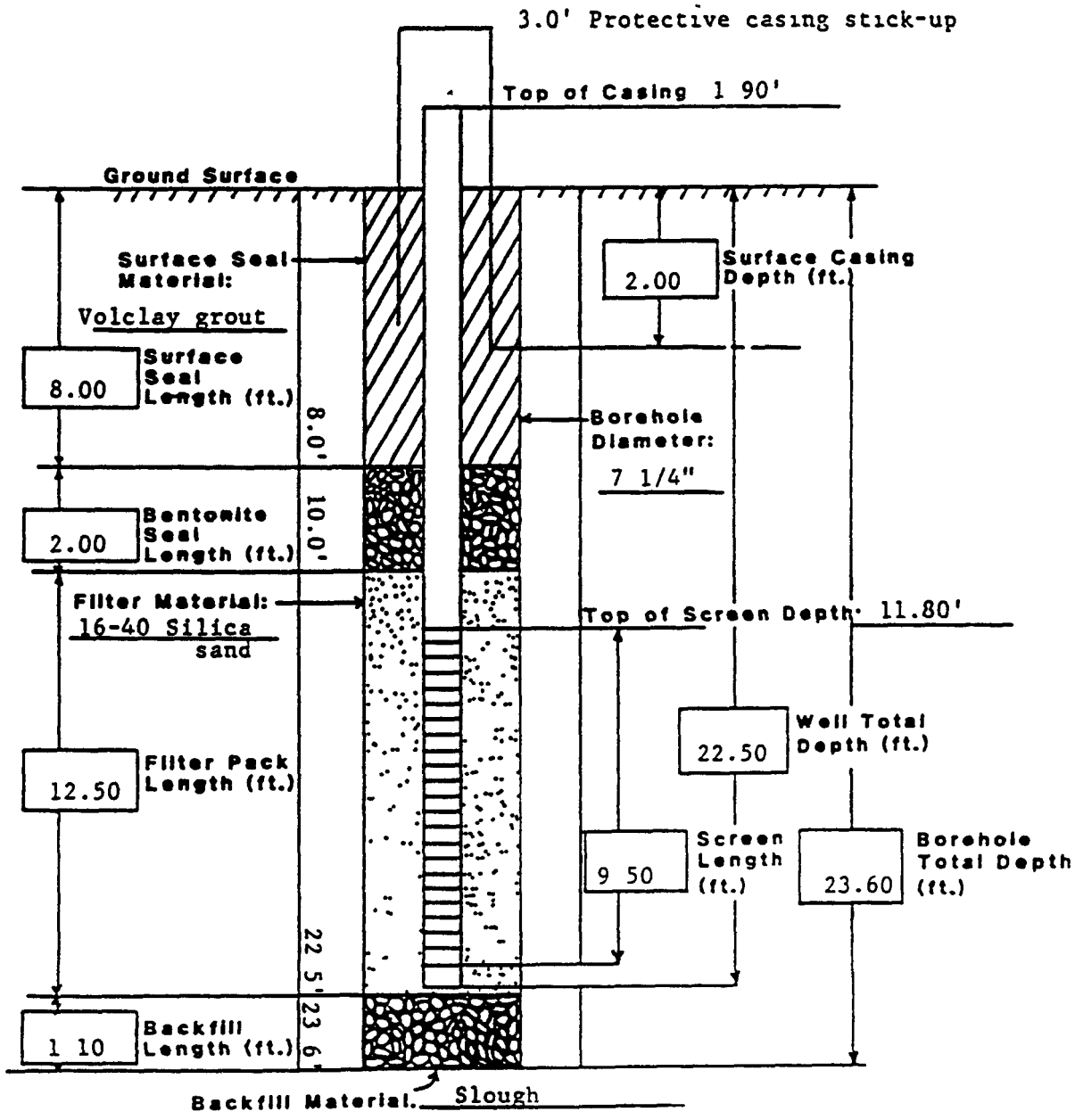
Date Installed 04/20/1989

Approved By Jarell Burman
Site Manager

Installed By R.T. Treat
Geologist

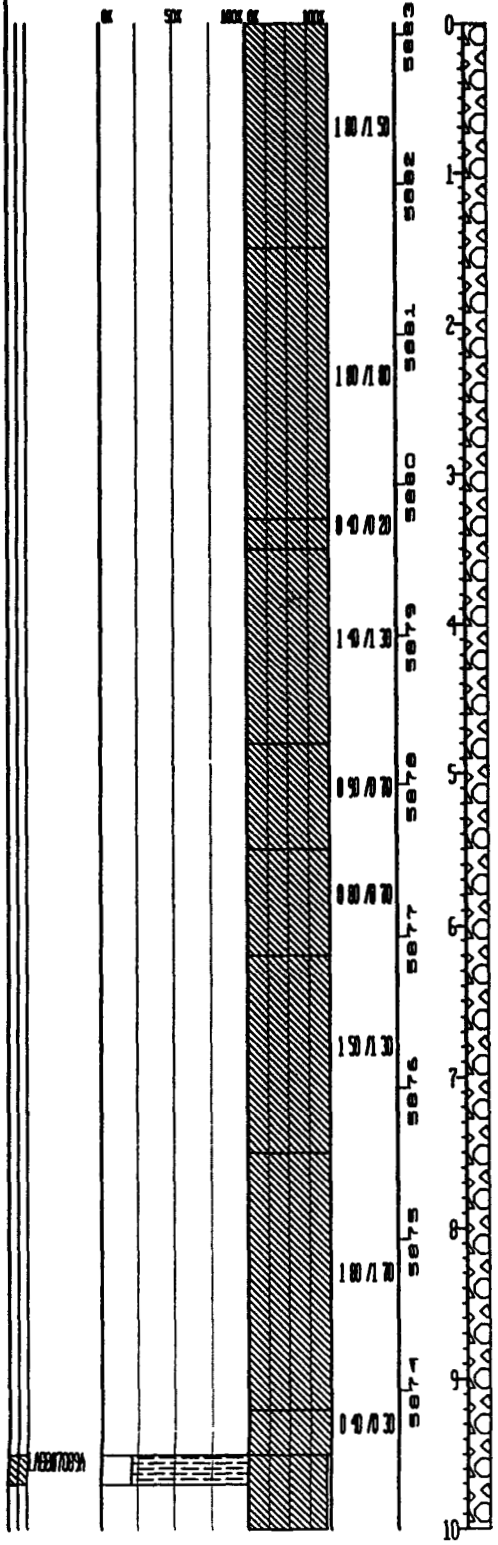
CEARP Manager

Comments Set stainless steel centralizer from 21.10' to 22.30' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60	GROUND ELEVATION (FT)	5883 07	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753103	AREA LANDFILL	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	LAH	B207089
EAST	2094837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	

REMARKS Hollow Stem Auger ASI Log



LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CL	Silty Sandy Clay - grayish brown to dusky brown (5 YR 3/2 to 5 YR 2/2) V f g sand, mod to high plasticity Root material (abundt) in top 3 in , trace in rest of interval Becomes gravelly at approx 6 in depth Gravel poorly graded angular to rounded (angularity probably due to breakage in drilling) Root material throughout interval Gravel to 2 cm (Sandy Clay with abundt Silt) 35% sand, 35% clay, 30% silt
	ML	Clayey Sandy Silt - Dark yellowish orange to pale yellowish brown (10 YR 6/0 to 10 YR 6/2) Mottled V f g sand Mildly calcareous, some caliche stringers Trace carbonaceous material at bottom (3 in) of interval Irreg laminated-bedding approx 3in thick, horiz (Clayey Silt with trace Sand) 5% sand, 45% clay, 50% silt
	ML	Same as above More carbonaceous material Trace f g sand Trace root material
	ML	Same as above Becomes more friable, and more sandy Some f g sand, trace med grained sand (Clayey Silt with some Sand) 10% sand, 40% clay, 50% silt
	ML	Same as above V f g sand thin, laminated, horiz bedding Trace caliche stringers (Sandy Silt with abundt Clay) 35% sand, 30% clay, 35% silt
	SILTY SANDSTONE	Top of Bedrock at 6 0' Bedding not evident (not consol as in above interval) (Silty Sandstone with abundt Clay) 35% sand, 30% clay, 35% silt
	SILTY CLAYSTONE	Pale yellowish brown to dark yellowish orange (10 YR 6/2 to 10 YR 6/6) V f g sand, well sorted Mod porous Laminated bedding, horiz Mod friable, mildly calcareous Some thin layers of clayey sandstone Some sand (Silty Claystone with some Sand) 20% sand, 50% clay 30% silt Note Rock type stated as Sandy Silty Claystone
	CLAYEY SANDSTONE	Weathered Dark yellowish brown (10 YR 4/2) V f g to f g sand, mod to well sorted Porous, mod friable to friable Thin, laminated bedding, horiz Some silt Color change to very pale orange (10 YR 8/2) toward bottom of interval (Clayey Sandstone with some Silt) 50% sand, 40% clay, 10% silt
	CLAYEY SANDSTONE	Same as above, grades to weathered Silty Claystone Weathered, pale yellowish brown (10 YR 6/2) with some dark yellowish orange layers (10 YR 6/6) Mod friable Mod porous, thin, laminated bedding approx 1/4 in 50% clay, 40% silt

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	60	GROUND ELEVATION (FT)	5883 07	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753103	AREA	LANDFILL	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	LAH	B207089
EAST	2084837	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	

REMARKS Hollow Stem Auger ASI Log

CHRONOLOGICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					10			SILTY CLAYSTONE	Pale yellowish brown (10 YR 6/2), weathered Some v f g sand with trace f g sand Mod to well sorted Mod porous Trace iron staining Trace carbonaceous material Grades to Claystone Some silt at bottom of interval (last 3 in) Sieve Results Claystone - >50% clay
				1 50 / 2 00	11			CLAYSTONE	Brownish gray to olive gray (5 YR 4/1 to 5 Y 4/1), weathered Mod porous, more friable Bedding not evident Trace silt >80% clay.
				0 50 / 1 00	12			CLAYSTONE	Some as above Higher silt content, less friable Trace v f g sand >80% clay
				1 30 / 1 00	13			CLAYSTONE	Some as above Trace iron staining >80% clay
				0 30 / 0 50	14			CLAYSTONE	Some as above >80% clay
				1 00 / 1 50	15			CLAYSTONE	Light brownish gray to light olive gray (5 YR 6/1 to 5 Y 6/1), weathered Trace silt Mod porous to porous, mod friable to friable Trace to some iron staining Faint horiz bedding barely visible Trace carbonaceous material on one bedding layer Top of interval is crumbled, bottom is more consol Bottom is less iron stained >80% clay
				2 00 / 2 00	16			CLAYSTONE	Some as above Color changes at mid interval from brownish gray (5 YR 4/1) at top to pale yellowish brown (10 YR 6/2) at bottom All else, same as above Top of interval desegregated and iron stained Bottom less desegregated but more friable >80% clay
				1 20 / 1 00	17			CLAYSTONE	Some as above Not desegregated >80% clay
				0 80 / 1 00	18			CLAYSTONE	Pale yellowish brown (10 YR 6/2) Mod porous, mod friable Bedding not evident In top half of interval horiz , laminated in bottom half Top half iron stained and broken up Bottom half is consol and less iron stained Bottom half color is light olive gray (5 Y 6/1) >80% clay
					19				
					20				

STATE PLANE COORDINATE
NORTH 753103
EAST 2094837

TOTAL DEPTH (FT) 60
AREA LANDFILL
LOCATOR NUMBER L13

GROUND ELEVATION (FT) 5883 07
CASING DIAMETER (IN) 4 5 0 D
BOREHOLE DIAMETER (IN) 7 25

PROJECT NUMBER
GEOLOGIST LAH
DATE DRILLED 04/24/89

LOG OF BORING NUMBER
B207089

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

0% 50% 100% 0% 100%

2.00 /2.00
2.00 /2.00
2.20 /2.00
2.20 /2.00
2.20 /2.00

sab3 sab2 sab1 sab0 sab4 sab5 sab7 sab6 sab8 sab9

20 21 22 23 24 25 26 27 28 29 30

CLAYSTONE	Light olive gray (5 Y 4/1) Mod porous, mod friable, weathered Horiz layered bedding approx 1/4 in Some iron staining Trace carbonaceous material Trace to some silt >80% clay
SILTY CLAYSTONE	Pale yellowish brown (10 YR 6/2) to light olive gray (5 Y 6/1) Weathered, mottled with dark yellowish orange staining Trace v f g sand Thin, nearly horiz, laminated bedding approx 1/8-1 4 in thick Trace black carbonaceous material Friable, porous Abundt staining at very bottom of interval (Silty Claystone with trace Sand) 4% sand, 48% clay, 48% silt
CLAYSTONE	Same as above, except less silt Some iron oxide Possibly fracture fill >75% clay
SILTY CLAYSTONE	Light olive gray (5 Y 6/1) Trace v f g sand, mod porous to porous Friable to mod friable Thin, laminated bedding (approx 1/8 in) visable on some pieces Trace iron staining 60% clay, 40% silt
SILTY CLAYSTONE	Same as above Slightly darker in center of interval-(olive gray (5 Y 4/1))

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60	GROUND ELEVATION (FT)	5983 07	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753103	AREA LANDFILL	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	LAH	B207089
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2.20 /2.00	5953	30				
					5952	31				
				1.00 /2.00	5951	32			SILTY CLAYSTONE	Light olive gray to olive gray (5 Y 6/1 to 5 Y 4/1) Some sand v f g to med grained Mod sorted, mod porous, mod friable Bedding not evident Core in small pieces Note Rock type stated as Sandy Silty Claystone 50% clay, 30% silt, 20% sand
					5950	33				
				0.80 /2.00	5949	34			SILTY CLAYSTONE	Same as above (Silty Claystone with some Sand) 20% sand, 50% clay, 30% silt Note Rock type stated as Sandy Silty Claystone
					5948	35				
				2.40 /2.00	5947	36			SANDY CLAYSTONE	Olive gray (5 Y 4/1) V f g sand, well sorted Mod porous Bedding appears laminated, almost horiz Slightly friable Trace carbonaceous material (Sandy Claystone with some Silt) 40% sand, 50% clay, 10% silt
					5946	37				
	B207089			1.20 /1.00	5945	38			SANDY CLAYSTONE	Same as above V f g to f g sand Some m g sand (Sandy Claystone with some Silt) 30% sand, 60% clay 10% silt
				0.00 /1.00	5944	39			NO SAMPLE	NO SAMPLE
						40			NO SAMPLE	NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60	GROUND ELEVATION (FT)	5883 07	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753103	AREA LANDFILL	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	LAH	B207089
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 0 / 2 0 0	5843	40				
					5842	41				
				0 0 / 1 0 0	5841	42			NO SAMPLE	NO SAMPLE
				0 0 / 1 0 0	5840	43			SANDY CLAYSTONE	Olive gray (5 Y 4/1) V f g to f g sand Mod to slightly friable Bedding appears to be laminated, horiz Some carbonaceous material in irreg bedding planes Trace iron staining 30% sand, 55% clay
				1 0 0 / 2 0 0	5839	44			SANDY CLAYSTONE	Same as above 30% sand, 55% clay
				0 5 0 / 0 5 0	5838	45			SANDY CLAYSTONE	Same as above Laminated bedding more visable 30% sand, 55% clay
				1 3 0 / 1 0 0	5837	46			SANDY CLAYSTONE	Same as above Bedding not evident 30% sand, 55% clay
				1 0 0 / 1 0 0	5836	47			SANDY CLAYSTONE	Same as above, increase in carbonaceous material content Bedding appears horiz from fractures 30% sand, 55% clay
				0 0 / 1 0 0	5835	48			SANDY CLAYSTONE	Same as above (Sandy Claystone with some Silt) 20% sand, 60% clay, 20% silt
				0 0 / 0 5 0	5834	49			NO SAMPLE	NO SAMPLE
				0 0 / 1 0 0		50	04/24/89 ▽		SANDY CLAYSTONE	Same as above (Sandy Claystone with trace Silt) 35% sand, 60% clay, 5% silt

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60		GROUND ELEVATION (FT)	5983 07	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753103	AREA LANDFILL		CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	LAH
EAST	2084837	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89
REMARKS	Hollow Stem Auger AST Log						B207089

CHEMICAL SAMPLE DEPTH / GRAVITATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) / DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					50				
				00 / 00	5933			NO SAMPLE	NO SAMPLE
					51				
				00 / 00	5932			SANDY CLAYSTONE	Olive gray to olive black (5 Y 4/1 to 5 Y 2/1) V f g sand, well sorted Mod porous, slightly friable Bedding appears to be thin, laminated, but difficult to tell because of desegregation of core Some carbonaceous material (Sandy Claystone with some Silt) 25% sand, 60% clay, 15% silt
				10 / 10	5931				
					52				
				10 / 10	5930			SANDY CLAYSTONE	Same as above Trace of iron staining (Sandy Claystone with some Silt) 25% sand, 60% clay, 15% silt
					53				
				10 / 10	5929			SANDY CLAYSTONE	Same as above (Sandy Claystone with some Silt) 25% sand, 60% clay, 15% silt
					54				
				20 / 10	5928			SANDY CLAYSTONE	Olive gray (5 Y 4/1) V f g sand, well sorted Mod porous, mod friable Some carbonaceous material, trace iron staining Thin, irreg laminated bedding 30% sand, 65% clay
					55				
				10 / 10	5927			SANDY CLAYSTONE	Same as above 35% sand, 60% clay
					56				
				10 / 10	5926			SANDY CLAYSTONE	Same as above, very friable Totally crumbled most of interval Bedding not evident 35% sand, 65% clay
					57				
				10 / 10	5925			SILTY CLAYSTONE	All else same as above Trace carbonaceous material Bedding not evident 65% clay, 30% silt
					58				
				10 / 10	5925			SILTY CLAYSTONE	Same as above, not as friable Thin, platey bedding visible Thin laminations of v f g sand visible 65% clay, 30% silt
				10 / 10	5924				
					59				
				10 / 10	5924			CLAYSTONE	All else same as above, some slickensides visible >80% clay Total Drilled Depth = 60 0'
					60				

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 11-26-89

Location Rocky Flats Plant: Land Fill Area
Coordinates N 40110.58 E 21741.54 (RFP)
Total Depth: Well 54.0'
Borehole 60.0'

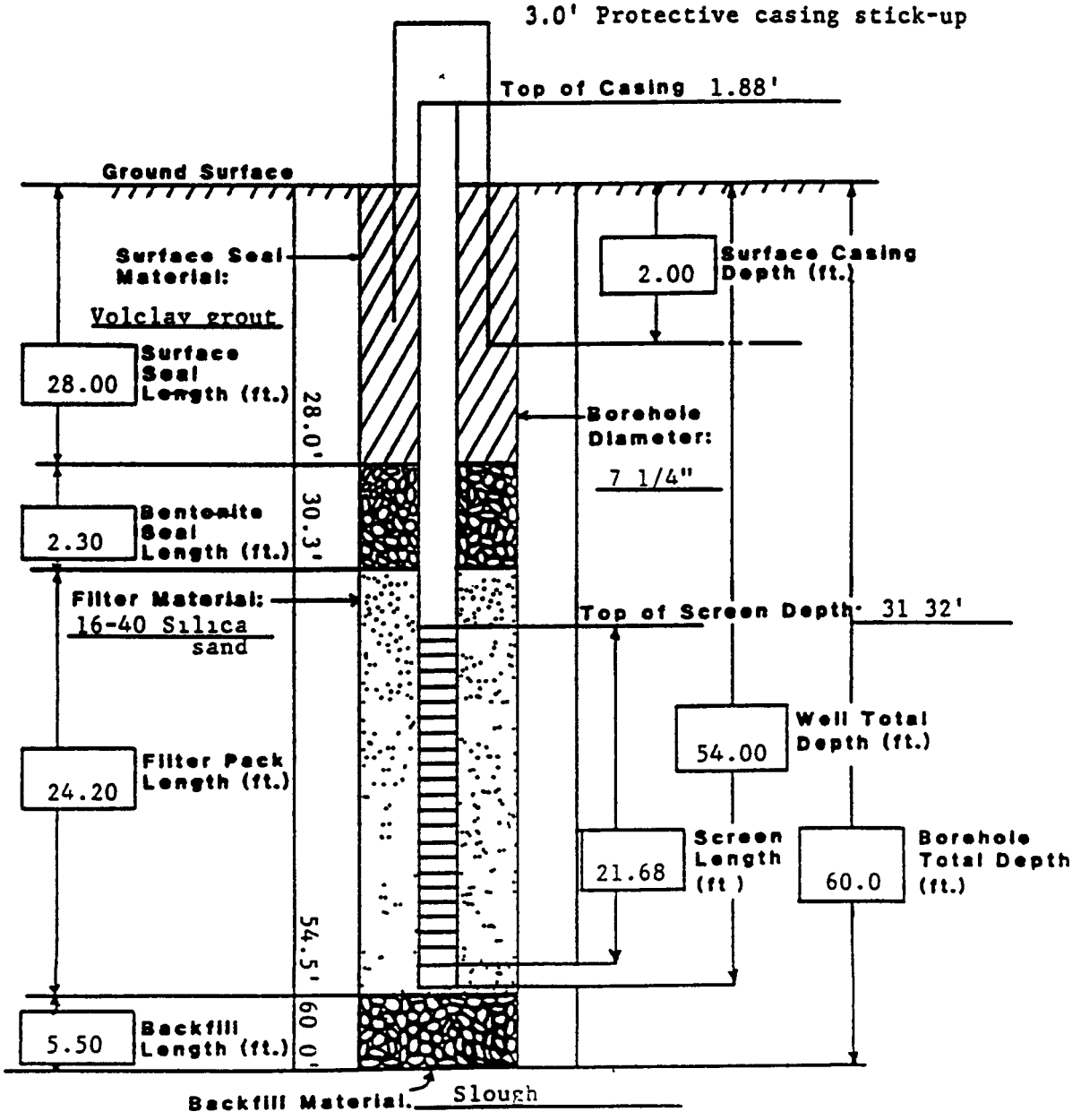
Well No. B207089
Elevation Ground Surface 5883.07'
Top of Casing 5884.95'

Formation of Completion Unweathered Sandstone
Casing Material Schedule 40 PVC
Screen Material Schedule 40 10-slotted PVC
Date Installed 04/25/1989
Installed By R.T. Treat
Geologist

Casing Diameter 4 1/2" O D
Surface Casing Diameter 8 5/8" O.D.
Approved By Jarell Burman
Site Manager

CEARP Manager

Comments Ser stainless steel centralizer from 52 6' to 53.8' below ground surface



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	DCB	B207189
EAST 2084837	LOCATION NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

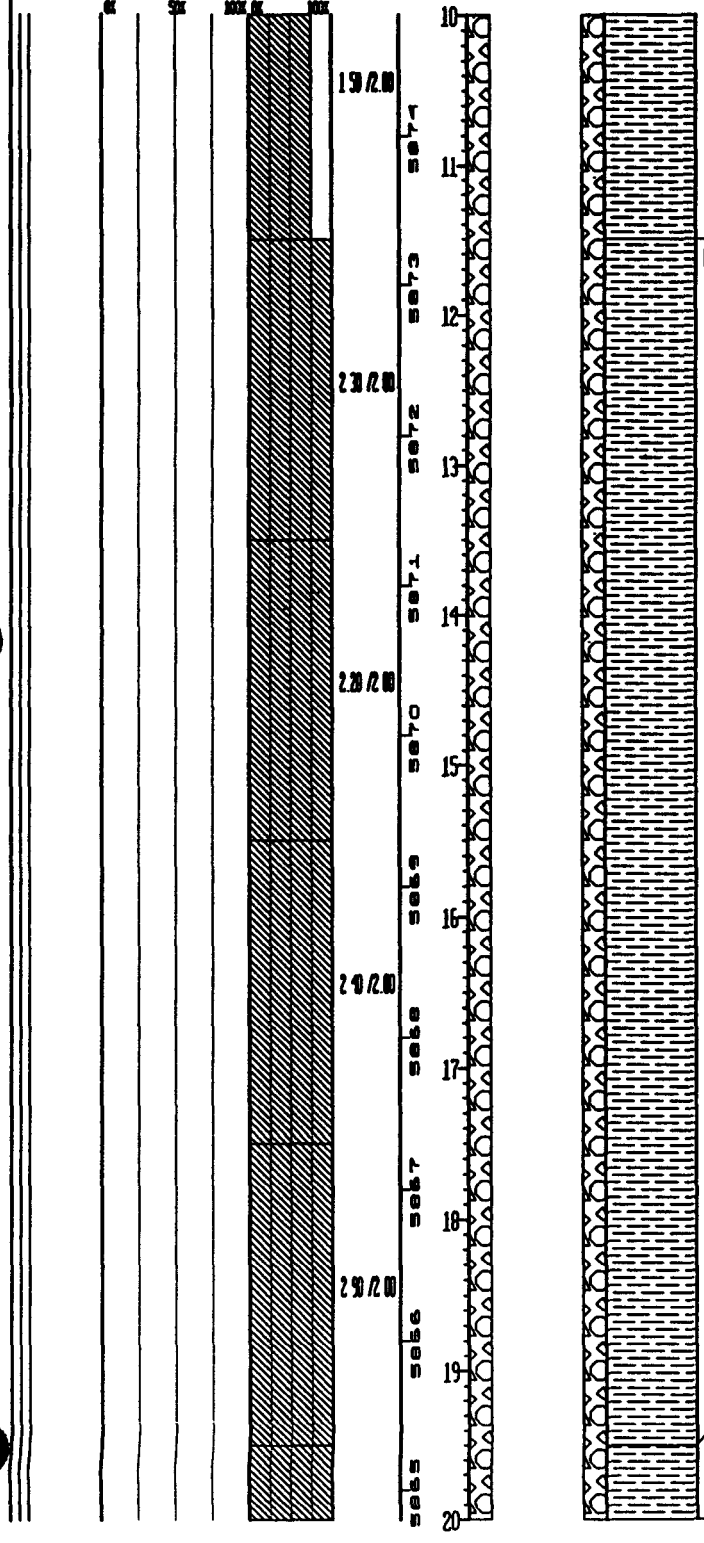
REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / RADIATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT) DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1.20 /1.50	0			CL	Silty Clay - dark yellowish brown (10 YR 4/2), mod plasticity Some gravel, trace of roots >50% clay
				2.30 /2.00	2			GP	Gravel - light gray (N7), angular to sub-angular, poorly graded, max size 3 5 cm Trace to some clay Trace of silt, locally calcareous >50% clay
				0.00 /1.00	4			NO SAMPLE	NO SAMPLE
				1.10 /1.00	5			GC	Clayey Gravel - light gray (N7), matrix is dark yellowish brown (10 YR 4/2) Sub-angular to sub-rounded, well graded Max size approx 6 5 cm Some sand and silt, locally calcareous
				2.10 /2.00	7			CLAYSTONE	Top of Bedrock Claystone - mottled dark yellowish orange (10 YR 6/6) and light gray (N7) Bedding is thin (<2 mm) where apparent and exhibits deformation Highly weathered, mod friable Trace to some carbonaceous material and small bodies of caliche (<3 mm diam) Trace silt and v f g sand Color grades to med light gray (N6) below approx 7 5' and silt fraction increases
				2.40 /2.00	9			CLAYSTONE	Olive gray (5 Y 4/1), thin bedded (<2 mm) where apparent Well weathered, mod friable Some silt to silty Some carbonaceous material and Mg and Fe oxides, locally calcareous >50% clay
					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT) 5884 80	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN) 2 3/8 0 0	GEOLOGIST DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED 06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

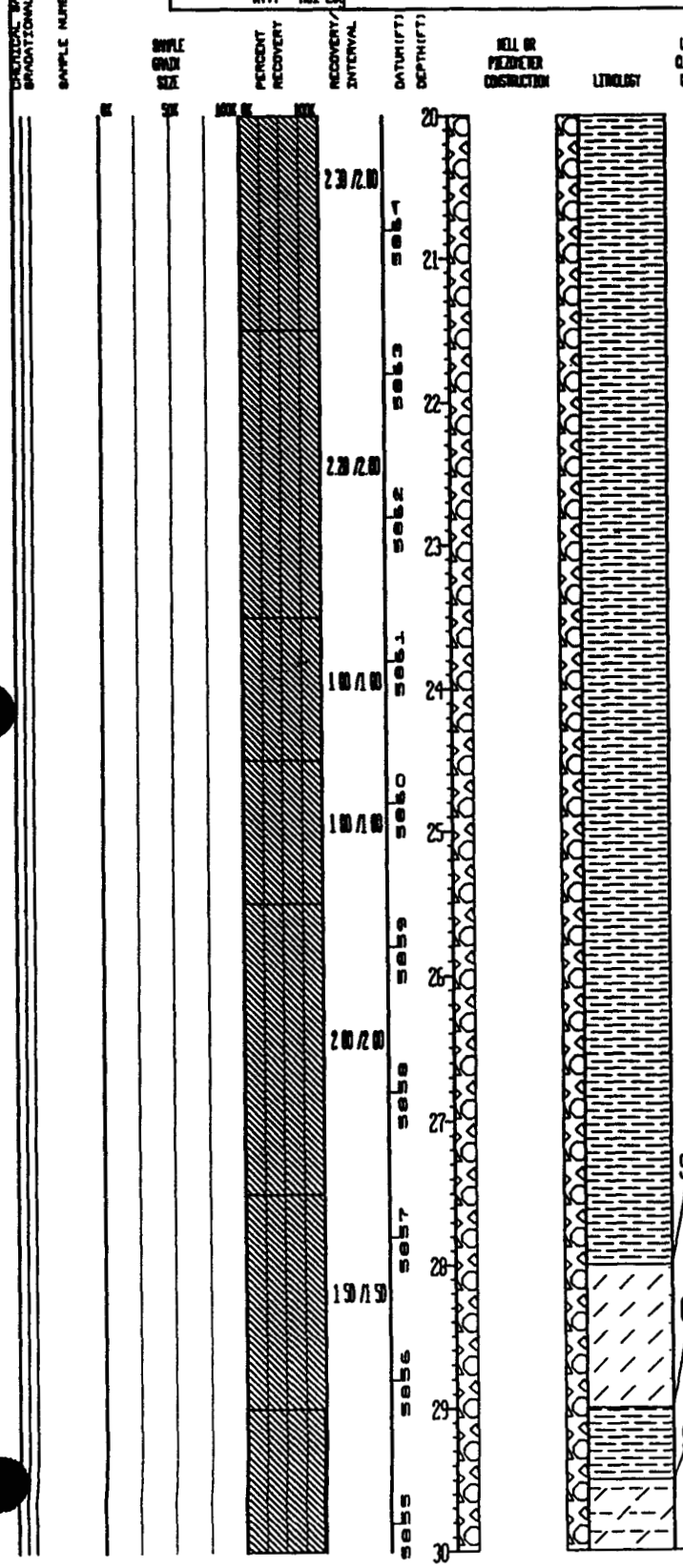
CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Color grades to med gray (N5) below approx 11 7', and carbonaceous material, Mg and Fe oxides diminish Mg oxides are absent below approx 13 0' V f g sand occurs locally and disseminated in irreg pockets Sand fraction diminishes with depth and is absent below approx 14 5' >50% clay
CLAYSTONE	Silt fraction increases at approx 19 8' and varies locally Iron staining occurs on fracture surface >50% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to 259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log



SILTSTONE	Light gray (N7), poorly bedded, slightly friable Some clay, iron staining on fractures
CLAYSTONE	Highly weathered Dark yellowish brown (10 YR 4/2), bedding not apparent Mod friable, slight amount of iron staining locally >50% clay
SILTY CLAYSTONE	Light gray (N7), bedding not apparent Well weathered, slightly friable, on fresh surface color is med gray (N5) >50% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

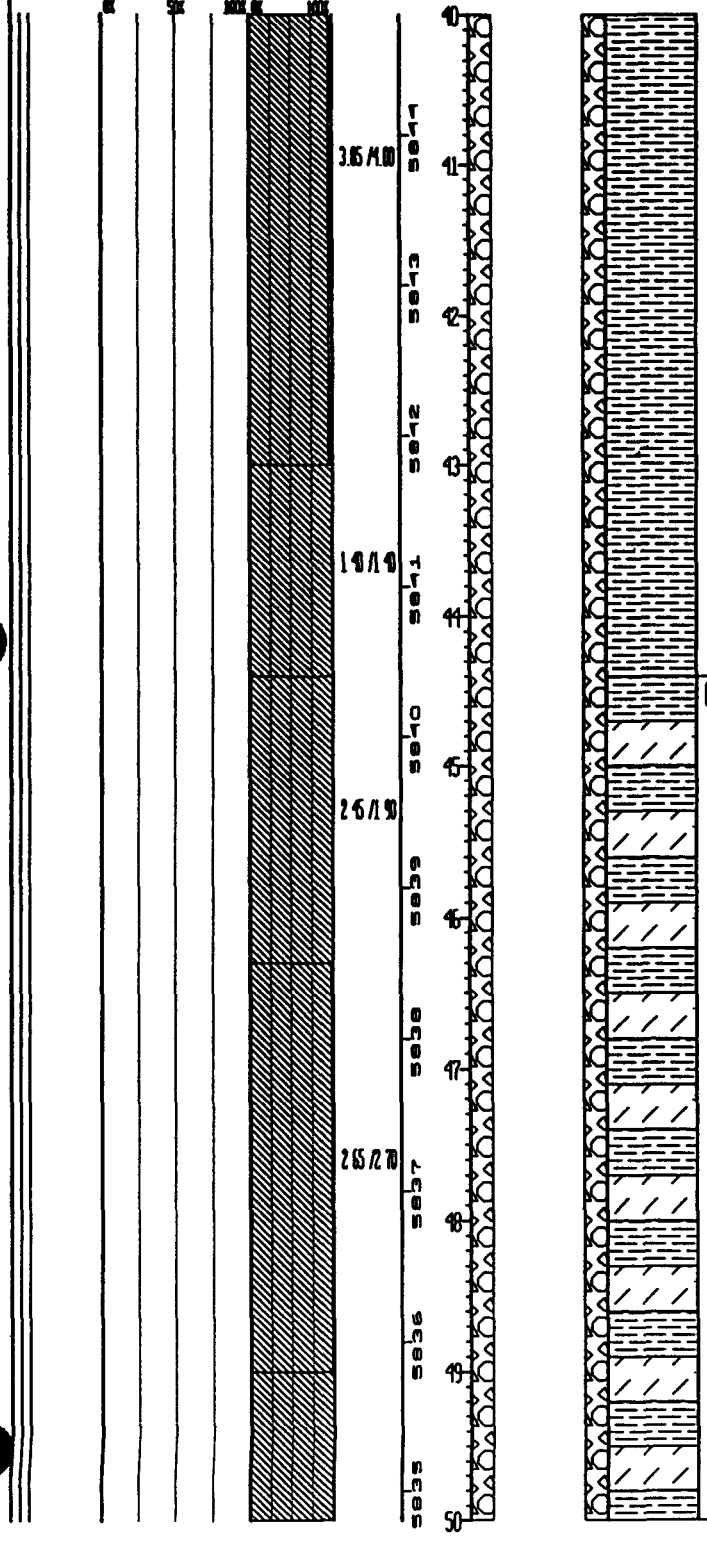
REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to 259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CORE/CUTTINGS SAMPLE DEPTH (FT) BEGINNING SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				3 00 / 3 00	5854 30				
					5853 31	04/08/89 ▽			
					5852 32			CLAYSTONE	Dark yellowish brown (10 YR 4/2), bedding not apparent Highly weathered, mod friable Iron staining on possible fracture surface at approx 33 2'
				4 20 / 5 00	5851 33				
					5850 34			SILTY CLAYSTONE	Med dark gray (N4), bedding not apparent Weathered, slightly friable >50% clay
					5849 35				
				1 00 / 1 00	5848 36				
					5847 37			SILTY CLAYSTONE	Same as above, bedding is thin (2 mm) where apparent >50% clay
				1 70 / 1 90	5846 38				
				0 00 / 0 50	5845 39			CLAYSTONE	Dark gray (N3), thin bedded (2 mm) where apparent Weathered, mod friable Mod silt component, slight amount of carbonaceous material >50% clay
					5844 40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT) 5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN) 2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



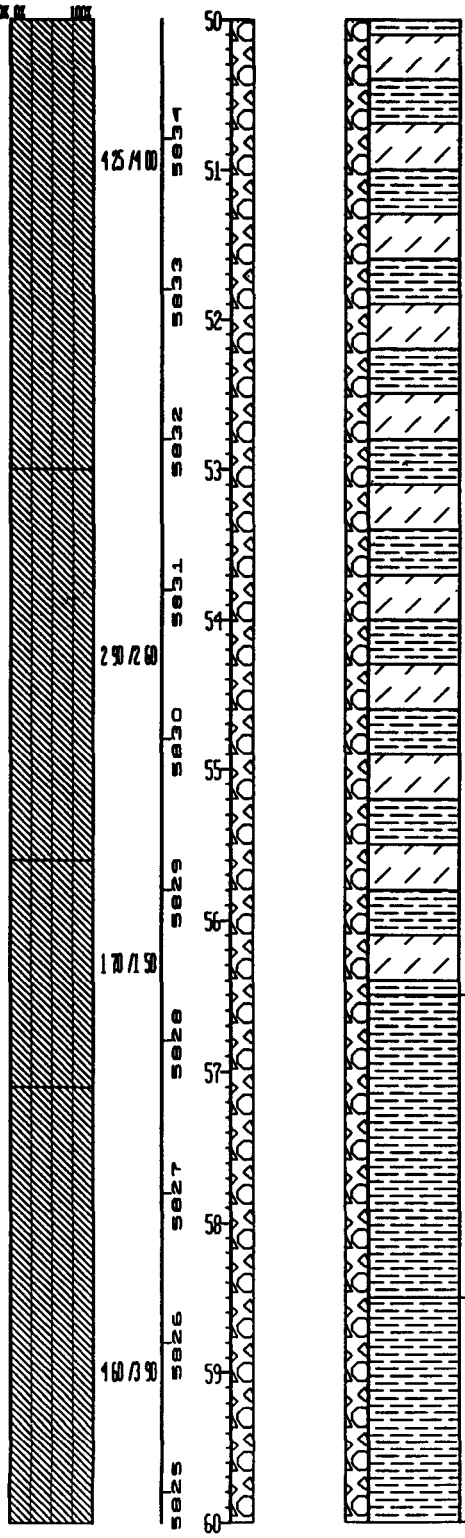
CLAYSTONE

Claystone and Siltstone interbedded, dark gray (N3) and light gray (N7), respectively Thin bedded (<2 mm), soft sediment deformation apparent, slumping beds apparent Slightly weathered, slightly friable Some carbonaceous material Iron staining on fractures and locally as irreg mottling Occasional bodies of coal (<2 mm)
Approx 50% silt, approx 50% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE 0% 50%
PERCENT RECOVERY 100% 0% 100%
RECOVERY/INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Same as above - silt fraction decreases >50% clay
CLAYSTONE	Olive gray (5 Y 4/1), bedding not apparent Weathered, slightly friable >50% clay

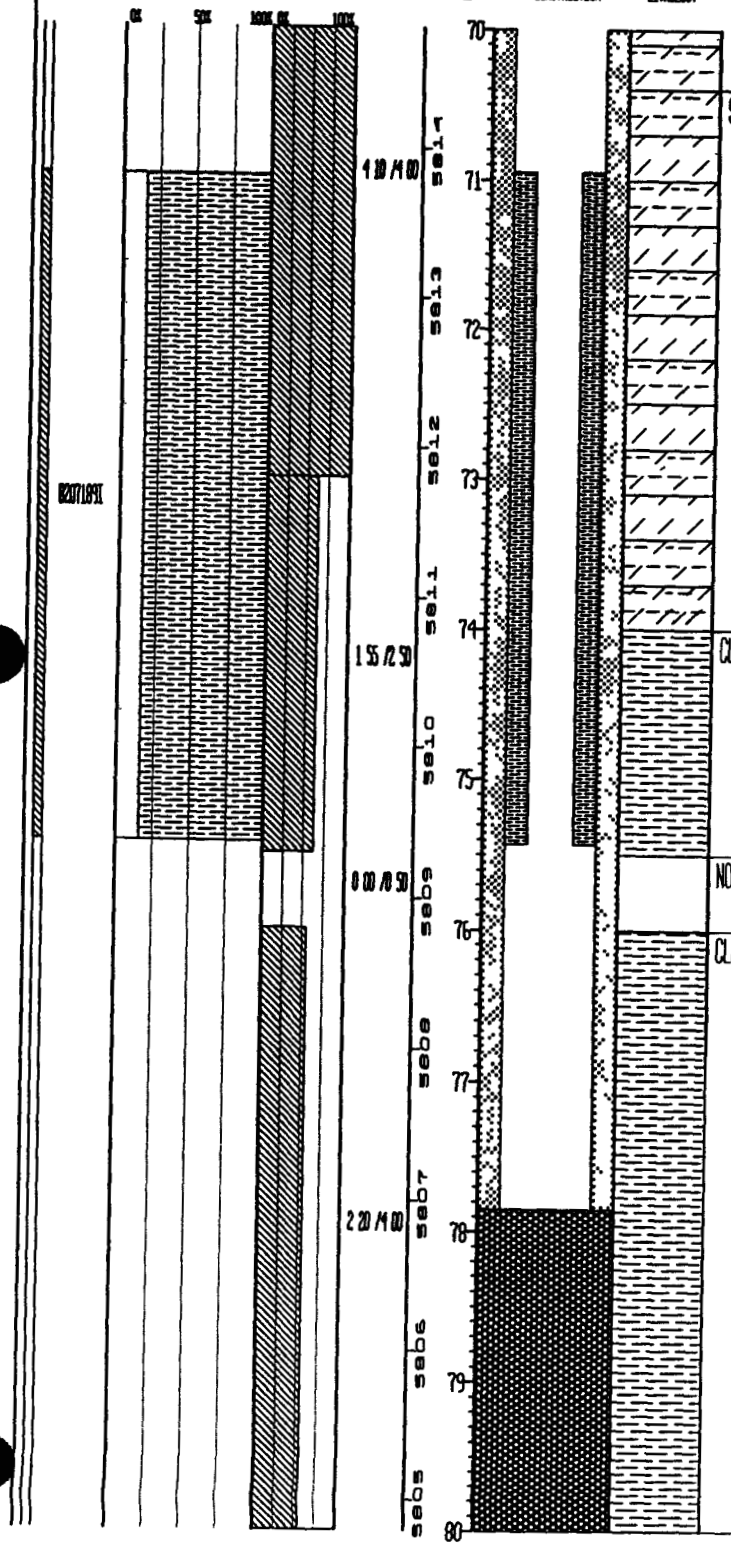
STATE PLANE COORDINATE		TOTAL DEPTH (FT)	259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA	LANDFILL	CASING DIAMETER (IN)	2 3/8 0 D	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100% OR 100%			60				
					5824	61			CLAYSTONE	Same as above, interval grades to dark gray (N3) >50% clay
					5823	62				
				3 40 / 3 30	5822	63			CLAYSTONE	Same as above Iron nodules approx 1 mm in diam at 62 5', and color grades to olive gray (5 Y 4/1) with slight silt fraction >50% clay
					5821	64				
				0 80 / 0 70	5820	65			CLAYSTONE	Olive gray (5 Y 4/1), poorly bedded Weathered, mod friable Mod silt fraction that decreases with depth Interval becomes carbonaceous from approx 67 3' to approx 67 6' Bedding angle 0 degrees where apparent >50% clay
					5819	66				
				1 70 / 1 60	5818	67				
					5817	68			SILTY CLAYSTONE	Light gray (N7) to med dark gray (N4) Bedding not apparent, slightly weathered, slightly friable
					5816	69			SILTY CLAYSTONE	Interbedded Silty Claystone and m g to v f g Sandstone Thin bedded (<5 mm), weathered Mod to slightly friable Abundt carbonaceous material in interval from approx 70 0' to approx 70 4' Approx 35% sand, approx 10% silt, approx 55% clay
					5815	70				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Interval grades to interbedded Silty Claystone and Siltstone Silty Claystone and Siltstone med dark gray (N4) to very light gray (N8), respectively Thin bedded (<2 mm), bedding exhibits soft sediment deformation Slightly friable, some carbonaceous material Slight to abundt v f g sand component Fracture angle approx 15 degrees Approx 35% sand, approx 10% silt, approx 55% clay
CLAYSTONE	Dark gray (N3), bedding not apparent Weathered, mod friable Mod silt fraction, mod carbonaceous material
NO SAMPLE	NO SAMPLE
CLAYSTONE	Olive gray (5 Y 4/1), bedding not apparent Weathered, mod friable Slight silt fraction increasing to mod silt fraction with depth Interval is carbonaceous from approx 80 0' to 80 3' >50% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89

B207189

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

0% 50% 100% OR 100%

2 90 /1 20

1 70 /1 80

1 20 /3 90

1 00 /1 00

5804 5803 5802 5801 5800 5799 5798 5797 5796 5795

80 81 82 83 84 85 86 87 88 89 90

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Dark gray (N3), interfingering discontinuous beds of Silty Sandstone, <3 mm thick, very light gray (N8) Slightly friable, occasional carbonaceous material and iron stains Sand is f g to v f g, Claystone has mod silt fraction Approx 10% to 20% v f g sand and silt, >70% clay

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST 2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to 259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						90				
				0 00 / 0 10	5794	91			NO SAMPLE	NO SAMPLE
									CLAYSTONE	Same as above (reference interval 85 0' to 90 9')
				3 20 / 2 90	5793	92				
					5792	93				
				0 00 / 0 10	5791	94			NO SAMPLE	NO SAMPLE
									CLAYSTONE	Same as above (reference interval 85 0' to 90 9')
					5790	95				
				3 90 / 3 80	5789	96			CLAYSTONE	Med dark gray (N4), bedding not apparent Slightly friable, mod silt fraction >50% clay
									SILTY CLAYSTONE	Silty Claystone and Silty Sandstone, interbedded, med dark gray (N4) and light gray (N7), respectively Thin bedded (<4 mm) to irreg and distorted bedding (soft sediment deformation) Slightly friable, mod carbonaceous material including occasional bodies of coal (<2 mm diam) Sand is m g to v f g, sub-rounded, poorly sorted Bedding angle approx 10 degrees Approx 45% sand and silt, approx 55% clay
					5788	97				
					5787	98				
				2 60 / 2 40	5786	99				
					5785	100			CLAYSTONE	Claystone and Silty Sandstone interbedded, as above, with both intraclasts and sub-rounded Sandstone clasts

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIEVE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						100				
					5784					
				1 00 / 1 00		101			CLAYSTONE	Dom Claystone from approx 101 0' to approx 101 8'
					5783					
						102			SANDSTONE	Sandstone interbedded with carbonaceous Claystone, light gray (N7) to dark gray(N3), respectively Thin bedded (<1 mm), mod friable Sand is f g to v f g Claystone laminae exhibits soft sediment deformation Mod silt component in Sandstone Bedding angle approx 20 degrees Approx 80% f g -v f g sand, approx 20% clay and silt
	B207189A				5782	103				
				3 50 / 3 50	5781	104				
					5780	105			SANDY SILTSTONE	Sandy Siltstone with irreg bedded v f g Sandstone, med gray (N5) and light gray (N7), respectively Irreg bedded, soft sediment deformation, occasional iron staining Approx 40% v f g sand, approx 60% silt
				0 00 / 0 50	5779	106			NO SAMPLE	NO SAMPLE
	B207189B				5778				SANDY SILTSTONE	Same as above (reference interval 104 5' to 105 5') Small body of coal at approx 108 1' Approx 40% v f g sand, approx 60% silt
				4 10 / 4 10	5777	108			CLAYSTONE	Med dark gray (N4), bedding not apparent Mod friable, slight silt component >50% clay
					5776	109				
					5775	110				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0		GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL		CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST DCB	B207189
EAST	2084837	LOCATOR NUMBER L13		BORCHOLE DIAMETER (IN)	4 0	DATE DRILLED 06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M
Hill NSI Log

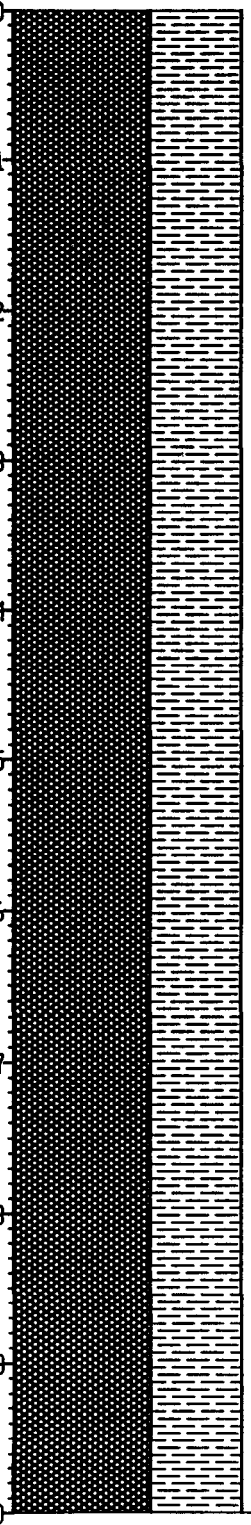
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

0% 50% 100% 0% 100%

1 60 /1 30
1 00 /3 70
1 10 /1 10

5874 5873 5872 5871 5870 5869 5868 5867 5866 5865

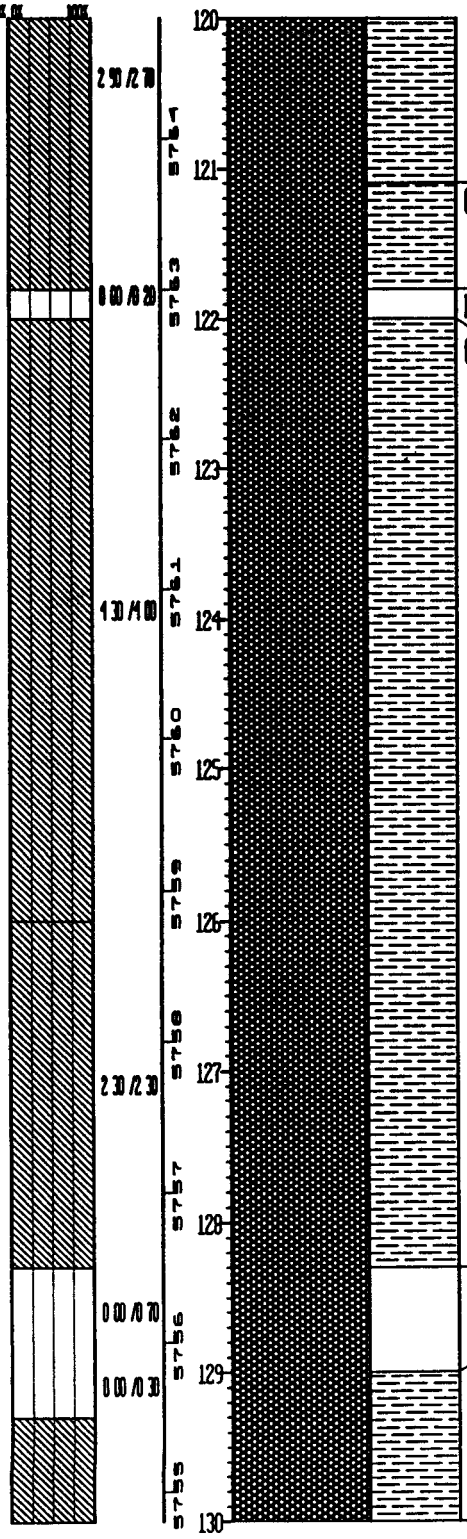
110 111 112 113 114 115 116 117 118 119 120



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 D	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Light brown (5 YR 6/4), massively bedded Slightly friable, well indurated Slight silt fraction
NO SAMPLE	NO SAMPLE
CLAYSTONE	Med dark gray (N4), bedding not apparent Mod friable, very slight silt fraction Slickensides at approx 125 5' with approx vertical attitude >50% clay
NO SAMPLE	NO SAMPLE
CLAYSTONE	Same as above (reference interval 122 0' to 128 3') Color grades to dark gray (N3) to grayish black (N2) from approx 129 6' to approx 130 0' slight to mod amount of carbonaceous material below 129 0' >50% clay

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST 2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%			130				
				3 80 /3 80	5754	131				
					5753	132				
					5752	133				
					5751	134				
				4 10 /4 10	5750	135				
					5749	136			SANDY SILTSTONE	Sandy Siltstone with interbedded Claystone, light gray (N7) to med gray (N5), respectively Thin bedded, slightly friable, mod carbonaceous material Approx 40% sand, approx 50% silt, approx 10% clay
					5748	137			CLAYSTONE	Med dark gray (N4), bedding not apparent Mod friable, slight silt component Slight amount of carbonaceous material >50% clay
				1 90 /1 90	5747	138				
					5746	139				
				2 50 /2 40	5745	140				

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA	LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CRITICAL DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			100%	2 50 / 2 40		140			SANDY SILTSTONE	Interbedded Sandy Siltstone and Silty Claystone, light gray (N7) and med dark gray (N4) Thin bedded (<3 mm), slightly friable, sand fraction is v f g Approx 30% v f g sand, approx 40% silt, approx 30% clay
					5744	141				
					5743	142			CLAYSTONE	Interval grades to Claystone Med dark gray (N4), bedding not apparent Slightly friable, slight to mod carbonaceous material >50% clay
				1 75 / 1 60	5742	143			SILTY SANDSTONE	Silty Sandstone interbedded with Claystone, very light gray (N8) and med dark gray (N4), respectively Thin bedded (<2 mm), soft sediment deformation apparent Slight amount of carbonaceous material Approx 85% v f g sand, approx 15% clay and silt
					5741	144				
					5740	145			SILTSTONE	Interbedded Siltstone and Claystone, light gray (N7) and med gray (N5), respectively Thin bedded (<1 mm) where apparent Interval exhibits soft sediment deformation, slumping and convoluted bedding Slightly friable, some v f g sand occurs in beds and irreg bodies Approx 15% v f g sand, approx 55% silt, approx 30% clay
					5739	146				
				3 20 / 3 10	5738	147				
					5737	148				
				0 90 / 0 80	5736	149				
				0 00 / 0 10					NO SAMPLE	NO SAMPLE
					5735	150			SILTSTONE	Interbedded Siltstone and Claystone as above (reference interval 144 5' to 148 9') Bedding angle 10 degrees >50% clay

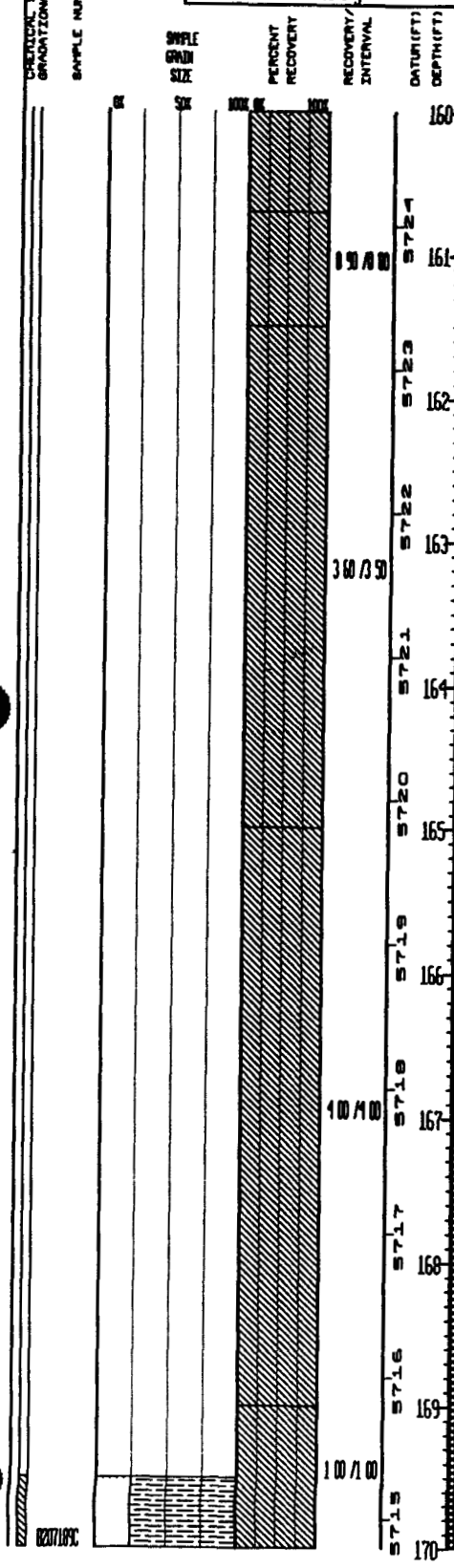
STATE PLANE COORDINATE	TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST 2094837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				3 75 / 3 80	5734	150				
						151				
					5733	152				
					5732	153			CLAYSTONE	Dark gray (N3), bedding not apparent Mod friable Interval is carbonaceous from approx 155 5' to 156 3' >50% clay
					5731	154				
				3 30 / 4 00	5730	155				
					5729	156				
				0 00 / 0 30	5728	157			NO SAMPLE	NO SAMPLE
				0 00 / 0 30					CLAYSTONE	Same as above (reference interval 152 7' to 156 7') >50% clay
					5727	158			NO SAMPLE	NO SAMPLE
				0 00 / 1 80						
					5726	159			CLAYSTONE	Same as above (reference interval 152 7' to 156 7') >50% clay
				1 60 / 1 60	5725	160				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 D	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Olive gray (5 Y 4/1), bedding not apparent Slightly friable, mod silt fraction Occasional carbonaceous material Slickensides at approx 161 3', attitude vertical >50% clay
CLAYSTONE	Interval is highly weathered Claystone Brownish black (5 YR 2/1), bedding not apparent, soft and pliable consistency >50% clay
CLAYSTONE	Med dark gray (N4), bedding not apparent Slightly friable, slight to mod silt fraction >50% clay
SILTY CLAYSTONE	Med gray (N5), bedding not apparent Slightly friable, occasional carbonaceous material >50% clay
CLAYEY SILTSTONE	Interval grades to Clayey Sandy Siltstone Light gray (N7) and med light gray (N6) Irreg bedded where apparent (sand both occurs in and defines bedding) Slightly friable, sand is v f g Approx 30% sand, approx 40% silt, approx 30% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	259 0	GROUND ELEVATION (FT)	5891 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA	LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084937	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

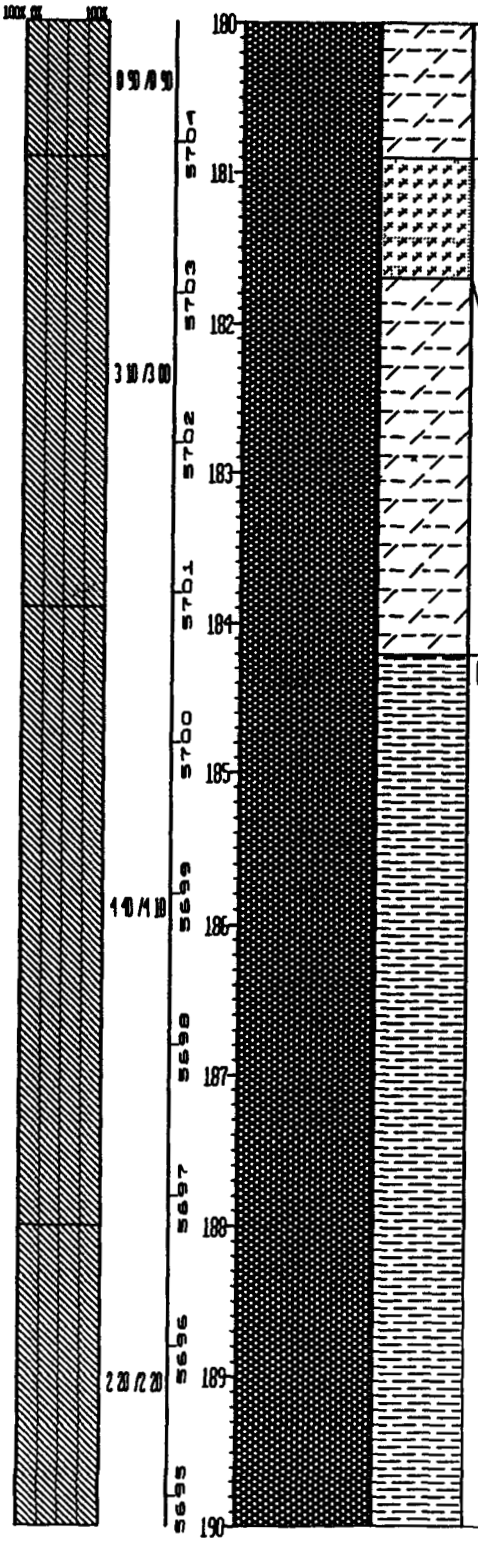
REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH	GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
						5714	170				
							171				
					3 30 /3 00	5713					
							172			CLAYEY SILTSTONE	Clayey Sandy Siltstone as above Mod amount of carbonaceous material Bedding is thin (<2 mm) soft sediment deformation apparent Bedding angle 0 degrees to 15 degrees
						5712					
							173				
						5711				CLAYSTONE	Carbonaceous Claystone, black (N1), bedding not apparent Slightly friable >50% clay
					2 40 /2 30		174				
						5710				CLAYSTONE	Med dark gray (N4), bedding not apparent Slightly friable, mod silt fraction Mod to abundt carbonaceous material >50% clay
							175				
						5709				NO SAMPLE	NO SAMPLE
					0 00 /1 70		176				
						5708					
							177			CLAYSTONE	Same as above (reference interval from 174 6' to 175 3') >50% clay
						5707					
							178				
					2 55 /2 50	5706					
							179			SILTY CLAYSTONE	Med light gray (N6), bedding not apparent Slightly friable Occasional carbonaceous material Slight to mod v f g sand component (Silty Claystone with some Sand) Approx 15% v f g sand, approx 25% silt, approx 60% clay
					0 00 /0 10	5705	180			NO SAMPLE	NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0 90 /0 90	SILTY CLAYSTONE	Same as above (reference interval 179 0' to 179 9') (Silty Claystone and some Sand) Approx 15% v f g sand, approx 25% silt, approx 60% clay
	SANDY SILTSTONE	Med light gray (N6), massive bedding with some discontinuous thin beds of v f g sand (<2 mm thick) Slightly friable, sand is v f g and is disseminated throughout the interval and in occasional thin beds Some clay (Sandy Siltstone with some Clay) Approx 25% sand, >50% silt, approx 10% clay
3 10 /3 00	SILTY CLAYSTONE	Med dark gray (N4), poorly bedded Slightly friable, silt fraction varies from Claystone Some silt to sitly >50% clay
4 40 /4 10	CLAYSTONE	Dark gray (N4), poorly bedded Slightly to mod friable Trace of carbonaceous material Some to trace of silt Slickensides at approx 187 5', vertical attitude Carbonaceous material is in association with slickensides >50% clay
2 20 /2 20		

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2094837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

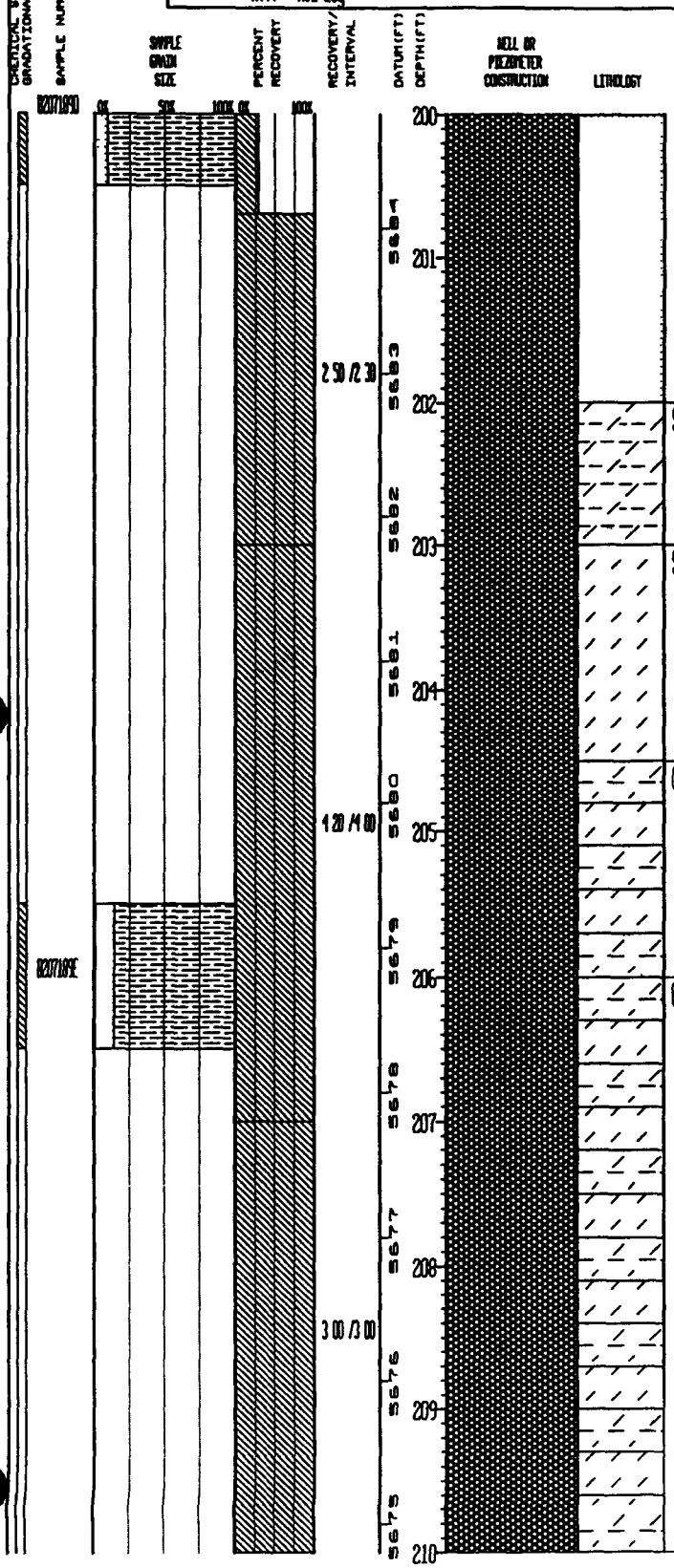
REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				10/10	5694	190				
						191				
					5693	192				
				5 10/10	5692	193				
					5691	194				
					5690	195			NO SAMPLE	NO SAMPLE
				0 00/1 50	5689	196				
					5688	197			CLAYSTONE	Same as above (reference interval 184 2' to 195 0') Silt fraction increase with depth Slickensides at approx 198 0', attitude approx 60 degrees >50% clay
					5687	198				
				1 20/1 20	5686	199			SANDSTONE	Light gray (N7), thin bedded where apparent Slightly friable, sand is v f g Carbonaceous material at approx 200 4' in association with slickensides, 70 degree to 90 degree attitude (Sandstone with some Silt) Approx 80% v f g sand, approx 20% silt
					5685	200				

B207189D

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT) 5684 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN) 2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Med light gray (N6), massive bedding Slightly friable, abundt iron staining >50% clay
SILTY SANDSTONE	Very light gray (N7), thin bedded (<2 mm), bedding exhibits soft sediment deformation Sand is v f g , trace of clay Bedding angle approx 0 degrees Approx 65% v f g sand, approx 35% silt and clay
CLAYEY SILTSTONE	Interbedded Clayey Siltstone, some v f g sand and Silty Sandstone, med gray (N5) and light gray (N7) respectively 35% sand, approx 45% silt, approx 20% clay
CLAYEY SILTSTONE	Some v f g sand is poorly bedded Silty Sandstones are thin (<1 5 cm) bedded and exhibit soft sed deformation Slightly friable, trace of carbonaceous material 35% sand, approx 45% silt, approx 20% clay

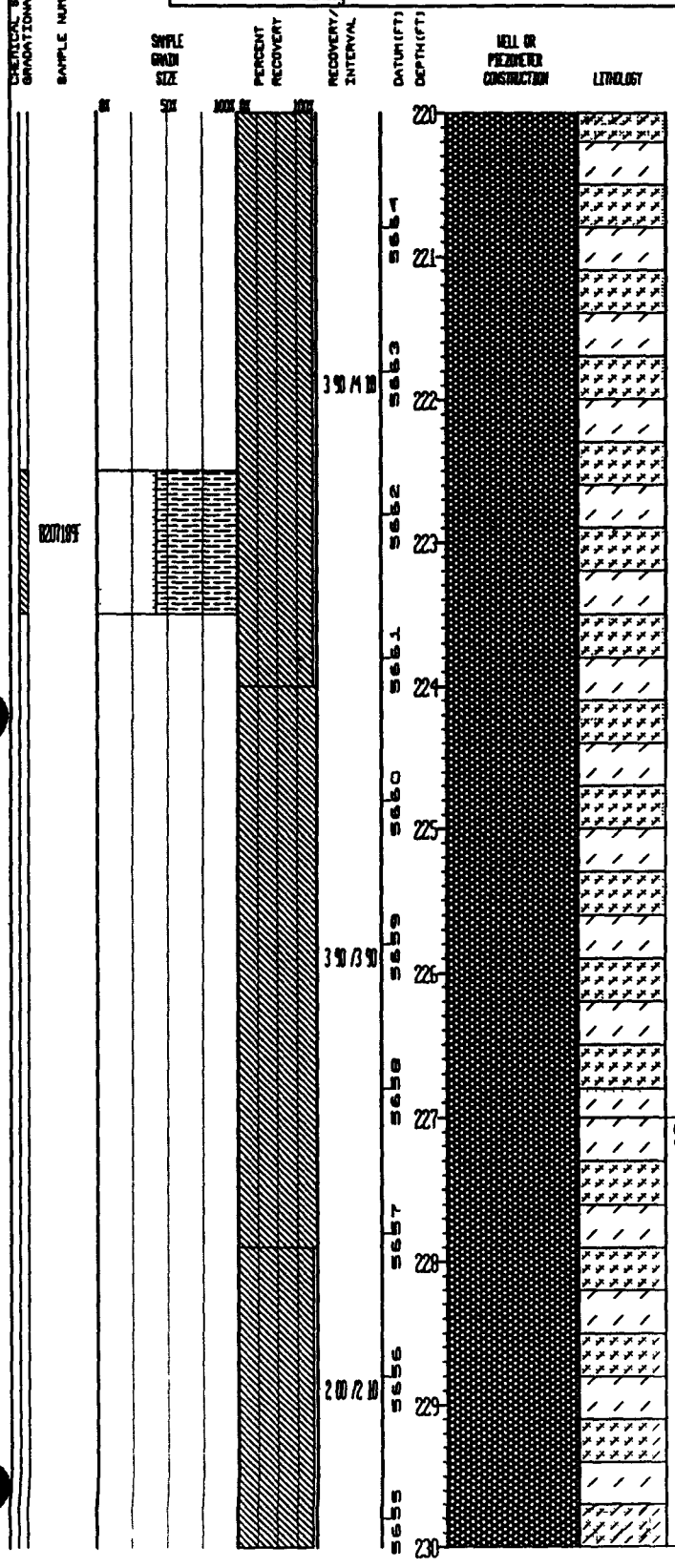
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0		GROUND ELEVATION (FT)	5684 80	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL		CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST DCB	B207189
EAST	2084837	LOCATOR NUMBER L13		BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED 06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to 259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill MSI Log

CHEMICAL SAMPLE DEPTH RADIATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				140/160	5674	210			SANDSTONE	Light gray (N7), thin bedded where apparent (<2 mm) Slightly friable, some silt Trace of clay and carbonaceous material Sand is v f g Bedding angle approx 10 degrees (Sandstone with some Silt and Clay) Approx 85% v f g sand, approx 15% silt and clay
					5673	211				
						212				
					5672	213				
				390/400	5671	214				
					5670	215				
				000/010	5669	216			NO SAMPLE	NO SAMPLE
									SANDSTONE	Same as above (reference interval 210 0' to 215 5') Locally silty (Sandstone with some Silt and Clay) Approx 85% v f g sand, approx 15% silt and clay
				400/390	5668	217				
					5667	218				
					5666	219			SILTY SANDSTONE	Silty Sandstone interbedded with Sandy Siltstone, light gray (N7) and med light gray (N6), respectively Thin bedded (<2 mm to approx 1 5 cm) Dewatering features apparent Slightly friable, trace of carbonaceous material and clay Sand is v f g to f g Approx 65% v f g-f g sand, approx 30% silt, approx 5% clay
					5665	220				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surf ace on 04/25/89 by E M Hill ASI Log



SILTY SANDSTONE Same as above Core exhibits multiple displacements of approx 2 cm, associated with soft sediment deformation (e g, slumps, deformed bedding) Displacement angles approx 60 degrees (Silty Sandstone with trace of Clay) Approx 65% sand, approx 30% silt, approx 5% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0		GROUND ELEVATION (FT)	5884 80	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL		CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB
EAST	2084837	LOCATOR NUMBER	L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89

B207189

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

ORIGINAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIEVE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT) / DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%	100 / 100	5654 230				
					231				
					5653 232				
					5652 233				
					234				
					5650 235				
					5649 236				SILTY SANDSTONE Light gray (N7) to med light gray (N6), thin bedded (2 mm) Slightly friable, trace of clay and carbonaceous material Approx 75% v f g sand, approx 25% silt and clay
					5648 237				
				100 / 100	5647 238				
	B207189				5646 239				
					5645 240				

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT) 5884 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 753092	AREA LANDFILL	CASING DIAMETER (IN) 2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST 2094837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN) 4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0'. Rotary Core 28 0' to 259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

DEPTH (FT)	DATUM (FT)	RECOVERY/ INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
240	5644			
241	5643	2 80 /2 80	SILTSTONE	Light gray (N7), massive bedding Slightly friable, trace of clay, some v f g sand Approx 10% sand, >50% silt
242	5642			
243	5641		SILTY CLAYSTONE	Med dark gray (N4), poorly bedded Slightly friable Slickensides at approx 242 8', attitude 40 degrees >50% clay
244	5640	4 30 /4 40		
245	5639		SILTY CLAYSTONE	Same as above, trace of carbonaceous material Slickensides at approx 245 5', attitude vertical and approx 38 degrees Slickensides at approx 246 5', attitude approx 40 degrees and approx 80 degrees Slickensides at approx 248 0', attitude approx 50 degrees Silt fraction increases in interval from 248 8' to 249 4' Silt content decreases below 249 5' >50% silt
246	5638			
247	5637			
248	5636	2 60 /2 40		
249	5635			
250				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259 0	GROUND ELEVATION (FT)	5694 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	753092	AREA LANDFILL	CASING DIAMETER (IN)	2 3/8 0 0	GEOLOGIST	DCB	B207189
EAST	2084837	LOCATOR NUMBER L13	BOREHOLE DIAMETER (IN)	4 0	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger 0 0' to 28 0', Rotary Core 28 0' to259 0' Surface casing set at 28 0' below ground surface on 04/25/89 by E M Hill ASI Log

CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2.00 / 2.10	5694	250				
						251			SANDSTONE	Very light gray (N8), thin bedded Slightly friable, v f g sand >50% v f g sand
				2.00 / 0.50	5693	252			CLAYSTONE	Carbonaceous Claystone and low grade coal Grayish black (N2) Bedding not apparent Slightly friable >50% clay-and coal
					5692	253			SILTSTONE	Med light gray (N6), poorly bedded Slightly friable, some v f g sand and clay Trace of carbonaceous material, locally sandy 10-30% v f g sand, >50% silt
				3.50 / 3.00	5691	254			SILTY CLAYSTONE	Med light gray (N6), poorly bedded Slightly friable, some to trace of v f g sand <10% v f g sand, >50% clay
					5690	255			CLAYSTONE	Med dark gray (N4), poorly bedded Slightly friable, trace to some silt >50% clay
					5689	256				
				3.80 / 3.70	5688	257			SILTY CLAYSTONE	Light gray (N7), poorly bedded Slightly friable, trace of carbonaceous material >50% clay
					5687	258				
				0.00 / 0.30	5686	259			NO SAMPLE	Core missing
					5685	260				Total Drilled Depth 259 0'

WELL COMPLETION INFORMATION

QA By/Date Sorrell Gilman 11-29-89

Location Rocky Flats Plant, Landfill Area Well No. B207189

Coordinates N 40107 09 E 21741.74 (RFP) Elevation. Ground Surface 5884 80'

Total Depth: Well 77.76' Top of Casing 5886 72'

Borehole 259'

Formation of Completion Unweathered Sandstone

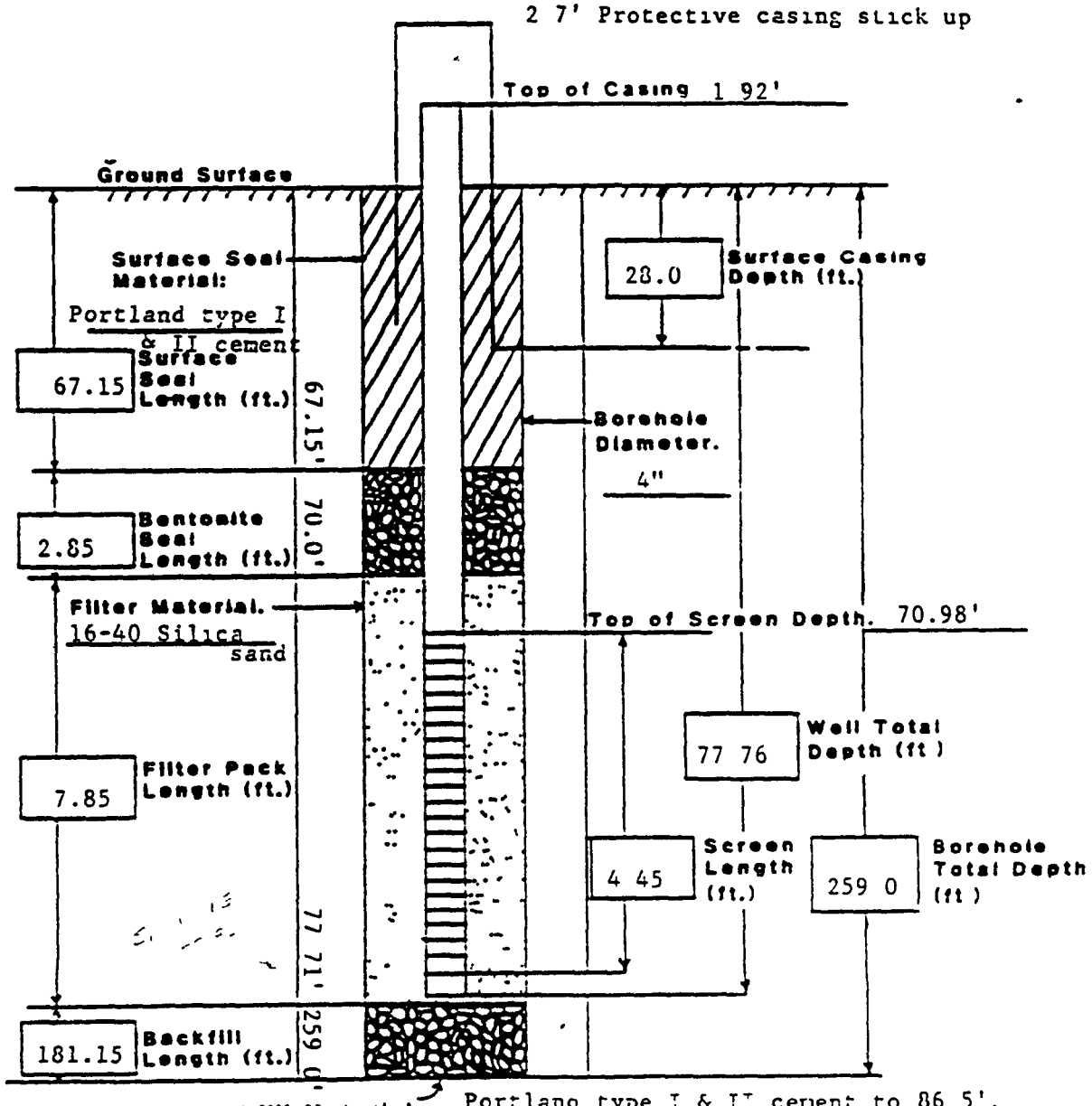
Casing Material Schedule 80 PVC Casing Diameter 2 3/8" O D

Screen Material Scnedule 80 10-slotted PVC Surface Casing Diameter 5 5/8" O.D

Date Installed 06/19 & 06/20/1989 Approved By Sorrell Gilman, Site Manager

Installed By H.G. Bienkowski, Geologist CEARP Manager

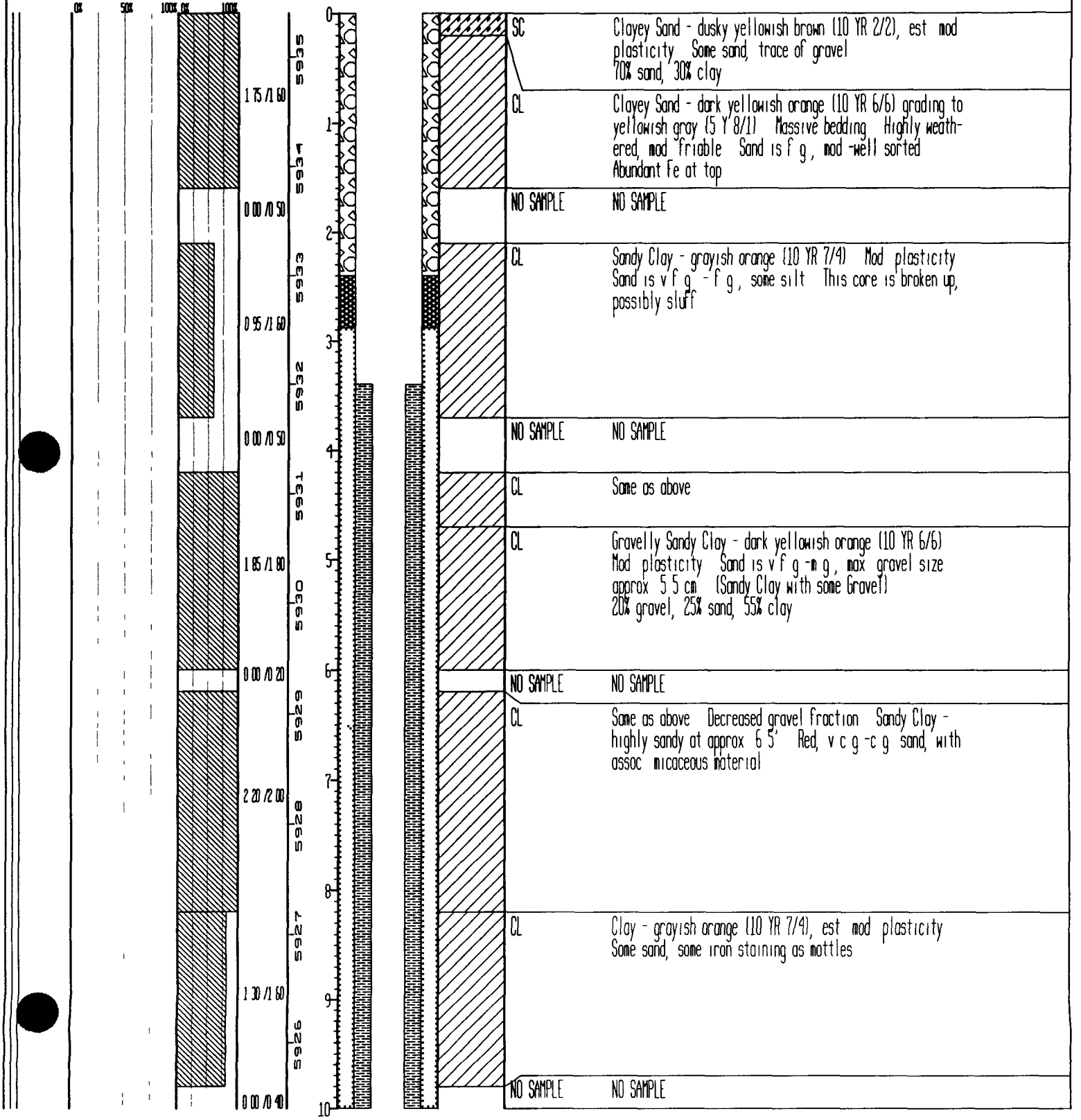
Comments No centralizer used. Well was constructed inside drill rods.



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 2	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751143	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DAT	B208089
EAST	2085876	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/17/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	Clayey Sand - dusky yellowish brown (10 YR 2/2), est mod plasticity Some sand, trace of gravel 70% sand, 30% clay
CL	Clayey Sand - dark yellowish orange (10 YR 6/6) grading to yellowish gray (5 Y 8/1) Massive bedding Highly weathered, mod friable Sand is f g , mod -well sorted Abundant Fe at top
NO SAMPLE	NO SAMPLE
CL	Sandy Clay - grayish orange (10 YR 7/4) Mod plasticity Sand is v f g - f g , some silt This core is broken up, possibly sluff
NO SAMPLE	NO SAMPLE
CL	Same as above
CL	Gravelly Sandy Clay - dark yellowish orange (10 YR 6/6) Mod plasticity Sand is v f g -m g , max gravel size approx 5 5 cm (Sandy Clay with some Gravel) 20% gravel, 25% sand, 55% clay
NO SAMPLE	NO SAMPLE
CL	Same as above Decreased gravel fraction Sandy Clay - highly sandy at approx 6 5' Red, v c g -c g sand, with assoc micaceous material
CL	Clay - grayish orange (10 YR 7/4), est mod plasticity Some sand, some iron staining as mottles
NO SAMPLE	NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 2	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751143	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DAT	B208089
EAST	2085876	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/17/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CK	100% CK	100% 0 00 /0 40	5925	10			GC	Clayey Gravel - matrix color is dark yellowish brown (10 YR 4/2), sub-angular to sub-rounded Mod poorly graded, max size approx 6 cm Some silt, trace sand
			0 40 /0 40						
			0 00 /1 60	5924	11			NO SAMPLE	NO SAMPLE
						08/31/89			
				5923	12			CLAYSTONE	Top of Bedrock Claystone - dark yellowish orange (10 YR 6/6) Highly weathered, some carbonaceous material at base Some sand f g -m g
			1 70 /1 70						
				5922	13				
			0 00 /0 30		14			NO SAMPLE	NO SAMPLE
				5921				CLAYSTONE	Grayish orange (10 YR 7/4), no apparent bedding Highly weathered, mod friable, broken texture Some v f g sand Some iron staining as mottles Trace of Mg staining
			1 00 /1 50		15				
				5920					
			0 00 /0 50		16			NO SAMPLE	NO SAMPLE
				5919				SANDY CLAYSTONE	Yellowish gray (5 Y 8/1), Non-apparent bedding Well weathered, mod friable Sand is v f g -f g, trace of carbonaceous material Some silt (Sandy Claystone with some Silt) 25% sand, 60% clay, 15% silt
			1 60 /1 70		17				
				5918					
			0 00 /0 30		18			NO SAMPLE	NO SAMPLE
				5917				SILTY CLAYSTONE	Yellowish gray (5 Y 8/1), non-apparent bedding Well weathered, mod friable Trace of sand Trace of iron staining as mottles Trace of carbonaceous material
			1 30 /2 00		19				
				5916					
					20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 22 2	GROUND ELEVATION (FT)	5935 43	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751143	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DAT	B208089
EAST	2085876	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/17/89	
REMARKS	Hollow Stem Auger ASI Log						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0% 50% 100%	0% 100%	1 00 /1 40	5915	20			SILTY CLAYSTONE	Pale yellowish brown (10 YR 6/2), non-apparent bedding Highly weathered, mod to poorly friable Some iron staining (in possible micro-fractures) Some carbonaceous material
		0 00 /0 60	5914	21			NO SAMPLE	NO SAMPLE
			5913	22				Total Drilled Depth 22 2'
			5912	23				
			5911	24				
			5910	25				
			5909	26				
			5908	27				
			5907	28				
			5906	29				
				30				

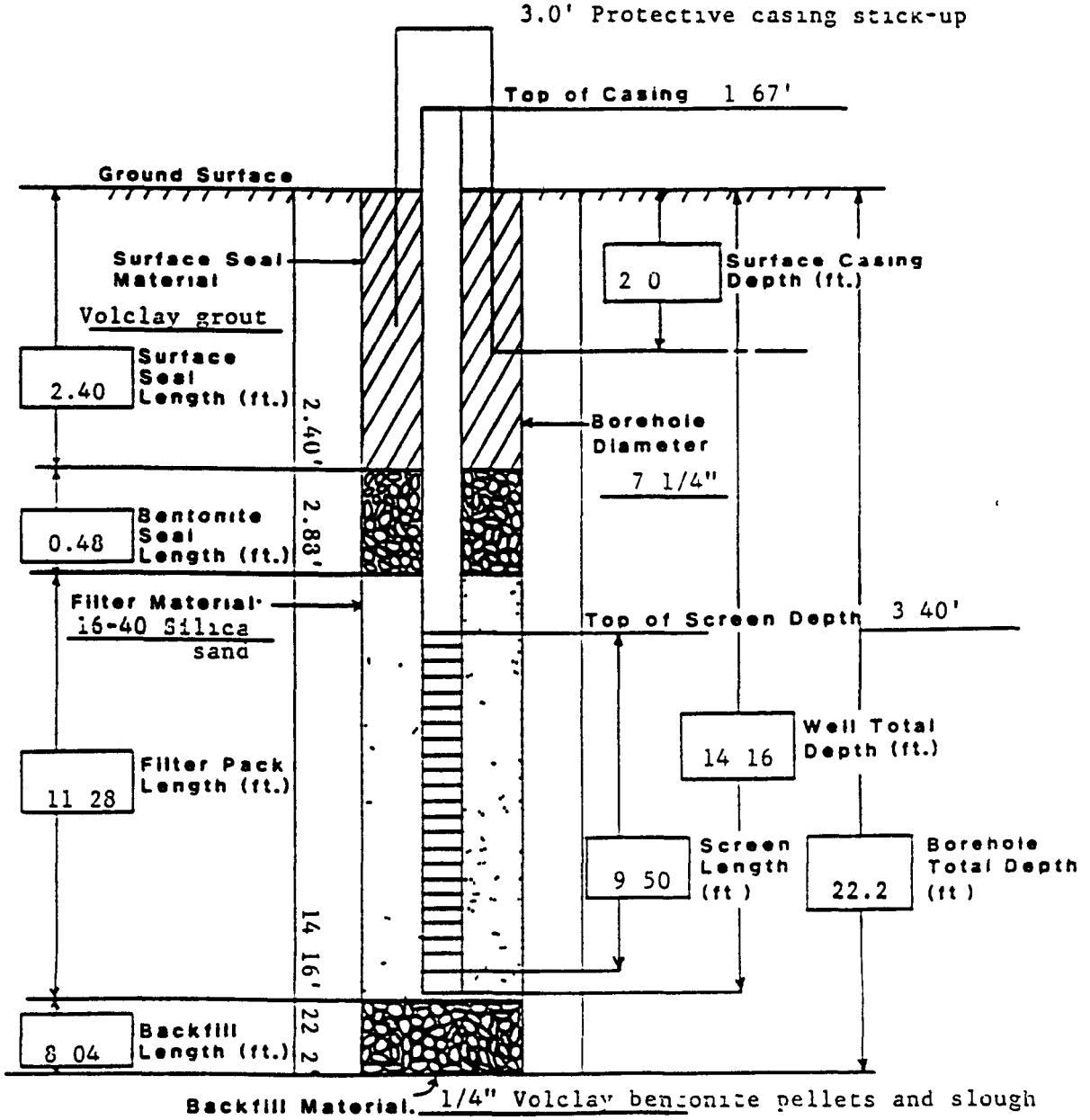
WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 11-18-89

Location Rocky Flats Plant, Solar Pond Area
Coordinates N 38154 24 E 22774 -3 (MTP)
Total Depth Well 14 16'
Borehole 22 2'
Formation of Completion Colluvium
Casing Material Schedule 40 PVC
Screen Material Schedule 40 10-slotted PVC
Date Installed 04/17/1989
Installed By K.E Miller
Geologist

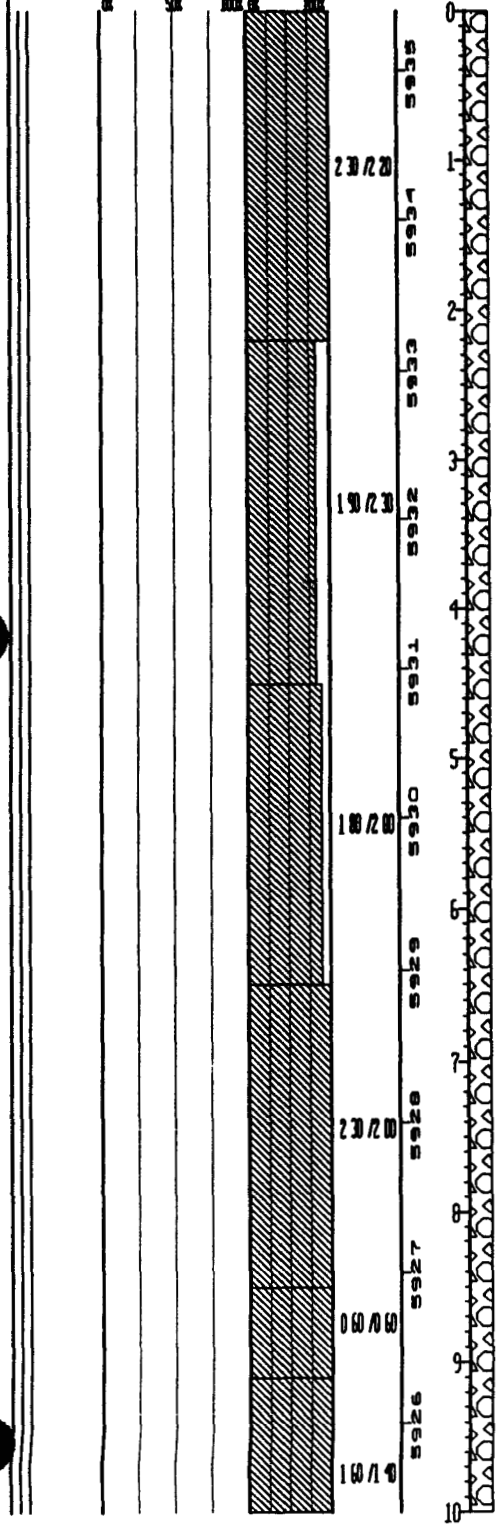
Well No B208089
Elevation Ground Surface 5935 4'
Top of Casing 5937 07'
Casing Diameter 4 1/2" O.D.
Surface Casing Diameter 8 5/8" O D
Approved By Jarell Burman
Site Manager
CEARP Manager

Comments Set stainless steel centralizer from 12 59' to 13 84' below ground surface



Backfill Material 1/4" Volclay bentonite pellets and slough

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32 5	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751138	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208189
EAST	2085865	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/18/89	
REMARKS	Hollow Stem Auger ASI Log						

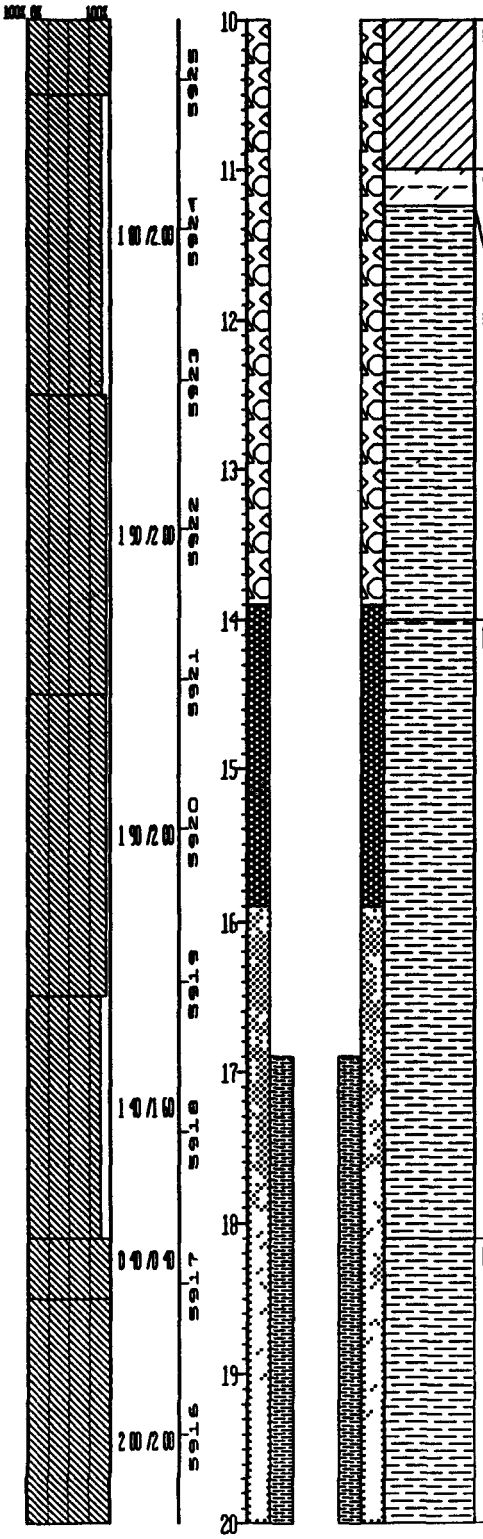


LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CL	Silty Clay - dark yellowish brown (10 YR 4/2), low plasticity Trace of gravel, plant roots and debris >50% clay
	CL	Clay - mottled light gray (N7) to grayish orange (10 YR 7/4), mod high plasticity Some f g sand to sandy Locally calcareous Possibly highly weathered claystone (Clay with some Sand) 20% to 10% f g sand, 80% to 90% clay
	CL	Gravelly Clay - light brown (5 YR 5/6) and light gray (N7) Mod high plasticity, trace of silt and f g sand Gravel is sub-angular to sub-rounded, max size is approx 6 cm Possibly reworked claystone or fill

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32 5	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751138	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208189
EAST	2085885	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/18/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	Gravelly Clay - as above Gravel fraction decreases (Gravelly Clay with trace Sand and Silt) 20% gravel, 5% f g sand and silt, 75% clay
SILTY CLAYSTONE	Top of Bedrock Silty Claystone - grayish black (N2) Trace of f g sand, some decomposed root fragments Possibly top of original grade
CLAYSTONE	Dark yellowish orange (10 YR 6/6) Some sand to sandy, (sand fraction is m g and rounded to well rounded) Sand fraction decreases with depth Some irregular caliche bodies, clay is calcareous to approx 13 5' Possibly highly weathered claystone 15% sand, 80% clay, sand/clay fraction varies locally
CLAYSTONE	Light olive gray (5 Y 6/1) to med light gray (N6) Bedding not apparent Highly weathered, moderately friable, some f g sand Trace of caliche as irreg bodies (<2 mm in diam) Iron staining locally and on fractures (Claystone with some Sand) 10% f g sand, 90% clay
CLAYSTONE	Light olive gray (5 Y 6/1) Bedding not apparent Highly weathered, mod friability, trace of carbonaceous material Some silt Iron staining on fractures >50% clay

WELL COMPLETION INFORMATION

QA By/Date Sarah Burman 14-19-89

Location Rocky Flats Plant; Solar Ponds Area

Coordinates N 38149.60 E 22783.27 (HFP)

Total Depth: Well 27 58'

Borehole 32.5'

Well No. B208189

Elevation: Ground Surface 5935.40'

Top of Casing 5937 46'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC

Screen Material Schedule 40 10-slotted PVC

Date Installed 04/18/1989

Installed By K.E. Miller
Geologist

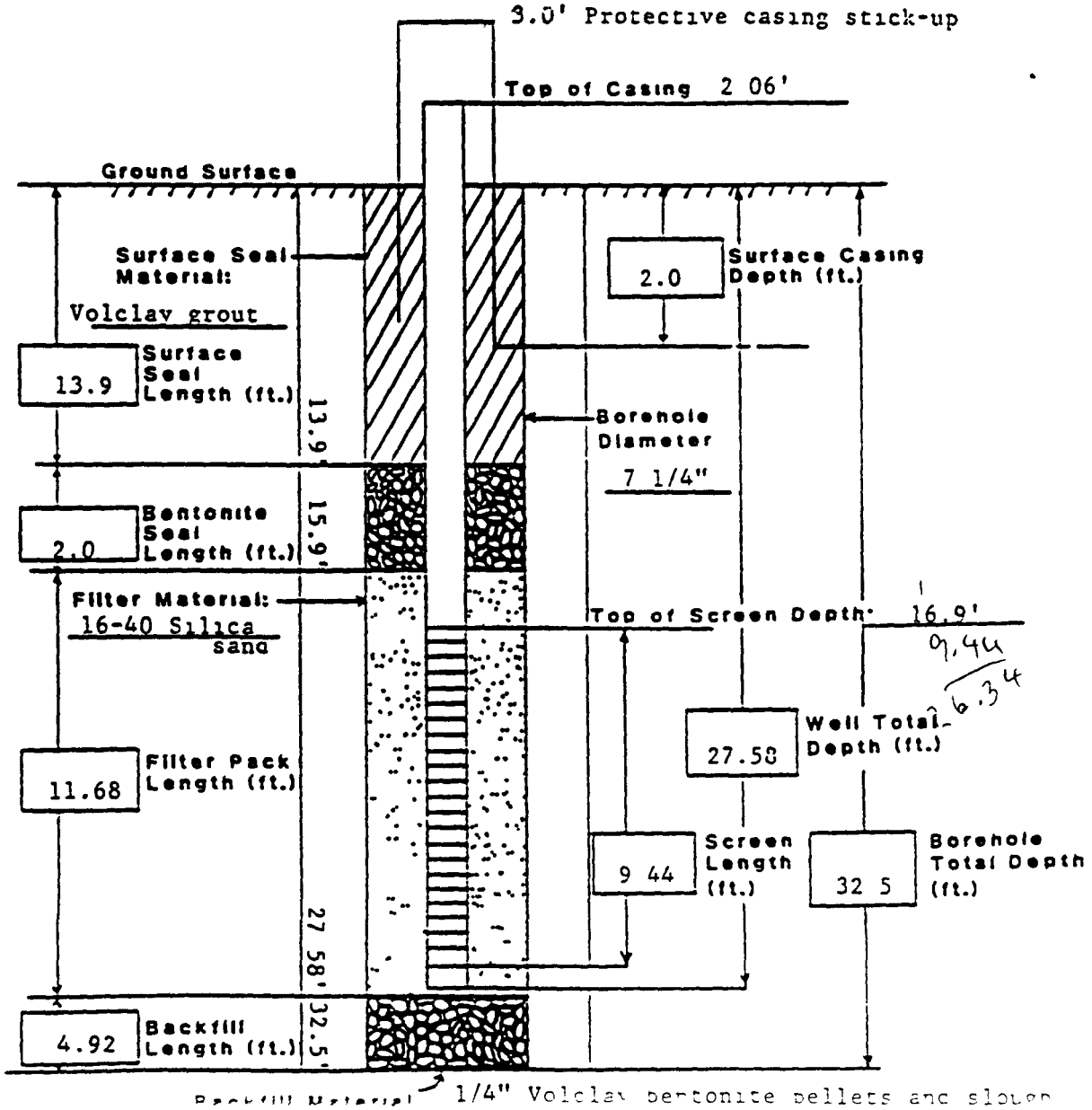
Casing Diameter 4 1/2" O D

Surface Casing Diameter 8 5/8" O.D.

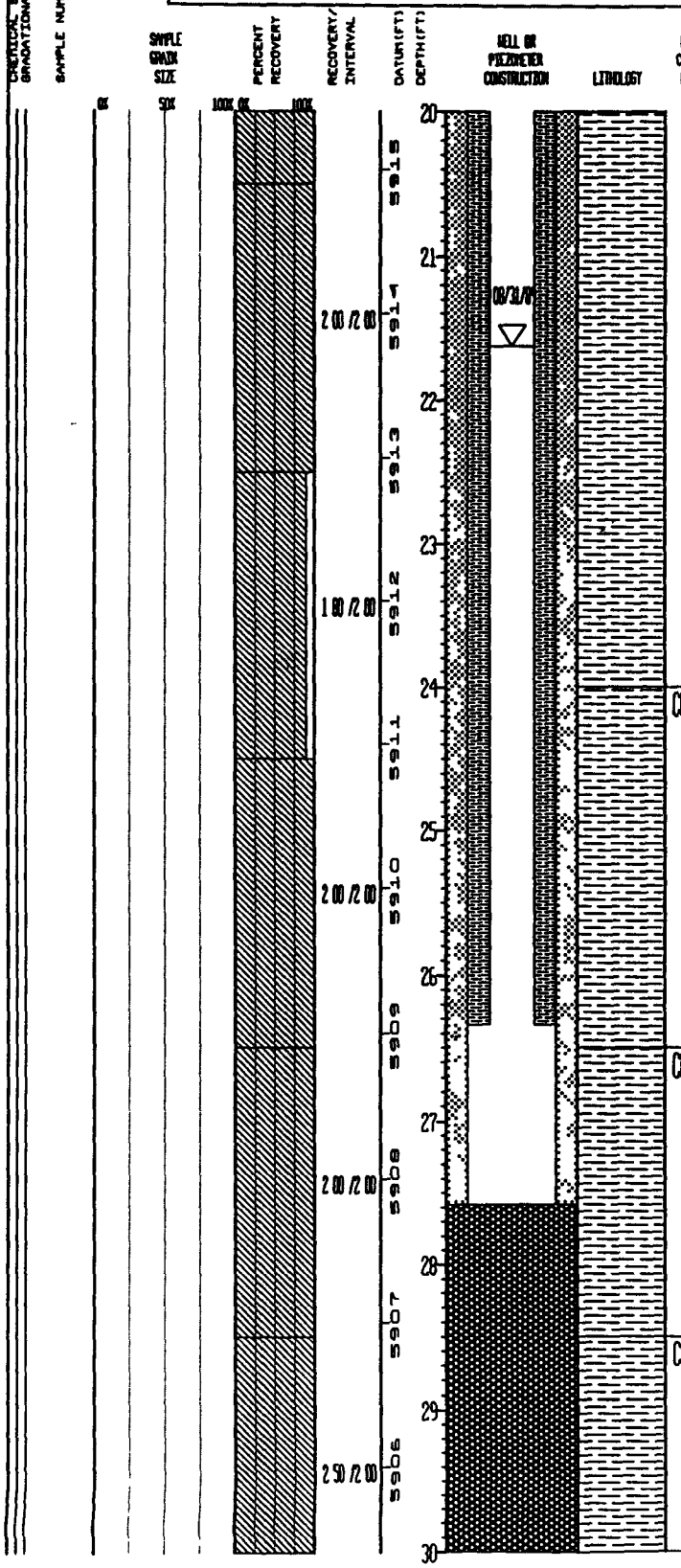
Approved By Sarah Burman
Site Manager

CEARP Manager

Comments Set stainless steel centralizer from 26.12' to 27.37' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32 5	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751138	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208189
EAST	2085885	LOCATOR NUMBER NLL	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/18/89	
REMARKS	Hollow Stem Auger ASI Log						



CLAYSTONE — Some as above Color grades to med light gray (N6) Increase in amount of carbonaceous material from approx 24 0' to 26 5' Interval from 26 0' to 26 5' is heavily iron stained

CLAYSTONE — Dark gray (N3) Bedding not apparent Well weathered, mod friable Some carbonaceous material Iron stains on fractures

CLAYSTONE — Some as above Color grades to med light gray (N6) below 28 0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	32 5	GROUND ELEVATION (FT)	5935 40	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	751138	AREA SOLAR POND		CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB
EAST	2085885	LOCATOR NUMBER	M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/18/89
REMARKS	Hollow Stem Auger ASI Log						

B208189

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

2 00 /2 00

5905 5904 5903 5902 5901 5900 5899 5898 5897 5896

30 31 32 33 34 35 36 37 38 39 40

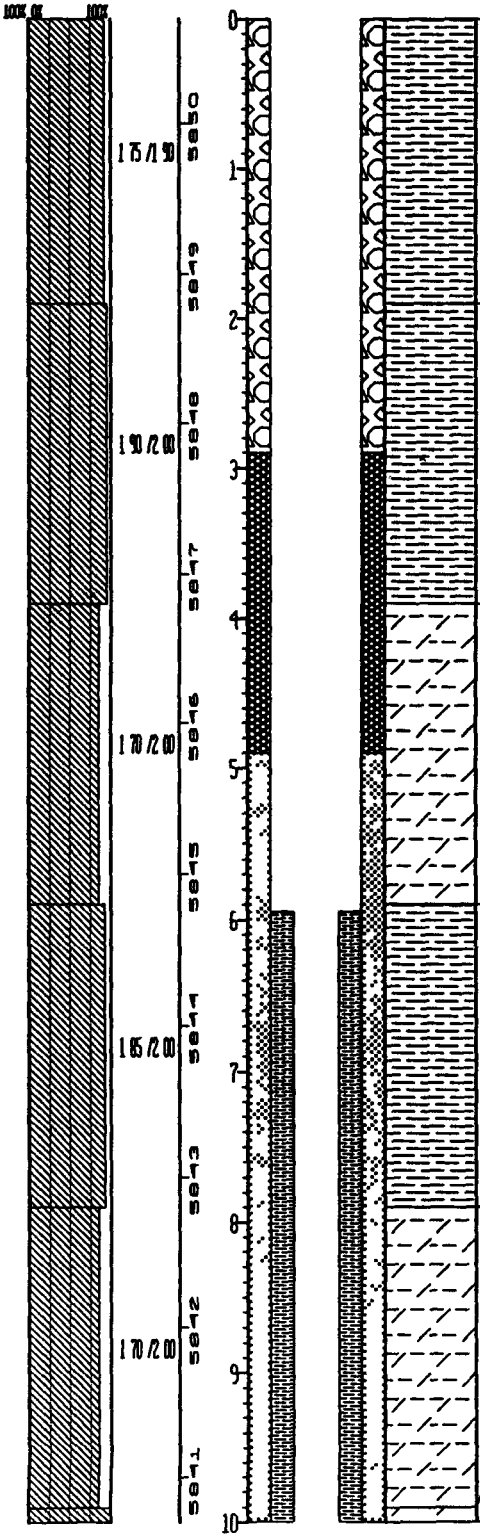
Total Drilled Depth = 32 5'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 19 0	GROUND ELEVATION (FT) 5850 70	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	751739	AREA SOLAR POND	CASING DIAMETER (IN) 4 5 0 0	GEOLOGIST DAT	B208289
EAST	2086289	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED 04/14/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE / PERCENT RECOVERY / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

AKS-1 0% 50% 100% 0% 100%



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Top of Bedrock at 0 8' Claystone - light olive gray (5 Y 6/1) Highly weathered, trace of gravel at top of interval Some roots and surficial grass
CLAYSTONE	Claystone - light olive gray (5 Y 6/1), massive bedding Highly weathered, mod friable Some iron staining as mottles and as fracture filling
SILTY CLAYSTONE	Light olive gray (5 Y 6/1), non-apparent bedding, highly weathered, mod to highly friable Some v f g sand, especially in middle of interval
CLAYSTONE	Moderate olive brown (5 Y 4/4) Massive bedding, mod to highly weathered, mod friable Some iron staining as mottles, trace of Mg staining Silt layer at approx 6 0', trace of silt
SILTY CLAYSTONE	Med light gray (N6), massive bedding Mod to highly weathered, mod friable Some iron staining as mottles
SILTY CLAYSTONE	Same as above Top of interval has abundant silt and some sand with flaky texture

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	19 0	GROUND ELEVATION (FT)	5850 70	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751739	AREA	SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DAT	B208289
EAST	2086289	LOCATOR NUMBER	N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/14/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		OR SOIL	100% OR 100%	2 00 / 2 00	5840	10				
					5839	11				
						12			CLAYSTONE	Top 0 4' of interval is same as above Olive black (5 Y 2/1), massive bedding, well weathered Mod to highly friable Top has floury texture, some iron staining along possible fracture planes, some silt
				2 00 / 2 00	5838	13				
					5837	14			CLAYSTONE	Same as above Brownish gray (5 YR 4/1), some carbonaceous material Fracture at approx 14 2' is approx 70 degrees and shows slickensides Some iron staining as mottles, trace silt
				1 70 / 1 70	5836	15				
				0 30 / 0 30	5835				CLAYSTONE	Same as above
						16			CLAYSTONE	Same as above Some silt, trace of white, blebbed mineralization (possibly gypsum)
				2 00 / 2 00	5834	17				
					5833	18			CLAYSTONE	Same as above Some possible multi-directional fracturing NOTE No water level encountered
				1 10 / 1 10	5832	19				Total Drilled Depth 19 0'
					5831	20				

WELL COMPLETION INFORMATION

QA By/Date Jarel Burman 14-13-89

Location Rocky Flats Plant; Solar Ponds Area Well No. B208289

Coordinates N 38748.93 E 23188.76 (RFP) Elevation: Ground Surface 5850.7'

Total Depth: Well 16.16' Top of Casing 5852.95'

Borehole 19.00'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O.D.

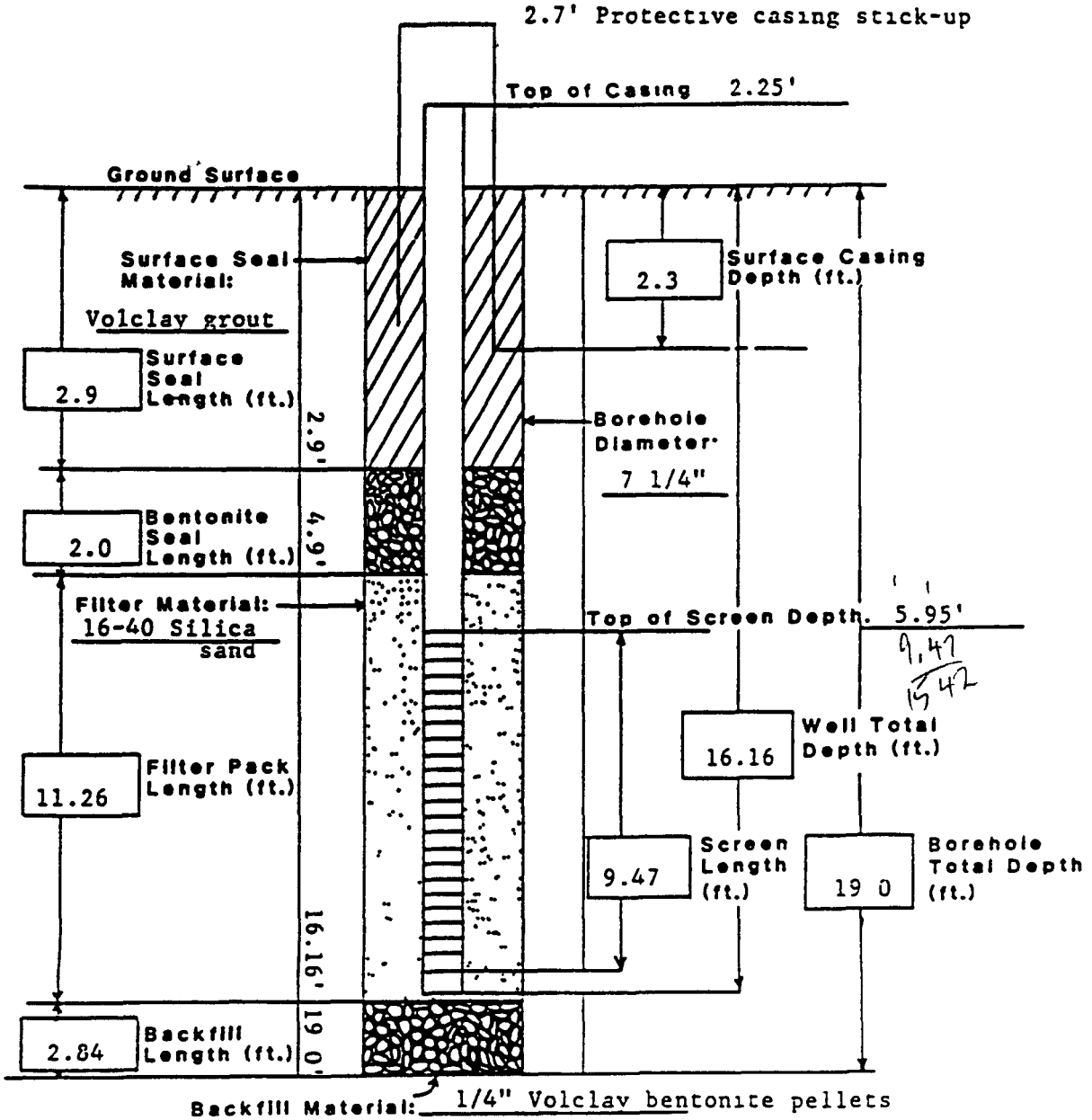
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D

Date Installed 04/13/1989 Approved By Jarel Burman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

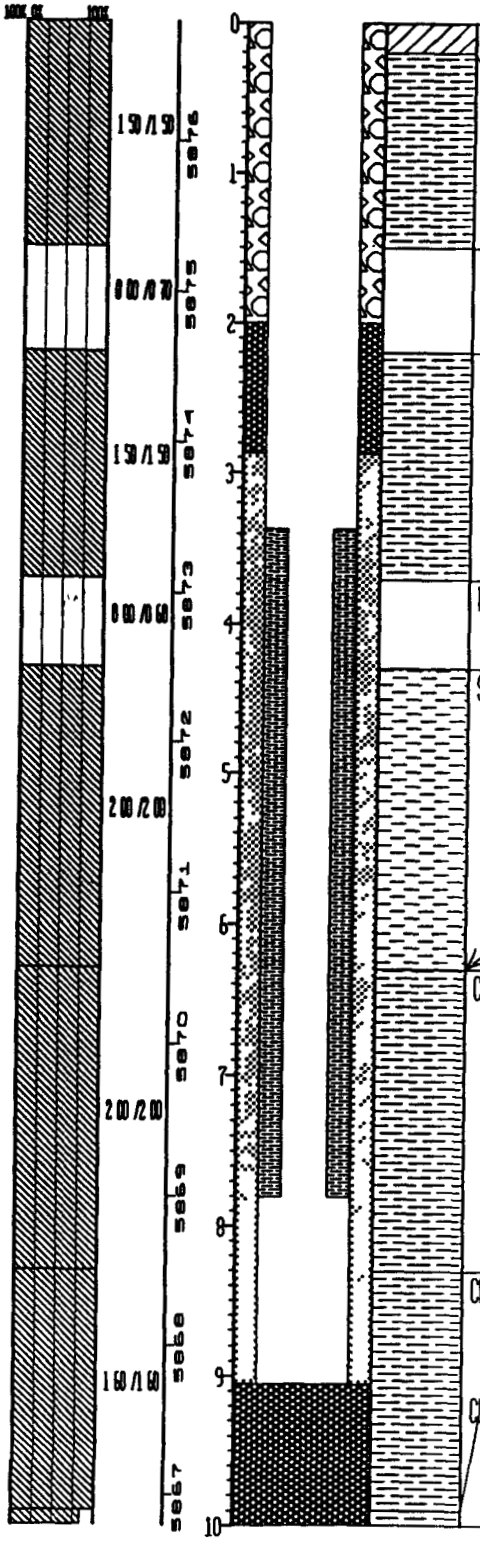
Comments Set stainless steel centralizer from 14.28' to 15 53' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 16 3	GROUND ELEVATION (FT)	5876 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751687	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DAT	B208389
EAST	2085584	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/19/89	
REMARKS	Hollow Stem Auger ASI Log						

7 0.5

CHEMICAL SAMPLE DEPTH | GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	Clay - mod brown (5 YR 3/4) Trace gravel, some roots Trace of sand
CLAYSTONE	Top of Bedrock at 0 2' Mod brown (5 YR 3/4) Trace of gravel, some roots Trace of sand
NO SAMPLE	NO SAMPLE
CLAYSTONE	Mod yellowish brown (10 YR 5/4) Some sand, some calcareous material
NO SAMPLE	NO SAMPLE
SANDY CLAYSTONE	Mod yellowish brown (10 YR 5/4) Some gravel, some calcareous material Sand is f g -m g Max gravel size 4 0 cm
BR.	
CLAYSTONE	Light olive gray (5 Y 6/1) massive bedding Highly weathered, mod friable Abundt iron staining as mottles Abundt calcareous material, possibly concentrated in fractures (approx 30-90 degrees)
CLAYSTONE	Same as above Some Mg staining
CLAYSTONE	Light olive gray (5 Y 6/1) Massive bedding mod - highly friable Some calcareous material Some iron staining as mottles Calcareous material is concentrated along possible fractures

STATE PLANE COORDINATE
NORTH 751687
EAST 2085584
REMARKS Hollow Stem Auger ASI Log

TOTAL DEPTH (FT) 16 3
AREA SOLAR POND
LOCATOR NUMBER N11

GROUND ELEVATION (FT) 5876 80
CASING DIAMETER (IN) 4 5 0 0
BOREHOLE DIAMETER (IN) 7 25

PROJECT NUMBER
GEOLOGIST DAT
DATE DRILLED 04/19/89

LOG OF BORING NUMBER
B208389

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 00 / 2 10	5866	10 11			CLAYSTONE	Same as above, at base Iron staining increases and some Mg staining decrease to some calcareous material
				2 00 / 2 00	5864 5863	12 13 14			CLAYSTONE	Same as above Trace of calcareous material at top of interval, more at base Decrease in iron staining and Mg staining at base
				2 00 / 2 00	5862 5861	15 16			CLAYSTONE	Same as above Fracture with possible Mg smeared at approx 50 degrees
					5860 5859 5858 5857	17 18 19 20				Total Drilled Depth = 16 3'

WELL COMPLETION INFORMATION

QA By/Date Janell Burman 4-25-89

Location Rocky Flats Plant: Solar Ponds Area

Well No. B208389

Coordinates N 38699.83 E 22484.18 (RFP)

Elevation: Ground Surface 5876.80'

Total Depth: Well 9.05'

Top of Casing 5878 66'

Borehole 16.30'

Formation of Completion Colluvium

Casing Material Schedule 40 PVC

Casing Diameter 4 1/2" O.D.

Screen Material Schedule 40 10-slotted PVC

Surface Casing Diameter 8 5/8" O.D.

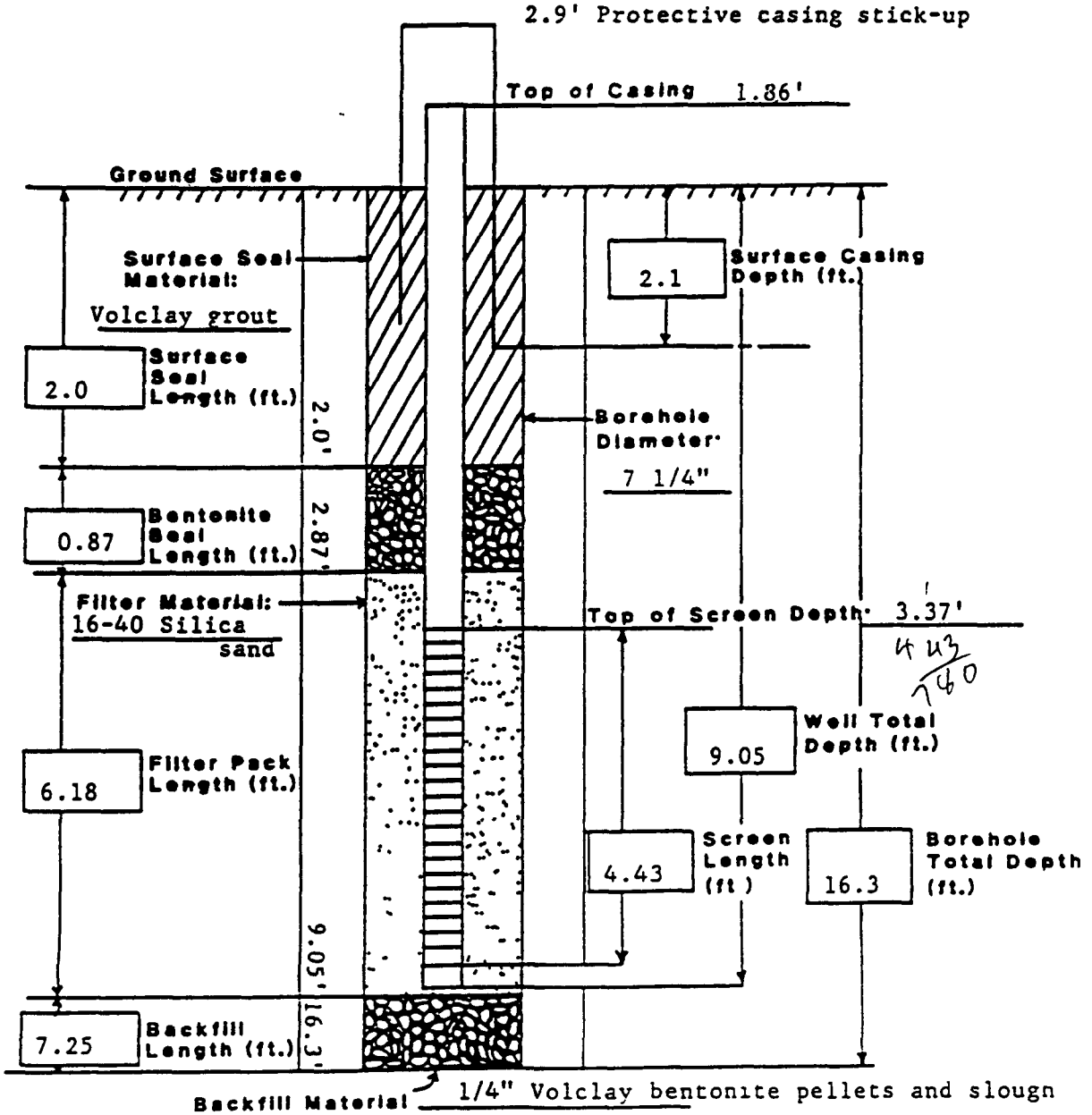
Date Installed 04/19/1989

Approved By Janell Burman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 7.25' to 8.8' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 33 2	GROUND ELEVATION (FT)	5876 30	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751683	AREA SOLAR PONDS	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208489
EAST	2085636	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/14/89	
REMARKS	Hollow Stem Auger ASI Log						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

RECOVERY/INTERVAL	DATUM (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
2 10 /2 10	5876	CL	Clay - grayish brown (5 YR 3/2), mod high plasticity Trace of silt, some root fragments and organic debris from 0 0' to 0 7' Interval is locally calcareous >50% clay
2 10 /2 10	5874	CL	Clay - mod yellowish brown (10 YR 5/4), mod plasticity Some gravel to gravelly, some silt Trace to some sand Interval is locally calcareous and exhibits poorly developed caliche precipitate in gravelly zones and along fractures >50% clay
2 00 /2 00	5872	CL	Silty Sandy Clay - pale yellowish brown (10 YR 6/2) to dark yellowish orange (10 YR 6/6), mottled Mod plasticity, locally calcareous
1 40 /1 40	5870		
0 00 /0 60	5869	NO SAMPLE	NO SAMPLE
1 85 /2 00	5868	CL	Silty Sandy Clay - as above (reference interval 4 0' to 7 6') (Silty Clay with some Sand) >20% sand, >50% clay

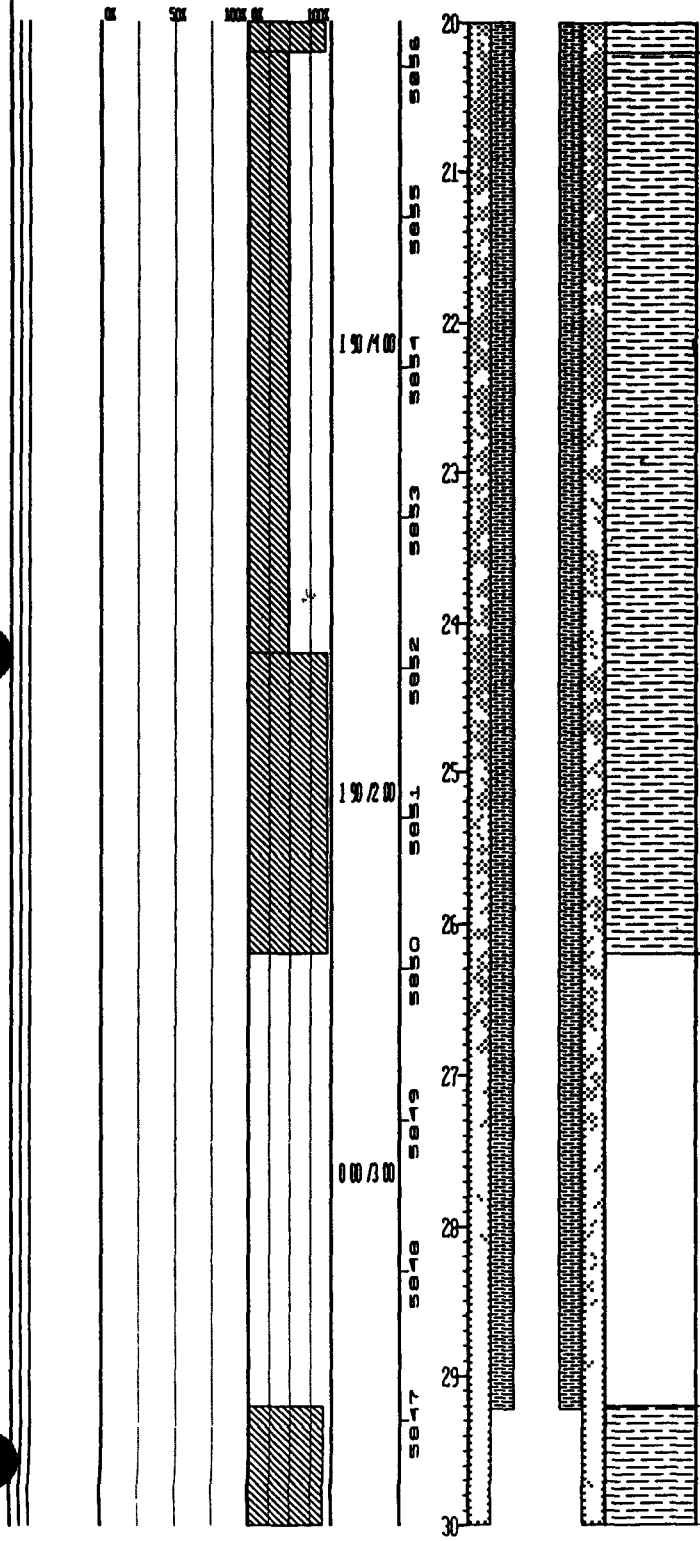
STATE PLANE COORDINATE	TOTAL DEPTH (FT) 33 2	GROUND ELEVATION (FT)	5876 30	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 751683	AREA SOLAR PONDS	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DCB	B208489
EAST 2085636	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/14/89	
REMARKS Hollow Stem Auger ASI Log			5876.8			

CHEMICAL SAMPLE WITH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	XXX% 0% XXX%		10			CL	Silty Sandy Clay - as above Interval begins to exhibit some characteristics of highly weathered rock, e g mod well defined fracture planes Mg and Fe stains Weathered slickensides at approx 12 2', attitude approx 60 degrees with Fe and Mg oxide on slick face 20% sand, >50% clay
				1 85 / 2 00	11				
					12				
				1 75 / 2 00	13				
					14			CL	Silty Sandy Clay - as above, with gravel to gravelly and some caliche in gravel zones Max gravel size approx 5 5 cm 50% gravel, 50% clay
				1 80 / 1 60	15				
				0 00 / 0 10	16			NO SAMPLE	Top of Bedrock at 15 5' NO SAMPLE
								NO SAMPLE	NO SAMPLE
								SILTY CLAYSTONE	Mottled pale yellowish brown (10 YR 6/2) to dark yellowish orange (10 YR 6/6) >50% sand
				1 90 / 2 00	17			CLAYSTONE	Med gray (N5), bedding not apparent Well weathered, slightly friable, trace of silt and iron stains, some Mg oxides Color grades to grayish black (N2) from approx 17 8' to 18 2' Slickensides at approx 17 3', attitude approx 30 degrees At approx 19 5' to 20 2' interval is heavily ironed stained and exhibits iron nodules approx 1 cm - 2 mm in diam and exhibits calcite fracture fillings >50% clay
					18				
				1 85 / 2 00	19				
					20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 33 2	GROUND ELEVATION (FT)	5876 30	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751683	AREA SOLAR PONDS	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DCB	B208489
EAST	2085636	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/14/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

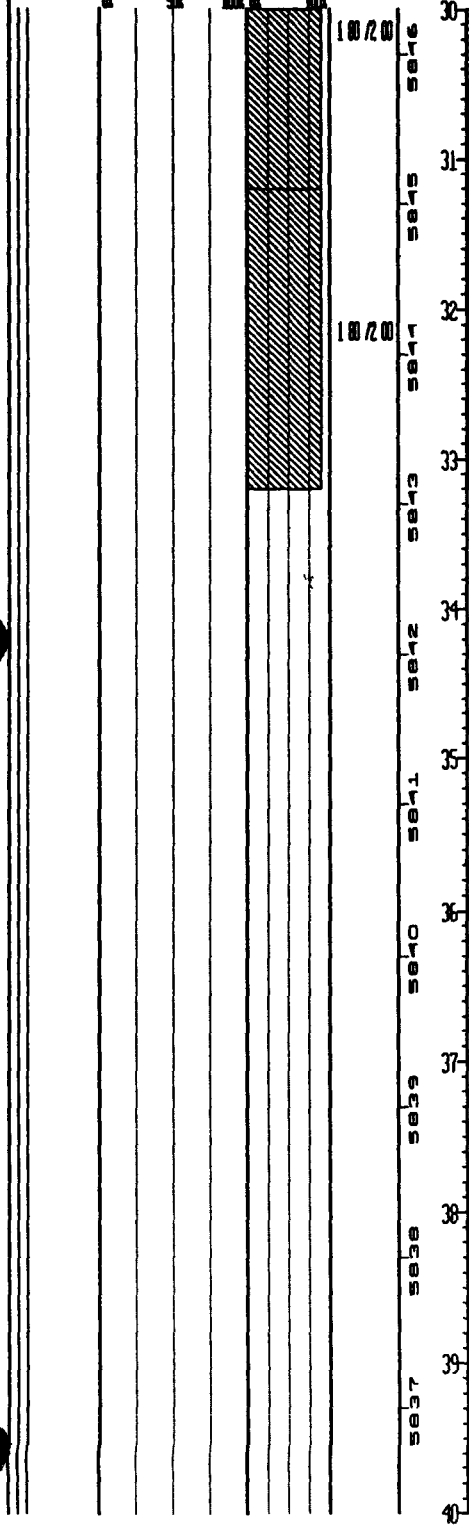


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Med light gray (N6), massively bedded Slightly weathered, slightly friable Local iron staining some carbonaceous material, trace of silt Slickensides at approx 22 0', attitude approx 30 degrees >50% clay
NO SAMPLE	NO SAMPLE
CLAYSTONE	Same as above (reference interval 20 2' to 26 2') Slickensides at approx 30 0', attitude 30 degrees

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 33 2	GROUND ELEVATION (FT)	5876 30	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751683	AREA SOLAR PONDS	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208489
EAST	2085636	LOCATOR NUMBER NL1	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/14/89	

REMARKS Hollow Stem Auger NSI Log

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/ INTERVAL
DATUM(FT)
DEPTH(FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



CLAYSTONE — Same as above Slickensides at approx 31 1', attitude approx 70 degrees Abundt iron staining on face of slick

Total Drilled Depth = 33 2'

WELL COMPLETION INFORMATION

QA By/Date Janell Burman 14-17-89

Location Rocky Flats Plant; Solar Ponds Area Well No. B208489

Coordinates N 38695.29 E 22535.71 (RFP) Elevation: Ground Surface 5876 30'

Total Depth: Well 30.49' Top of Casing 5878.34'

Borehole 33.2'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O.D.

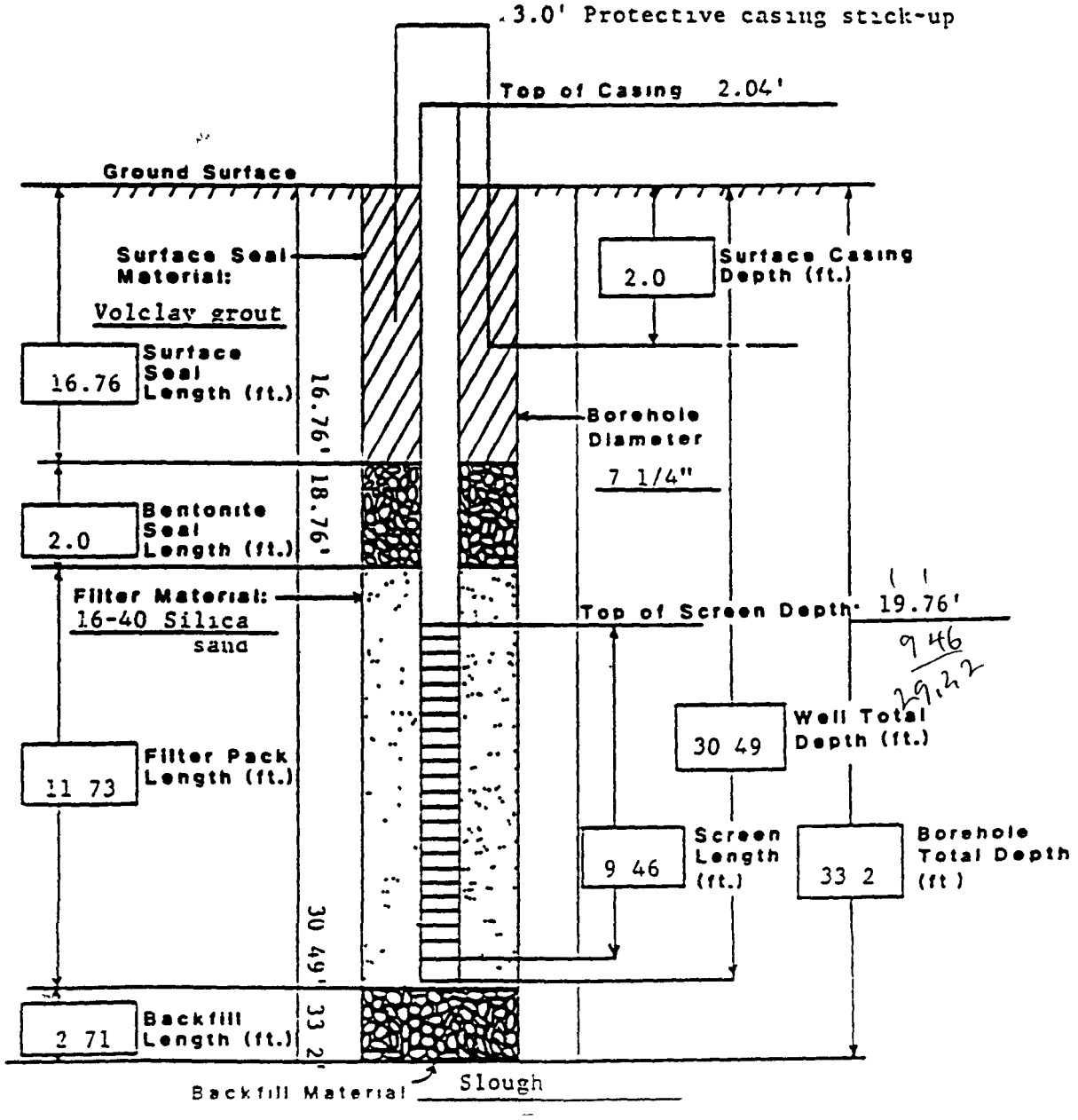
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D

Date Installed 04/14/1989 Approved By Janell Burman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 29.28' to 30.53' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 6		GROUND ELEVATION (FT)	5856 50	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	751804	AREA SOLAR POND		CASING DIAMETER (IN)	4 5	GEOLOGIST DCB	B208589
EAST	2085477	LOCATOR NUMBER NLL		BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED 04/19/89	
REMARKS	Hollow Stem Auger ASI Log						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0 20 / 0 20	5856	0			CL	Silty Gravelly Clay - dusky brown (5 YR 2/2), moderate plasticity, some plant debris
				0 00 / 1 0	5855	1			NO SAMPLE	NO SAMPLE
				0 10 / 1 0	5854	2			CL	Gravel and Clay - gravel is very light gray (N8), poorly sorted, angular to sub-angular, max size approx 6 in clay is pale yellowish brown (10 YR 6/2), low to mod plasticity Trace f g sand
				0 00 / 1 60	5853	3			NO SAMPLE	NO SAMPLE
				0 80 / 0 80	5852	4			CLAYSTONE	Top of Bedrock at 3 6' Claystone - pale yellowish brown, (10 YR 6/2) Trace of silt
				0 00 / 1 20	5851	5			NO SAMPLE	NO SAMPLE
				1 00 / 1 00	5850	6			CLAYSTONE	Claystone - same as above (reference interval 3 6' to 4 4')
				0 00 / 1 00	5849	7			NO SAMPLE	NO SAMPLE
				2 20 / 2 00	5848	8			CLAYSTONE	Claystone, light gray (N2) Bedding not apparent, highly weathered, mod friable Trace of silt and carbonaceous material, localized iron staining
					5847	9				Total Drilled Depth 9 6'
						10				

WELL COMPLETION INFORMATION

QA By/Date Janell Burman 14-25-89

Location Rocky Flats Plant; Solar Ponds Area

Well No. B208589

Coordinates N 38816.83 E 22377.09 (RFP)

Elevation: Ground Surface 5856.5'

Total Depth: Well 5.07'

Top of Casing 5858.35'

Borehole 9.6'

Formation of Completion Valley Fill Alluvium

Casing Material Schedule 40 PVC

Casing Diameter 4 1/2" O.D.

Screen Material Schedule 40 10-slotted PVC

Surface Casing Diameter 8 5/8" O.D.

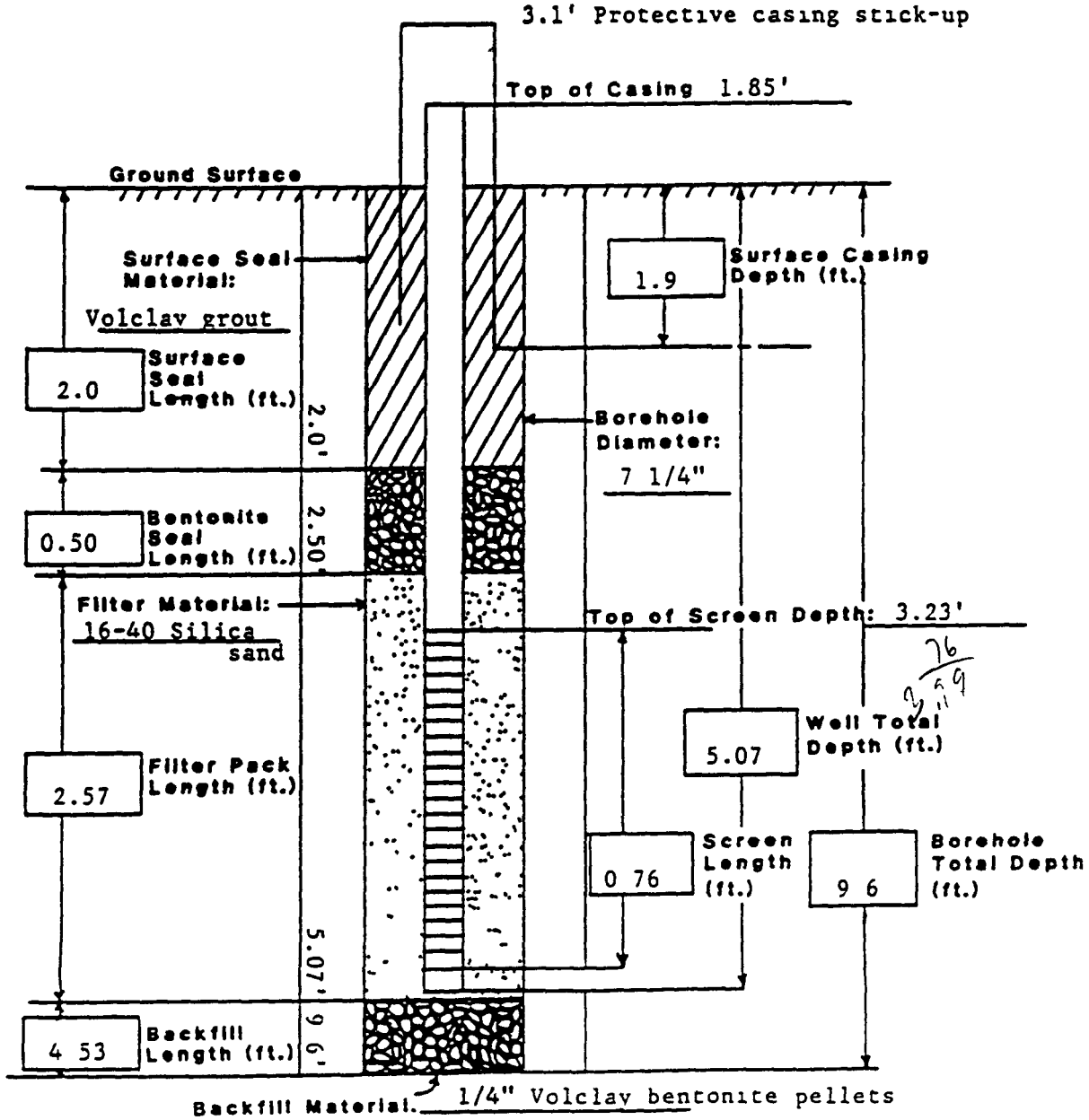
Date Installed 04/19/1989

Approved By Janell Burman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 3 62' to 4 87' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 4	GROUND ELEVATION (FT)	5867 60	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751728	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEM	B208689
EAST	2085250	LOCATOR NUMBER M12	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	
REMARKS	Hollow Stem Auger Weston Log						

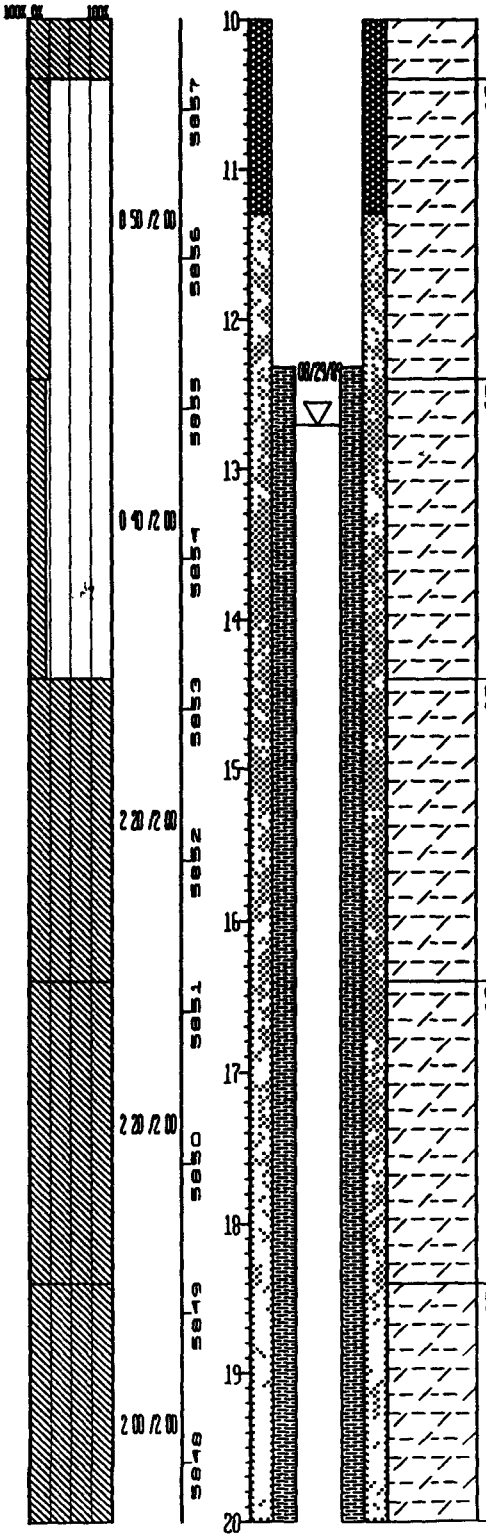
CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

Recovery/Interval	Depth (ft)	Well or Piezometer Construction	Unified Soils Classification or Rock Type	Description
0 60 /2 20	0		CL	Silty Clay - olive gray (5 Y 3/2) Trace coarse to fine gravel, quartzite Soft, non-plastic, (cl with gravel), dry
0 50 /2 20	2		CL	Gravelly Silty Clay - olive gray (5 Y 3/2) Coarse to fine quartzite gravel, 2 cm to 3 cm Trace c g to f g quartz sand Firm, low plasticity, (cl-gc), damp
1 80 /2 00	5	04/20/89	GM	Sandy Silty Gravel - light olive brown (5 Y 5/6) Coarse to fine quartzite gravel, 2 cm to 4 cm, broken, sub-rounded C g to f g sand, sub-rounded Soft, no plasticity, trace clay (gc-sc), wet
	6		NO SAMPLE	NO SAMPLE
1 60 /2 00	7		GM	Sandy Silty Gravel - same as above (reference interval 5 7' to 6 2')
	8		SILTY CLAYSTONE	Top of Bedrock at 7 4' Pale olive (10 Y 6/2) to med gray (N 5/0) Consol, small calcareous nodules (HCl reactive), very stiff, low plasticity, damp
	8		NO SAMPLE	NO SAMPLE
2 00 /2 00	9		SILTY CLAYSTONE	Same as above - grading to light olive brown (5 Y 5/6) Mottles of dark yellowish orange (10 YR 6/6) Consol, very stiff, low plasticity, damp
	10			

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 4	GROUND ELEVATION (FT)	5867 60	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751728	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEM	B208689
EAST	2085250	LOCATOR NUMBER M12	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	

REMARKS Hollow Stem Auger Weston Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Same as above - lignite nodules black (N 1/0)
SILTY CLAYSTONE	Light olive brown (5 Y 5/6) to dusky yellow (5 Y 6/4) Trace c g to f g sand, mottles of mod yellow (5 Y 7/6) Very stiff, low plasticity, consol , damp
SILTY CLAYSTONE	Same as above - iron stains, dark yellowish orange (10 YR 6/6), fractured, grading to med gray (N 5/0), dry
SILTY CLAYSTONE	Olive gray (5 Y 4/1) Iron stains, dark yellowish orange (10 YR 6/6) Calcareous nodules (HCl reactive), very stiff, low plasticity, consol Carbonaceous - lignite, black (N 1/0), dry
SILTY CLAYSTONE	Same as above - more silt, dry

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	28 4	GROUND ELEVATION (FT)	5867 60	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751728	AREA	SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEM	B208689
EAST	2085250	LOCATOR NUMBER	M12	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	

REMARKS Hollow Stem Auger Weston Log

CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% OR 100%			20				
					5847	21			SILTY CLAYSTONE	Med dark gray (N 4/0) Mottles of mod yellow (5 Y 7/6) Highly carbonaceous, abundt lignite, black (N 1/0) Consol , very stiff to hard, low plasticity, dry
				2 20 /2 00	5846	22				
					5845	23			SILTY CLAYSTONE	Same as above - grading to light olive brown (5 Y 5/6) Highly carbonaceous, abundt lignite, black (N 1/0) Dry
				2 20 /2 00	5844	24				
					5843	25			SILTY CLAYSTONE	Olive gray (5 Y 4/1) Abundt carbonaceous material, lignite pieces, black (N 1/0) Mod consol , hard, low plasticity Iron streaks, dark yellowish orange (10 YR 6/6) Dry
				2 00 /2 00	5842	26				
					5841	27			SILTY CLAYSTONE	Same as above - grading to med dark gray (N 4/0)
				2 00 /2 00	5840	28				
					5839	29				Total Drilled Depth - 28 4'
					5838	30				

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 4-21-89

Location Rocky Flats Plant; Solar Ponds Area Well No. B208689

Coordinates N 38741.72 E 22149.03 (NFP) Elevation: Ground Surface 5867.6'

Total Depth: Well 23.07' Top of Casing 5869 60'

Borehole 28.4'

Formation of Completion Weathered Claystone

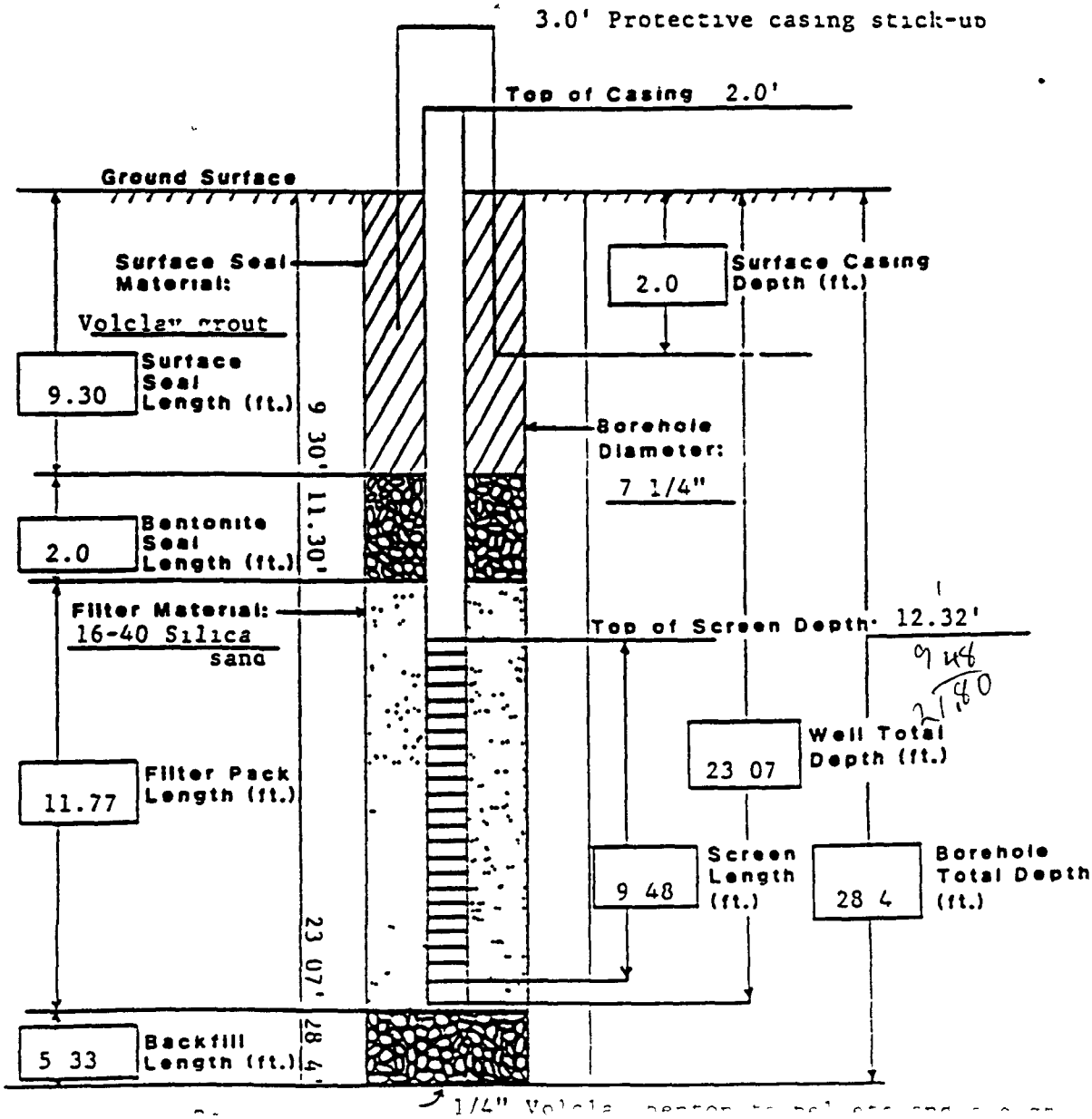
Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O.D.

Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D

Date Installed 04/21/1989 Approved By Jarell Burman
Site Manager

Installed By K.E. Miller
Geologist
CEARP Manager

Comments Set stainless steel centralizer from 21 47' to 22 72' below ground surface



2.9

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 4	GROUND ELEVATION (FT)	5907 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751775	AREA SOLAR PONDS 5	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DCB	B208789
EAST	2084450	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	
REMARKS	Hollow Stem Auger ASI Log						

CRITICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5907	0			CL	Clay - mod yellowish brown (10 YR 5/4) to dark yellowish brown (10 YR 4/2), mod plasticity Trace to some v f g sand, some gravel Root fragments in upper 2 4' Sand fraction varies in amount and size locally, at approx 2 4' on 4 0', sand is m g (Clay with some Gravel and Sand) 10% gravel, 10% f g sand, 80% clay
				1 60 /2 20	5906	1				
					5905	2				
				1 30 /2 20	5904	3				
					5903	4				
					5902	5			CALICHE	Top of Bedrock Caliche occurs as small (2 mm diam) bodies and possible fracture fills from approx 4 4' to 7 1'
				1 10 /2 00	5901	6				
				0 60 /0 70	5900	7			NO SAMPLE	NO SAMPLE
				0 00 /1 30	5899	8				
				0 25 /0 50	5898	9			CLAYSTONE	Dark yellowish brown (10 YR 4/2), trace of silt >50% clay
				0 00 /1 50					NO SAMPLE	NO SAMPLE
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 14 4	GROUND ELEVATION (FT)	5907 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751775	AREA SOLAR PONDS	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B208789
EAST	2084150	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/24/89	

REMARKS Hollow Stem Auger ASI Log

DRILLING SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY / INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	0% 100%		5897	10	08/21/89 ▽			
				8 10 / 1 00	5896	11			CLAYSTONE	Same as above (reference interval 8 4' to 8 9') >50% clay
				0 00 / 1 00	5895	12			NO SAMPLE	NO SAMPLE
				1 00 / 1 20	5894	13			CLAYSTONE	Dark yellowish orange (10 YR 6/6), bedding not apparent Highly weathered, slightly friable, some silt Trace of caliche as small irreg bodies (<2 mm diam) >50% clay
				0 70 / 0 90	5893	14				
				0 00 / 0 30					NO SAMPLE	NO SAMPLE
					5892	15				Total Drilled Depth = 14 4'
					5891	16				
					5890	17				
					5889	18				
					5888	19				
						20				

WELL COMPLETION INFORMATION

QA By/Date Jarell Bupman 11-25-89

Location Rocky Flats Plant: Solar Ponds Area Well No. B208789

Coordinates N 38771.39 E 21350.22 (RFP) Elevation. Ground Surface 5907.1'

Total Depth: Well 12.32' Top of Casing 5909.03'

Borehole 14.4'

Formation of Completion Colluvium

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O D.

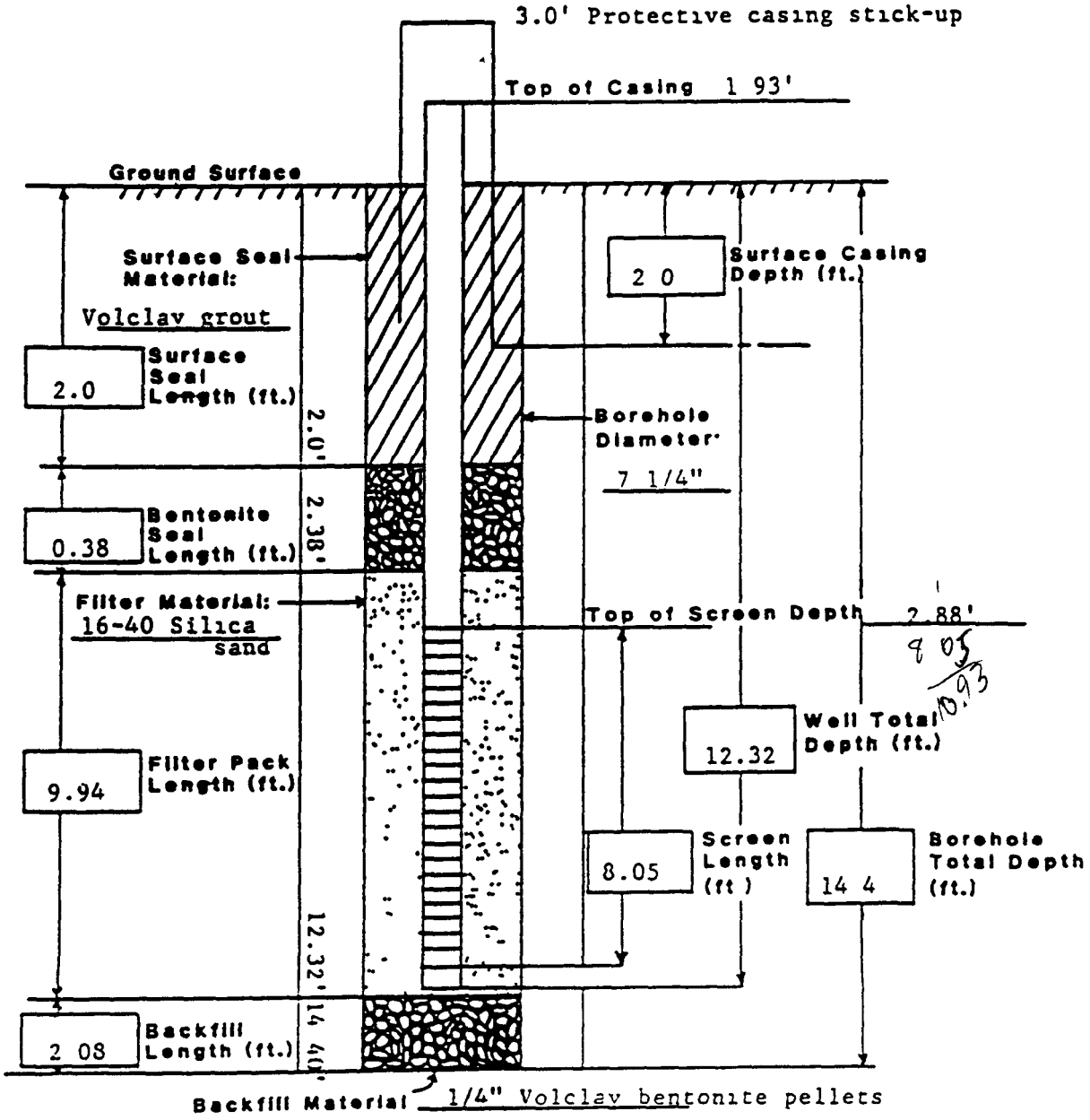
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D.

Date Installed 04/24/1989 Approved By Jarell Bupman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 10 12' to 12 17' below ground surface



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5898 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH 751565	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	KEM	P209989
EAST 2094649	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/26/89	
REMARKS Hollow Stem Auger Weston Log						

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2 00 /2 00	5898	0			CL	Silty Clay - dusky yellow (5 Y 6/4) Abundt organics Trace c g to f g sand, unconsol , firm, non-plastic, dry
					5897	1			CL	Silty Clay - light olive brown (5 Y 5/6) Some gravel, quartzite, sub-angular, broken Trace c g to f g sand Mottles dark yellowish orange (10 YR 6/6), Firm to stiff, low plasticity, (cl with gravel), damp
					5896	2				
				2 00 /2 00	5895	3			CL	Silty Clay - dusky yellow (5 Y 6/4) to light olive brown (5 Y 5/6) Trace coarse to fine quartzite gravel to 1 cm , sub-rounded Trace c g to f g sand Calcareous nodules, HCl reactive Low plasticity, firm, (cl with gravel), damp
					5894	4				
				2 10 /2 00	5893	5			CL	Silty Clay - same as above (reference interval 2 0' to 4 0') More coarse to fine gravel, quartzite and K-feldspar Broken, slight HCl reaction (slightly calcareous), damp
					5892	6				
				2 00 /2 00	5891	7				
					5890	8			SILTY CLAYSTONE	Top of Bedrock Dusky yellow (5 Y 6/4) to pale olive (10 Y 6/2) Consol , very stiff, low plasticity Streaks of yellowish orange (10 YR 6/6) Slightly calcareous, HCl reactive, damp
				2 10 /2 00	5889	9			SILTY CLAYSTONE	Same as above (reference interval 7 7' to 8 0') Trace c g to f g sand, dry
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 12 0	GROUND ELEVATION (FT)	5898 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751565	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEM	P209989
EAST	2084649	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/26/89	

REMARKS Hollow Stem Auger Weston Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2 20 /2 00	5888	10			SILTY CLAYSTONE	Same as above
					5887	11				
					5886	12				Total Drilled Depth = 12 0'
					5885	13				
					5884	14				
					5883	15				
					5882	16				
					5881	17				
					5880	18				
					5879	19				
						20				

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 11-21-89

Location Rocky Flats Plant: Solar Ponds Area Well No. P209989

Coordinates N 33580.65 E 21547.81 (RFP) Elevation: Ground Surface 5898.1'

Total Depth: Well 9.58' Top of Casing 5900.40'

Borehole 12.0'

Formation of Completion Colluvium

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O D

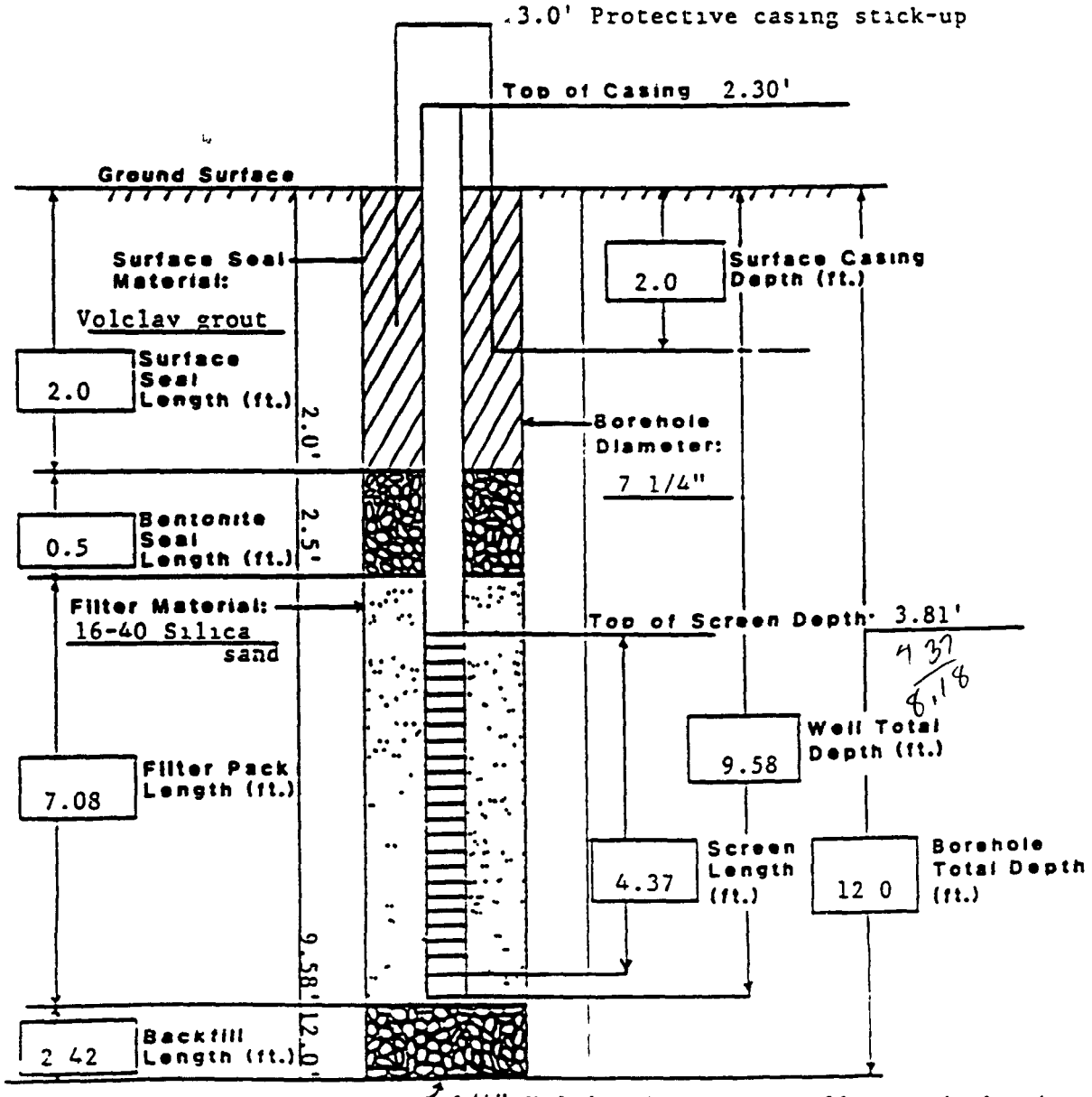
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D

Date Installed 04/26/1989 Approved By Jarell Burman
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 8.2' to 9.45' below ground surface



Backfill Material 1/4" Volclay bentonite pellets and slough

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 0	GROUND ELEVATION (FT)	5898 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751564	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEH/BJP	P210089
EAST	2084639	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/25/89	

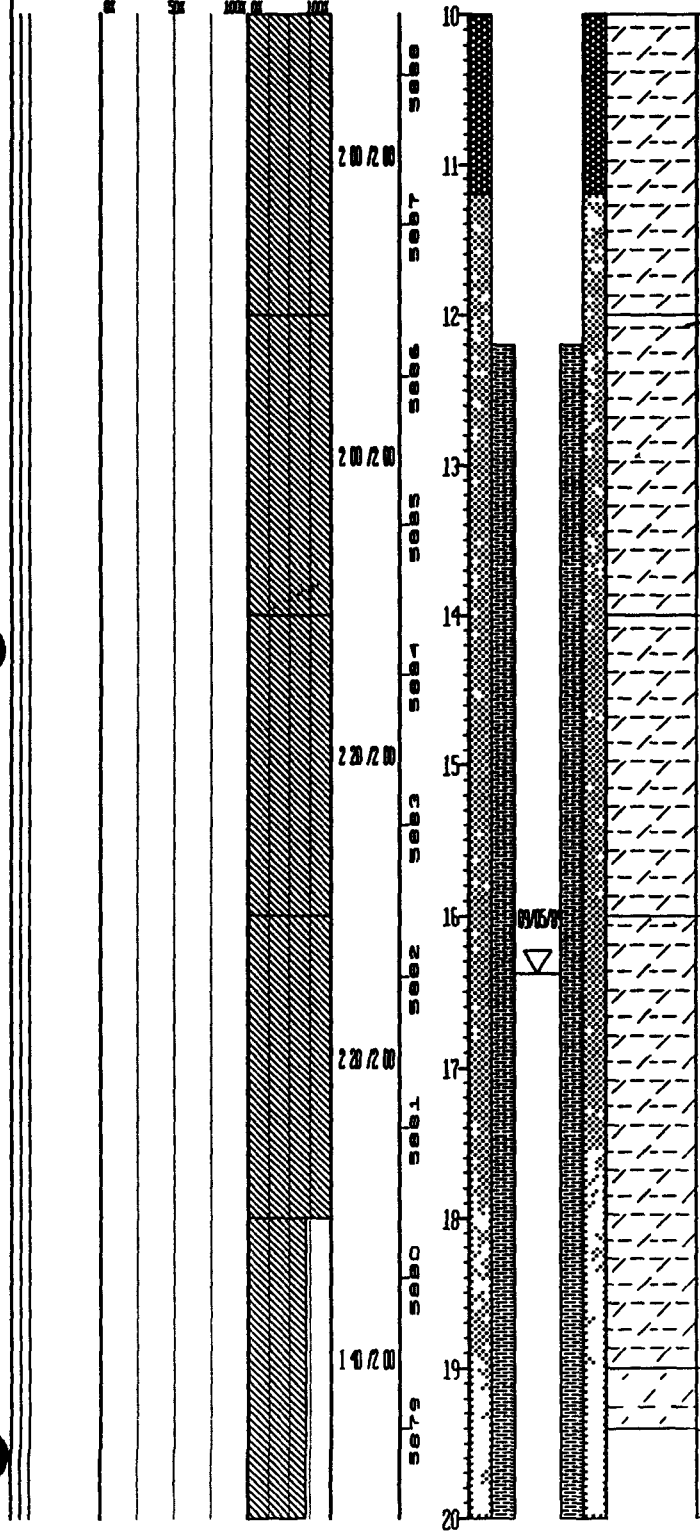
REMARKS Hollow Stem Auger Surface casing set April 25, 1989 at 23 0' and cemented April 25, 1989 by K E Miller Weston Log

CRITICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SIMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT) DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%		5898 0			CL	Silty Clay - dark yellowish brown (10 YR 4/2)
				1 50 /2 00	5897 1			CL	Silty Clay - mod yellowish brown (10 YR 5/4) to mod yellow (5 Y 7/6) Trace gravel, firm, low plasticity, damp
					2			NO SAMPLE	NO SAMPLE
				1 00 /2 00	5896 2			CL	Silty Clay - mod yellowish brown (10 YR 5/4) to dark yellowish orange (10 YR 4/6) Trace gravel C g to f g sand Iron staining, stiff, low plasticity, damp
					5895 3				
				2 00 /2 00	5894 4			CL	Silty Clay - same as above Some gravel, 1 cm to 5 cm, rounded to sub-rounded Stiff, low plasticity, damp (Silty Clay with some Gravel) 20% gravel
					5893 5				
					5892 6			CL	Silty Clay - mod yellowish brown (5 Y 5/6) Dusky yellow (5 Y 6/4) to dark yellowish orange (10 YR 6/6) Trace gravel, rounded to sub-angular (2 cm) Stiff, low plasticity, damp
				1 50 /2 00	5891 7			SILTY CLAYSTONE	Top of Bedrock Light olive brown (5 Y 5/6) Stiff, low plasticity, damp
					5890 8			SILTY CLAYSTONE	Light olive brown (5 Y 5/6) to dark yellowish orange (10 YR 6/6) Calcareous nodules, slight HCl reaction, stiff, low plasticity, damp
				2 00 /2 00	5889 9				
					10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 0	GROUND ELEVATION (FT)	5898 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751564	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KEM/BJP	P210089
EAST	2084639	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/25/89	

REMARKS Hollow Stem Auger Surface casing set April 25, 1989 at 23 0' and cemented April 25 1989 by K E Miller Weston Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6) Stiff to very stiff, low plasticity, damp
SILTY CLAYSTONE	Olive gray (5 Y 4/1) to olive black (5 Y 2/1) Fractured, calcareous nodules, iron staining Stiff to very stiff, low plasticity, damp
SILTY CLAYSTONE	Dark yellowish brown (10 YR 4/2) to light brownish gray (5 YR 6/1) Fractured, iron staining Stiff, low to no plasticity, damp
SILTY CLAYSTONE	Mod olive brown (5 Y 4/4) to olive gray (5 Y 4/1) Fractured, iron staining Stiff to low plasticity, damp
CLAYEY SILTSTONE	Mod brown (5 YR 3/4) to dark yellowish brown (10 YR 6/6) Hard, friable, no plasticity, slightly damp
NO SAMPLE	NO SAMPLE

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 0	GROUND ELEVATION (FT)	5898 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751564	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	KENYRUP	P210089
EAST	2084639	LOCATOR NUMBER L11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/25/89	

REMARKS Hollow Stem Auger Surface casing set April 25, 1989 at 23 0' and cemented April 25, 1989 by K E Miller Weston Log

CHEMICAL SAMPLE DEPTH RADIATIONAL SAMPLE DEPTH SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0 00 /2 00	5878	20				
				5877	21				
			0 00 /0 50	5876	22			NO SAMPLE	Drilled with center bit No sample recovery
			1 50 /1 50	5875	23			SILTY CLAYSTONE	Dark yellowish brown (10 YR 4/2) Iron staining, hard, low plasticity, dry
			2 20 /2 00	5874	24			SILTY CLAYSTONE	Dark yellowish brown (10 YR 4/2) to light brown (5 YR 5/6) to olive black (5 Y 2/1) Calcareous material, slight HCl reaction Trace c g to f g sand Very stiff, low plasticity, slightly damp
				5873	25				
			2 20 /2 00	5872	26			SILTY CLAYSTONE	Same as above - olive black (5 Y 2/1) Trace c g to f g sand Hard, low plasticity, strong HCl reaction (calcareous), dry
				5871	27				
				5870	28				Total Drilled Depth - 28 0'
				5869	29				
					30				

WELL COMPLETION INFORMATION

QA By/Date James Burgess 1-28-89

Location Rocky Flats Plant; Solar Ponds Area Well No. P210089

Coordinates N 38579.31 E 21538.57 (RFP) Elevation Ground Surface 5898.4'

Total Depth: Well 22.93' Top of Casing 5900.40'

Borehole 28.0'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O.D.

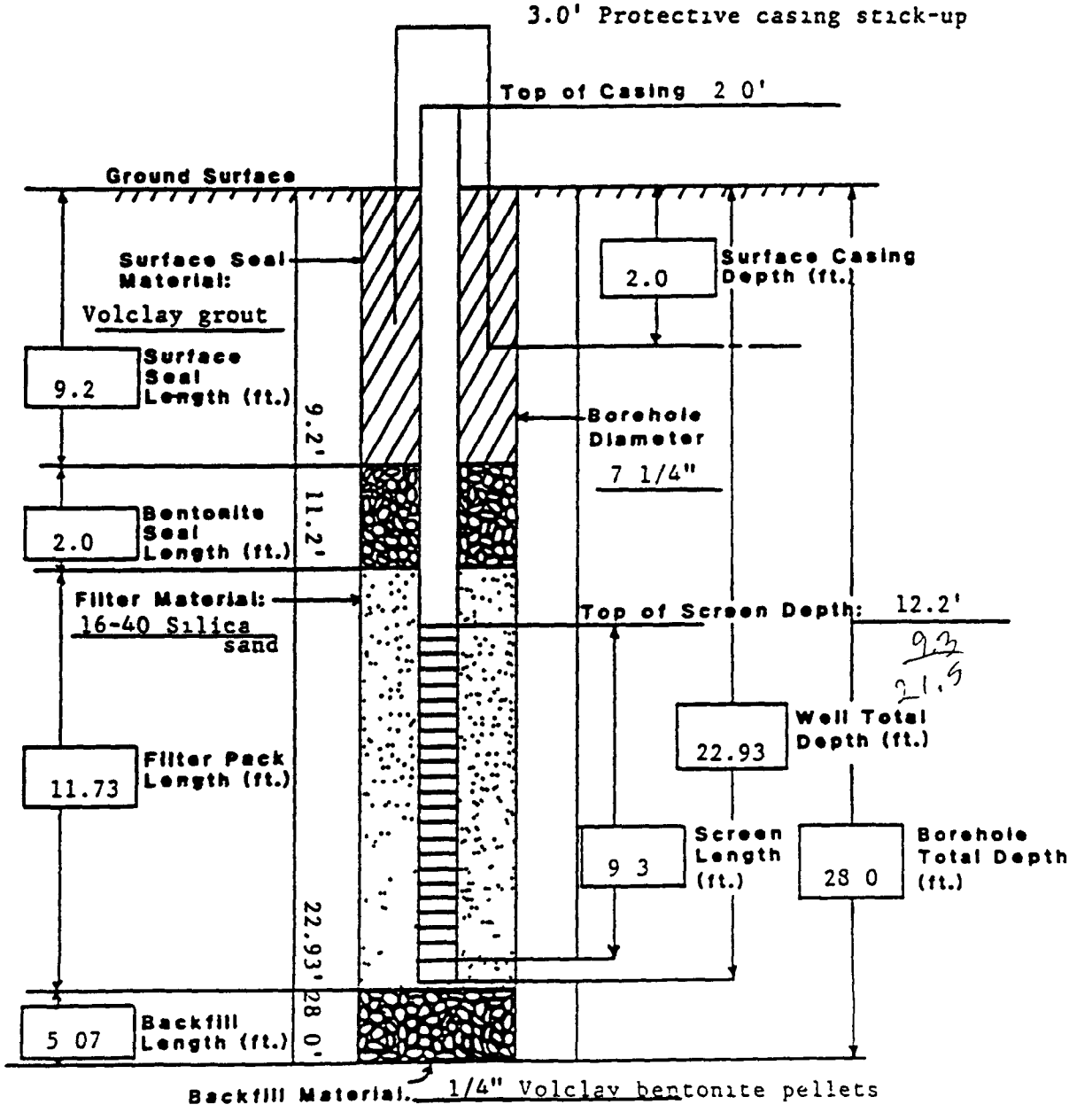
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O.D

Date Installed 04/25/1989 Approved By James Burgess
Site Manager

Installed By K.E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 21.53' to 22.78' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 5		GROUND ELEVATION (FT)	5873 20	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	751696	AREA SOLAR POND		CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST KEN	B210389
EAST	2085116	LOCATOR NUMBER M11		BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED 04/21/89	
REMARKS	Hollow Stem Auger Weston Log						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	5873	0		CL	Silty Clay - grayish brown (5 YR 3/2) Trace organics Trace c g to f g sand, stiff, non-plastic, (ol), dry
2 00 /2 30	5872	1		CL	Silty Clay - grayish brown (5 YR 3/2) Trace c g to f g sand Trace coarse to fine gravel, quartzite, firm, non-plastic, dry
	5871	2			
2 20 /2 00	5870	3		CL	Gravelly Sandy Clay - grayish brown (5 YR 3/2) to olive black (5 Y 2/1) Coarse to fine gravel, quartzite, c g to f g sand, quartz, sub-rounded, poorly sorted, firm, low plasticity, (cl with gravel and sand), dry
	5869	4		NO SAMPLE	NO SAMPLE
				CL	Gravelly Sandy Clay - same as above
1 50 /2 20	5868	5			
	5867	6	04/21/89 ▽	GC	Sandy Clayey Gravel - mod brown (5 YR 4/4) C g to f g quartz sand, sub-rounded Coarse to fine quartzite gravel, broken to 4 0 cm, firm, no to low plasticity, (gc with sand), dry
1 00 /2 00	5866	7		GC	Sandy Clayey Gravel - same as above, wet
	5865	8			
				GC	Sandy Clayey Gravel - same as above
2 20 /2 00	5864	9		SILTY CLAYSTONE	Top of Bedrock Silty Claystone - mod olive brown (5 Y 4/6) Consol, very stiff, low plasticity, streaks of dark yellowish orange (10 YR 6/6), dry
		10			

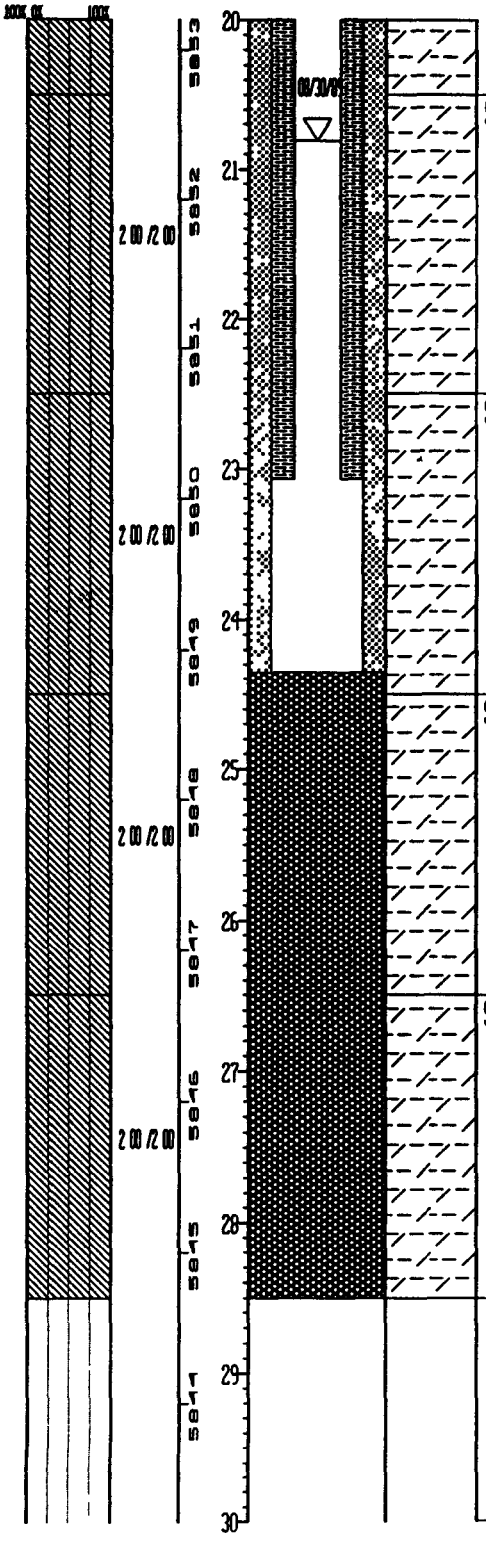
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 5	GROUND ELEVATION (FT)	5873 20	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751696	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	KEM	B210389
EAST	2085116	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/21/89	

REMARKS Hollow Stem Auger Weston Log

CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50%	100% 0% 100%	2 20 /2 00	sea3 sea2 sea1	10 11 12			SILTY CLAYSTONE	Pale olive (10 Y 6/2), mottled Mod yellow (5 Y 7/6), consol , very stiff, low plasticity, calcareous nodules, HCl reactive, dolomite, dry
				2 20 /2 00	sea0	13			SILTY CLAYSTONE	Same as above - grading to med gray (N 5/0) Hard, low plasticity
				2 00 /2 00	sea9 sea8 sea7	14 15 16			SILTY CLAYSTONE	Med gray (N 5/0) to olive gray (5 Y 4/6) Highly carbonaceous Lignite, black (N 1/0) Hard, low plasticity Iron stains, dark yellowish orange (10 YR 6/6), dry
				2 00 /2 00	sea6 sea5	17 18			SILTY CLAYSTONE	Same as above - fractured, med dark gray (N 4/0) Highly carbonaceous Lignite, black (N 1/0)
				2 00 /2 00	sea4	19 20			SILTY CLAYSTONE	Olive gray (5 Y 4/1) Trace carbonaceous material Lignite, black (N 1/0) Consol , very stiff, low plasticity, dry

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 5	GROUND ELEVATION (FT)	5873 20	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751696	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	KEM	B210389
EAST	2085116	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/21/89	
REMARKS	Hollow Stem Auger Weston Log						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH — SAMPLE NUMBER — SAMPLE GRAIN SIZE (0% 50% 100%) — PERCENT RECOVERY (0% 100%) — RECOVERY/INTERVAL — DATUM (FT) — DEPTH (FT) — WELL OR PIEZOMETER CONSTRUCTION — LITHOLOGY — UNIFIED SOILS CLASSIFICATION OR ROCK TYPE — DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Same as above - fractured Iron stains, dark yellowish orange (10 YR 6/6)
SILTY CLAYSTONE	Same as above
SILTY CLAYSTONE	Olive gray (5 Y 4/1) to med dark gray (N 4/0) Mod consol, very stiff, low plasticity Iron stains, dark yellowish orange (10 YR 6/6), dry
SILTY CLAYSTONE	Same as above
	Total Drilled Depth 28 5'

WELL COMPLETION INFORMATION

A By/Date Janell Bergman 14-25-89

Location Rocky Flats Plant; Solar Ponds Area — Well No. B210389

Coordinates N 38710.01 E 22016.16 (RFP) — Elevation: Ground Surface 5873.2'

Total Depth: Well 24.35' — Top of Casing 5875.32'

Borehole 28.5'

Formation of Completion Weathered Claystone

Casing Material Schedule 40 PVC — Casing Diameter 4 1/2" O D.

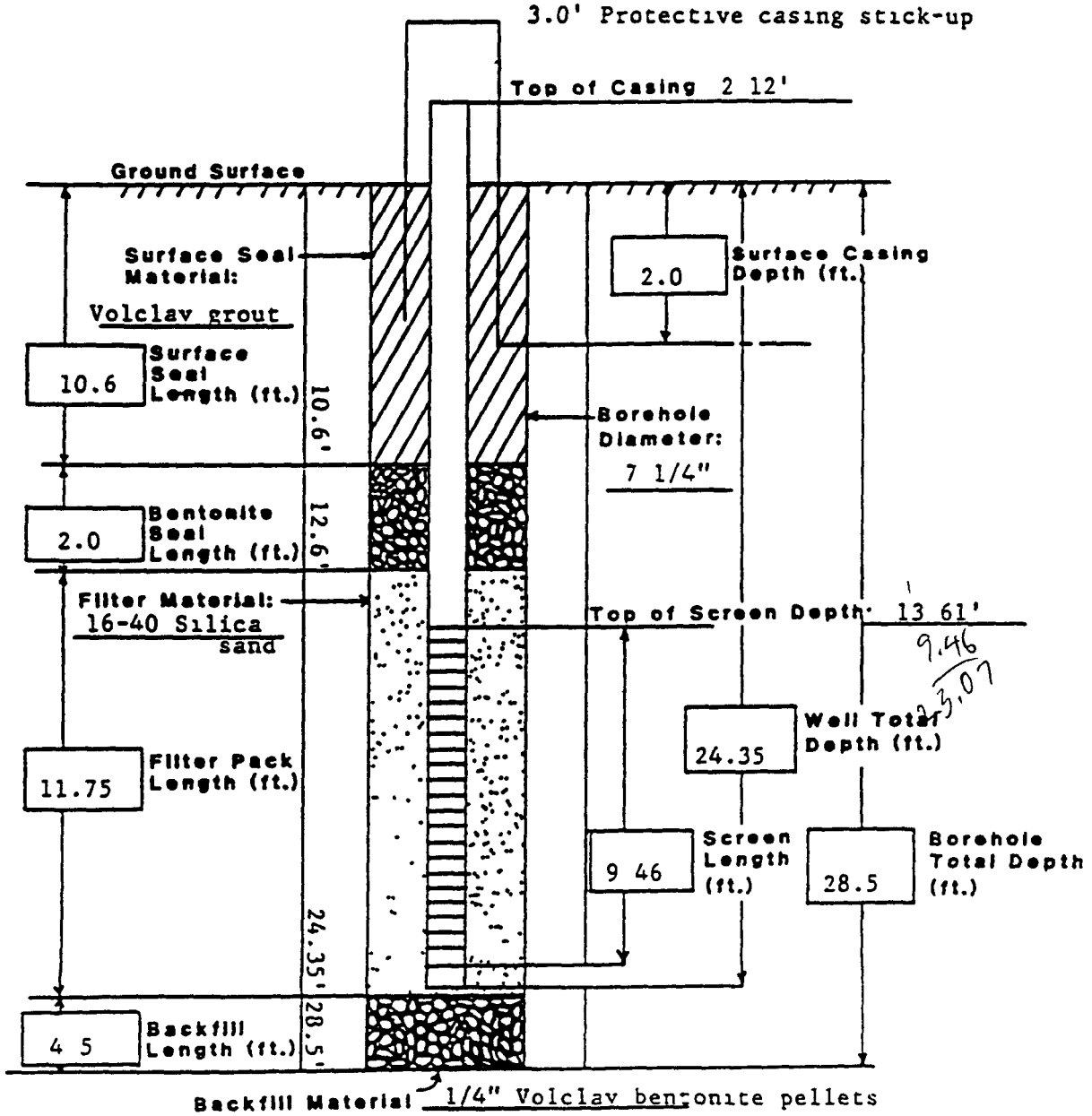
Screen Material Schedule 40 10-slotted PVC — Surface Casing Diameter 8 5/8" O.D.

Date Installed 04/24/1989 — Approved By Janell Bergman, Site Manager

Installed By K.E. Miller, Geologist

CEARP Manager

Comments Set stainless steel centralizer from 22 75' to 24 0' below ground surface

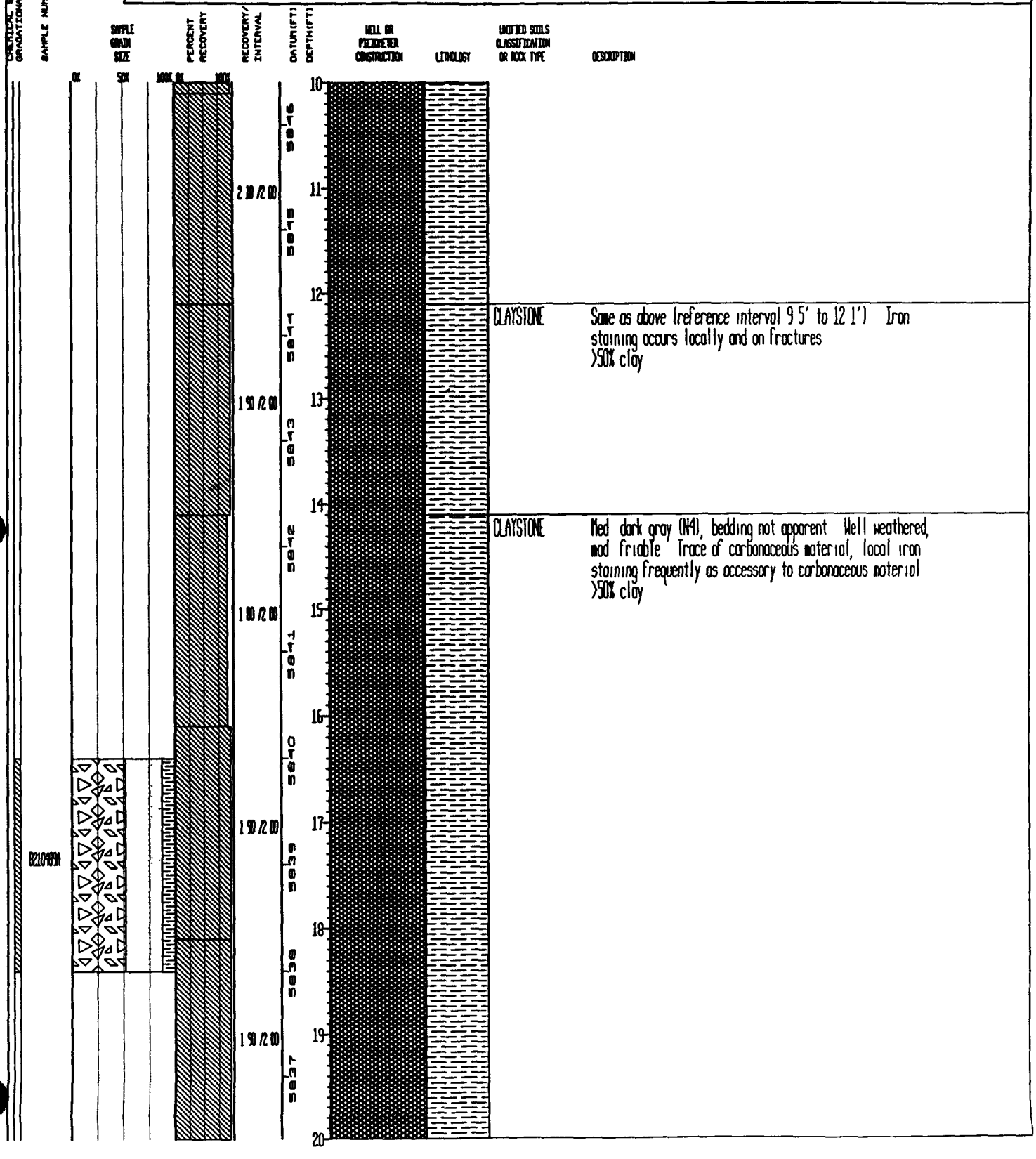


STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 1	GROUND ELEVATION (FT)	5956 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751802	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DCB	B210489
EAST	2085513	LOCATOR NUMBER N11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	

REMARKS Hollow Stem Auger ASI Log

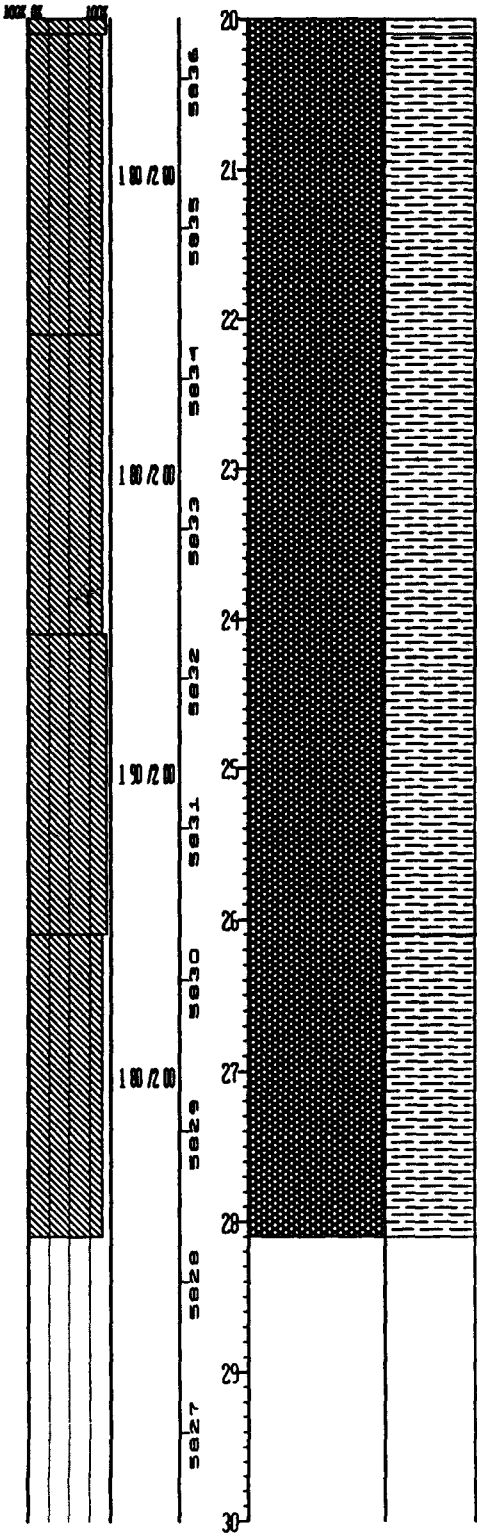
CRITICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0% 50% 100%	100% 0% 100%			0			CL	Clay - dusky yellowish brown (10 YR 2/2), low to mod plasticity Some gravel to gravelly, trace of f g to m g sand roots and plant debris in upper 1 5' >50% clay
				1 60 / 1 70	5956	1				
					5955	2	04/20/89		NO SAMPLE	NO SAMPLE
				0 00 / 0 40					GC	Clayey Gravel - dom med light gray (N6) Matrix is dark yellowish brown (10 YR 4/2), sub-angular, mod graded Max size approx 6 cm Some f g to c g sand Approx 65% gravel, approx 10% f g -c g sand, approx 25% clay
				0 65 / 0 70	5954	3				
				0 00 / 1 30	5953				NO SAMPLE	NO SAMPLE
						4	09/20/89		GC	Clayey Gravel as above (reference interval 2 1' to 2 8') Approx 65% gravel, approx 10% f g -c g sand, approx 25% clay
				1 65 / 1 20	5952	5				
					5951				NO SAMPLE	NO SAMPLE
				0 00 / 0 80		6			GC	Clayey Gravel as above (reference interval 2 1' to 2 8') Approx 65% gravel, approx 10% f g -c g sand, approx 25% clay
				1 20 / 1 40	5950					
					5949	7			CLAYSTONE	Top of Bedrock Claystone - dark yellowish brown (10 YR 4/2), bedding not apparent Highly weathered, mod friability Trace of f g sand to sandy, sand fraction varies locally >50% clay
				0 00 / 0 60		8			NO SAMPLE	NO SAMPLE
					5948				CLAYSTONE	Same as above (reference interval 7 0' to 7 5') Sand fraction decreases with depth 0-30% f g sand, >50% clay
				1 90 / 2 00	5947	9			CLAYSTONE	Color grades to light olive gray (5 Y 6/1) and light gray (N7) Sand fraction absent below approx 10 5' Caliche body approx 1 5 cm diam at approx 11 9' >50% clay
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 20 1	GROUND ELEVATION (FT)	5856 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751802	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 D	GEOLOGIST	DCB	B210489
EAST	2085513	LOCATOR NUMBER ALL	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	
REMARKS	Hollow Stem Auger ASI Log						



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 1	GROUND ELEVATION (FT)	5856 40	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	751802	AREA SOLAR POND	CASING DIAMETER (IN)	4 5 0 0	GEOLOGIST	DCB	B210489
EAST	2085513	LOCATOR NUMBER M11	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	04/20/89	
REMARKS	Hollow Stem Auger ASI Log						

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Light olive gray (5 Y 6/1), bedding not apparent Well weathered, mod friability Iron staining locally and on fractures Trace of silt to some silt >50% clay
CLAYSTONE	Same as above color grades to dark gray (N3) >50% clay
	Total Drilled Depth = 28 1'

WELL COMPLETION INFORMATION

QA By/Date Lowell Bergman 14-21-89

Location Rocky Flats Plant; Solar Ponds Area Well No. B210489

Coordinates N 38014.87 E 22413.47 (RFP) Elevation: Ground Surface 5856 4'

Total Depth: Well 8.67' Top of Casing 5858 71'

Borehole 28.1'

Formation of Completion Colluvium

Casing Material Schedule 40 PVC Casing Diameter 4 1/2" O.D

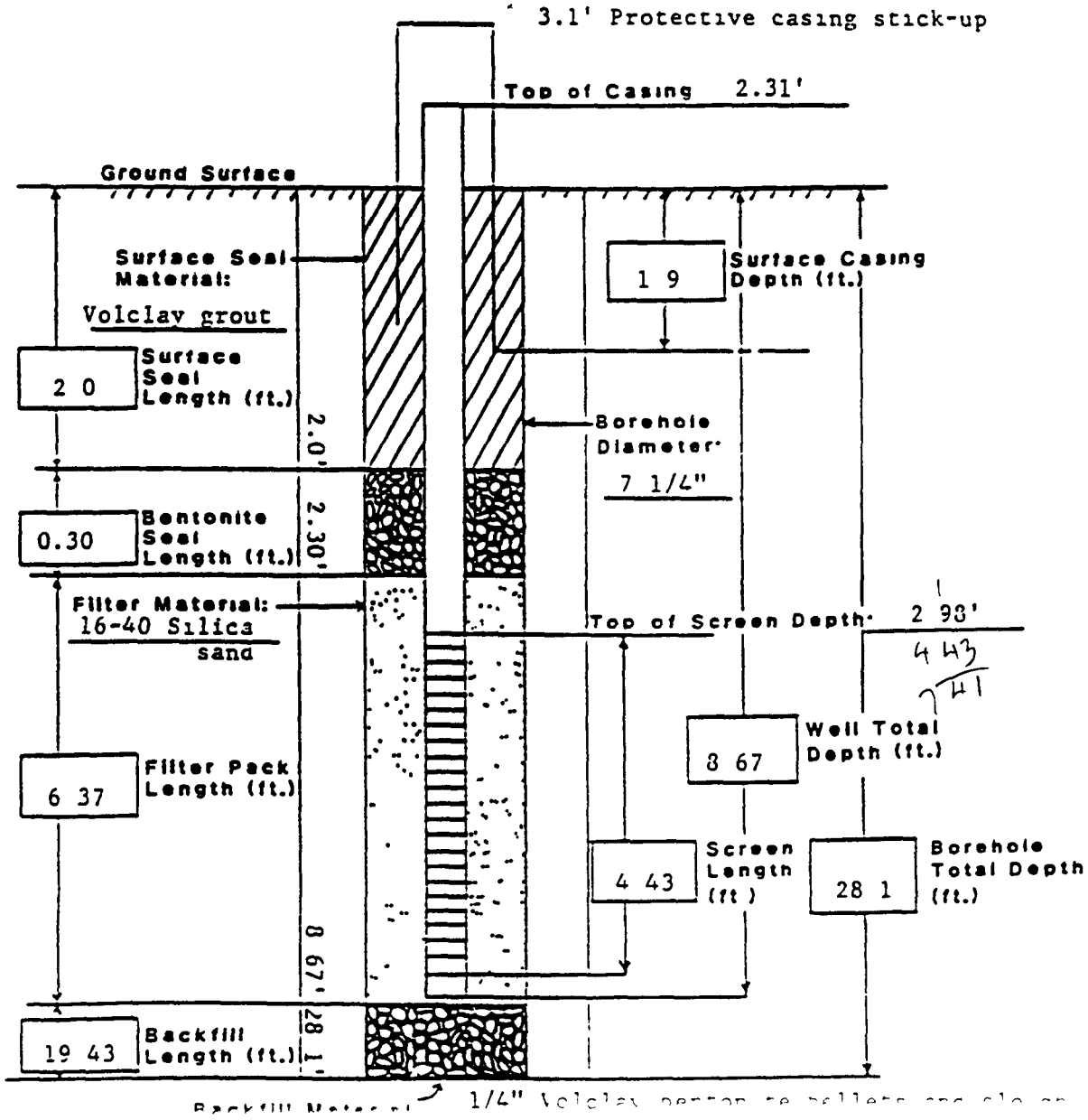
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 8 5/8" O D.

Date Installed 04/20/1989 Approved By Lowell Bergman
Site Manager

Installed By K E. Miller
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 7.25' to 8 50' below ground surface



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 9 6	GROUND ELEVATION (FT)	5917 80	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	750538	AREA B-1 POND	CASING DIAMETER (IN)	2-3/8 0 0	GEOLOGIST	SPC	B213789
EAST	2086677	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	06/13/89	

REMARKS Hollow Stem Auger Weston Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE / PERCENT RECOVERY / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION

0% 50% 100% 0% 100%

Recovery/Interval	Datum (FT)	Unified Soils Classification or Rock Type	Description
1 40/1 60	5917	CL	Sandy Clay - mod brown (5 YR 4/4) to dusky yellowish brown (10 YR 2/2) Trace gravel to pebbles, non-stratified F g to v c g sand, poor sorting, sub-angular, quartzose Poorly consol, stiff, med plasticity, moist
2 00/2 00	5916, 5915	CL	Sandy Clay - mod yellowish brown (10 YR 5/4), non-stratified F g to v c g sand, poor sorting, sub-angular, quartzose Poor consol, stiff, med plasticity, calcareous, moist
1 95/2 00	5914, 5913	CL	Sandy Clay - same as above Light brown (5 YR 5/6) to dark yellowish orange (10 YR 6/6), increased calcareous deposits
1 90/2 00	5912, 5911	CLAYEY SANDSTONE	Top of Bedrock Dark yellowish orange (10 YR 6/6) to grayish orange (10 YR 7/4) to light gray (N 7/0), non-stratified, mottled F g to c g sand, poor sorting, sub-angular, quartzose Poorly consol, calcareous, very weathered, moist
		CLAYSTONE	Very light gray (N 8/0) Non-stratified, blocky, mod consol, med to high plasticity, weathered, abundt iron oxide staining, moist
		NO SAMPLE	NO SAMPLE
2 00/2 00	5910, 5909, 5908	CLAYSTONE	Same as above - light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6) to med light gray (N 6/0), mottled Calcareous deposits
			Total Drilled Depth 9 6'

P213890506

WELL COMPLETION INFORMATION

QA By/Date Terrell Burman 16-14-99

Location Rocky Flats Plant; Original Process Waste Lines (RFP) Well No. B213789

Coordinates N 37546.69 E 23573.81 Elevation: Ground Surface 5917.8'

Total Depth: Well 8.25' Top of Casing 5920.01'

Borehole 9.4'

Formation of Completion Colluvium

Casing Material Schedule 40 PVC Casing Diameter 2 3/8" O.D.

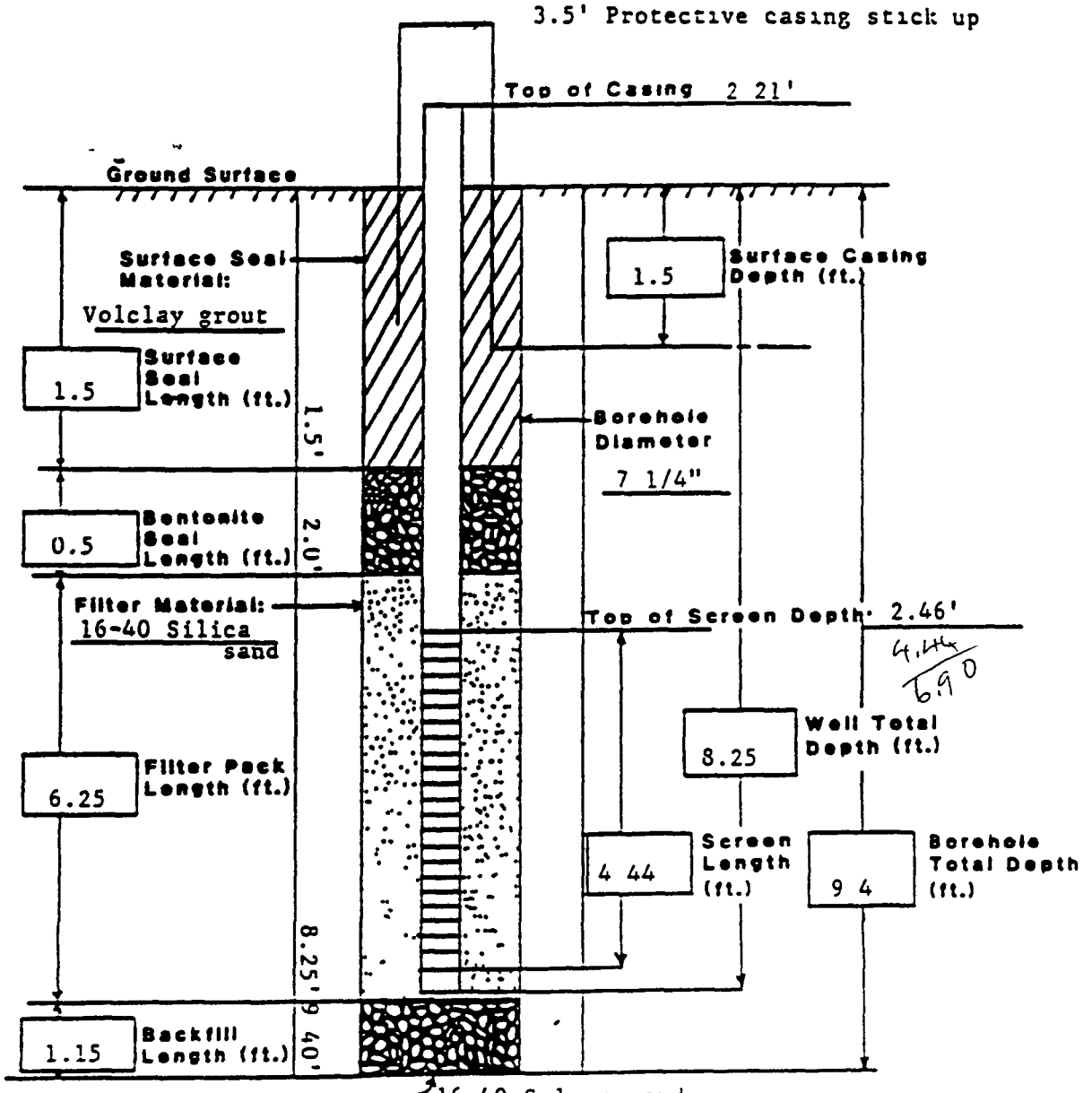
Screen Material Schedule 40 10-slotted PVC Surface Casing Diameter 5 5/8" O.D.

Date Installed 06/13/1989 Approved By Terrell Burman
Site Manager

Installed By S.P. Carpenter
Geologist

CEARP Manager

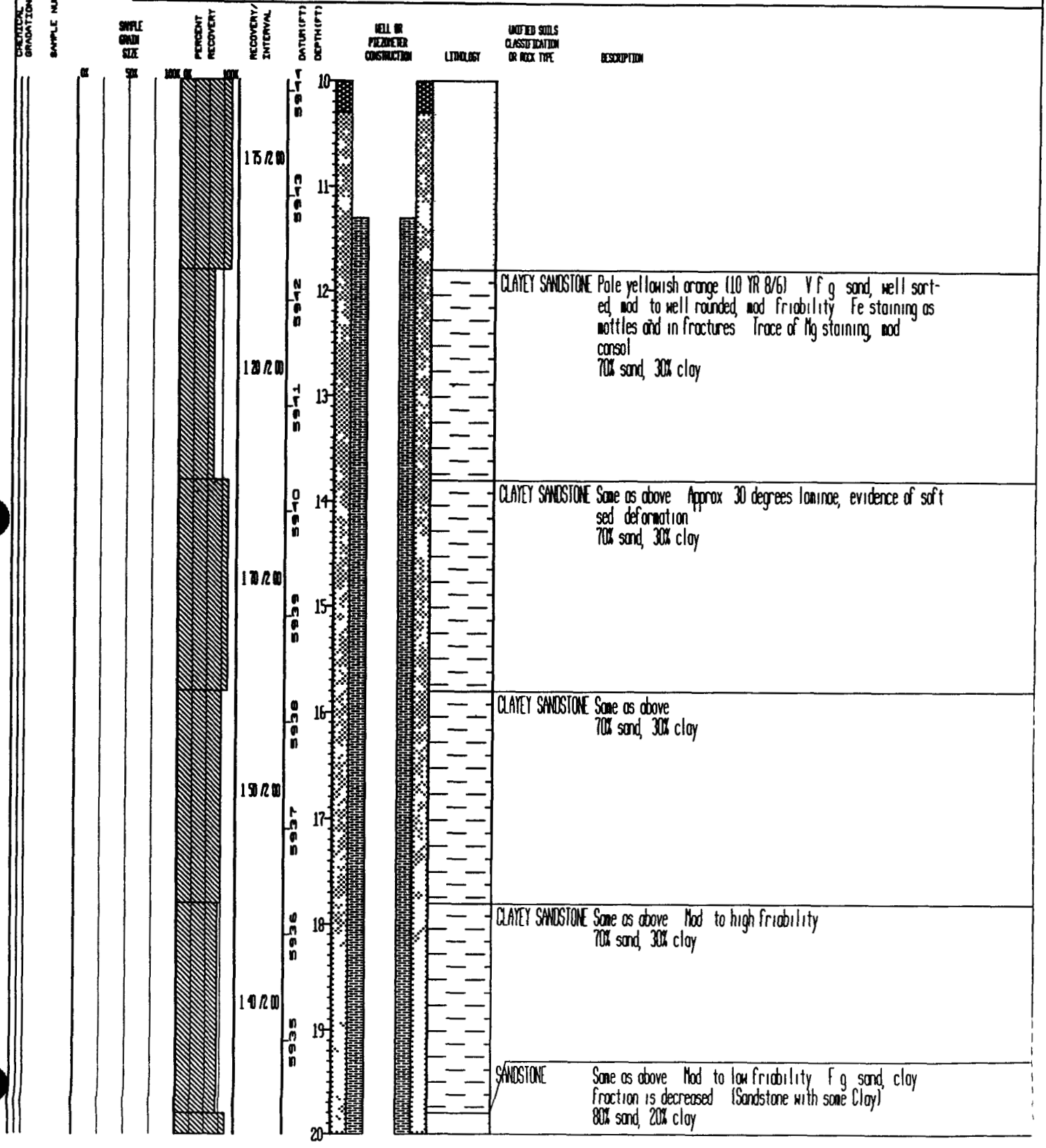
Comments Set stainless steel centralizer from 6.92' to 8.13' below ground surface.



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 85	GROUND ELEVATION (FT)	5954 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	750466	AREA PLANT	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	DAT	P213889
EAST	2086109	LOCATOR NUMBER N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	06/16/89	
REMARKS	Hollow Stem Auger AGI Log						

CHEMICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CK SOK ROCK CK ROCK			5954	0			CL	Sandy Clay - grayish orange (10 YR 7/4), grading to mod brown (5 YR 3/4), mod graded Sand is m g to c g, angular to sub-angular, mod plasticity Some gravel approx 5 cm in diam at base of interval, calcareous 30% sand, 70% clay
	P213889A			1 40 /1 00	5953	1				
					5952	2			CL	Same as above Top is dark reddish brown (10 R 3/4), gravel fraction increases (Sandy Gravelly Clay) 20% gravel, 20% sand, 60% clay
				1 30 /2 00	5951	3				
					5950	4			GC	Calcareous Gravel - grayish orange pink (10 R 8/2) Mod to well graded, angular to sub-angular Some sand f g to c g, some clay (Sandy Clayey Gravel) 70% gravel, 15% sand, 15% clay
				1 30 /2 00	5949	5				
	P214893SU				5948	6			NO SAMPLE	NO SAMPLE
				9 00 /2 00	5947	7				
					5946	8			SANDSTONE	Top of Bedrock at 8 0' Sandstone - pinkish gray (5 YR 8/1) V f g to f g, rounded to sub-rounded, poorly graded Fe staining, trace gravel, largest is diameter of core (approx 6 cm) >90% sand
	P213889B			0 60 /2 00	5945	9			SANDSTONE	Pinkish gray (5 YR 8/1) V f g to f g, rounded to sub-rounded, poorly graded Fe staining as mottles, some calcareous material in middles of interval, unconsol Some clay >90% sand
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 85	GROUND ELEVATION (FT)	5954 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	750466	AREA PLANT	CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	DAT	P213889
EAST	2086109	LOCATOR NUMBER NLO	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	06/16/89	
REMARKS	Hollow Stem Auger ASI Log						



CLAYEY SANDSTONE Pale yellowish orange (10 YR 8/6) V f g sand, well sorted, mod to well rounded, mod friability Fe staining as mottles and in fractures Trace of Mg staining, mod consol
70% sand, 30% clay

CLAYEY SANDSTONE Same as above Approx 30 degrees laminae, evidence of soft sed deformation
70% sand, 30% clay

CLAYEY SANDSTONE Same as above
70% sand, 30% clay

CLAYEY SANDSTONE Same as above Mod to high friability
70% sand, 30% clay

SANDSTONE Same as above Mod to low friability F g sand, clay fraction is decreased (Sandstone with some Clay)
80% sand, 20% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 85	GROUND ELEVATION (FT) 5954 10	PROJECT NUMBER	LOG OF BORING NUMBER
NORTH	750466	AREA PLANT	CASING DIAMETER (IN) 2 3/8 O D	GEOLOGIST DAT	P213889
EAST	2086109	LOCATOR NUMBER M10	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED 06/16/89	

REMARKS Hollow Stem Auger AST Log

VERTICAL SAMPLE DEPTH GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		CL SIL	100% CR 100%	1 70 /2 00	5953	20				
					5952	21				
				2 00 /2 00	5951	22			SANDSTONE	Very pale orange (10 YR 8/2) V f g sand, mod well sorted, sub-rounded to rounded, mod friability Fe staining as mottles >90% sand
					5950	23				
				2 00 /2 00	5949	24			SANDSTONE	Same as above >90% sand
					5948	25				
				2 00 /2 00	5947	26			SANDSTONE	Same as above, decrease in clay fraction in top of interval and is yellowish gray (5 Y 5/2) Fissile >90% sand
					5946	27				
				2 00 /2 00	5945	28			SANDSTONE	Same as above >90% sand
					5944	29				
	P213889C					30			SANDSTONE	Same as above, more clay fraction at base >90% sand

STATE PLANE COORDINATE		TOTAL DEPTH (FT)	31 85	GROUND ELEVATION (FT)	5954 10	PROJECT NUMBER		LOG OF BORING NUMBER
NORTH	750466	AREA PLANT		CASING DIAMETER (IN)	2 3/8 O D	GEOLOGIST	DAT	P213889
EAST	2086109	LOCATOR NUMBER	N10	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	06/16/89	

REMARKS Hollow Stem Auger ASI Log

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0%	100% 0% 100%	2 00 /2 85	5924	30				
		SIX			5923	31				
					5922	32				Total Drilled Depth = 31 85'
					5921	33				
					5920	34				
					5919	35				
					5918	36				
					5917	37				
					5916	38				
					5915	39				
						40				

WELL COMPLETION INFORMATION

QA By/Date Janell Burman 11-20-89

Location Rocky Flats Plant: Original Process Waste Lines (NPP)

Coordinates N 37476.24 E 23005.19

Total Depth: Well 22.03'

Borehole 31.35'

Well No. P213889

Elevation: Ground Surface 5954.1'

Top of Casing 5955.94'

Formation of Completion Weathered Sandstone

Casing Material Schedule 40 PVC

Screen Material Schedule 40 10-slotted PVC

Date Installed 06/16/1989

Installed By S.P. Carpenter
Geologist

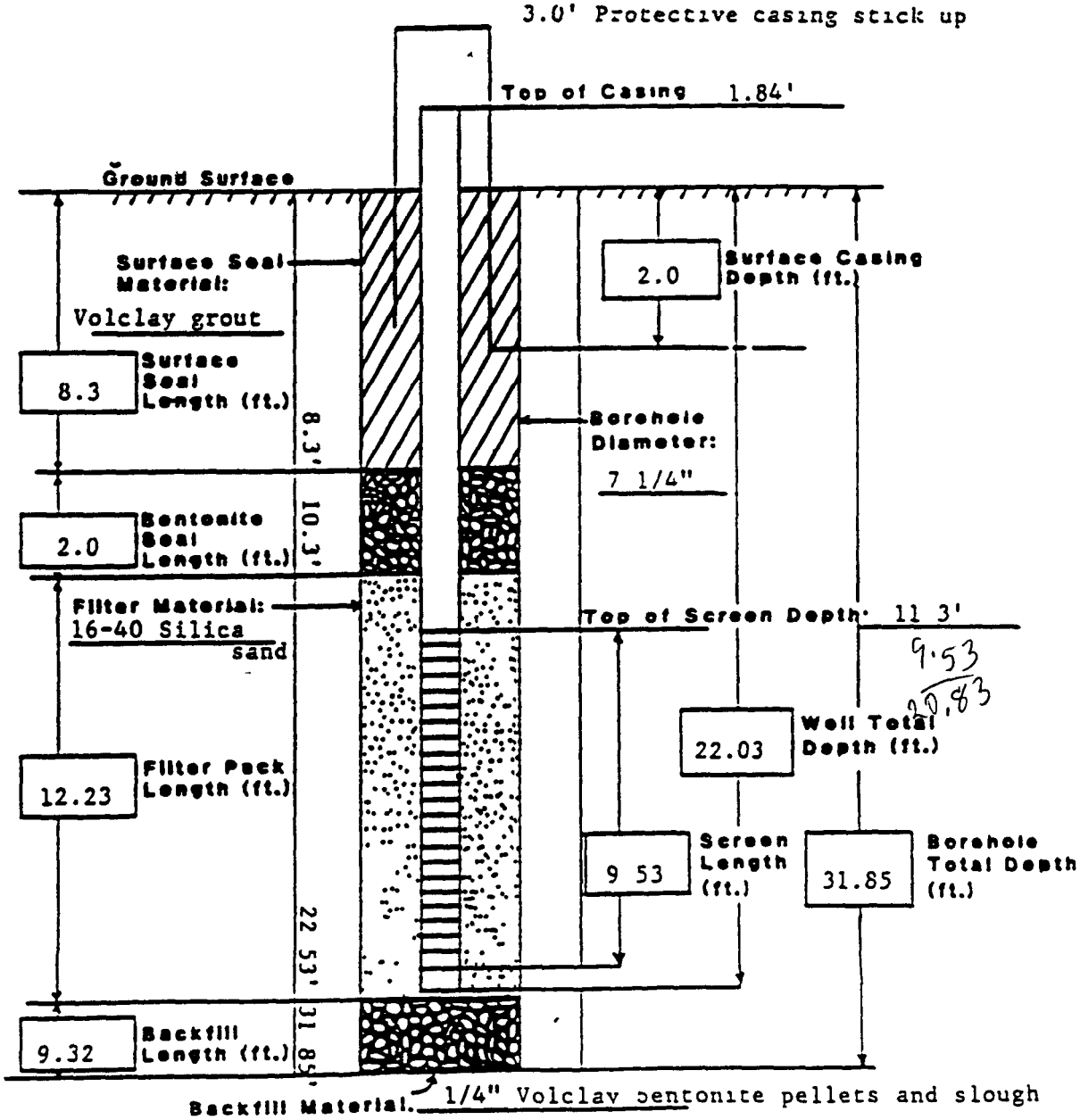
Casing Diameter 2 3/8" O.D.

Surface Casing Diameter 5 5/8" O.D.

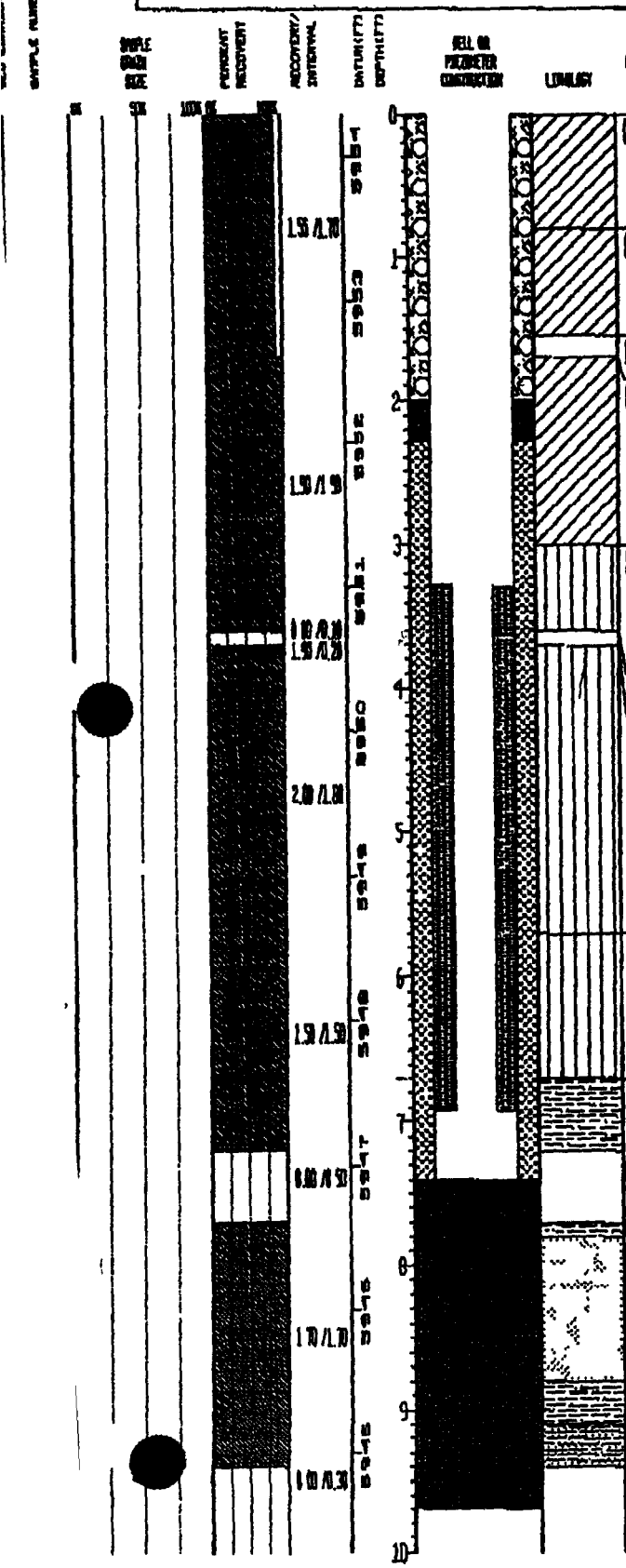
Approved By Janell Burman
Site Manager

CEARP Manager

Comments



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 9.7	GROUND ELEVATION (FT) 5954.30	OLD WELL NUMBER P214-89A	LOG OF BORING NUMBER	
NORTH 750468	AREA PLANT	CASING DIAMETER (IN) 2-3/8 O D	GEOLOGIST SPC	P213989	
EAST 2086102	LOCATOR NUMBER 100	BOREHOLE DIAMETER (IN) 7.25	DATE DRILLED 06/19/89		
REMARKS Hollow Stem Auger Weston Log					



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	Sandy Clay - dark yellowish orange (10 YR 6/6), non-stratified F g to c g sand, mod consol, non-cemented, low to med plastic, stiff, moist
CL	Sandy Gravelly Clay - mod brown (5 YR 3/4) F g to c g sand 1 mm to 3 mm gravel, poorly sorted, sub-angular, quartzose Low plastic, stiff, moist
NO SAMPLE	No recovery
CL	Sandy Gravelly Clay - same as above - mod brown (5 YR 3/4) to mod reddish brown (10 YR 4/6)
ML	Gravelly Silty Sand - mod orange pink (5 YR 8/4) F.g to c g sand 1 mm to 4 mm gravels, poorly sorted, sub-angular, quartzose Non-stratified, unconsol, dense to very dense, calcareous, dry
NO SAMPLE	NO SAMPLE
ML	Gravelly Silty Sand - same as above Mod orange pink (5 YR 8/4) to light brown (5 YR 5/6) 1 mm to 6 mm gravels Trace of 1 mm to 2 mm clay laminations
ML	Gravelly Silty Sand - same as above Slightly moist at contact with Claystone bedrock
CLAYSTONE	Top of Bedrock Light olive gray (5 Y 6/1), non-stratified Mod consol, blocky, weathered, med to high plastic, iron oxide staining, calcareous, moist
NO SAMPLE	NO SAMPLE
CLAYSTONE	Same as above (reference interval 6 7' to 7 2')
SANDSTONE	Light gray (N 7/0) V f g to f g sand, mod sorting, sub-angular, quartzose Non-stratified, unconsol, non-cemented Slightly calcareous, with increasing clay content and iron oxide staining with depth
CLAYSTONE	Interbedded Claystone and Sandstone - same as above, with lenses of 1 mm to 5 mm in thickness
NO SAMPLE	NO SAMPLE
	Total Drilled Depth = 9 7'

WELL COMPLETION INFORMATION

QA By/Date Janell Berman 11-20 89

Location Rocky Flats Plant: Original Process Waste Lines

Coordinates N 37478.56 E 22997.66 (SFP)

Well No. P213989

Elevation: Ground Surface 5954.3'

Top of Casing 5956.38'

Total Depth: Well 7.2'

Borehole 9.7'

Formation of Completion Rocky Flats Alluvium

Casing Material Schedule 80 PVC

Casing Diameter 2 3/8" O.D.

Screen Material Schedule 80 10-slotted PVC

Surface Casing Diameter 5 5/8" O.D.

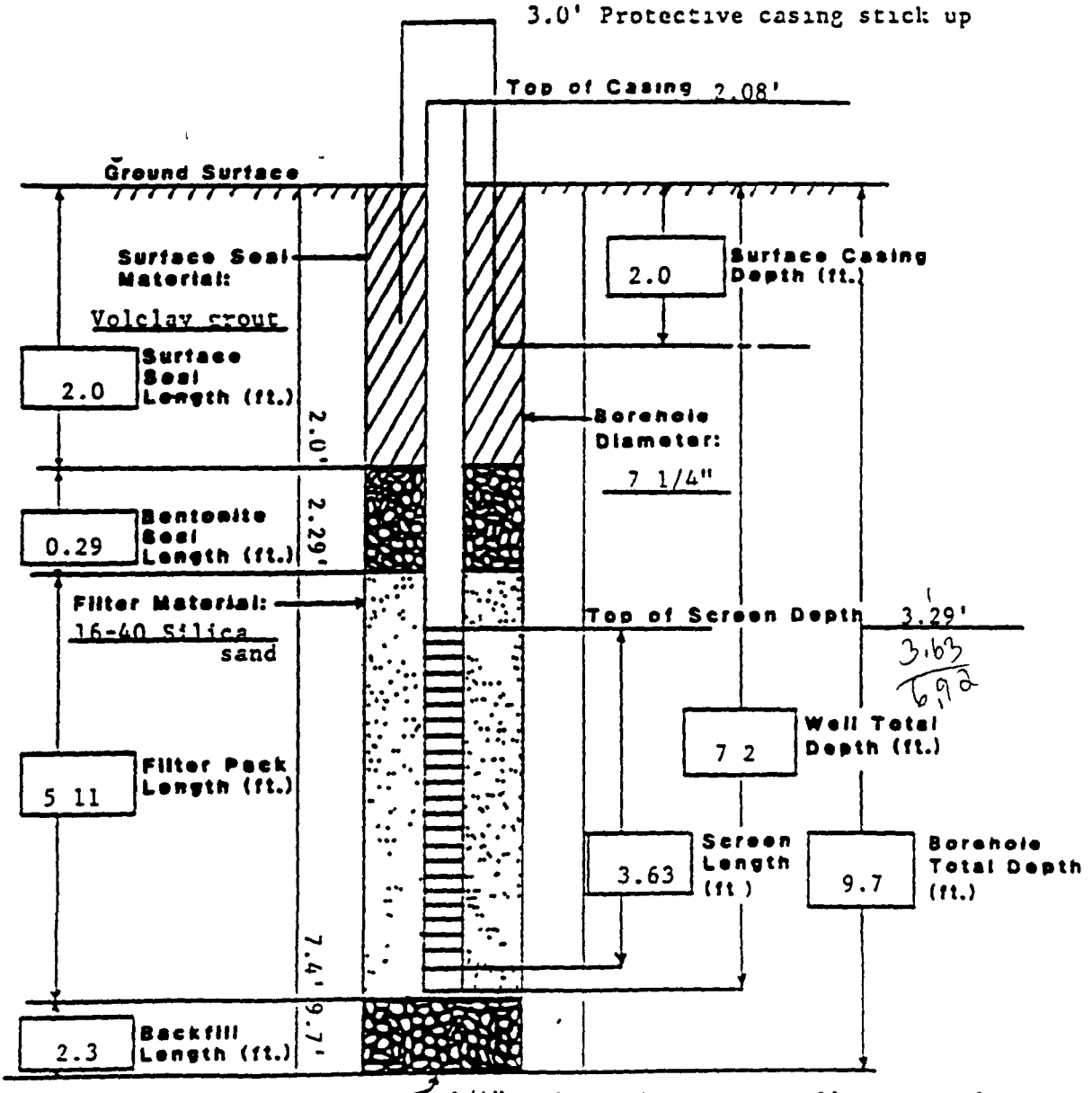
Date Installed 06/19/1989

Approved By Janell Berman
Site Manager

Installed By S.P. Carpenter
Geologist

CEARP Manager

Comments



Backfill Material 1/4" Volclay bentonite pellets and slough

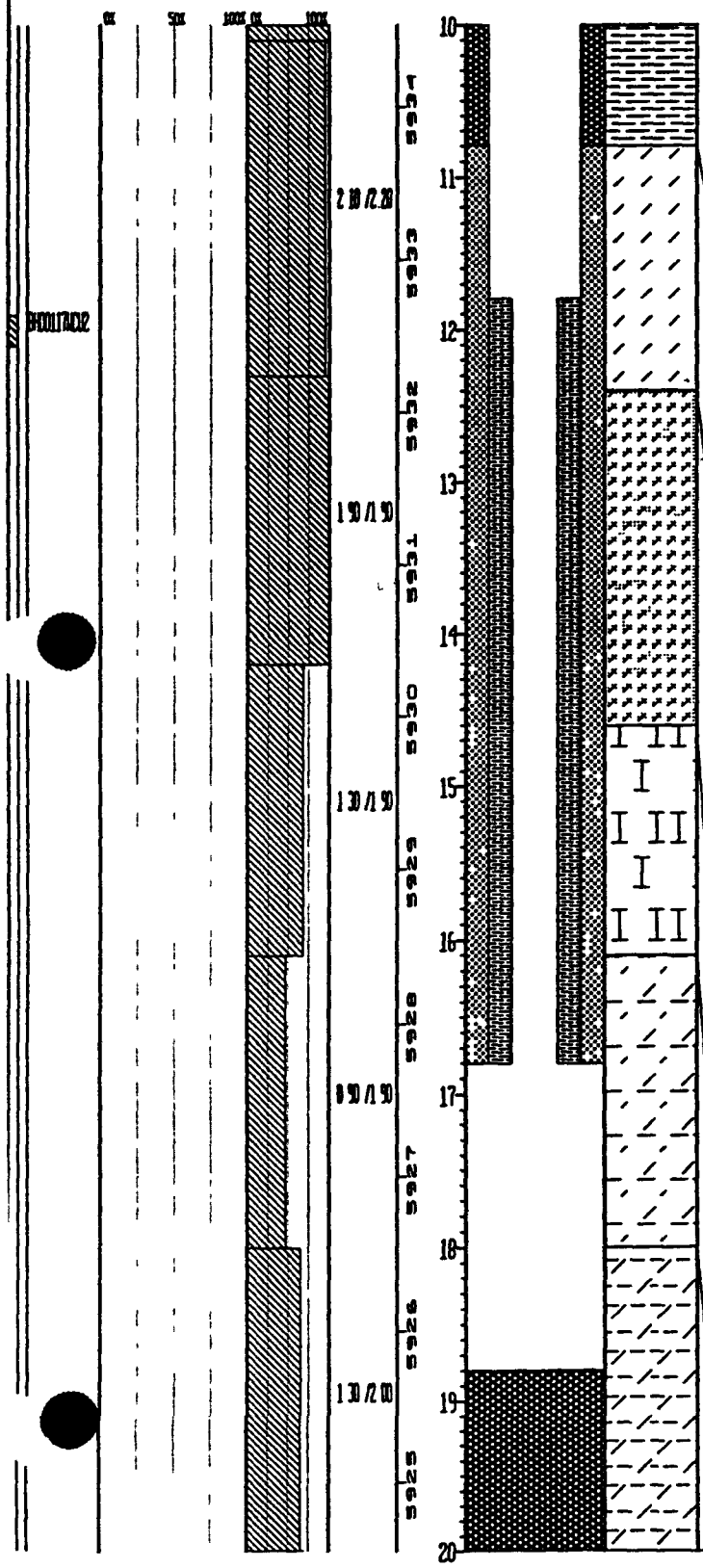
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT)	5944 54	PROJECT NUMBER	EMAD	LOG OF BORING NUMBER
NORTH	749948 52	AREA MOUND	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P O'BRIEN	02491
EAST	2086432 04	LOCATOR NUMBER H13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/06/91	

REMARKS HOLLOW STEM AUGER BENTONITE SEAL 10 8 FT - 7 8 FT BACKFILL MATERIAL BENTONITE 24 2 FT - 18 8 FT

TH DEPTH	CHEMICAL/PHYSICAL/RADIATIONAL	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0%	50%	100% 0%	100%					
					0 80 / 0 90	5944	0				Top soil, start of boring at 0 90 ft
					0 80 / 1 50	5943	1			CL	Clay with some sand and silt - olive gray (5Y4/1), very fine-grained sand, poorly graded, sub-angular, medium plasticity, maximum size gravel 2" diameter, average 1/2" diameter, dominant lithology sand quartz with some dark minerals and mica, gravel primarily quartzite, some limonite throughout, trace caliche clast throughout, trace carbonaceous material at 2 9-3 0', no apparent bedding, moist, highly broken or brecciated at 2 4-5 1', bedrock like appearance, increase in competency at 5 1-5 3' 3% gravel, 5% sand, 5% silt, 87% clay
							2				
					1 10 / 2 40	5941	3				
							4				
						5940	5				
					1 10 / 2 00	5939	6			ML	Sandy Silt with abundant gravel - brownish black (5YR2/1), coarse- to fine-grained sand, maximum size gravel 1" diameter, average 5" diameter, well graded, angular to sub-angular, low plasticity, dominant lithology sand quartz with abundant rock fragments and trace mica and dark minerals, trace limonite throughout, some caliche clast, no apparent bedding, moist 27% gravel, 31% sand, 33% silt, 8% clay
						5938	7			CL	Clay with some sand - pale olive (10Y6/2) with some dark yellowish orange (10Y6/6) mottling, very fine-grained sand, maximum size gravel 1/2" diameter, average 1/4" diameter, poorly graded, sub-angular, medium plasticity, dominant lithology sand quartz with trace dark minerals and mica, trace iron staining on grains, gravel primarily quartzite with some kaolinized coating, trace caliche clast and coating on gravels and carbonaceous material throughout, some limonite throughout, no apparent bedding, moist, highly broken, bedrock like appearance 2% gravel, 10% sand, 8% silt, 80% clay Top of bedrock at 8 5 ft
					1 70 / 1 90	5937	8				
						5936	9			CLAYSTONE	Claystone with some sand - olive gray (5Y4/1), very fine-grained sand, well sorted, sub-angular, approximately 10%
					1 40 / 1 40	5935	10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT) 5944 54	PROJECT NUMBER EMAD	LOG OF BORING NUMBER
NORTH	749948 52	AREA MOUND	CASING DIAMETER (IN) 2 0	GEOLOGIST J P O'BRIEN	02491
EAST	2086432 04	LOCATOR NUMBER N13	BOREHOLE DIAMETER (IN) 10 0	DATE DRILLED 11/06/91	

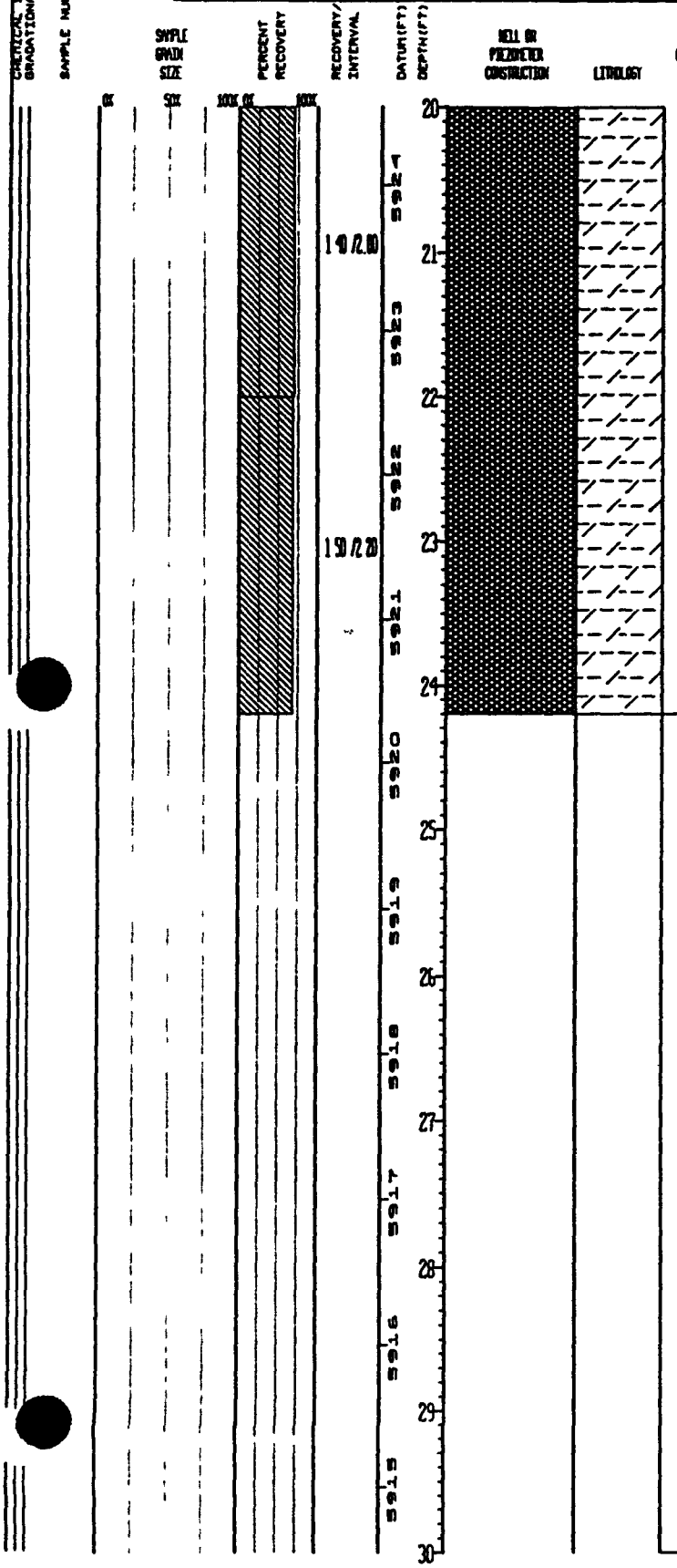
REMARKS HOLLOW STEM AUGER BENTONITE SEAL 10 8 FT - 7 8 FT BACKFILL MATERIAL BENTONITE 24 2 FT - 18 8 FT



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	porosity, argillaceous cement, non- to slightly friable, dominant lithology sand clear quartz with trace dark minerals, iron nodules and mica, trace limonite throughout, increase to some limonite at 8 8-9 2', trace clay clast throughout, abundant caliche clast at 9 4-10 1', no preferred orientation, planar features, brecciated texture controlling caliche, no apparent fractures, moist, weathered 6% sand, 4% silt, 90% clay
SILTY SANDSTONE	Silty Sandstone with some clay - pale olive (10Y6/2), very fine-grained sand, well sorted, sub-angular, approximately 15% porosity, argillaceous cement, moderately friable, dominant lithology sand clear quartz with trace dark minerals, mica and iron nodules, some iron staining on grains, some caliche throughout, abundant caliche at 11 4-11 6', trace limonite throughout, some clay clast throughout, sand clast at 11 1', no apparent bedding, low angle laminated bedding at 13 8', no apparent fractures, moist, weathered 45% sand, 33% silt, 22% clay
SANDY SILTSTONE	Sandy Siltstone with some clay - pale olive (10Y6/2), fine- to very fine-grained sand, moderate to well sorted, sub-angular, approximately 15% porosity, argillaceous cement, moderately friable, dominant lithology sand clear quartz with some dark minerals and trace mica, trace iron staining on grains, trace limonite throughout, some clay clast throughout, trace caliche throughout, abundant caliche at 13 6-13 8', increase to abundant limonite at 13 5-14 6', no preferred bedding orientation, horizontal healed fracture with iron at 12 7' surrounded by horizontal grooves, 0 degree healed fractures with hematite at 13 4-13 5', 0 degree healed fractures with iron at 13 5-13 8', abundant clast with hematite and some carbonaceous material at 14 1-14 6', moist, weathered, highly broken-brecciated appearance 32% sand, 48% silt, 20% clay
IRONSTONE	Ironstone - dark reddish brown (10R3/4) to dark yellowish orange (10YR6/6), very fine-grained sand, sub-angular, well sorted, approximately 5% porosity, iron precipitate cement, non- to slightly friable, primarily hematite and limonite with trace clear quartz, up to 1" diameter concretion-like nodules, no apparent bedding or fractures, dry, weathered
CLAYEY SILTSTONE	Clayey Siltstone with some sand - dusky yellow (5Y6/4), very fine-grained sand, well sorted, sub-angular, approximately 15% porosity, argillaceous cement, moderately friable, dominant lithology sand clear quartz with some dark minerals and trace iron nodules and mica, some iron staining on grains, trace carbonaceous material and clay clast throughout, trace horizontal bedding at 16 5-17 0', no apparent fractures, moist, weathered 19% sand, 49% silt, 32% clay
SILTY CLAYSTONE	Silty Claystone with some sand - pale olive (10Y6/2) to olive

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24 2	GROUND ELEVATION (FT)	5944 54	PROJECT NUMBER	EMD	LOG OF BORING NUMBER
NORTH	749948 52	AREA ROUND	CASING DIAMETER (IN)	2 0	GEOLOGIST	J P O BRIEN	02491
EAST	2086432 04	LOCATOR NUMBER N13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/06/91	

REMARKS HOLLOW STEM AUGER BENTONITE SEAL 10 8 FT - 7 8 FT BACKFILL MATERIAL BENTONITE 24 2 FT - 18 8 FT



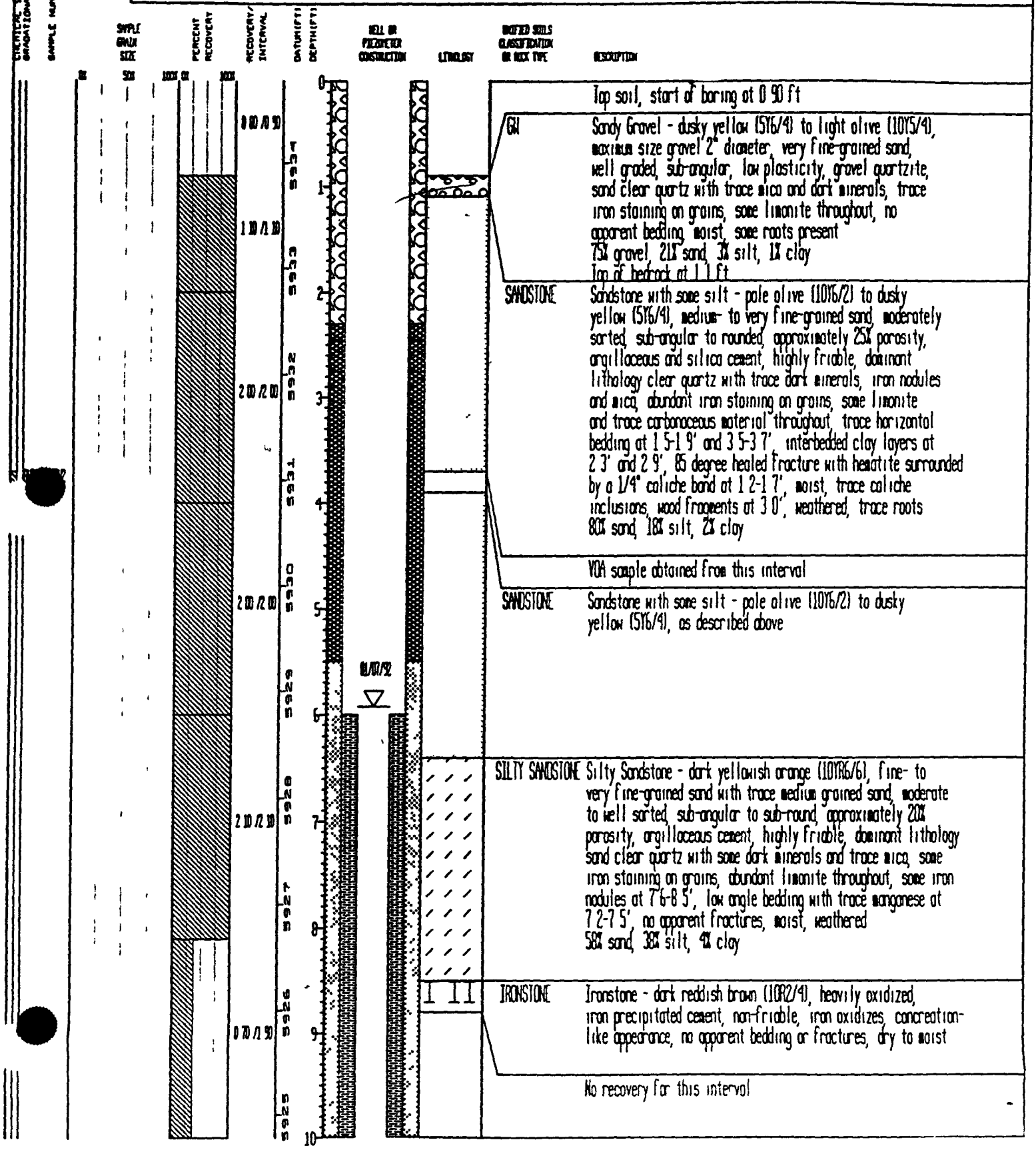
DESCRIPTION

gray (5Y4/1), very fine-grained sand, well sorted, sub-angular, approximately 10% porosity, argilloceous cement, non- to slightly friable, dominant lithology sand clear quartz with trace dark minerals and mica, trace limonite, carbonaceous material and clay clast throughout, trace horizontal bedding 20 5-20 6', highly broken-brecciated appearance, increase in competency at 18 6-19 3', abundant healed fractures with iron at 22 0-22 1', abundant clay clast at 20 0-20 5', moist, slightly weathered
8% sand, 32% silt, 60% clay

Total depth at 24 2 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 3	GROUND ELEVATION (FT)	5934 78	PROJECT NUMBER	01291	LOG OF BORING NUMBER
NORTH	750576 90	AREA MOUND	CASING DIAMETER (IN)	2 0	GEOLOGIST	L A GUST	02691
EAST	2086576 43	LOCATOR NUMBER 113	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/12/91	

REMARKS HOLLOW STEM AUGER BENTONITE SEAL 5 5 FT - 2 3 FT BACKFILL MATERIAL BENTONITE 18 3 FT - 18 0 FT



Top soil, start of boring at 0 90 ft

GW — Sandy Gravel - dusky yellow (5Y6/4) to light olive (10Y5/4), maximum size gravel 2" diameter, very fine-grained sand, well graded, sub-angular, low plasticity, gravel quartzite, sand clear quartz with trace mica and dark minerals, trace iron staining on grains, some limonite throughout, no apparent bedding, moist, some roots present
75% gravel, 21% sand, 3% silt, 1% clay
Top of bedrock at 1 1 ft

SANDSTONE — Sandstone with some silt - pale olive (10Y6/2) to dusky yellow (5Y6/4), medium- to very fine-grained sand, moderately sorted, sub-angular to rounded, approximately 25% porosity, argillaceous and silica cement, highly friable, dominant lithology clear quartz with trace dark minerals, iron nodules and mica, abundant iron staining on grains, some limonite and trace carbonaceous material throughout, trace horizontal bedding at 1 5-1 9' and 3 5-3 7', interbedded clay layers at 2 3' and 2 9', 65 degree healed fracture with hematite surrounded by a 1/4" caliche band at 1 2-1 7', moist, trace caliche inclusions, wood fragments at 3 0', weathered, trace roots
80% sand, 18% silt, 2% clay

VOA sample obtained from this interval

SANDSTONE — Sandstone with some silt - pale olive (10Y6/2) to dusky yellow (5Y6/4), as described above

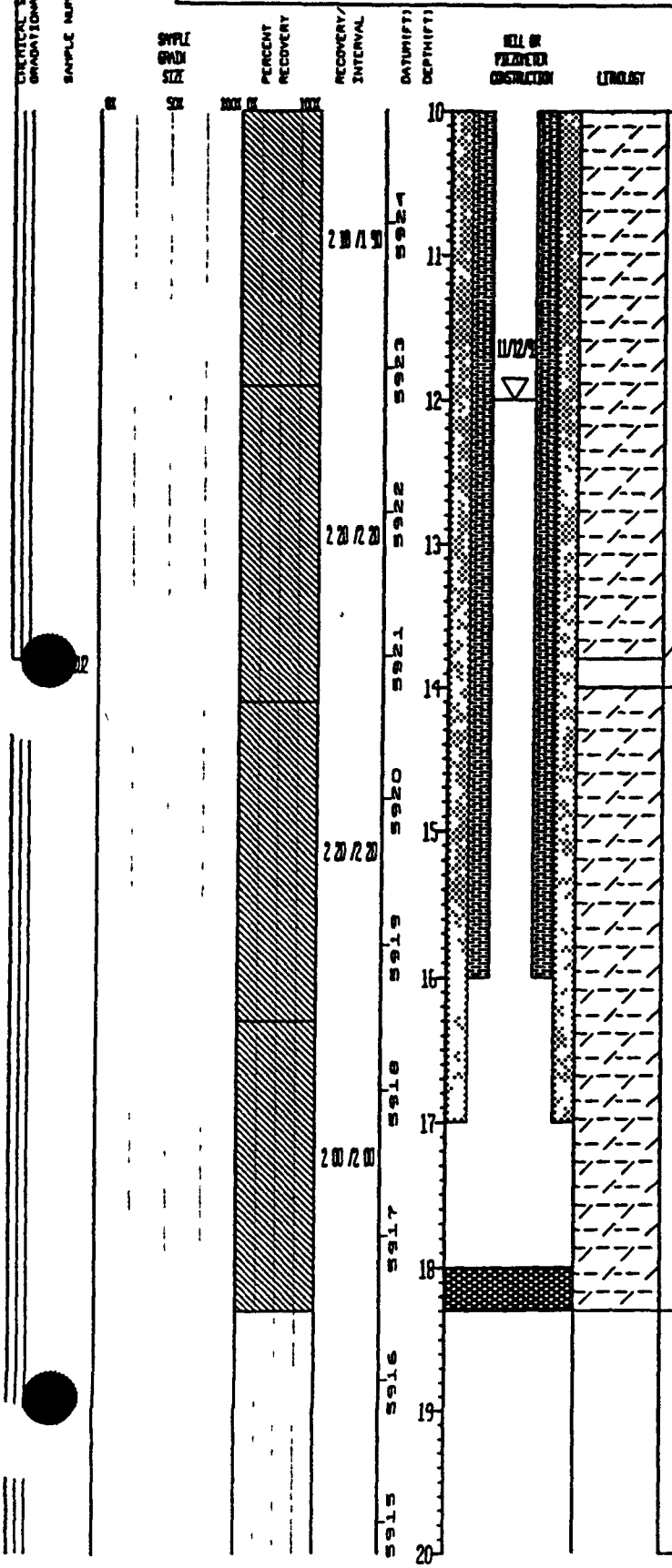
SILTY SANDSTONE — Silty Sandstone - dark yellowish orange (10YR6/6), fine- to very fine-grained sand with trace medium grained sand, moderate to well sorted, sub-angular to sub-round, approximately 20% porosity, argillaceous cement, highly friable, dominant lithology sand clear quartz with some dark minerals and trace mica, some iron staining on grains, abundant limonite throughout, some iron nodules at 7 6-8 5', low angle bedding with trace manganese at 7 2-7 5', no apparent fractures, moist, weathered
58% sand, 38% silt, 4% clay

IRONSTONE — Ironstone - dark reddish brown (10R2/4), heavily oxidized, iron precipitated cement, non-friable, iron oxidizes, concretion-like appearance, no apparent bedding or fractures, dry to moist

No recovery for this interval

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 18 3		GROUND ELEVATION (FT)	5934 78	PROJECT NUMBER	OUZRI	LOG OF BORING NUMBER
NORTH	750576 90	AREA MOUND		CASING DIAMETER (IN)	2 0	GEOLOGIST	L A GUST	02691
EAST	2086576 43	LOCATOR NUMBER	I13	BOREHOLE DIAMETER (IN)	10 0	DATE DRILLED	11/12/91	

REMARKS HOLLOW STEM AUGER BENTONITE SEAL 5 5 FT - 2.3 FT BACKFILL MATERIAL BENTONITE 18 3 FT - 18 0 FT



SILTY CLAYSTONE Silty Claystone with some sand - medium dark gray (N4), very fine-grained sand, well sorted, sub-angular, approximately 10% porosity, argillaceous cement, slightly friable, dominant lithology sand clear quartz with trace dark minerals, trace limonite and iron nodules throughout, trace carbonaceous material throughout, cylindrical fossil at 10 7', trace vertical healed fracture with manganese and iron at 10 5-11 0', vertical healed fracture with iron stain at 12 1-15 6' with approximately 1/2" zone of alteration surrounding fracture, no preferred bedding orientation, moist to saturated, carbonaceous material at 11 4-11 8'
5% sand, 35% silt, 60% clay

VOA sample obtained from this interval

SILTY CLAYSTONE Silty Claystone with some sand - medium dark gray (N4), as described above, 45-90 degree healed fractures with manganese and iron at 15 3-15 6', 45-90 degree healed fractures with iron at 16 0-18 3'

Total depth at 18 3 ft

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 1	GROUND ELEVATION (FT)	5801 19	PROJECT NUMBER	SITEWIDE	LOG OF BORING NUMBER
NORTH	752163	AREA SITEWIDE	CASING DIAMETER (IN)	2 0 I D	GEOLOGIST	6 GRIGSBY	40991
EAST	2086298	LOCATOR NUMBER 012	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	11/11/91	

REMARKS Hollow Stem Auger, Rotary Core ASI Geologist, F Grigsby, EBASCO Geologist, R T Canon

PTH DEPTH	CHEMICAL/ BAR GRADATIONAL 1	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			OX	50%	100% OX	5801	0			SC	Clayey Sand with some Gravel and Silt Yellowish brown (10 YR 5/2) to dusky yellowish brown (10 YR 2/2) with some mod yellowish brown (10 YR 5/4) mottling Med plasticity, poorly graded Gravel small, pred angular to sub-angular quartzite Sand pred sub-angular quartz, some quartzite and feldspar Dry, weathered, slightly calcareous Good root development 8% gravel, 54% sand, 11% silt, 27% clay
		BH00121EB			1 00 /2 00	5800	1			CL	Silty Clay with some Sand Dark yellowish brown (10 YR 4/2) Med plasticity, poorly graded Slightly calcareous One 2-1/2 in granodiorite pebble in sample Assumed atypical for this interval Dry, weathered 17% sand, 34% silt, 49% clay
		BH00122EB				5799	2			NO SAMPLE	No recovery, lost core
		BH00123EB				5798	3			CL	Silty Clay with some Sand Same as above (reference interval 0 5' to 1 0')
					1 20 /4 00	5797	4			GW	Sandy Gravel with trace Silt and Clay Grayish orange (10 YR 7/4) to pale yellowish brown (10 YR 6/2) Matrix slightly calcareous, low plasticity Gravel pred quartzite and quartz, angular to sub-angular, max pebble size 2 0 in, well graded Sand pred quartz and quartzite in coarser fractions, sub-angular Finer fraction pred quartz, sub-angular to sub-rounded Interval dry, weathered 60% gravel, 35% sand, 3% silt, 2% clay
						5796	5			NO SAMPLE	No recovery, lost core
						5795	6			GW	Sandy Gravel with trace Silt and Clay Same as above (reference interval 2 6' to 3 2') Entire interval sieved 60% gravel, 35% sand, 3% silt, 2% clay
						5794	7			SILTY CLAYSTONE	Top of Bedrock at 7 4' (unconsol sample) Silty Claystone with some Sand Grayish orange (10 YR 7/4) to light olive gray (5 Y 5/2) with some dark yellowish orange (mottling (Fe staining) Some silty to sandy intervals/gradational contacts Core mod indurated, mod friable, slightly damp Sand v f g, sub-angular quartz 13% sand, 20% silt, 67% clay
					3 20 /3 50	5793	8				
		BH00125EB									
		BH00126EB				5792	9			CLAYEY SILTSTONE	Clayey Siltstone with some Sand Same as above (reference interval 7 0' to 8 8') with more sand and dom Siltstone Max porosity estimated at 20% plus Very friable, no bedding 21% sand, 48% silt, 31% clay
		BH00124EB			0 80 /0 60					NO SAMPLE	No recovery, lost core
							10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 10 1	GROUND ELEVATION (FT) 5801 19	PROJECT NUMBER SITEWIDE	LOG OF BORING NUMBER
NORTH	752163	AREA SITEWIDE	CASING DIAMETER (IN) 2 0 I D	GEOLOGIST G GRIGSBY	40991
EAST	2086298	LOCATOR NUMBER 012	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED 11/11/91	

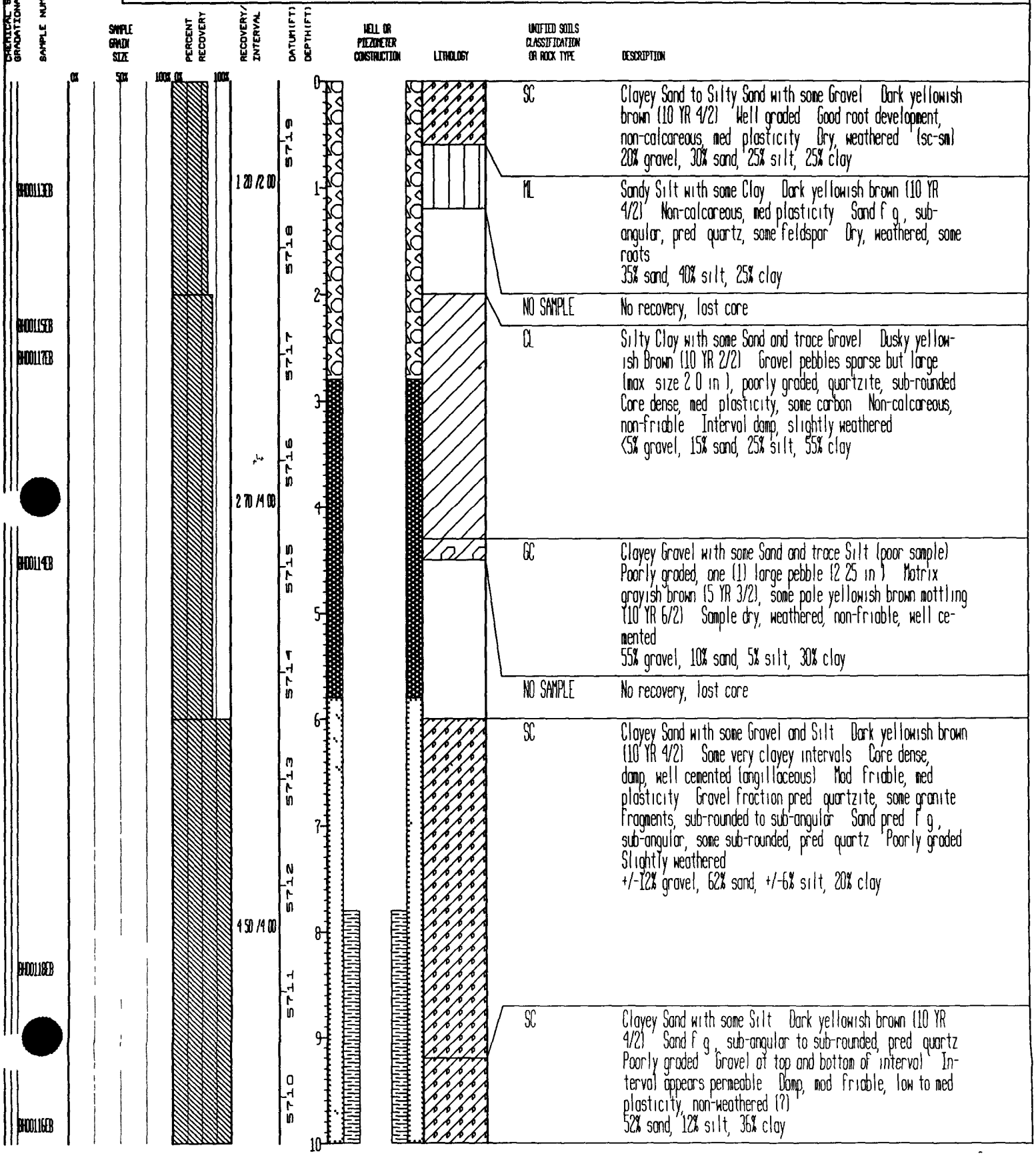
REMARKS Hollow Stem Auger, Rotary Core ASI Geologist, F Grigsby, EBASCO Geologist, R T Canon

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE 0% 50% 100%
PERCENT RECOVERY 0% 100%
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION

DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
5791	10	CLAYEY SILTSTONE	Clayey Siltstone with some Sand Same as above (reference interval 8 8' to 9 2') 21% sand, 48% silt, 31% clay NOTE 0 2' extra core recovery
5790	11		Total Drilled Depth = 10 1' NOTE Total Depth of Casing 9 73' Bottom Depth of Filter Pack 10 1' Top of 16-40 sand Backfill = 10 1'
5789	12		
5788	13		
5787	14		
5786	15		
5785	16		
5784	17		
5783	18		
5782	19		
	20		

STATE PLANE COORDINATE	TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT)	5719 56	PROJECT NUMBER	SITEWIDE	LOG OF BORING NUMBER	
NORTH 753241	AREA SITEWIDE	CASING DIAMETER (IN)	2 0	GEOLOGIST	F G	41091	
EAST 2089994	LOCATOR NUMBER 013	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	11/11/91		

REMARKS Hollow Stem Auger and Rotary Core Drill ASI Geologist Fred Grigsby, EBASCO Geologist, R T Canon ASI Log



SC — Clayey Sand to Silty Sand with some Gravel Dark yellowish brown (10 YR 4/2) Well graded Good root development, non-calcareous, med plasticity Dry, weathered (sc-sm)
20% gravel, 30% sand, 25% silt, 25% clay

ML — Sandy Silt with some Clay Dark yellowish brown (10 YR 4/2) Non-calcareous, med plasticity Sand f g , sub-angular, pred quartz, some feldspar Dry, weathered, some roots
35% sand, 40% silt, 25% clay

NO SAMPLE — No recovery, lost core

CL — Silty Clay with some Sand and trace Gravel Dusky yellowish Brown (10 YR 2/2) Gravel pebbles sparse but large (max size 2 0 in), poorly graded, quartzite, sub-rounded Core dense, med plasticity, some carbon Non-calcareous, non-friable Interval damp, slightly weathered
<5% gravel, 15% sand, 25% silt, 55% clay

GC — Clayey Gravel with some Sand and trace Silt (poor sample) Poorly graded, one (1) large pebble (2 25 in) Matrix grayish brown (5 YR 3/2), some pale yellowish brown mottling (10 YR 6/2) Sample dry, weathered, non-friable, well cemented
55% gravel, 10% sand, 5% silt, 30% clay

NO SAMPLE — No recovery, lost core

SC — Clayey Sand with some Gravel and Silt Dark yellowish brown (10 YR 4/2) Some very clayey intervals Core dense, damp, well cemented (argillaceous) Mod friable, med plasticity Gravel fraction pred quartzite, some granite fragments, sub-rounded to sub-angular Sand pred f g , sub-angular, some sub-rounded, pred quartz Poorly graded Slightly weathered
+/-12% gravel, 62% sand, +/-6% silt, 20% clay

SC — Clayey Sand with some Silt Dark yellowish brown (10 YR 4/2) Sand f g , sub-angular to sub-rounded, pred quartz Poorly graded Gravel at top and bottom of interval Interval appears permeable Damp, mod friable, low to med plasticity, non-weathered (?)
52% sand, 12% silt, 36% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 13 0	GROUND ELEVATION (FT) 5719 56	PROJECT NUMBER	SITEWIDE	LOG OF BORING NUMBER
NORTH	753241	AREA SITEWIDE	CASING DIAMETER (IN) 2 0	GEOLOGIST	F G	41091
EAST	2089994	LOCATOR NUMBER 013	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED	11/11/91	

REMARKS Hollow Stem Auger and Rotary Core Drill ASI Geologist Fred Grigsby, EBASCO Geologist, R T Canon ASI Log

CHEMICAL SAM GRADATIONAL | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

RECOVERY/INTERVAL	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	10	CLAYSTONE	Top of Bedrock at 10 0' Claystone with some Silt and trace Sand Pred yellowish gray (5 Y 7/2), damp, mod friable Badly broken (drilling induced), mod indurated Trace sand, +/-15% silt, +/-85% clay
0 80 /2 00	11	NO SAMPLE	No recovery, lost core
	12	CLAYSTONE	Claystone with some Silt Same as above (reference interval 10 0' to 10 8') Trace of sand, +/-15% silt, +/-85% clay
0 10 /1 00		NO SAMPLE	No recovery, lost core
	13		Total Drilled Depth = 13 0' NOTE Total Depth of Casing 12 3' Bottom Depth of Filter Pack 10 3' Top of bentonite Backfill 10 3'

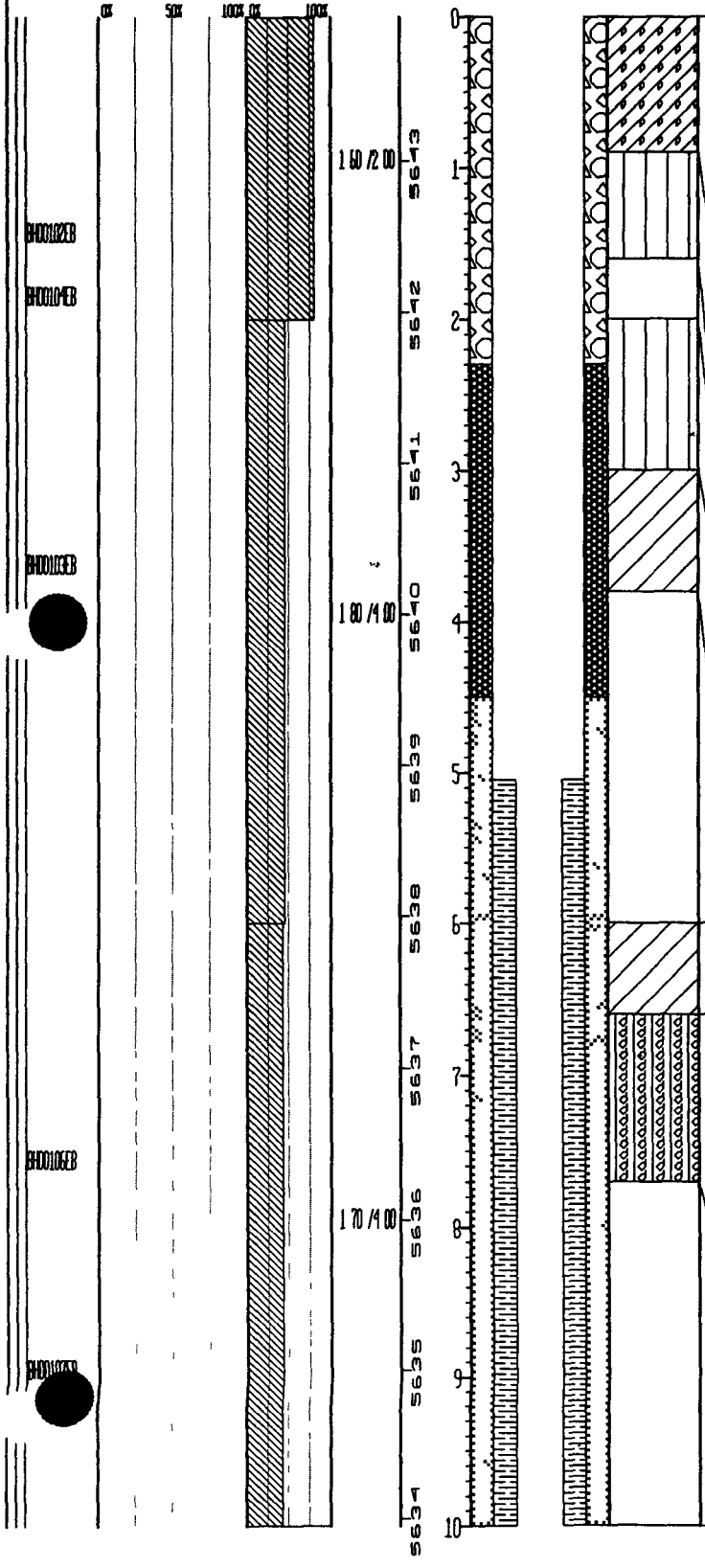
DATUM (FT): 5709, 5708, 5707, 5706, 5705, 5704, 5703, 5702, 5701, 5700

DEPTH (FT): 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 17 40	GROUND ELEVATION (FT) 5643 95	PROJECT NUMBER SITEWIDE	LOG OF BORING NUMBER
NORTH	753470	AREA SITEWIDE	CASING DIAMETER (IN) 2 0	GEOLOGIST F G	41691
EAST	2093851	LOCATOR NUMBER U13	BOREHOLE DIAMETER (IN) 7 25	DATE DRILLED 11/08/91	

REMARKS Drilling Equipment Hollow Stem Auger, Rotary Core ASI Geologist Fred Grigsby, EBASCO Geologist R T Canon

CHEMICAL SAMPLE GRADATIONAL | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	Clayey Sand with some Silt and Gravel Pred dark yellowish brown (10 YR 4/2), slightly calcareous Topsoil, good root development Gravel pred quartzite, max pebble size 1 5 in , sub-rounded to sub-angular Sand well graded, c g fraction sub-angular quartz, quartzite, feldspar, and misc rock fragments Finer fraction sub-angular to sub-rounded quartz, some feldspar, trace mica Sample dry, weathered, med to low plasticity 18% gravel, 34% sand, 22% silt, 26% clay
ML	Sandy Silt with some Clay Pale yellowish brown (10 YR 6/2) Poorly graded, calcareous Trace Fe staining Sand pred sub-angular to sub-rounded quartz, some feldspar Low plasticity, sample dry, weathered 36% sand, 38% silt, 26% clay
NO SAMPLE	No recovery
ML	Sandy Silt with some Clay Same as above (reference interval 0 9' to 1 6')
CL	Silty Clay with some Sand Grayish brown (5 YR 3/2) to dark yellowish brown (10 YR 4/2) Poorly graded, med plasticity Sand pred f g , sub-angular quartz Some feldspar and dark mineralization Sample dry, weathered, slightly calcareous Trace Fe Trace carbon 23% sand, 38% silt, 39% clay
NO SAMPLE	No recovery, lost core
CL	Silty Clay with some Sand Same as above (reference interval 3 0' to 3 8')
SM	Gravelly Sand with some Silt and Clay Mod yellowish brown (10 YR 5/4) to dark yellowish brown (10 YR 4/2) Poorly graded Med to low plasticity Gravel pred quartzite, pebble at 2 25 in , avg size approx 1 in , sub-rounded to sub-angular Sand f g , sub-angular to sub-rounded, pred quartz Interval appears to have mod to high permeability Damp, slightly weathered, non-calcareous (sm-sc) 20% gravel, 60% sand, 10% silt, 10% clay
NO SAMPLE	No recovery, lost core

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 17 40	GROUND ELEVATION (FT)	5643 95	PROJECT NUMBER	SITEWIDE	LOG OF BORING NUMBER
NORTH	753470	AREA SITEWIDE	CASING DIAMETER (IN)	2 0	GEOLOGIST	F G	41691
EAST	2093851	LOCATOR NUMBER U13	BOREHOLE DIAMETER (IN)	7 25	DATE DRILLED	11/08/91	

REMARKS Drilling Equipment Hollow Stem Auger, Rotary Core ASI Geologist Fred Grigsby, EBASCO Geologist R T Conon

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM(FT)	DEPTH(FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50%	100% 0% 100%			10			GC	Clayey Gravel Matrix dark yellowish brown (10 YR 4/2) with some mod yellowish brown (10 YR 5/4) mottling Poorly graded Gravel pred quartzites, max pebble size to 2 0+ in Some scattered hematite nodules Some dark gray (N3) staining and mottling Sample damp, weathered, med plasticity (very sticky) 55% gravel, 45% clay
			2 90 /2 00	5633	11				
				5632	12				
			1 50 /2 00	5631	13			GC	Sandy Gravel with some Clay and trace Silt Mod yellowish brown (10 YR 5/4), with dark yellowish orange (10 YR 6/6) and dark gray (N3) mottling Gravel pred quartzite, one pebble to 2 25 in , avg size approx 1 0 in , sub-angular Sand f g , pred quartz, sub-angular to sub-rounded Upper half of interval moist, lower half damp Med to low plasticity, sample weathered 55% gravel, 23% sand, 4% silt, 18% clay
				5630	14				
								NO SAMPLE	No recovery, lost core
				5629	15			GC	Sandy Gravel with some Clay and trace Silt Same as above (reference interval 12 7' to 13 5')
			4 10 /2 60					CLAYSTONE	Top of Bedrock at 14 7' Claystone with some Silt Grayish orange (10 YR 7/4) and very pale orange (10 YR 8/2) grading to yellowish gray (5 Y 7/2) Interbedded claystones with some silt Gradational - no sharp contacts Core damp, mod indurated to sticky in very clayey intervals Slightly friable No apparent bedding of fracture Entire interval badly broken (drilling induced) <15% silt, >85% clay NOTE 1 5' of excess core recovery in interval frome 14 0' to 17 4'
				5628	16				
			1 50 /1 80	5627	17				
				5626	18				Total Drilled Depth = 17 4' NOTE Total Depth of Casing = 17 1' Bottom Depth of Filter Pack = 17 4' Backfill = None
				5625	19				
				5624	20				

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141

GROUNDWATER MONITORING WELL AND PIEZOMETER REPORT

PROJECT EMAD - Geological Characterization

LOCATION 4169

Date Completed 11-12-91 Original Depth 17 4 ft

Inspected By _____ Date _____

Checked By _____ Date _____

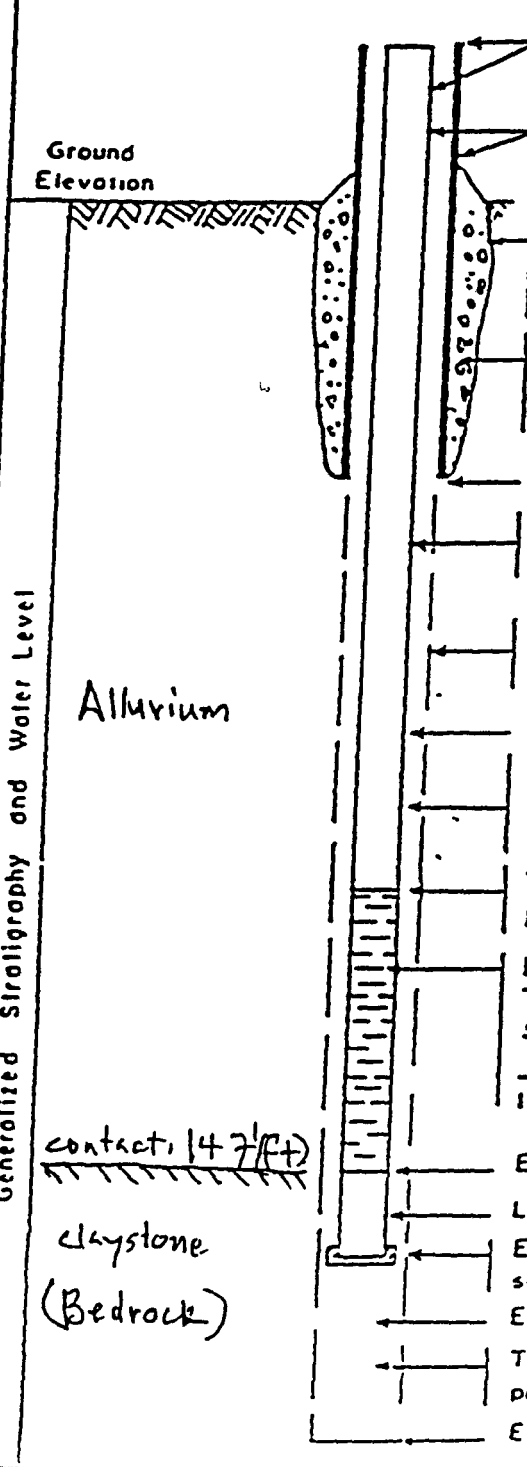
Page 1 of 1

Well No 4169

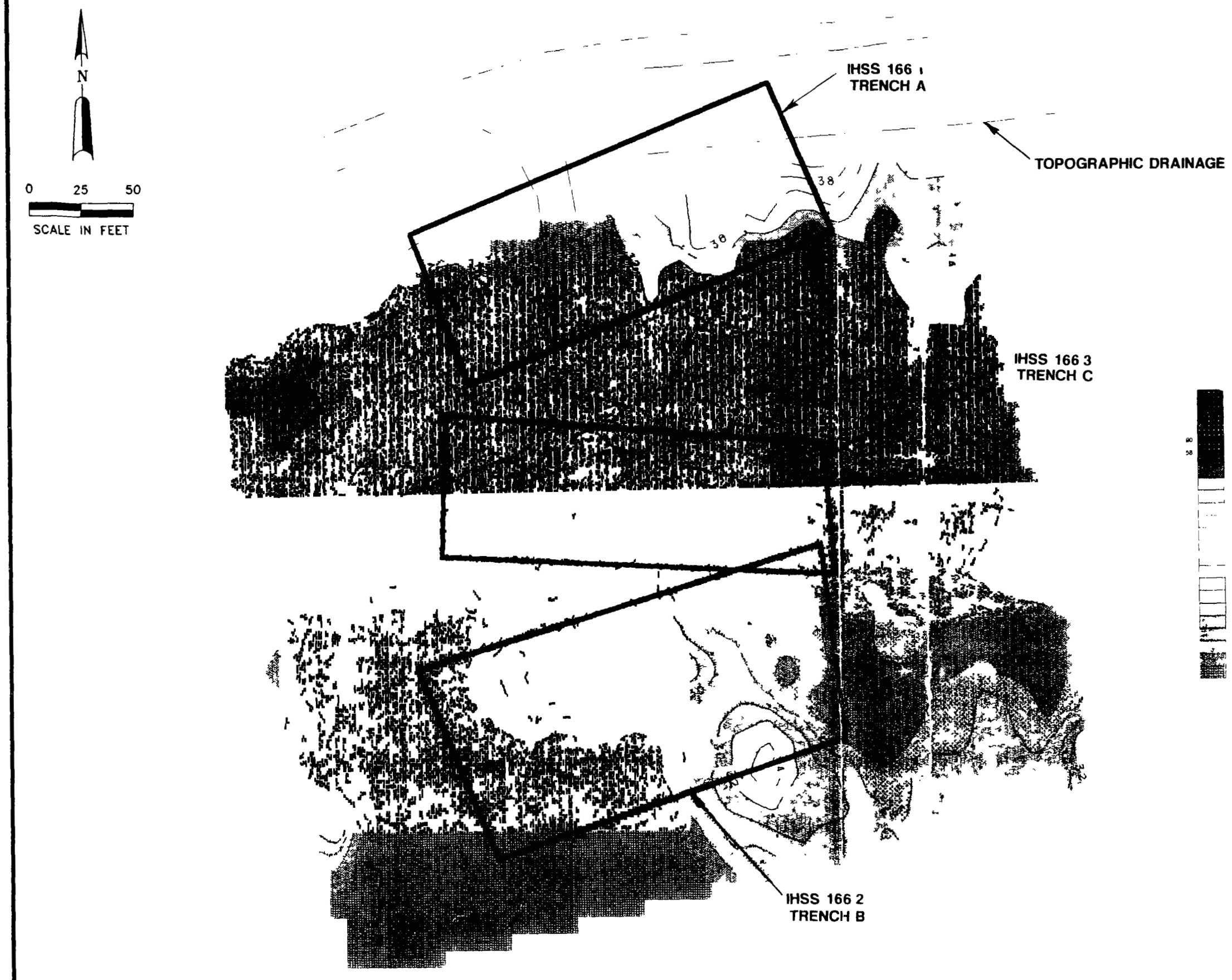
Aquifer Alluvium

Depth Interval 17.4 ft

NOTE CENTRALIZER DEPTHS



Elevation of top of surface casing / riser pipe.	
Height of top of surface casing / riser pipe above ground surface	2.0 ft / ~~2.70 ft~~ DCR 30 ft ~~3.25 ft.~~ / ~~3.8 DCR~~
Depth of surface seal below ground surface	2.3 ft
Type of surface seal Portland Cement	
I.D. of surface casing	6 inches
Type of surface casing Steel	
Depth of surface casing below ground	2.0 ft ~~2.3 ft.~~ DCR
I.D. of riser pipe	2 inches
Type of riser pipe 2 PVC Sch 40	
Diameter of borehole	7.25 inch
Depth of borehole	17.4 ft.
Type of backfill NA	
Elev./depth top of seal	2.30 ft
Type of seal bentonite	
Elev./depth bottom of seal	4.50 ft.
Type of filter pack 16-40 sand	
Depth of top of filter pack.	4.50 ft
Elev./depth top of screened section	5.05 ft
Type of screened section 0.10 slot	
Screen openings 0.10	
I.D of screened section	
Elev./depth bottom of screened section	14.70 ft.
Length of blank section	2.41 ft
Elev./depth bottom of plugged blank section	17.11 ft.
Elev./depth bottom of sand column	17.4 ft
Type of backfill below observation pipe bedrock @ 17.4 ft	
Elev./depth of hole	17.4 ft



EXPLANATION

DIRT ROADS

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)

\+ ELECTROMAGNETIC (EM) STATION

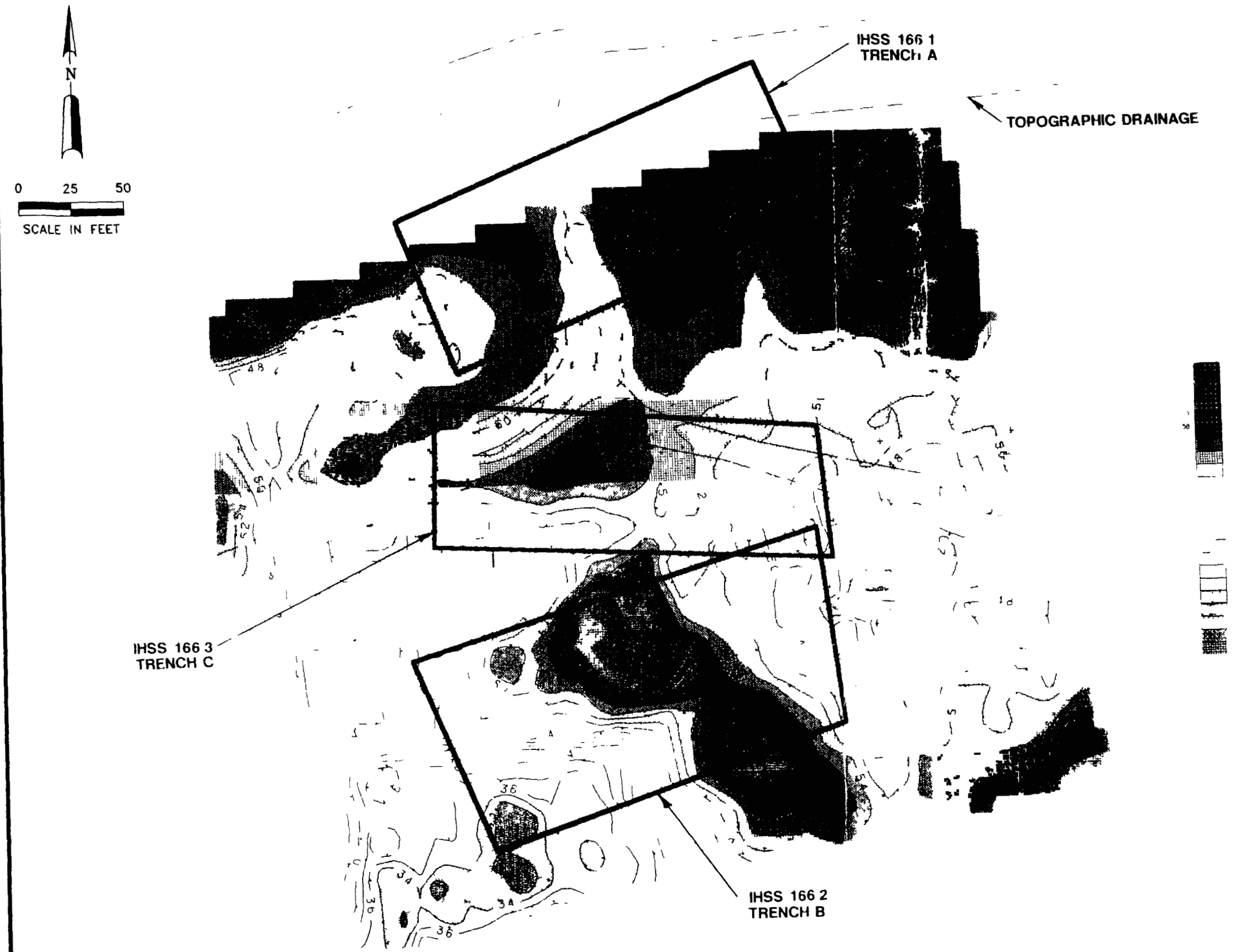
CONTOUR INTERVAL (CI) = 2 MILLIMHOS/METER (MMHOS/METER)

U S DEPARTMENT OF ENERGY
Rocky Flats Environmental Technology Site
Golden Colorado

OPERABLE UNIT NO 6
PHASE I RFI/RI REPORT

ELECTROMAGNETICS CONDUCTIVITY
CONTOUR MAP
HORIZONTAL DIPOLE DATA
GRID A

FIGURE B4 1 APRIL 1995



EXPLANATION

DIRT ROADS

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)

\+ ELECTROMAGNETIC (EM) STATION

CONTOUR INTERVAL (CI) =
2 MILLIMHOS/METER (MMHOS/METER)

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Golden Colorado

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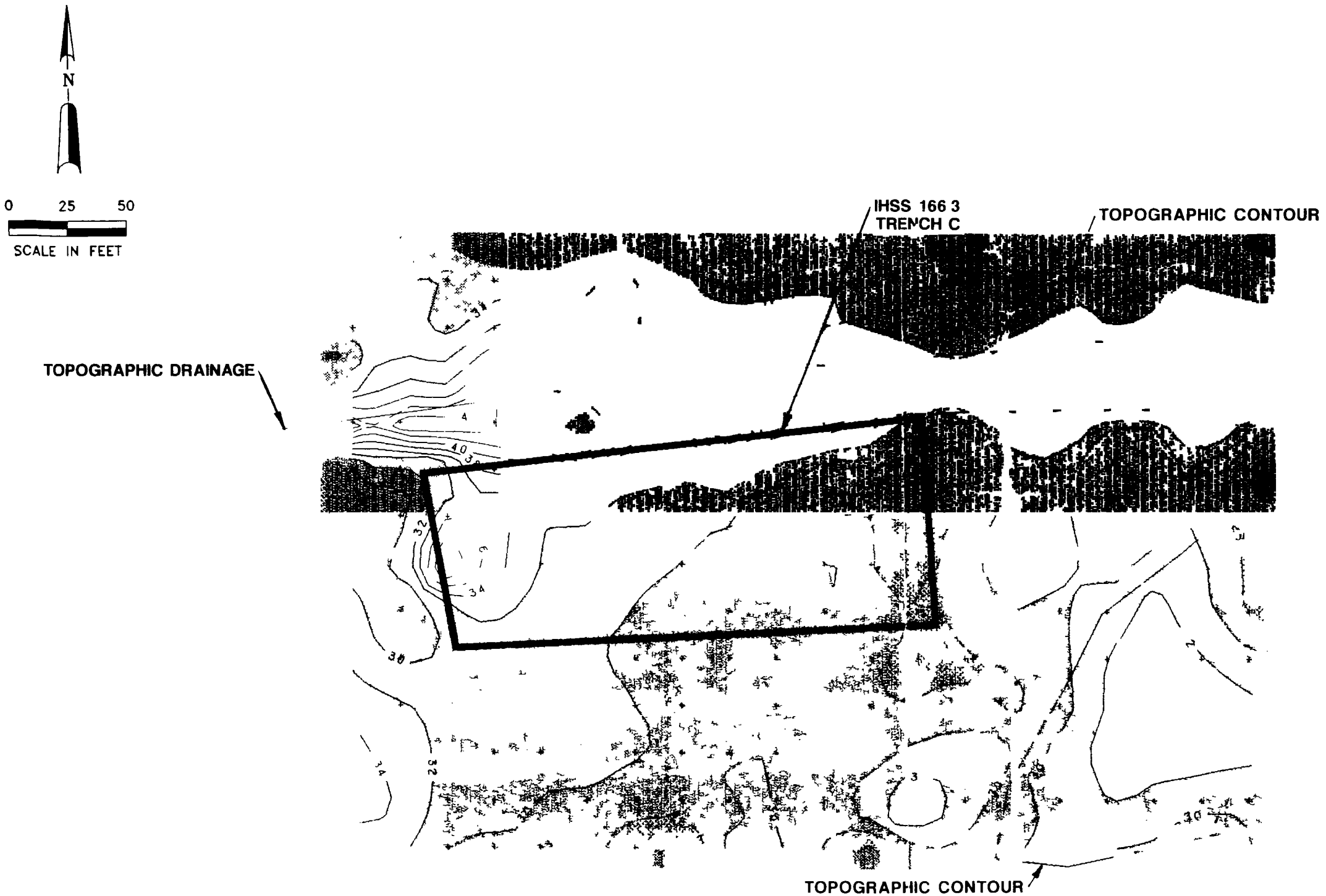
PHASE I RFI/RI REPORT

ELECTROMAGNETICS CONDUCTIVITY
CONTOUR MAP
VERTICAL DIPOLE DATA
GRID A

FIGURE B4 2 APRIL 1995



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)

ELECTROMAGNETIC (EM) STATION

CONTOUR INTERVAL (CI) = 2 MILLIMHOS/METER (MMHOS/METER)

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ELECTROMAGNETICS CONDUCTIVITY
CONTOUR MAP
HORIZONTAL DIPOLE DATA
GRID B

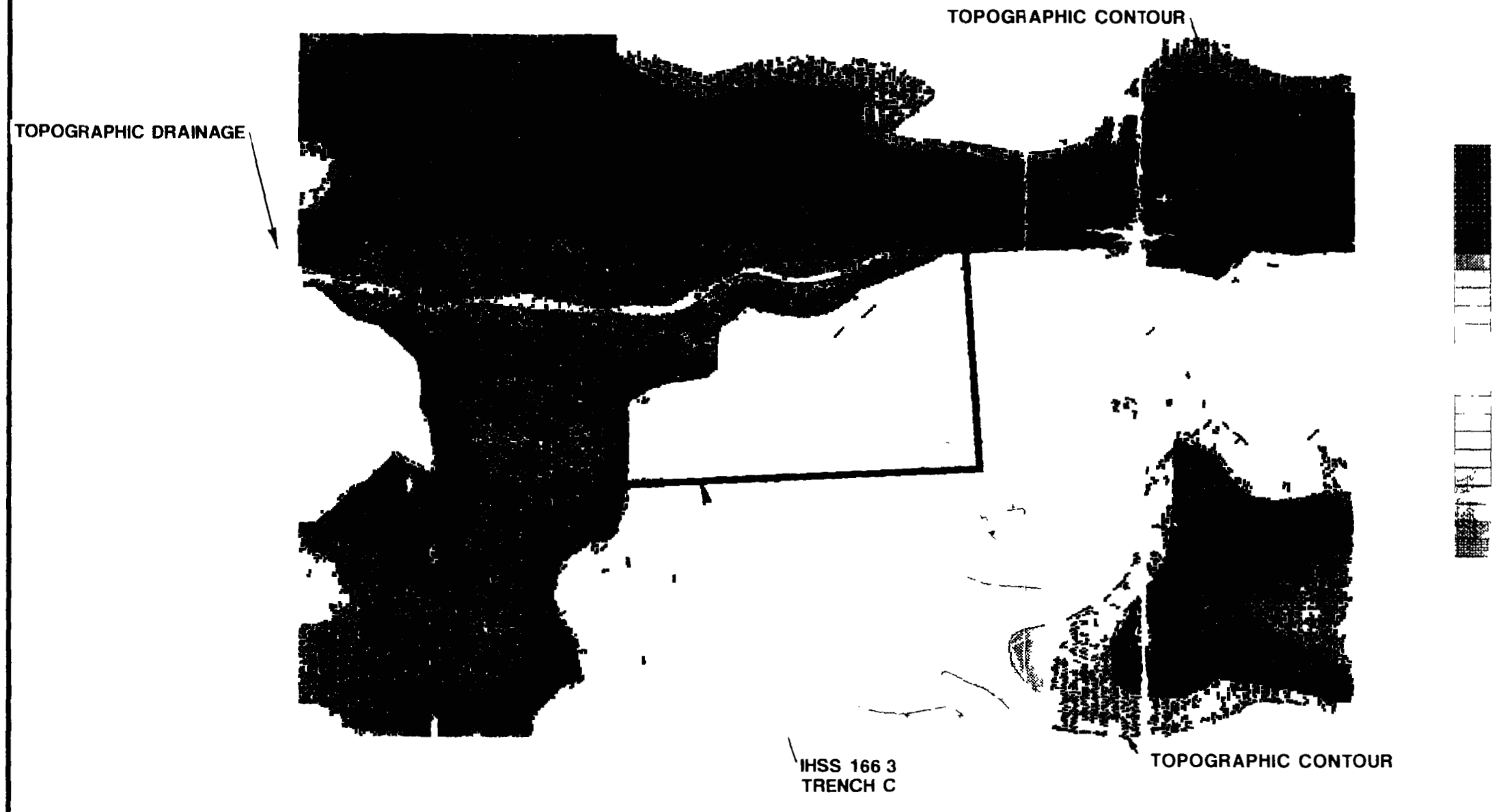
FIGURE B4 3

APRIL 1995

N

0 25 50

SCALE IN FEET



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)

ELECTROMAGNETIC (EM) STATION

CONTOUR INTERVAL (CI) = 2 MILLIMHOS/METER (MMHOS/METER)

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Golden Colorado

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ELECTROMAGNETICS CONDUCTIVITY
CONTOUR MAP
VERTICAL DIPOLE DATA
GRID B

FIGURE B4 4

APRIL 1995