NOTICE

All drawings located at the end of the document.

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EG&G

ROCKY FLATS

TECHNICAL MEMORANDUM

FINAL WORK PLAN
OPERABLE UNIT NO. 7

PRESENT LANDFILL (IHS 114) AND INACTIVE HAZARDOUS WASTE STORAGE AREA (IHS [illegible])

VOLUME II - APPENDICES A-H

Rocky Flats Environmental Restoration Project

REVISION [illegible]

DATE

SEPTEMBER 2, 1994

Technical Memorandum

Final Work Plan
Operable Unit No. 7 — Present Landfill (IHSS 114) and Inactive Hazardous Waste Storage Area (IHSS 203)

Volume II — Appendices A–H

September 2, 1994

U.S. Department of Energy
Rocky Flats Site
Golden, Colorado

Appendix A

Waste Streams to the Present Landfill from 1968 to 1986 (WSIC)

Table I
Solid Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
770	22640	metal chips/scraps	metal	3276	lbs/yr	biweekly
771	22250	empty containers & surgical gloves	solid	5000		every 2 weeks
771	22470	plastic scraps	solid	2900		daily
771	22450	metal chips	metal	3275		weekly
771	22460	combustibles	solid	5000		daily
776	12020	wood & plastic chips/dust	solid	10400		weekly (200 lbs./wk)
776	12010	empty containers	empty containers	100		occasionally
776	12030	soiled kimwipes	solid	2080		weekly (40 lbs/wk)
776	12040	empty containers	empty containers	2080		weekly (40 lbs/wk)
778	15040	trash in canisters	solid	800		continuous
778	15210	sanitary trash	solid	500		continuous
778	15050	metal/wood shavings	solid	2000		continuous
778	15060	sanitary trash	solid	500		continuous
778	15090	sanitary trash	solid	500		continuous
778	15210	metal/wood shavings	solid	2000		continuous
778	15140	trash	solid	1000		continuous
778	15310	sanitary trash	solid	500		continuous
779	19050	sanitary trash	solid	1300		continuous
779	15480	trash	solid	1000		continuous
779	15400	kimwipes	solid	480		periodically
779	19060	metal shavings/fines	metal	300		continuous
779	15730	water chiller filters	solid	10		monthly
779	15460	plastics grindings	organic	500	gal/yr	continuous
779	19200	machine fines	metal	300	lbs/yr	continuous
779	15410	mixed trash	solid	500		continuous
779	19190	sanitary trash	solid	500		continuous
779	15450	grindings metal	metal	1000		continuous
783	11780	sump sludge	solid	200		intermittent
850	04940	toner and dispersant bottles	empty containers	5		intermittant
865	04240	stainless steel grinding paper	solid	6		per year
865	04280	mold compound	solid	50		
865	04290	photography lab solid wastes	solid	240		
865	04330	metal scraps	metal	260		
881	04670	aerosol, paint and thinner cans	empty containers	200		
881	04620	dirty kimwipes	solid	200		as needed
881	04710	uncontaminated solid waste	solid	5000		
881	04610	other metal chips	metal	600		
881	05070	rags and kimwipes	solid	100		
885	05110	rags	solid	100		
886	03190	copy machine waste	solid	40		
910	06360	diatomaceous earth	solid	54750		weekly/monthly
910	07560	wastewater sludge	solid	0		intermittant
966	06840	empty containers	empty containers	100		intermittent
980	06550	kimwipes	solid	1500		daily
980	06980	sawdust soaked with oil seepage	solid	900		daily
980	06590	metal scrap	metal	5000		daily
980	06530	metal scrap	metal	2000		daily
980	06520	fiberglass resins and catalysts	solid	1000		intermittent
980	06500	metal scraps	metal	5000		daily
980	06570	oily rags	solid	480		daily
980	06510	rags with mineral spirits	solid	1480		daily
980	06490	empty containers	empty containers	100		intermittent
980	06580	oily rags	solid	480		daily
991	07510	toner & dispersant containers	empty containers	100		monthly
991	07500	empty paint containers	empty containers	100		
T750	06010	empty toner/dispersant containers	empty containers	100		monthly
T750	06040	kimwipes	solid	100		as needed
T750	06020	soiled kimwipes	solid	100		as needed

Table I
Solid Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
460	00820	used kimwipes	solid	0	lbs/yr	as needed
460	00830	used oil filters	solid	0		as needed
460	01110	empty containers	empty containers	100		intermittent
460	01100	kimwipes and rags	solid	165		as needed
460	00450	used kimwipes and rags (ult)	solid	280		as needed
460	01270	kimwipes	solid	40		as needed
460	23650	apron filter	solid	2		once/6 mon
460	23790	bijur filter screen	solid			once 6/mon
460	01240	empty containers	empty containers	100		as needed
460	09000	used oil filters	solid	0		to be determined
460	23640	turret res. filter	solid	2		once/6 mon
460	23750	inline coolant filter	solid	2		once/6 mon
460	01190	kimwipes	solid	100		as needed
460	01340	kimwipes and rags	solid	60		as needed
460	01170	sludge	solid	1200		to be determined
460	01120	kimwipes and rags	solid	165		as needed
460	00630	film packs	solid	48		
460	01110	empty containers	empty containers	100		intermittent
460	23740	rough inline filter	solid	2		once/6 mon
460	23720	oil filter	solid	2		once/6 mon
460	01070	used kimwipes and floor dry	solid	48		as needed
460	00760	used kimwipes	solid	24000		as needed
460	01320	kimwipes	solid	200		as needed
460	01180	used oil filters	solid	2000		weekly
460	00780	used kimwipes and floor dry	solid	350		as needed
460	00980	metal chips	metal	40		
460	01010	used oil filters	solid	15		as needed
551	06320	metal cuttings	metal	300		
551	06310	spray paint cans	empty containers	100		
551	06300	kimwipes and degreasing residue	solid	300		
560	11810	sump sludge	solid	200		1 to 2 years
563	20580	sump sludge	solid	200		intermittent
662	04040	used filters	solid	20		intermittnat
662	04000	kimwipes	solid	200		continuous
662	04030	broken parts	solid	100		as occurs
664	17500	empty containers	empty containers	100		daily
664	17510	used rags	solid	200		daily
664	17590	solid waste	solid	500		continuous
701	17620	solid waste	solid	200		daily
705	20280	kimwipes	solid	1		as needed
705	20240	polishing pads	solid	2		as needed
705	20300	metal and glass scraps	solid	100		daily
705	20250	kimwipes	solid	3		as needed
705	20620	dumpster	solid			
705	20060	kimwipes	solid	20		as needed
705	20310	office trash	solid	1000		daily
705	20410	sump sludge	solid	20		continuous
708	10650	HEPA filters	solid	200		PMO schedule
709	11700	sump sludge	solid	200		varies
711	20530	sump sludge	solid	200		varies
712	20590	sump sludge	solid	200		varies
713	20600	sump sludge	solid	200		varies
732	15020	filters	solid	300		once per month
750	09100	empty toner/developer containers	empty containers	3		intermittent
750	09020	empty fixer/developer containers	empty containers	100		as required
750	09110	kimwipes	solid	100		intermittent
750	09070	microfilm wrapper	solid	100		continuous
750	09060	empty containers	empty containers	100		intermittent
750	09090	kimwipes	solid	100		intermittent
770	22570	rags	solid	365		occasionally
770	22650	combustibles	solid	4700		daily

Table I
Solid Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
439	00090	kimwipes	solid	200	lbs/yr	as needed
440	00140	aluminum and sst chips	metal	500		
440	00180	kimwipes and rags	solid	500		as needed
440	00160	empty containers	empty containers	100		as needed
440	01390	kimwipes and rags	solid	500		
440	00200	kimwipes and rags	solid	500		as needed
441	00220	toner	empty containers	100		as needed
442	00260	respirator cartridges	solid	100		
442	00250	defective HEPA filters	solid	50		as appropriate
445	15340	trash	solid	500		continuous
445	15280	trash	solid	500		continuous
445	15260	carbon dust	solid	20800		continuous
445	15290	steel shavings	metal	5000		continuous
445	15270	carbon scraps	solid	10000		continuous
445	15300	steel scraps	metal	5000		continuous
449	11070	rags	organic	200		
449	11060	empty paint cans and containers	empty containers	10		
449	11090	miscellaneous trash	solid	660		
454	11890	sump sludge	solid	800		intermittent
457	11860	sump sludge	solid	200		intermittent
460	00910	used kimwipes and floor dry	solid	0		as needed
460	00940	used kimwipes	solid	302		as needed
460	23630	bijur filter screen	solid	2		once/6 mon
460	00600	used kimwipes and rags	solid	200		as needed
460	23770	bijur filter screen	solid			once/6 mon
460	00770	used oil filters	solid	70		as needed
460	23690	air filter	solid	2		once/6 mon
460	00880	metal chips	metal	0		to be determined
460	01000	used kimwipes	solid	55		as needed
460	23710	bijur filter screen	solid	2		once/6 mon
460	00370	used oil filters	solid	20		4 per year
460	01080	kimwipes	solid	150		as needed
460	00840	used kimwipes and floor dry	solid	0		as needed
460	01250	kimwipes and rags	solid	165		as needed
460	23800	bijur filter screen	solid			
460	00460	used kimwipes and rags (vap)	solid	280		as needed
460	01310	kimwipes	solid	50		as needed
460	23680	hydraulic intake filter	solid	2		once/6 mon
460	00640	kimwipes and rags	solid	110		
460	23850	air inlet filter	solid			once/6 mon
460	00810	metal chips	metal	0		to be determined
460	01090	empty paint cans	empty containers	100		
460	23700	bijur filter screen	solid	2		once/6 mon
460	00930	used filters	solid	1800		to be determined
460	01360	kimwipes and floor dry	solid	20		as needed
460	23660	hydraulic system filter	solid	2		once/6 mon
460	01060	discarded containers	empty containers	100		intermittent
460	00890	used kimwipes	solid	0		as needed
460	01050	metal chips	metal	300		to be determined
460	01200	empty chem. and solvent containers	empty containers	100		intermittent
460	01230	kimwipes w/Freon	solid	165		as needed
460	00710	kimwipes, gloves and gauze	solid	0		as needed
460	00710	used kimwipes, gloves and gauze	solid	580		as needed
460	00490	used kimwipes and gloves	solid	110		as needed
460	00950	used kimwipes and floor dry	solid	110		as needed
460	01140	kimwipes and rags	solid	165		as needed
460	00570	nuocure	solid	100		
460	00750	metal chips	metal	0		to be determined
460	23780	bijur filter screen	solid			
460	00380	used kimwipes and gauze	solid	150		as needed
460	01280	kimwipes and floor dry	solid	40		as needed

Table I
Solid Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
111	06780	developer and fixer containers	empty containers	10	lbs/yr	as needed
111	06630	kimwipes and rags	solid	240		continous
111	06610	toner and dispersant containers	empty containers	3		2 per month
111	06820	empty developer and fixer container	empty containers	100		as needed
111	06680	empty solvent containers	empty containers	3		1 per month
111	06640	empty toner containers	empty containers	10		3 per week
111	06690	kimwipes and rags	solid	240		continous
111	06670	empty ink cans	empty containers	12		3-4 per month
111	06800	kimwipes and filmpacks	solid	100		as needed
111	06650	demineralizer system filters	solid	24		1 per month
111	06760	kimwipes and rags	solid	100		
111	06740	empty chemical containers	empty containers	100		as needed
121	04810	solid waste	solid	100		intermittant
121	04780	gun patches	solid	50		continuous
123	02830	waste resin	aqueous	3		batch
123	03080	batteries,metalwire,used elec.comp.	solid	500		continuous
123	03000	empty vials	solid	100		batch
123	02880	waste resin	solid	50		batch
123	03070	kimwipes	solid	200		continuous
124	01910	settling basin sludge	aqueous	500000	gal/yr	batch
124	00010	microstrainer backwash	aqueous	180000	gal/yr	summer operation
124	00020	clarifier underflow	aqueous	1500000	gal/yr	continuous
124	00030	sand filter backwash	aqueous	1500000	gal/yr	intermittent
124	01660	dried sludge	solid	5000	lbs/yr	once/ 6 months
125	02550	kimwipes	solid	100		continuous
125	02730	oil filters	solid	5		intermittant
130	07350	copy machine toner	empty containers	100		as needed
130	07400	rejected bags	solid	200		as needed
130	07330	polaroid film backings	solid	100		as needed
130	07390	kimwipes	solid	100		as needed
130	07360	packing materials	solid	100		intermittent
130	07380	water conditioning filters	solid	5		twice per month
130	07340	floor sweepings	solid	100		as needed
223	06840	compressor oil filter	solid	1		1 filter/2 years
331	06430	oil filters and used parts	solid	500		daily
331	06440	paint and body-filler cans	solid	200		as needed
333	06230	shavings	solid	100		daily
333	06220	sawdust	solid	100		as needed
333	06110	filters	solid	200		weekly
333	06210	blast waste	solid	1500		as needed
333	06140	empty cans	empty containers	100		as needed
333	06080	empty paint cans	solid	200		as needed
333	06200	scrapings	solid	200		as needed
333	06180	empty cans	empty containers	100		as needed
333	06130	rags	solid	300		as needed
333	06150	disposed equipment	solid	1000		as needed
333	06090	empty paint cans	solid	500		as needed
334	07050	wood/plastic shavings	solid	500		continous
334	07060	floor scrap	solid	200		daily
334	07110	other metal waste	metal	500		
334	06950	enamel residue	solid	100		intermittent
334	07250	miscellaneous solid waste	metal	500		daily
334	07140	scrap metal	metal	500		daily
334	07160	fluorescent light tubes	solid	1000		as needed
334	07120	used filters	solid	2		as needed
334	07130	metal and silica waste	solid	500		intermittent
335	07040	fire extinguisher chemicals	aqueous	200	gal/yr	as needed
373	11640	sump sludge	solid	100	lbs/yr	yearly
439	00070	kimwipes and rags	solid	200		as needed
439	00110	empty cans and containers	empty containers	100		as needed
439	00060	metal chips	metal	500		daily

Table II
Hazardous Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
460	02410	metal chips	metal	0		
460	02500	metal chips	metal	0		
460	23570	metal chips	metal	0		
460	02340	metal chips	metal	0		
460	00590	mercury light bulbs	solid	5		
460	02320	metal chips	metal	0		
460	02400	metal chips	metal	0		
460	23590	metal chips	metal	0		
460	01780	empty containers	empty containers	100		
460	02380	metal chips	metal	0		
460	02330	metal chips	metal	0		
460	01580	kimwipes and rags	solid	165		
460	02360	metal chips	metal	0		
460	02450	metal chips	metal	0		
460	23600	metal chips	metal	0		
460	23530	metal chips	metal	0		
460	02310	metal chips	metal	0		
460	23470	metal chips	metal	0		
460	02430	metal chips	metal	0		
460	02490	metal chips	metal	0		
460	02420	metal chips	metal	0		
528	15360	kimwipes	solid	10		periodically
549	07300	empty containers	empty containers	100		as needed
562	09840	paper towels with oil	solid	20		varies
668	09570	rags with methyl alcohol	solid	50		intermittant
705	20180	kimwipes	solid	15		as needed
708	10690	rags w/freon and trichloroethane	solid	200		
727	09520	paper towels with oil/freon TF	solid	100		intermittant
771	22010	deionizer exchange resin column	solid	5		yearly
771	22230	bottles, cartons, gloves, kimwipes	solid	15000		continuous
771	22210	liquid chemical containers	solid	4000		continuous
775	22030	trash paper	solid	200		none
776	12120	soiled kimwipes	solid	365		daily
776	12130	empty containers	empty containers	365		daily
776	12100	empty containers	empty containers	365		daily
776	12000	soiled kimwipes	solid	1200		once per day
776	12180	soiled kimwipes	solid	4000		daily
776	12090	soiled kimwipes	solid	365		daily
779	19730	metal chips	metal	10000		2/week
780	09590	rags with trichloroethane	solid	50		infrequent
780	09580	empty paint cans	solid	50		infrequent
881	04660	metal and plastic chips	solid	10000		
881	04760	dirty kimwipes	solid	100		
881	03240	waste resin	solid	4		continuous
886	03180	kimwipes	solid	10		
886	03200	chemicals in cabinet	organic	50		infrequent
910	06340	filter backwash	aqueous	100000		weekly
991	07490	reject rings	solid	1820		weekly

Table II
Hazardous Waste Stream to Landfill
(1986)

BUILDING NO.	WASTE NO.	WASTE NAME	WASTE TYPE	QUANTITY GENERATED	UNITS	GENERATION FREQUENCY
111	06700	film packs and positives	solid	50	lbs/yr	
123	03100	broken badges	solid	200		as occurs
123	03120	waste vials	solid	100		batch
123	02930	waste resin	solid	5		batch
123	03160	waste resin	solid	100		as required
125	02560	filters	solid	5		Change once/year
125	02640	silicone oil filters	solid	5		
125	02580	kimwipes	solid	100		continuous
334	07070	mineral and asbestos dust	solid	200		as appropriate
367	06930	empty cans, bags and containers	empty containers	100		as needed
377	09960	oil filters	solid	5		pmo schedule
440	01500	kimwipes and rags from paint booth	solid	500		
440	00120	composite kimwipe drum	solid	600		
440	01460	foam trimmings	solid	200		
440	01410	empty paint cans	empty containers	100		
440	00390	metal chip dumpster	solid	2000		
440	00170	R-compound	organic	2640		
440	01470	kimwipes and rags	solid	500		
440	01480	kimwipes and rags	solid	500		
440	01440	kimwipes and rags	solid	500		
440	01420	paint filters	solid	300		
443	00320	contaminated rags	solid	200		as needed
444	14120	sst, iron metal chips	metal	1200		continuous
444	11920	sump sludge	solid	200		varies
453	11130	paper towels	solid	2		intermittent
460	23520	metal chips	metal	0		
460	23560	metal chips	metal	0		
460	01640	air filters	solid	0		
460	23540	metal chips	metal	0		
460	23610	metal chips	metal	0		
460	02350	metal chips	metal	0		
460	02460	metal chips	metal	0		
460	23620	metal chips	metal	0		
460	02300	metal chips	metal	0		
460	01750	metal chip composite	metal	100000		
460	23510	metal chips	metal	0		
460	02290	metal chips	metal	0		
460	02480	metal chips	metal	0		
460	02440	metal chips	metal	0		
460	01650	water filters	solid	0		
460	01830	water filters (x-ray)	solid	50		
460	02280	metal chips	metal	0		
460	01600	compressor filters	solid	40		
460	23580	metal chips	metal	0		
460	02270	metal chips	metal	0		
460	02370	metal chips	metal	0		
460	23550	metal chips	metal	0		
460	01370	film packs	solid	30		
460	02390	metal chips	metal	0		

Appendix B

Selected As-Built Drawings of Groundwater Intercept System

ACRONYMS AND ABBREVIATIONS

Am	americium
App.	appendix
ASTM	American Society of Testing and Materials
BAT®	Bengt-Arne Torstensson
CAS No.	Chemical Abstracts Service Registry Number
CDH	Colorado Department of Health
Cl	chloride
cm	centimeter
CO_3	carbonate
CPT	cone penetration test
Cs	cesium
DCE	dichloroethene
DCN	document change notice
Diss.	dissolved
DUP	duplicate
ECD	electron capture detector
EQ BLK	equipment blank
Equip Rinse	equipment rinse
ERR	not sampled due to sampling error or sampled but analysis was inadvertently not requested
F	fluoride
FID	flame ionization detector
FIDLER	Field Instrument for the Detection of Low Energy Radiation
GC	gas chromatogram
Gross α/β	gross alpha/beta
H_3	tritium
HCO_3	bicarbonate
IHSS	individual hazardous substance site
Lab Repl.	laboratory replicate
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
MS	matrix spike
MSD	matrix spike duplicate
N	nitrogen
NC-DUP	not completed - duplication
NC-NWBR	not completed - no weathered bedrock
NE	not encountered
NMOCs	non-methane organic compounds
NP-ACC	not performed - access
NP-DRY	not performed - dry

NP-DUP	not performed - duplication of effort
NP-EQUIP	not performed - equipment
NP-REF	not performed - refusal
NR-MOD	not required - modification
NR-SOP	not required - standard operating procedure
NR-WP	not required - work plan
NS-DRY	not sampled - dry
NS-DW	not sampled - dewatered
NS-ERR	not sampled - error
NS-IX	not sampled - Appendix IX
NS-REF	not sampled - refusal
NT-DRY	not tested - dry
OU	operable unit
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pCi/L	picocuries per liter
PID	photoionization detector
ppm	parts per million
Pu	plutonium
PVC	polyvinyl chloride
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA facility investigation/remedial investigation
S-NA	sampled - not analyzed
SGS	soil-gas sample
SO_4	sulfate
SOP	standard operating procedure
Sr	strontium
SVOC	semivolatile organic compound
SW	surface water
TAL	Target Analyte List
TCA	trichloroethane
TCE	trichloroethene
TDS	total dissolved solids
TOC	total organic carbon
TSS	total suspended solids
U	uranium
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
UTL	upper tolerance limit
VOC	volatile organic compound

C. OU 7 PHASE I FIELD INVESTIGATION

The Operable Unit (OU) No. 7 Phase I field investigation was designed and implemented to generate data adequate to satisfy the two general objectives identified in the OU 7 work plan (DOE 1991). These two objectives were to characterize site physical features and define contaminant sources. In order to achieve these objectives, the following types of investigations were performed:

- Surface features investigations
- Landfill investigations
- Surface-water and sediment investigations
- Soil and soil-gas investigations
- Geological investigations
- Groundwater investigations
- Ecological investigations

The analytical suites for each of the investigations performed at OU 7 were developed according to the type of waste suspected to be present at the site. The rationale for the analytical suites is based on historical information about the waste management practices and types of contamination present, available chemical data, and interpretations of the environmental fate and transport characteristics of the contaminants present. Table C-1 presents the target analytes for the Phase I Resource Conservation and Recovery Act (RCRA) facility investigation/remedial investigation (RFI/RI) at OU 7, the detection/quantitation limits specified in the OU 7 work plan (DOE 1991), and the reported range of detection/quantitation limits achieved by the analytical laboratories for the samples submitted. Target analytes for specific media are discussed below in the sections that describe each type of investigation.

Section C.1 provides a comparison of field activities proposed in the RFI/RI field sampling plan (DOE 1991) to field activities actually performed. Sections C.2 through C.8 describe each type of investigation listed above. Section C.8 includes a comparison of field activities proposed in the environmental evaluation field sampling

plan (DOE 1991) to field activities actually performed. Section C.9 presents the conclusions of the Phase I RFI/RI and Section C.10 includes references for this appendix.

C.1 Comparison of Proposed to Actual Field Activities

Table C-2 provides a summary comparison of the field activities (including number of locations sampled and types of chemical analyses performed) proposed in the OU 7 work plan (see Tables 7-1, 7-2, and 7-3; DOE 1991) to the actual field activities performed. Field activities were conducted at three areas: individual hazardous substance site (IHSS) 114, IHSS 203, and the areas around the East Landfill Pond (including IHSSs 167.2 and 167.3).

Proposed field activities for IHSS 114 included data review, visual inspections, cone penetration tests (CPTs), *in situ* gas–leachate sampling, borehole drilling and sampling, borehole packer tests, monitoring well installation and groundwater sampling, sediment sampling, leachate/effluent/surface water sampling, and sample location surveying. Table C-3 provides a comparison of the proposed versus actual field activities associated with the CPT rig, including:

- Cone penetration testing (CPT)
- Screening-level methane surveying (MET)
- *In situ* soil-gas sampling (SGS)
- *In situ* leachate–groundwater sampling using the Bengt-Arne Torstensson (BAT®) system

Table C-4 provides a comparison of the proposed versus actual field activities associated with drilling, including borehole drilling, borehole sampling, monitoring well installation, hydraulic conductivity testing, and groundwater sampling. Throughout this appendix, the acronyms listed above are combined with the location identification number to identify the type of information or sample(s) obtained at a given sample location. Where deviations from the proposed field activities occurred, abbreviations (NR = not required, NP = not performed, NS = not sampled) are used to explain the deviation. As presented in Table C-2, deviations occurred due to work plan

modifications. These modifications, which are in the form of formal correspondence, are presented as Attachment A to this appendix.

Proposed field activities for IHSS 203 included data review, visual inspections, radiation field screening, soil-gas sampling, surface soil sampling, subsurface soil sampling, and sample location surveying. Table C-2 summarizes proposed field activities for IHSS 203, actual field activities, deviations from proposed field activities, and reasons for deviations.

Proposed field activities for the areas around the East Landfill Pond included data review, visual inspections, radiation field screening, surface soil sampling, subsurface soil sampling, and sample location surveying (Table C-2).

C.2 Surface Features Investigations

The surface features investigations included visual inspections of IHSS 114, IHSS 203, IHSS 167.2, IHSS 167.3, and the area around the East Landfill Pond to assess site conditions, including ongoing waste operations, and determine the effect on field activities and on the quality of data collected. An investigation of the groundwater intercept system was also performed.

A visual inspection was performed at IHSS 114 in November 1992 prior to the Phase I field investigation. Hazards including exposed metal, pipe, asphalt, and concrete were noted but none resulted in significant changes to sample locations. Slope or other ground conditions affecting CPT or drill rig access were also investigated. Location CPT01693, down the face of the landfill near the pond, was inaccessible to the CPT rig, and CPT activities at that location were canceled. Waste operations activities were evaluated daily to determine the impact on the OU 7 Phase I field investigation. At some locations within the active landfill area, locations were staked and samples were collected after normal working hours or on weekends to minimize disturbances related to daily waste operations. The IHSS 203 area was inspected in November 1992 prior to sampling activities. The purpose of the inspection was to look for areas of soil staining or stressed vegetation that could indicate a spill and to modify the sampling plan to ensure that soils were sampled if any evidence of a spill was found. Areas around the East Landfill Pond were also inspected in November 1992 prior to the field investigation to delineate areas impacted by spray evaporation and ensure that soils in these areas were sampled.

A visual inspection of the valves at junction points in the groundwater intercept system was performed, where possible, to determine whether effluent from the system is discharged to the East Landfill Pond or to surface water stations SW099 and SW100 downgradient of the pond. Rocky Flats Waste Operations personnel were contacted to provide additional information on the operation and valve settings of the groundwater intercept system. A discussion of the operation of the groundwater intercept system is included in Section 2.6. Water levels from well pairs installed on the north and south sides of the intercept system provided information on the effectiveness of the groundwater intercept system near its western terminus. A discussion of the effectiveness of the groundwater intercept system is included in Section 2.5.

The surface investigation included an analysis of historical documents and aerial photographs to estimate the location of the now-buried West Landfill Pond, the axis of the infield drainage, the intercept system, and the asbestos disposal pits. Borehole location 72193 and CPT locations CPT01593 and CPT02293, which investigated the West Landfill Pond sediments, were staked based on information from the aerial photographs. Location information on the drainage axis, intercept system, and asbestos disposal pits was used to construct the OU 7 base map (Plate C-1) and the geologic cross-sections (Figures 2-9 through 2-16).

A site inspection was also conducted in June 1993 to observe changes in surface features. Section 2.1 provides a description of the physical features of the site.

C.3 Landfill Investigations

Landfill investigations included cone penetration testing, *in situ* landfill gas screening measurements, *in situ* soil-gas sampling, and field screening of leachate for volatile organic compounds (VOCs) using the BAT® *in situ* sampling system. The specific objectives of the landfill investigation were to characterize the subsurface material within and beneath the landfill, determine the area and volume of the landfill, determine the depth to saturated materials, characterize landfill-generated gases, determine the volume of landfill-generated gases, and characterize leachate–groundwater within the landfill.

Lithologic data and depth to saturated materials determined from the CPT profiles were used to select sampling locations for *in situ* soil-gas and leachate–groundwater samples and to design the monitoring wells subsequently installed at OU 7.

C.3.1 Cone Penetration Testing

Subsurface geological investigations using CPTs were performed to measure the physical properties of soil, characterize the lithologies within the landfill, determine the distribution and thickness of both landfill debris and fill material, determine the area and volume of the landfill, and determine the depth to saturated materials. All of the locations investigated were assigned 1993 project numbers with the prefix CPT followed by a three-digit number and the year (CPT00193 to CPT03893).

The CPTs were performed at approximately 100-foot intervals along four transects in accordance with the OU 7 work plan (DOE 1991). As illustrated in Figure C-1, these transects included one east-west transect and three north-south transects. The east-west transect provided profiles along the center line of the landfill where waste material was expected to be thickest. This information was used to estimate the volume of landfilled materials. The western north-south transect provided profiles of the western portion of the landfill where the groundwater intercept system may not be completely keyed into bedrock. Data obtained from this transect were used to estimate the volume of landfilled materials and to design monitoring wells 71193, 71493, 71693, and 71893, which were installed to evaluate the effectiveness of the groundwater intercept system. The middle north-south transect provided CPT profiles along the center of the landfill that were compared to existing borehole logs as a calibration technique, and were used to design monitoring wells 72093 and 72393. The eastern north-south transect provided profiles of the eastern portion of the landfill and was used to estimate the volume of landfilled material present in this area, evaluate the location of the buried West Landfill Pond, and provide a subsurface profile of the associated sediments. The CPT profiles were also used to select the location of borehole 72193 and monitoring wells 72293 and 72493 which were installed along this north-south transect.

Thirty-six of the 38 proposed CPTs (CPT00193 through CPT01593, CPT01793 through CPT02093, and CPT02293 through CPT03893) were completed, and two CPTs (CPT01693 and CPT02193) were canceled. Location CPT01693, located below the steep face of the landfill along the western boundary of the East Landfill Pond, was not investigated because it was inaccessible to the CPT rig. Location CPT02193 was canceled because two other locations (CPT01593 and CPT02293) encountered the buried sediments of the West Landfill Pond, and sediment profiles were obtained at these locations. Table C-5 provides the testing details for each CPT, and Figure C-1

shows their locations. The CPT locations along the four transects were staked in December using a compass and tape measure. Radiation field screening was performed at each location using a Bicron Analyst Field Instrument for the Detection of Low-Energy Radiation (FIDLER) on a 17-point grid in accordance with Field Operations Standard Operating Procedure (SOP) FO.16, Field Radiological Measurements (EG&G 1992). Cone penetration testing began in December 1992 and was completed in April 1993.

The CPTs were performed in accordance with procedures outlined in Geotechnical SOP GT.21, Cone Penetrometer Testing (EG&G 1992), and American Society of Testing and Materials (ASTM) Standard D3441-86 (ASTM 1986). Cone penetration (penetrometer) testing uses cone penetrometers (probes) that have built-in electronic sensors (usually strain gauges) at the tip and sides or sleeve of the probe. As the probe was hydraulically pushed into the subsurface, sensors measured tip penetration resistance, sleeve friction, inclination of the cone relative to the vertical axis, and interstitial pore pressure. The number of parameters measured was a function of the number of electronic channels in the probe. The CPTs performed as part of the Phase I field investigation used both 3- and 4-channel probes. Based on the availability of equipment, 7 of the 36 CPTs (CPT00593, CPT01293, CPT01393, CPT03493, CPT03593, CPT03693, and CPT03793) were performed using a 3-channel probe, which measured tip penetration resistance, sleeve friction, and inclination of the cone relative to the vertical axis. The remaining 29 CPTs were conducted using a 4-channel probe, which was also equipped with an electronic pore-pressure transducer that measured dynamic and equilibrium pore pressures in saturated soils. The pore-pressure transducer was also used for dissipation tests, which measured the decay or dissipation in excess pore pressure generated within the formation by advancing the CPT probe.

At each location, the rig was set up and leveled using hydraulic jacks to obtain a vertical thrust direction. The probe was then advanced and additional meter-long 1.5-inch-diameter CPT rods were added as necessary to reach the desired depth. During CPT profiling, the probe was advanced at a constant rate of 0.6 to 1.0 inches per second. Continuous measurements of tip penetration resistance, sleeve friction, inclination, and pore pressure (as available) were recorded. These data were transferred, via an electric cable that was attached to the probe and prethreaded through the rods, to a computer-automated data collection and display system located in the CPT rig. Upon completing the CPTs in the field, the information obtained using the

computer data acquisition system was downloaded onto a computer located at the field trailer, and CPT profiles were generated. Figure C-2 schematically illustrates a typical CPT profile. Section 2.4 presents geologic cross-sections constructed using data from CPT profiles.

The CPTs were performed to measure the physical characteristics of material from ground surface to bedrock, or tip refusal. Refusal was defined as elevated tip penetration resistance and/or sleeve friction that, if exceeded, could cause potential damage to the probe. Refusal during the CPT investigation was most likely caused by encountering cobbles, boulders, concrete, asphalt, or metal within the landfill or by encountering unweathered bedrock (usually claystone) at depth. When shallow refusal was encountered and interpreted to be caused by material other than unweathered bedrock, the CPT rig was moved and additional penetrations attempted. In general, offsets were approximately 5 feet from the original CPT location. Document Change Notice (DCN) Number 93.02 for Geotechnical SOP GT.21 (EG&G 1992), dated March 17, 1993, addressed the distance requirement for offsets. Although a maximum of three offsets was stipulated in the OU 7 work plan (DOE 1991), in areas determined to be critical in evaluating the subsurface geology, more than three offsets were attempted.

Upon encountering refusal, the CPT probe and associated rods were removed from the hole and the hole was backfilled with bentonite pellets. If the hole did not stay open, a stainless-steel sacrificial grouting tip was attached to the end of the CPT rods, and the rods were pushed back down to total depth. The hole was then backfilled by placing bentonite pellets into the rods. The rods, which were used as a tremie pipe, were slowly removed as the bentonite pellets were added thereby backfilling the hole from the bottom up. The grouting tip was left at the bottom of the hole. DCN Number 93.01 for Geotechnical SOP GT.21, (EG&G 1992), dated January 15, 1993, addressed the use of bentonite pellets for backfill instead of bentonite-cement grout, which allowed the CPT rods to be decontaminated in the field, minimizing the potential for spread of contamination between CPT locations and the decontamination pad. In addition, bentonite pellets provide a better seal than grout, minimizing the potential for cross contamination between strata.

All downhole equipment was decontaminated between locations in accordance with Field Operations SOP FO.3, General Equipment Decontamination (EG&G 1992), and

DCN Number 93.01 for Field Operations SOP FO.03 (EG&G 1992), which allowed wire brushes to be used in the field to clean the CPT rods and associated equipment. These brushes were permitted for use to decontaminate equipment during the CPT investigation because there were no samples collected for metals analyses.

C.3.2 In Situ Landfill Gas Measurements

The landfill gas investigation consisted of two phases, a screening-level characterization phase (referred to as the methane survey), and a gas sampling phase.

The methane survey was conducted to characterize the distribution of landfill gases (methane, hydrogen sulfide, carbon dioxide, and non-methane organic compounds [NMOCs]). Field instruments were used to measure concentrations of landfill gases at depths of approximately every 5 feet at each CPT location. In the gas sampling phase, gas samples were collected in accordance with the OU 7 work plan (DOE 1991) from specific depths within the unsaturated zone. Sampling depths during this phase were chosen where landfill material was first encountered below ground surface and then immediately above the water table surface. Samples collected during the second phase were analyzed using a field gas chromatogram (GC) for 10 gases potentially present within the landfill.

C.3.2.1 Methane Survey

Based on the results of the CPT investigation and a review of static water levels from existing wells in the vicinity of the landfill, the elevation of the potentiometric surface within the landfill and the thickness of the unsaturated zone were estimated. A methane survey was subsequently performed to characterize the distribution and composition of landfill gases within the unsaturated zone.

A total of 163 samples (and 13 duplicate samples) was collected as part of this field screening activity at 33 locations (MET00293 through MET01593, MET01893 through MET02093, and MET02293 through MET03793). Five locations (MET00193, MET01693, MET01793, MET02193, and MET03893) were canceled due to inaccessibility, redundancy, or tip refusal. In general, methane surveys were performed approximately 5 feet upgradient of the deepest CPT attempt for that location. Sampling began at approximately 3 feet below ground surface and was performed at approximately 5-foot intervals thereafter until leachate–groundwater was encountered

(Figure C-2). The methane survey began in January 1993 and was completed in April 1993. Table C-6 presents a summary of the methane survey investigation.

The methane survey was performed in accordance with procedures outlined in a preliminary version of Geotechnical SOP GT.22, In Situ Sampling with BAT System (EG&G in progress). The survey used a soil-gas sampling probe, which is a perforated extension of a CPT rod that allows soil gas to enter the rods for the purpose of sampling, attached to CPT rods in order to reach the desired sampling depth(s). A stainless-steel sacrificial grouting tip was attached to the probe. This tip was wider than the sampling probe, and thus prevented debris from moving into and clogging the sampling system as the probe was pushed to specific sampling depths. The threaded ends of the CPT rods were sealed with Teflon® tape during assembly to prevent the introduction of ambient air into the sampling system. The soil-gas sampling probe was used to collect gas samples, rather than the BAT® sampling probe specified in the OU 7 work plan (DOE 1991), because it is more efficient.

When the first sampling depth was encountered, a manifold outfitted with a quick-relief pressure valve (relief valve), with in-line gauges for the measurement of off-gas potential and vacuum pressure, was attached to the top of the CPT rods extending inside the rig. The relief valve was closed and the rods were pulled up approximately 2 inches to expose the soil-gas probe perforations and allow landfill gas to enter the rods. The pressure gauges were monitored for five 1-minute intervals, and off-gas pressures were recorded.

The relief valve was then opened and attached to a vacuum pump, which was used to collect gas samples in accordance with Geotechnical SOP GT.22, In Situ Sampling with BAT System (EG&G in progress). Samples were collected in five-layer fused aluminum sample bags with Teflon® septum ports and analyzed as part of the field screening activities. The samples were analyzed for total combustible gas (methane and NMOCs), methane, NMOCs, and carbon dioxide. The combination of field instruments used to detect suspected contaminants was able to differentiate between methane and NMOCs and included a Gastech Tank-Techtor® (total gas and NMOCs at concentrations less than 10,000 parts per million [ppm]), Digiflam® 2000 (total gas at concentrations greater than 10,000 ppm), and an Infra-Red Gas Analyzer® (methane at concentrations greater than 1,000 ppm and carbon dioxide at concentrations greater than 2,000 ppm). These instruments were calibrated daily and were used in various

combinations depending on the depth-specific concentrations encountered. When the Gastech Tank-Techtor® was used, the concentration of methane was calculated as the difference between the total gas and non-methane organic compound concentration, and carbon dioxide was not measured. When the Digiflam® 2000 and Infra-Red Gas Analyzer® were used, the concentration of NMOCs was calculated as the difference between the total gas and methane concentrations. Section 4.2 presents cross-sections and maps that show the concentrations and distribution of gases in the landfill.

After sampling at a given depth was completed, the manifold was removed, the soil-gas sampling probe was closed (perforations no longer exposed), and the probe was advanced to the next sampling depth. Before collecting the next sample, the rods were purged by injecting argon gas (an inert gas) through plastic tubing that extended to the bottom of the sample probe to displace any residual gas from the previous sampling depth. The vacuum pump was then used to purge the downhole rods of any remaining gas, including argon. Additional samples were then collected as described above. After collecting samples for field screening at each specific depth, an electronic water-level probe was inserted into the rods to check for the presence of leachate–groundwater. In the event that liquid was detected within the rods, the methane survey was discontinued and where possible, the static water level was measured.

After finishing the methane survey, each hole was backfilled by placing bentonite pellets into the rods. The rods, which were used as a tremie pipe, were slowly removed as the bentonite pellets were added thereby backfilling the hole from the bottom up. DCN Number 93.01 for Geotechnical SOP GT.21 (EG&G 1992), dated January 15, 1993, addressed the use of bentonite pellets for backfill instead of grout.

All downhole equipment was decontaminated between locations in accordance with Field Operations SOP FO.3, General Equipment Decontamination (EG&G 1992), and DCN Number 93.01 for Field Operations SOP FO.3 (EG&G 1992).

C.3.2.2 Soil-Gas Sampling

In situ soil-gas sampling was performed to characterize the chemical composition of gases present within the unsaturated zone of the landfill. A total of 67 soil-gas samples was collected at 33 locations (SGS00293 through SGS01593, SGS01893 through SGS02093, and SGS02293 through SGS03793) using the methods described in the methane survey discussion above. Five locations (SGS00193, SGS01693, SGS01793,

SGS02193, and SGS03893) were canceled due to inaccessibility, redundancy, or tip refusal. Soil-gas sampling began in February 1993 and was completed in April 1993.

Soil-gas sampling was performed in accordance with the procedures outlined in a preliminary version of Geotechnical SOP GT.22, In Situ Sampling with BAT System (EG&G in progress). Approximately two samples were collected at each soil-gas sampling location, one shallow and one deep. Shallow samples were collected at a depth of approximately 5 feet below ground surface in unsaturated landfill material. Deep samples were collected approximately 3 to 5 feet above the estimated potentiometric surface at each location (Figure C-2). Soil-gas samples were collected as described in the methane survey discussion (Section C.3.2.1). Samples were analyzed using a portable field GC for gases commonly found in landfills and selected VOCs previously detected in leachate–groundwater at IHSS 114 including methane, hydrogen sulfide, trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), acetone, 2-butanone, methylene chloride, toluene, and total xylenes (para, meta, and ortho isomers). The SRI® Model 8610 field GC used to analyze gas samples was equipped with a flame ionization detector (FID) and a photoionization detector (PID). Methane concentrations were measured with the FID. Concentrations of TCE, 1,2-DCE, 1,1,1-TCA, methylene chloride, acetone, 2-butanone, toluene, total xylenes, and hydrogen sulfide were measured with the PID.

In addition to the 67 samples analyzed using the field GC, 19 split samples were collected as part of the quality control (QC) program for OU 7. Each split or QC sample was assigned a unique sample number consisting of a two-letter prefix (SG for soil gas) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller). These 19 samples were analyzed for the same 10 analytes listed above by an offsite laboratory. Although the OU 7 work plan (DOE 1991) only required that 10 percent of the gas–liquid samples be sent off the site to an analytical laboratory to confirm the results of the field GC, the 19 soil-gas split samples represent 28 percent of the total soil-gas samples. Eight field duplicates were also collected and analyzed on the site to evaluate the precision of the field sampling methods and the field GC analysis. Table C-7 provides a summary of the locations sampled and the corresponding sample dates, sample depths, and analyses performed. Section 4.2 presents the results of the soil-gas investigation.

Upon the completion of soil-gas sampling, each hole was backfilled by placing bentonite pellets into the rods. The rods, which were used as a tremie pipe, were slowly removed as the bentonite pellets were added thereby backfilling the hole from the bottom up. DCN Number 93.01, for Geotechnical SOP GT.21 (EG&G 1992) dated January 15, 1993, addressed the use of bentonite pellets for backfill instead of grout.

All downhole sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.3, General Equipment Decontamination (EG&G 1992), and DCN Number 93.01 for Field Operations SOP FO.3 (EG&G 1992).

C.3.3 In Situ Landfill Leachate–Groundwater Sample Collection

In situ leachate–groundwater sampling was performed to characterize contaminants in leachate–groundwater in the landfill and to define their vertical distribution. As many as three samples were planned at each of the 38 CPT locations, one collected from the top, middle, and bottom of the saturated zone (Figure C-2). As a result of low water levels during the winter months when sampling was performed, the thickness of the saturated zone was less than anticipated. Therefore, the number of samples per location considered adequate to identify light and dense non-aqueous phase liquids and to define the resulting vertical chemical gradients within landfill leachate was revised before sampling began based on the actual thickness of the saturated zone determined during the CPT investigation. At locations where the saturated zone was greater than 10 feet thick, three samples were to be collected; where the saturated zone was 5 to 10 feet thick, two samples were collected; and where the saturated zone was less than 5 feet thick, one sample was collected. No attempts to collect leachate–groundwater samples were made at locations for which CPT data were not available or at locations where dry conditions persisted. Five locations (BAT01693, BAT02193, BAT00193, BAT01793, and BAT03893) were canceled because of inaccessibility, redundancy, or tip refusal. Two locations (BAT03393 and BAT03693), were canceled because nearby wells were dry or nearly dry, and one location (BAT02093) was canceled because the static water level was interpreted to be below the landfill–bedrock contact, leaving 30 locations to be sampled.

Specific sampling depths were chosen by reviewing the CPT profiles and identifying the depths of materials with the highest relative permeability. Leachate–groundwater samples were collected at 16 of the 30 locations where sampling was attempted. At seven locations (BAT00293, BAT00993, BAT01493, BAT02693, BAT02793,

BAT03093, and BAT03193) tip refusal occurred, and no samples were collected. At seven other locations (BAT00393, BAT00493, BAT00593, BAT01293, BAT02293, BAT02593, and BAT03593) leachate–groundwater was not present or liquid recovery was so slow that no samples were collected. A total of 26 leachate–groundwater samples were collected from the 63 proposed sample intervals. The slow groundwater recovery rate observed during BAT® sampling was consistent with the slow recoveries encountered during developing and sampling in nearby monitoring wells installed during the Phase I field investigation and was, therefore, considered to be the result of low formation permeabilities. Leachate–groundwater sampling with the BAT® system began in March 1993 and was completed in April 1993. Table C-8 provides a summary of the locations sampled with the corresponding sample dates, depth intervals, and analyses performed.

Leachate–groundwater sampling at the present landfill was performed using the BAT® sampling system in accordance with a preliminary version of Geotechnical SOP GT.22, In Situ Sampling with BAT System (EG&G in progress). The BAT *in situ* sampling system used an Enviroprobe®, which consisted of a stainless-steel filter tip and housing. The filter tip was sealed with a specially developed septum seated in the cap. The stainless-steel housing protected a 4-inch-long filter with a 200-micron stainless-steel screen, which was attached to the filter tip, while the probe was pushed to the target depth. During the advancement of the filter tip, care was taken to avoid pulling up on the probe prior to reaching the target depth as this could have opened the protective housing and contaminated the filter.

The CPT rig was used to advance the Enviroprobe® and additional 2-inch-diameter BAT® rods that were added to reach the appropriate sampling depth(s). Because the Enviroprobe® and the BAT® rods are larger in diameter than the CPT rods, the BAT® sampling system often experienced a higher resistance to penetration than the CPT rods at similar locations, which sometimes resulted in shallower refusal depths than were encountered with the CPT rods. In order to reach the appropriate sampling depths using the BAT® system, several holes were prepunched with the CPT rods to a depth just above the top sampling interval prior to using the Enviroprobe® and BAT® rods.

Upon reaching the target depth, the BAT® rods were pulled up several inches to expose the filter. Soil friction held the filter tip in place while the protective housing, which was connected to the BAT® rods, was retracted. Leachate–groundwater present at this

depth was then able to flow into the filter tip. A series of sterile evacuated sample containers was then lowered down the BAT® rods for the purpose of collecting *in situ* leachate–groundwater samples. Each evacuated container was mounted in a portable sampling probe equipped with a disposable double-ended hypodermic needle. When lowered inside the BAT® rods to the top of the Enviroprobe®, the portable sampling probe connected to the cap of the filter tip, causing the needle to penetrate the septa in both the filter tip and the evacuated sample container forming a temporary, leakproof hydraulic connection. As a result of the negative pressure present in the evacuated sample container, leachate–groundwater was drawn from the filter tip into the sample container.

The time needed to fill the sample container varied with the relative permeability of the formation being sampled. Conditions at the majority of sampling locations required leaving the filter tip at the sampling depth for several hours or overnight in order to obtain the volume necessary for analysis. The sample container was then pulled off the hypodermic needle as the portable sampling probe was retrieved from downhole. Upon removing the needle, the septum of the sample container automatically resealed resulting in a hermetically isolated liquid sample. Similarly, the septum in the filter tip also resealed allowing for the collection of additional sample volumes at this depth. Usually several evacuated sample containers were used at each sampling depth to obtain the required sample volume for the field GC analysis (approximately 30 milliliters [mL]), the laboratory split samples (80 mL), and the field parameters (25 mL).

When more than one leachate–groundwater sample was required at a BAT® sampling location, as dictated by the thickness of the saturated interval, the deepest sample was collected first as described above. The BAT® rods were then pulled up to the next sampling depth. Several evacuated sample containers were subsequently used to purge the filter tip of any material remaining from the depth last sampled. Because the filter tip was in direct contact with the formation fluid, only a small amount (approximately 30 mL, which is the capacity of the filter tip) of leachate–groundwater needed to be purged from the filter tip before additional samples were collected. After purging, a new needle was inserted into the portable sampling probe, and a sample was collected.

Field parameters, including temperature, pH, and electrical conductivity, were measured on the first sample volume collected using a HyDAC® digital conductivity–

temperature–pH tester. The remaining leachate–groundwater samples were containerized, preserved, handled, and shipped in accordance with the OU 7 work plan (DOE 1991) and Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992).

The analytical suite for the BAT® samples consisted of common gases frequently found in landfills and selected VOCs historically detected in leachate–groundwater. The headspace of the liquid samples was analyzed for methane, hydrogen sulfide, TCE, 1,2-DCE, 1,1,1-TCA, acetone, 2-butanone, methylene chloride, toluene, and total xylenes, using a field GC. For each sample, results of the headspace analysis were used to calculate VOC concentrations in leachate–groundwater using vapor pressures of the gases and partition factors.

Four split or QC samples were collected as part of the QC program for OU 7. The aqueous phase of the split samples was analyzed for VOCs by an offsite laboratory. Although the OU 7 work plan (DOE 1991) only required that 10 percent of the gas/liquid samples be sent to an offsite laboratory to confirm the results of the field GC, the four aqueous split samples represent 15 percent of the total leachate–groundwater samples collected. Each split sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (GW for groundwater) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller). In addition, two field duplicates were collected and analyzed on the site to evaluate the precision of the sampling methods and the field GC analyses.

Upon completion of leachate–groundwater sampling at each location, the Enviroprobe® and BAT® rods were removed. A stainless-steel sacrificial grouting tip was subsequently inserted onto the end of CPT rods, and the rods were pushed to total depth. The hole was backfilled by placing bentonite pellets into the rods. The rods, which were used as a tremie pipe, were slowly removed as the bentonite pellets were added thereby backfilling the hole from the bottom up. The grouting tip was left at the bottom of the hole. DCN Number 93.01 for Geotechnical SOP GT.21 (EG&G 1992), dated January 15, 1993, addressed the use of bentonite pellets for backfill instead of grout, which allows the CPT rods to be decontaminated in the field, minimizing the potential for spread of contamination between CPT locations and the decontamination

pad. In addition, bentonite pellets provide a better seal than grout, minimizing the potential for cross contamination between strata.

All downhole sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.3, General Equipment Decontamination (EG&G 1992), and DCN Number 93.01 for Field Operations SOP FO.03.

C.4 Surface-Water and Sediment Investigations

The surface-water and sediment investigations included leachate sampling, surface-water sampling, discharge measurements, pond elevation measurements, and sediment sampling.

C.4.1 Surface-Water Investigations

Four previously established (1988) surface-water sampling stations are included in OU 7: SW097, SW098, SW099, and SW100 (Figure C-3). These stations are part of the network of sampling stations associated with the sitewide surface-water monitoring program and provide historical data in addition to data obtained during the Phase I field investigation. Station SW097 is located at the leachate seep below the landfill and above the East Landfill Pond. Station SW098 is located in the East Landfill Pond near the dam. Stations SW099 and SW100 are located below the East Landfill Pond dam in concrete box weirs that are discharge points for the groundwater intercept system when the valves to the pipes are open. Samples from SW097 and SW098 were analyzed to characterize the chemistry of the landfill leachate and pond water, respectively. Leachate discharge measurements were also obtained at SW097. Samples were collected from the groundwater intercept system discharge points to characterize the chemistry and determine flow rates of intercepted groundwater.

In accordance with the OU 7 work plan (DOE 1991), surface-water samples were collected at stations SW097 and SW098 on a monthly basis from December 1992 to March 1993. Surface-water station SW100 was not sampled during the Phase I field investigation because of dry or frozen conditions. Station SW099 was sampled once in March 1993. Frozen standing water or dry conditions restricted sampling at this site during the earlier monthly sampling events. Duplicate, equipment rinse, field preservation, and trip blank QC samples were collected with the real surface-water samples following QC sampling frequency guidelines stated in the OU 7 work plan

(DOE 1991). Each surface-water sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (SW for surface water) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller).

Surface-water samples were collected in accordance Surface Water SOPs SW.01, Surface Water Data Collection, SW.03, Surface Water Sampling, and SW.08, Pond Sampling (EG&G 1992). Samples from the leachate seep (SW097) were collected under low-flow conditions by the dip-and-transfer method. Samples collected for analyses of dissolved metals and dissolved radionuclides were field filtered using a peristaltic pump with a disposable 0.45-micron filter. Estimates of leachate discharge were made during the monthly sampling events, however, accurate and reliable discharge measurements were difficult to obtain at station SW097. Flow rates were estimated based on the velocity-area method referenced in Surface Water SOP SW.04, Discharge Measurement (EG&G 1992). A well-defined channel does not exist at Station SW097. Leachate is spread over a diffuse area with landfill debris altering the flow path. These conditions prevented the use of a current meter to obtain velocity readings. Therefore, timed visual observations of an object traveling through an estimated area of leachate were used to estimate flow rates. Flow rates were estimated using the bucket and stopwatch volumetric method in April 1993.

Pond-water samples (SW098) were collected from the shore along the west edge of the dam. The pond was frozen for the first three sampling events (December 1992 to February 1993). A hole was drilled through the ice before sampling. Samples were collected approximately 1 foot below the surface of the ice using the dip-and-transfer or container-immersion method. Samples collected for analyses of dissolved metals and dissolved radionuclides were field filtered using a peristaltic pump with a disposable 0.45-micron filter. The elevation of the pond surface (ice or water) was measured using standard land surveying techniques on a monthly basis when the surveyors were available. A staff gauge was installed on the north side of the pond near the dam in April 1993. The elevation of the top of the gauge was surveyed in order to obtain accurate measurements of the pond surface elevation.

Water was collected from the northern groundwater intercept system discharge point (SW099) once in March 1993. There was little or no flow, and the surface water in the concrete weir may have originated from snow melt or rain water instead of the

groundwater from the intercept system. Samples were collected from the weir using the dip-and-transfer or container-immersion method. Discharge from the pipe was measured in April 1993 using the bucket and stopwatch volumetric method, referenced in Surface Water SOP SW.04, Discharge Measurements (EG&G 1992). The valve components of the groundwater intercept system were inspected, where possible, to determine the discharge points of the system (Figure C-3).

Field parameters were measured at each surface-water sampling location as specified in the OU 7 work plan (DOE 1991). Field parameters included air and water temperature, total residual chlorine, dissolved oxygen, pH, alkalinity, specific conductance, turbidity, hardness, and nitrates. Instruments used to obtain field parameter measurements were calibrated according to the equipment manufacturer's instructions and Surface Water SOP SW.02, Field Measurements of Surface Water Field Parameters (EG&G 1992). All sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992).

Surface-water samples were containerized, preserved, handled, and shipped in accordance with the OU 7 work plan (DOE 1991) and Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992). During the December 1992 sampling event, total residual chlorine at station SW098 was greater than 0.2 milligrams per liter (mg/L). Therefore, the semi-volatile organic compound (SVOC) sample associated with these waters was preserved with sodium thiosulfate as specified in Surface Water SOP SW.03, Surface Water Sampling (EG&G 1992). When total residual chlorine was not elevated, the SVOC samples did not require a preservative.

Based on historical data, the contaminants of concern in leachate draining into the East Landfill Pond (SW097) include VOCs, SVOCs, metals, radionuclides, and select inorganic analytes. Contaminants of concern in surface water from the East Landfill Pond (SW098) include metals, radionuclides, bicarbonate, carbonate, and sulfate. These data were used to select sampling parameters for the Phase I RFI/RI.

In accordance with the OU 7 work plan (DOE 1991), surface-water samples were analyzed for VOCs; dissolved gross alpha; dissolved gross beta; dissolved uranium-233,234; uranium-235; uranium-238; SVOCs; dissolved metals; water quality parameters (chloride, fluoride, sulfate, carbonate, bicarbonate, total dissolved solids

[TDS], total suspended solids [TSS]); total metals; nitrate as nitrogen (N); tritium; total radionuclides; dissolved plutonium-239,240; dissolved americium-241; dissolved strontium-89,90; dissolved cesium-137; cyanide; and sulfide. Several analytes were inadvertently not requested including TSS and fluoride for SW097 and SW098 (December 1992), cyanide and sulfide for SW097 and SW098 (February and March 1993), and cyanide and sulfide for SW099 (March 1993). Table C-9 presents the surface-water samples collected and the analyses requested for each of the four sampling events. Samples were collected by priority in the approximate order listed above. The analytical suite for surface-water samples was developed to address the majority of chemicals and compounds that were landfilled, handled, or suspected to be present at OU 7. However, to evaluate the possible presence of additional hazardous constituents resulting from undocumented disposal at OU 7, as specified in the OU 7 work plan (DOE 1991), one leachate sample (SW097) was analyzed for a complete Appendix IX analytical suite. Section 4.6 presents the nature and extent of contamination in surface water.

C.4.2 Pond-Sediment Sampling

Three sediment sampling stations were established at OU 7: SED70093, SED70193, and SED70293 (Figure C-3). These locations correspond to 1993 project numbers in the 700 series for OU 7, beginning with the prefix "SED" for sediment. The sediment sampling locations were originally designated along a west-to-east transect near the centerline of the East Landfill Pond where sediments were expected to be thickest. However, the sediment column was thinner along the centerline than elsewhere in the pond, and sediment recovery was poor because of gravel along the bottom. These factors necessitated collection of sediment samples at locations between the centerline and the edge of the pond. Station SED70093 is located in the western portion of the East Landfill Pond directly downgradient of the landfill and leachate seep. It is anticipated that pond sediments from Station SED70093 contain the highest concentration of any contaminants that may be present because of its proximity to the leachate seep. Station SED70193 is located in the center of the pond near the discharge points for the groundwater intercept system. Station SED70293 is located in the eastern section of the pond. Because it is farthest from the leachate seep, sediment from station SED70293 is expected to contain the lowest concentration of contaminants that may be present in the pond sediments. Sediment from the East Landfill Pond was

collected and analyzed to determine the thickness, describe the stratigraphy, and characterize the chemistry of the pond sediment.

In accordance with the OU 7 work plan (DOE 1991), pond sediment was sampled once during the Phase I field investigation at OU 7. Sampling was performed in March 1993, within a week of the March 1993 OU 7 surface-water sampling event. The sediment was preliminarily estimated in the OU 7 work plan (DOE 1991) to be between 3- and 6-feet thick based on measurements of sediment in other detention ponds at Rocky Flats, which would require the collection of discrete samples from 10-inch intervals. The actual thickness of sediment was only 6 to 8 inches. Therefore, only one 10-inch interval was collected from each site. Duplicate and equipment rinse QC samples were collected according to the QC sampling frequency guidelines in the OU 7 work plan (DOE 1991). Each sediment sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (SD for sediment) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller).

Sediment sampling was performed in accordance with the OU 7 work plan (DOE 1991) and Surface Water SOPs SW.06, Sediment Sampling, and SW.17, Pond and Reservoir Bottom Sediment Sampling (EG&G 1992). Samples were collected from a boat with a hand-held coring device. The core barrel was used with stainless-steel liners to collect VOC and SVOC samples. Polybutyrate liners were used to collect the remaining samples. Extension rods were attached to the corer until the corer reached the bottom of the pond. A drive hammer was attached to the top extension rod and used to force the corer through the pond sediments into claystone bedrock. When refusal was encountered, the corer was retrieved by pulling it straight out of the bottom, keeping the core vertical at all times. Multiple cores were obtained from each site to acquire adequate sample volumes for chemical analyses. In order to obtain undisturbed sediment samples, offsets for subsequent borings were approximately 2 feet from the previous location. The multiple cores were then extruded, composited, and transferred to the appropriate sample containers. All sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.13, General Equipment Decontamination (EG&G 1992).

At each sample location, one core was also obtained for sediment characterization. Because the pond sediment was highly liquefied, it was not possible to extrude and

split the cores for characterization purposes in the field as specified in Surface Water SOP SW.17, Pond and Reservoir Bottom Sediment Sampling (EG&G 1992). The polybutyrate tubes containing pond sediment were placed in a freezer in the field trailer and kept in a vertical position so the sediment layers would be undisturbed. After the cores were slightly frozen they were extruded, placed in a core box, photographed, and described.

Pond-sediment samples were containerized, preserved, handled, and shipped in accordance with the OU 7 work plan (DOE 1991) and Field Operations SOP FO.013, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992).

Based on historical data, the contaminants of concern for sediments in the East Landfill Pond are identical to those for leachate–surface water draining into the pond (VOCs, SVOCs, metals, radionuclides, and inorganic analytes). Sediments in the East Landfill Pond may have adsorbed some of these analytes and are considered contaminants of concern for pond sediments. Polychlorinated biphenyls (PCBs) have not been detected in pond samples, nor are they expected, as any surface drainage from IHSS 203 would be diverted around the East Landfill Pond. Polychlorinated biphenyls are not contaminants of concern for pond sediments.

In accordance with the OU 7 work plan (DOE 1991), sediment samples were analyzed for VOCs; SVOCs; metals (standard and additional); gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; strontium-89,90; cesium-137; total organic carbon (TOC); pH; nitrate; and nitrate/nitrite as N. Table C-10 presents the sediment samples collected and analyses requested for each location. The analytical suite for sediment samples was developed to address the majority of chemicals and compounds that were landfilled, handled, or suspected to be present at OU 7. However, to evaluate the possible presence of additional hazardous constituents resulting from undocumented disposal at OU 7, in accordance with the OU 7 work plan (DOE 1991), one sediment sample (location SED70093 near the leachate seep) was analyzed for a complete Appendix IX analytical suite. Section 4.5 presents the nature and extent of contamination in pond sediment.

C.5 Soil and Soil-Gas Investigations

The soil and soil-gas investigations included radiation field screening, soil-gas sampling, surface-soil sampling, subsurface-soil sampling, and location surveying.

All of the location numbers begin with the prefix "SS" for surface soil and are 1993 project numbers in the 7000 series for OU 7 (numbering "SS700093" to "SS7020493"). Soil-gas, surface-soil and subsurface-soil samples were collected from the same locations at IHSS 203 and are all designated as SS locations. Each surface- and subsurface-soil sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (SS for surface soil) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller). The soil-gas samples were collected for screening purposes and were not assigned unique sample numbers. Soil-gas investigations directly related to the present landfill (IHSS 114), were discussed in Section C.3.

C.5.1 Radiation Field Screening

Radiation field screening was performed at IHSS 203, at the East Landfill Pond area, and at IHSS 114 to identify areas of radionuclide contamination. Screening was accomplished in accordance with procedures in Field Operations SOP FO.16, Field Radiological Measurements (EG&G 1992). The pre-work radiation survey was performed on a 25-foot grid at IHSS 203 and at the East Landfill Pond area in November and December 1992 using a Bicron Analyst FIDLER. Where measurements above background (250 counts per minute) occurred, the survey was to be performed on a 5-foot grid to further define the area of radioactive contamination. Results of the survey were to be plotted on a map and contoured. However, there were no radiation measurements above background at OU 7. A pre-work radiation survey was performed at IHSS 114 by taking radiation measurements on a 17-point grid centered on staked CPT sampling locations. The radiation survey was performed a few locations at a time beginning in November 1992 and finishing in February 1993. The overlap between sampling locations resulted in nearly complete coverage of IHSS 114 and all surface soil sampling locations included within it.

C.5.2 Soil-Gas Sampling

The soil-gas sampling program was designed to provide Phase I screening-level data to determine the presence or absence of VOCs in shallow subsurface geologic materials at IHSS 203. Sampling locations were staked on a 25-foot grid using a compass and tape measure. A 35-point *in situ* soil-gas survey was performed at IHSS 203 in December 1992 instead of field measurement of headspace samples (Figure C-4). Soil-gas samples were collected from 35 locations on a 25-foot grid. Duplicate QC samples were collected with the real soil-gas samples following the QC sampling frequency guidelines stated in the OU 7 work plan (DOE 1991). Quality assurance also included daily single-point calibration runs and daily equipment blanks. Soil gas was analyzed using a GC located on the site in a mobile laboratory. Based on the real-time GC data, 14 locations were added to the sample grid to delineate VOCs detected in the soil gas. The additional 14 points comprise two rows of samples at the northeast portion of the sampling grid (Figure C-4).

All soil-gas sampling was performed in accordance with the OU 7 work plan (DOE 1991) and Geotechnical SOP GT.09, Soil Gas Sampling and Field Analysis (EG&G 1992). Soil-gas samples were extracted from shallow subsurface geologic materials at IHSS 203 with a Geoprobe Systems™ Model E90-01 hydraulic probing apparatus mounted on a pick-up truck. Hollow steel probes with gas sampling tips were pushed into the ground using a hydraulic ram to an average depth of 5 feet. The soil-gas samples were drawn from the sampling tip in the probe into a gas-tight syringe. The soil-gas samples were then transported to the onsite mobile laboratory and injected directly into the GC. Sample analyses were conducted using a Perkin-Elmer® 8500 GC with megabore capillary columns and sequential photoionization and electron capture detectors.

Based on historical records, the primary contaminants of concern at IHSS 203 are VOCs, SVOCs, and PCBs. Contamination of surface soils by organic compounds was not expected because these contaminants would volatilize. However, residual organic compounds may be present in shallow soils where volatilization is limited by overlying soil. The analytical suite for the soil-gas survey consisted of common gases frequently found in landfills and selected VOCs detected in leachate–groundwater. The target analytes for soil-gas samples included TCE, 1,2-DCE, 1,1,1-TCA, acetone, 2-butanone, methylene chloride, toluene, and total xylenes, and benzene. Concentrations of TCE,

1,2-DCE, 1,1,1-TCA, and methylene chloride were measured with the electron capture detector (ECD). Concentrations of acetone, 2-butanone, toluene, total xylenes, and benzene were measured with the PID. Hydrogen sulfide and methane were included as target analytes in Table 7-2 in the OU 7 work plan (DOE 1991); however, the PID specified in the work plan and used for this study does not measure these analytes. Hydrogen sulfide and methane were analyzed in soil-gas samples collected during the CPT soil-gas sampling program in IHSS 114. Because they are landfill-generated gases, these analytes are more appropriate as target analytes for IHSS 114 than for IHSS 203. Table C-11 presents a summary of soil-gas sampling and analysis. Section 4.3 presents the nature and extent of contamination in the vadose zone at IHSS 203.

C.5.3 Surface- and Subsurface-Soil Sampling

Surface-soil sampling was performed to characterize surface soil contamination at IHSS 203, around the East Landfill Pond at areas affected by spray evaporation, and downwind of spray evaporation areas. Subsurface-soil sampling was designed to characterize the vertical extent of soil contamination in these areas. Sampling locations at IHSS 203 were staked on a 25-foot grid (Figure C-4); sampling locations covering areas affected by spray evaporation around the East Landfill Pond were staked on a 50-foot grid; and sampling locations downwind of the spray evaporation areas were staked at approximately 100-foot intervals (Figure C-5). All sampling locations were surveyed in accordance with the specifications in Geotechnical SOP GT.17, Land Surveying (EG&G 1992).

Surface-soil samples were collected at 49 locations in IHSS 203 and 133 locations around the East Landfill Pond in November and December 1992. Subsurface-soil samples were collected at 18 locations in IHSS 203 and 67 locations around the East Landfill Pond in March and April 1993. Surface-soil sampling locations at IHSS 203 included 35 locations specified in the OU 7 work plan (DOE 1991) and 14 locations added during the soil-gas survey. Surface-soil samples were collected at the same grid locations as soil-gas samples and radiation screening measurements. Surface-soil sampling locations around the East Landfill Pond included 124 locations specified in the OU 7 work plan (DOE 1991) and 9 locations added to ensure complete coverage of spray evaporation areas.

Subsurface-soil sampling locations at IHSS 203 and around the East Landfill Pond were chosen using analytical results from the surface-soil and soil-gas samples at

IHSS 203, and radiation screening measurements. Subsurface-soil samples were collected systematically across the sampling grid at IHSS 203 (Figure C-4). Analyte concentrations frequently occurred above background in the spray evaporation areas north and south of the East Landfill Pond (IHSSs 167.2 and 167.3). Therefore, subsurface-soil samples were collected at all grid locations within the spray areas. Analyte concentrations also occurred above background at random locations around the East Landfill Pond. Subsurface-soil samples were collected systematically across the rest of the sampling grid (Figure C-5). For the purpose of making field decisions regarding subsurface-sampling locations, background was defined as the upper tolerance limit (UTL) calculated using analytical data from surface soils in Rock Creek obtained during the Phase III RFI/RI at OU 1 (DOE 1992).

In accordance with the OU 7 work plan (DOE 1991), surface soils were described according to Geotechnical SOP GT.01, Logging Alluvial and Bedrock Material (EG&G 1992). Surface-soil samples were collected using the grab method outlined in Geotechnical SOP GT.08 Surface Soil Sampling (EG&G 1992). Grab samples were collected at a depth of 0 to 2 inches using a stainless-steel scoop. In order to collect enough material for all analyses, four scoops were obtained from each grid location, north, south, east, and west of the location stake. The grab samples were composited in a stainless-steel bowl, split, and then placed into individual sample jars. Subsurface-soil samples were collected using the hand-auger method outlined in Geotechnical SOP GT.08, Surface Soil Sampling (EG&G 1992). Vegetation was removed from the sampling location with a decontaminated shovel. The thin layer of soil that contacted the shovel was then removed with a stainless-steel scoop. A hand auger was used to collect the sample to a depth of 10 inches. The soil was composited in a stainless-steel bowl, split, and then placed into individual sample jars. All sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992).

Soil samples were containerized, preserved, handled, and shipped in accordance with the OU 7 work plan (DOE 1991) and Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992).

The analytical suites for each sampling area were developed according to the types of contaminants suspected to be present. Based on historical records, the primary contaminants of concern at IHSS 203 are VOCs, SVOCs, and PCBs. Because of

limited information regarding the types of wastes stored at IHSS 203, radiochemical analyses were performed to determine the presence or absence of radionuclides. Facilitated transport of PCBs dissolved in organic liquids (cosolvation) is not expected because spills were low in volume, intermittent, and subject to rapid volatilization (DOE 1991). Contamination of surface soils by organic compounds is not expected because these contaminants would volatilize. However, residual organic compounds may be present in shallow soils where volatilization is limited by overlying soil. Metals and radionuclides are expected to be adsorbed to the clayey materials in shallow soils.

In accordance with the OU 7 work plan (DOE 1991), soil samples collected at IHSS 203 were analyzed for PCBs; metals; gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; cesium-137; strontium-89,90; tritium; TOC; and nitrate as N. The analytical suite for soil samples was developed to address the majority of chemicals present at OU 7. However, to evaluate the possible presence of additional hazardous constituents resulting from undocumented disposal at OU 7, one subsurface-soil sample from IHSS 203 was analyzed for a complete Appendix IX analyte suite. Table C-12 presents the surface- and subsurface-soil samples collected and analyses requested for each location. Section 4.3 presents the nature and extent of contamination in soils at IHSS 203.

The primary contaminants of concern at the East Landfill Pond spray areas are metals and radionuclides. VOCs and SVOCs would not be present, as these compounds would volatilize during spray evaporation. Polychlorinated biphenyls have not been detected in pond samples, nor are they expected, as any surface drainage from IHSS 203 is diverted around the East Landfill Pond. Soil samples collected around the East Landfill Pond were analyzed for metals; gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; cesium-137; strontium-89,90; tritium; TOC; and nitrate as N. Table C-13 presents the surface and subsurface samples collected and analyses requested for each location. Section 4.3 describes the nature and extent of contamination in soils around the East Landfill Pond.

C.5.4 Additional Surface-Soil Sampling

Although not included in the OU 7 work plan (DOE 1991), surface-soil samples were collected at IHSS 114 and at the former asbestos disposal pits in accordance with the OU 7 work plan addendum (DOE 1993). To define the sampling locations, a uniform

grid of 30 rectangular cells was oriented to provide complete coverage of the landfill. Samples were collected from a 100-foot by 50-foot target area (polygon) located at each of the 20 nodes defined by the grid. One sample was also collected from a 100-foot by 50-foot polygon at each of the former asbestos disposal pits (Figure C-6). The northwestern corner of each sample polygon was surveyed and staked prior to sampling using coordinates generated from the map in the OU 7 work plan addendum (DOE 1993). The sampling locations were supposed to be permanently marked with a steel post and identification sign so they could be resampled, however, the stakes interfered with normal waste operations. DCN number 93.04 for Geotechnical SOP GT.08 (EG&G 1992), dated April 13, 1993, addressed this issue by allowing sampling locations within the present landfill to be surveyed but not permanently marked.

Twenty-two samples were collected to characterize potential contamination in surface soil within and adjacent to IHSS 114 and determine the extent of asbestos contamination in surface soils. Duplicate and equipment rinse QC samples were collected with the real soil samples following the QC sampling frequency guidelines in the OU 7 work plan addendum (DOE 1993).

Discrete samples collected from the corners and center of the polygon were composited to make one sample. The Rocky Flats method of soil sampling described in detail in Geotechnical SOP GT.08, Surface Soil Sampling (EG&G 1992), was used to collect "discrete" samples, although the method actually produces a local area composite. The Rocky Flats method consists of sampling two 1-square-meter areas or plots placed 1 meter apart, using a 10-centimeter (cm) by 10-cm by 5-cm soil sampling jig and a scoop. Each polygon area sample was composited in a stainless-steel bowl, split, and then placed into individual sample containers. All sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992). Samples were containerized, preserved, handled, and shipped in accordance with the OU 7 work plan (DOE 1991) and Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992).

Based on the disposal history of the landfill, the contaminants of concern include SVOCs, metals, inorganics, radionuclides, and asbestos. VOCs are not included because they are not likely to be present in surface soil. In accordance with the OU 7 work plan addendum (DOE 1993) the surface-soil samples collected at IHSS 114 were

analyzed for SVOCs; metals; gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; cesium-137; strontium-89,90; tritium; alkalinity; pH; TOC; asbestos; bulk density; and grain size. The analytical suite for surface soils at IHSS 114 is consistent with the analytical suite for soils at IHSS 203 and the spray evaporation areas around the East Landfill Pond. Grain size and bulk density were added to enable physical characterization of the soil. Table C-14 presents the surface samples collected and analyses requested for each location. Section 4.3 presents the nature and extent of contamination in soils at IHSS 114.

C.6 Geological Investigations

Geological investigations involved drilling boreholes, sampling subsurface geologic material in boreholes, and logging drill core to describe the geologic material, determine the depth to water, and characterize the chemistry of subsurface geologic material upgradient, within, and downgradient of IHSS 114. Physical data from the boreholes and CPT profiles (discussed in Section C.3.1) were used to design the monitoring wells subsequently installed at OU 7.

C.6.1 Borehole Drilling

A total of 11 boreholes was drilled during the Phase I field investigation at OU 7 (Figure C-7). Drilling locations were chosen to meet the guidelines presented in the OU 7 work plan (DOE 1991). All of the locations were assigned 1993 project numbers in the 700 series for OU 7, numbering from "70093" to "72493." Table C-15 provides the borehole drilling details. Drilling locations were staked in November 1992 and were cleared in accordance with Geotechnical SOP GT.10, Borehole Clearing (EG&G 1992). Radiation field screening was performed at each drilling location on a 17-point grid using a Bicron Analyst FIDLER in accordance with procedures in Field Operations SOP FO.16, Field Radiological Measurements (EG&G 1992). Drilling began in December 1992 and was completed in March 1993.

Locations were drilled using hollow-stem augers equipped for continuous core sampling in accordance with Geotechnical SOP GT.02, Drilling and Sampling Using Hollow Stem Auger Techniques (EG&G 1992), using Mobil® B-57 drill rigs. Continuous core samples were collected from all locations using a 3-inch inside diameter, 2-foot sample barrel. While augering, the sampler was mounted to a latch

box in the lead auger, and a "moss system" was used to retrieve the core after each run while leaving the augers in place.

Drilling at borehole locations was accomplished using 6 5/8-inch outside diameter hollow-stem augers equipped with continuous samplers and a 7-inch outside diameter bit. Borehole locations were drilled into bedrock. Six-inch polyvinyl chloride (PVC) surface casing was then installed to isolate surficial materials from bedrock, in accordance with Geotechnical SOP GT.03, Isolating Bedrock from Alluvium with Grouted Surface Casing (EG&G 1992) and DCN Number 93.01 for Geotechnical SOP GT.03, dated February 10, 1993, which allowed surface casing to be set 6 inches to 2 feet into bedrock instead of 3 to 5 feet. This DCN also allowed 8-inch PVC casing to be used when isolating bedrock from landfill material in boreholes that are for the purpose of sampling weathered bedrock. Drilling and sampling then continued to a depth approximately 2 to 4 feet into unweathered bedrock, after which these boreholes (71393, 71593, 71793, 71993 and 72193) were abandoned in accordance with guidelines in Geotechnical SOP GT.05, Plugging and Abandonment of Boreholes (EG&G 1992). At downgradient boreholes (70993 and 71093), surface casing was not installed; these holes were drilled into unweathered bedrock and then immediately abandoned according to the same guidelines.

At the three bedrock well locations (70293, 70593, and 70893), hollow-stem auger drilling was used to reach bedrock, after which surface casing was installed in accordance with SOP GT.03, Isolating Bedrock from Alluvium with Grouted Surface Casing (EG&G 1992). Drilling then continued using hollow-stem augers until sample collection activities were completed or poor core recovery became a problem. At that point, rotary coring methods were employed in accordance with Geotechnical SOP GT.04, Rotary Drilling and Rock Coring (EG&G 1992). Fresh, potable Rocky Flats water was used as the drilling medium. Continuous core was obtained using 1¾-inch inside diameter, 5-foot core tubes, which were placed within and retrieved from the lead rod with an overshot system. This method of drilling proceeded until the first bedrock sandstone unit was encountered, at which time a screened interval was selected and a monitoring well was installed.

Drill cuttings from all locations were containerized in 30-gallon drums in accordance with Field Operations SOP FO.08, Handling of Drilling Fluids and Cuttings (EG&G 1992). Characterization of the drums will be based on analytical results of the borehole

samples corresponding to the drill cutting intervals in the drums. Drums from drilling locations in IHSS 114 were moved to a 90-day RCRA storage area at Rocky Flats. Drums from all other drilling locations remain where they were filled.

All downhole drilling equipment was decontaminated at the main decontamination facility before being used at each new drilling location. Drill rigs were completely decontaminated before entering and upon departing IHSS 114 and when the rig became dirty enough to require decontamination, in accordance with procedures outlined in Field Operations SOP FO.04, Heavy Equipment Decontamination (EG&G 1992).

All locations not completed as monitoring wells were abandoned in accordance with Geotechnical SOP GT.05, Plugging and Abandonment of Boreholes (EG&G 1992). Abandoned locations were marked with stainless-steel identification tags secured to the concrete at the surface. Identification tags include the designated 700-series location number and date of abandonment.

C.6.2 Borehole Sampling

Borehole samples were collected to determine site-specific background concentrations of analytes in subsurface geologic materials and characterize leachate-contaminated materials beneath and downgradient of the landfill. Nine boreholes were sampled (Figure C-7); one upgradient of the landfill (70593), two downgradient of the landfill (70993 and 71093), and six within the landfill (71193, 71393, 71593, 71793, 71993, and 72193). The work plan called for sampling at all three upgradient boreholes (70293, 70593, and 70893). However, the plan was revised to require sampling at only one of the three upgradient boreholes based on guidance in work plan modification RLB-014-93 (EG&G 1993). Samples were collected at 2-foot increments in alluvium and 4-foot increments in bedrock, where core recovery allowed. Location 70493 was sampled at intervals where no recovery prevented sampling at borehole 70593. The samples from these two locations provided a complete upgradient sampling suite for site-specific background characterization.

Field duplicates and equipment rinse QC samples were collected with the real borehole soil samples following QC sampling frequency guidelines in the OU 7 work plan (DOE 1991). Because core recovery in alluvial and landfill materials was generally poor, duplicate QC samples were typically collected from bedrock material. Enough duplicate samples were collected at each borehole to comprise 10 percent of the total

number of samples from that borehole. Table C-16 presents the borehole samples collected and analyses requested for each sampling location. Each borehole sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (BH for borehole) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller).

Continuous borehole samples were collected in accordance with the OU 7 work plan (DOE 1991) and Geotechnical SOP GT.02, Drilling and Sampling Using Hollow Stem Auger Techniques (EG&G 1992). Two types of samples were collected; 3-inch-long discrete samples collected in stainless-steel sleeves for VOC analyses and 2- or 4-foot composite samples collected from 2-foot core barrels for all other analyses.

Immediately after the core barrel was opened, the core was scanned for VOCs and radioactivity and measured, the stainless-steel sleeve was removed from the barrel, and its exposed ends were covered with sheets of Teflon® and capped. The capped sample was then wrapped with black electrical tape, labeled, recorded, bagged, and placed in a cooler chilled to 4°C with blue ice. The core was peeled with a stainless-steel putty knife to remove any surficial material smeared onto the outside of the core. Then, any trash detected while collecting these samples was removed. Trash that was finely ground or shredded and was too fine to remove in the field was included in the samples. Core material was then placed in a clean stainless-steel bowl and homogenized. Typically, most or all of the core in each barrel was removed for the composite sample; if any remained, it was preserved in a core box for logging. If only small amounts of core remained to be boxed, and this material had been homogenized, it was placed in an 8-ounce jar and the jar was placed in the box, signifying that the core was not in its original condition. All sampling equipment was decontaminated in the field between samples in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992).

Borehole samples were containerized, preserved, handled, and shipped in accordance with Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992).

In accordance with the OU 7 work plan (DOE 1991), borehole samples were analyzed for VOCs; SVOCs; PCBs; metals; gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; cesium-137; strontium-89; strontium-90; tritium; pH; TOC; nitrate/nitrite; nitrate as N; and sulfide. When the

volume of material was limited because of poor core recovery, samples were collected by priority approximately in the order listed above. The analytical suite for borehole samples was developed to address the majority of chemicals and compounds suspected to be present at OU 7. However, to evaluate the possible presence of additional hazardous constituents resulting from undocumented disposal at OU 7, one sample from the buried sediments of the former West Landfill Pond encountered in borehole 72193 was analyzed for a complete Appendix IX analytical suite. Section 4.4 presents the nature and extent of contamination in subsurface geologic materials. Appendix N presents the analytical data.

C.6.3 Core Logging

Continuous core samples were collected from all 23 Phase I borehole drilling and monitoring well installation locations (Figures C-7 and C-8). Preliminary core descriptions were completed in the field by the rig geologist, and all core not used for chemical sampling was boxed at the site. Wooden blocks were labeled and placed in the core boxes to mark the beginning and ending depth for each box, the beginning of each drilling interval, and to represent sections of no recovery or sections used for chemical samples. After being returned to the field trailer, these cores were described in detail in accordance with Geotechnical SOP GT.01, Logging Alluvial and Bedrock Material (EG&G 1992). Landfill trash descriptions and characterizations were included in the core logging routine in accordance with DCN Number 93.01 for Geotechnical SOP GT.01, dated January 15, 1993. Alluvium, colluvium, artificial fill, and soil were classified and described according to the Unified Soil Classification System. Weathered and unweathered bedrock materials were classified and described using the classification scheme in Compton (1962), which has been modified for use at Rocky Flats and is incorporated in the SOPs.

C.7 Groundwater Investigations

Groundwater investigations involved installation, development, and sampling of groundwater monitoring wells, monitoring for immiscible layers, measurement of static water levels, and performance of drawdown recovery tests. These activities, in conjunction with the cone penetration testing and *in situ* leachate–groundwater sample collection (Sections C.3.1 and C.3.3), were used to estimate hydraulic conductivities of alluvial and bedrock material, characterize the flow regime within and around the landfill, evaluate the effectiveness of the groundwater intercept system and slurry

walls, evaluate the surface water–groundwater interactions at OU 7, determine site-specific background concentrations of analytes in groundwater, characterize groundwater quality within the landfill, and statistically compare landfill leachate–groundwater quality to background groundwater quality.

C.7.1 Monitoring Well Installation

A total of 16 monitoring wells was installed during the OU 7 Phase I field investigation (Figure C-8). Three of the 16 wells were screened in alluvium, 2 in weathered bedrock, 3 in unweathered bedrock sandstone, and 8 in landfill material. Table C-15 provides the drilling and completion details for monitoring wells. Well construction diagrams are presented in Appendix F.

The alluvial–weathered bedrock–unweathered bedrock wells were installed in three clusters upgradient of the landfill to the northwest, west, and southwest (70093/70193/70293, 70393/70493/70593, and 70693/70893). Because no weathered bedrock was encountered in borehole–well 70893, a weathered bedrock well (70793) was not installed in the well cluster southwest of the landfill which has only two wells. It was anticipated that the unweathered bedrock wells would be screened in the same sandstone unit screened in well 0986. Wells 70293 and 70893 were screened in a siltstone unit that occurs at a depth of approximately 50 to 65 feet, which is similar to the depth of the sandstone unit in well 0986. No sandstone–siltstone unit was encountered at this depth in well 70593, so a screen was set in a deeper siltstone unit at a depth of 121 to 136 feet. In all cases, the sandstone/siltstone unit was isolated from the overlying alluvium with grouted surface casing.

Two pairs of wells located along the north and south sides of the west end of the landfill were installed with one well inside and one well outside the groundwater intercept system (71193/71493 and 71693/71893). Another two well pairs were completed within the landfill, with one pair near the center of the landfill (72093/72393) and the other near east the face of the landfill (72293/72493). One well in each pair was screened at the base of the landfilled material and the other was screened at the top of the saturated zone. As specified in the OU 7 work plan (DOE 1991), the wells were installed as pairs rather than a single well because the saturated landfill material was more then 10 feet thick. In both cases, the well screened in the upper portion of the landfill material was installed 5 feet upgradient of the well screened in the lower portion of the landfill material to prevent possible cross

contamination. Well pair 72093/72393 was installed to determine the thickness of waste material along the centerline of the landfill.

Following borehole drilling (Section C.6.1), wells were installed in accordance with the OU 7 work plan (DOE 1991) and Geotechnical SOP GT.06 Monitoring Well and Piezometer Installation (EG&G 1992). Figure C-9 illustrates the construction guidelines for monitoring wells. After the borehole–well was drilled to total depth, water and fine-grained sediment were bailed using a sand bailer until the water was almost clear. The well assembly, comprised of a 2-foot sump, 2-inch diameter slotted screen, and 2-inch diameter blank casing, was then placed in the hole such that the bottom of the screen was at the contact between alluvium and weathered bedrock for alluvial wells. In open-hole installation, stainless-steel centralizers were typically placed above and below the well screen to ensure that a 2-inch annulus was maintained. A silicon sand filter pack was slowly added through a tremie pipe to at least 6 inches above the top of the screen. A minimum 2-foot bentonite pellet seal was installed immediately above the filter pack and hydrated. Bentonite grout was placed from the top of the bentonite seal to the ground surface. Excessive grout loss occurred at well 72093 in the landfill making it difficult to grout to the surface. DCN Number 93.06 for Geotechnical SOP GT.06, Monitoring Well and Piezometer Installation (EG&G 1992), dated February 10, 1993, allowed bentonite chips or pellets to be added to the annular space to seal off the area losing grout. Following emplacement of the bentonite, it was possible to complete grouting to the surface.

After the bentonite grout was allowed to settle for at least 24 hours, a 5-foot-long, 6-inch diameter protective steel casing with a locking steel cap was installed over the monitoring well riser. Stickup on the monitoring well riser was generally a minimum of 2 feet except at well 70693, which had a stickup of 1.2 feet. The protective casing was embedded 2 to 3 feet below ground surface in concrete or grout. The annulus between the well riser and the protective casing was filled with concrete and an external concrete pad approximately 3 feet square was built around the protective casing at the ground surface. The well designation was inscribed in the concrete before it hardened and was also welded on the protective casing. Four protective steel posts were installed around wells in high-traffic areas (70693/70893, 72093/72393, 72293/72493). When cold temperatures prevented curing of the concrete pad, surface features at many of the wells were completed later than the SOP-specified time frame of 24 to 72 hours following well completion. DCN Number 93.05 for Geotechnical

SOP GT.06, Monitoring Well and Piezometer Installation (EG&G 1992), dated February 10, 1993, allowed for these delays.

Weathered bedrock wells were installed using the same techniques and equipment as alluvial wells except that drilling continued beyond the alluvium–bedrock contact to just below the weathered–unweathered bedrock contact. The well was installed such that the base of the screen was at the weathered–unweathered bedrock contact and the bentonite seal was immediately below the alluvium–bedrock contact, with the top of the seal just above this contact, to isolate the screen and filter pack from alluvial groundwater.

Unweathered bedrock wells were constructed in the same fashion as alluvial and weathered bedrock wells, except that the bedrock was isolated from alluvial materials with grouted 8-inch steel surface casing installed before borehole advancement continued past unweathered bedrock in accordance with Geotechnical SOP GT.03, Isolating Bedrock from Alluvium with Grouted Surface Casing (EG&G 1992). Stainless-steel centralizers were placed on the casing 3 to 5 feet below ground surface and 3 to 5 feet from the base of the casing to ensure a minimum 2-inch annular space. After the casing was in place, the cement-grout mixture was forced out through pre-drilled ports at the base of the casing and into the annulus by pushing a plug down through the casing. The annulus was topped off with cement grout to the surface when necessary, and the cement grout was allowed to harden for a minimum of 24 hours.

Drilling through and below the surface casing at bedrock monitoring well locations 70593 was accomplished using 6 5/8-inch outside diameter hollow-stem augers equipped with continuous samplers until unweathered bedrock was reached and sample collection activities were completed. Drilling continued in the same manner at bedrock monitoring well location 70293 until poor core recovery occurred. The rig was then converted for rotary core drilling, and drilling continued in accordance with Geotechnical SOP GT.04, Rotary Drilling and Rock Coring (EG&G 1992) At bedrock monitoring well location 70893, drilling through and below surface casing was accomplished using only rotary core drilling techniques. After reaching total depth, unweathered bedrock wells were generally installed in an open borehole. Because of repeated caving, well 70293 was installed within casing rather than within augers or an open hole. The caving problem was alleviated when the well was set within casing because the smooth-walled casing could be withdrawn without knocking materials

loose along the sides of the hole. DCN Number 93.04 for Geotechnical SOP GT.06, Monitoring Well and Piezometer Installation (EG&G 1992), dated February 10, 1993, was written to address this method of installation.

C.7.2 Water-Level Measurement

Static depth-to-water measurements were obtained from December 1992 to March 1993 to characterize the potentiometric surface and evaluate the effectiveness of the groundwater intercept system. The monitoring well network consists of 37 pre-existing wells and 16 newly installed wells in the vicinity of the landfill (Figure C-10). Two of the newly installed wells (71693 and 72493) were dry during this time period.

Measurements were taken in accordance with Groundwater SOP GW.01, Water Level Measurements in Wells and Piezometers (EG&G 1992). The well cap was removed and the well head was screened for vapors with a PID and a combustible gas indicator. If VOC or methane gas vapors were detected, the well was allowed to ventilate until the vapor concentration levels fell to non-detectable levels with the field instruments. When it was determined safe to proceed, a Solinst® Model 101 water-level meter probe was lowered down the well. The water level was measured from the surveyed measuring point on the top of the PVC or stainless-steel casing and was recorded to the nearest 0.01 foot. Three readings were taken and recorded and an average of the three consecutive readings was used to determine the water level. The depth to the bottom of the well was measured in the same manner as the water level. The water-level meter was decontaminated before and after use in each well in accordance with Field Operations SOP FO.03, General Equipment and Decontamination (EG&G 1992). Static water levels were used to construct potentiometric maps included in Section 2.5.

C.7.3 Monitoring for Immiscible Layers

Groundwater in 14 of the 16 newly installed monitoring wells was checked in March 1993 to determine the presence or absence of dense or light immiscible layers of nonaqueous phase liquids. The remaining two wells were dry and could not be checked. Procedures followed those specified in Groundwater SOP GW.01, Water Level Measurements in Wells and Piezometers (EG&G 1992). The well cap was removed and the well head was screened with a PID and a combustible gas indicator. If VOC or methane gas vapors were detected, the well was allowed to ventilate until the vapor concentration levels fell to non-detectable levels with the field instruments.

When it was determined safe to proceed, a Solinst® Model 121 interface meter probe was lowered down the well. After checking for light non-aqueous phase liquids at the top of the water column, the probe was lowered to the bottom of the well to determine the presence or absence of dense non-aqueous phase liquids. The interface meter was decontaminated before and after each use in each well in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992). No immiscible layers were detected during the Phase I field investigation.

C.7.4 Well Development

Monitoring wells were developed to remove drilling fluids and particulates from the groundwater and provide physically and chemically representative groundwater samples. Newly installed monitoring wells were developed prior to groundwater sampling. Two wells (71693 and 72493) were dry, and therefore, were not developed during the Phase I field investigation. The wells were later developed as part of the site groundwater sampling program.

Well development was performed in accordance with SOP GW.02, Well Development (EG&G 1992). Well development equipment was decontaminated before and after each use in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992), and stored in clean plastic bags between use. The water level and total depth were measured at each well to determine the volume of water in the well casing. The minimum volume of water to be purged from a well was calculated according to the guidelines in Groundwater SOP GW.02, Well Development (EG&G 1992). Generally, the purge amount was a minimum of five times the initial well casing volume of water. In some wells the total volume purged included water lost during drilling. In the landfill large void spaces commonly occur because of the uneven distribution of waste materials. Water lost during drilling was considered unrecoverable in these areas. DCN Number 93.01 for Groundwater SOP GW.02, Well Development (EG&G 1992), dated April 13, 1993, limited the volume of purge water to five well casing volumes for wells (70893 and 72393) where these conditions existed.

During development, water was slowly evacuated from the wells using a Teflon® bailer and/or an inertial pump. The purge water was emptied in a graduated 5-gallon bucket to measure the amount of water removed and then transferred to a holding tank for proper disposal. The purge and decontamination water were handled in accordance

with Field Operations SOP FO.07, Handling of Decontamination and Wash Water (EG&G 1992). Field parameters including pH, temperature, specific conductance, and turbidity were measured following the procedures outlined in Groundwater SOP GW.05, Field Measurement of Groundwater Field Parameters (EG&G 1992). Parameters were measured at regular intervals at least once for each well casing volume purged. Estimated recharge rates were measured for low-yielding wells in accordance with Groundwater SOP GW.01, Water Level Measurements in Wells and Piezometers (EG&G 1992).

A well was considered fully developed when the following conditions were met: (1) a minimum of five casing volumes of water was removed; (2) field parameter measurements of pH, temperature, specific conductance, and turbidity had stabilized over three consecutive readings; and (3) the purged water became free of suspended sediment. Wells that dewatered during the development activities were revisited a number of times over several days in order to remove the required volume of water. In cases where the wells went dry, temperature instability occurred. This was a result of ambient air and purge equipment temperature differences. DCN Number 93.02 for Groundwater SOP GW.02, Well Development (EG&G 1992), dated May 13, 1993, was written to waive the requirement for temperature stabilization under such conditions. These conditions occurred at monitoring wells 70293, 70593, 70893, 71193, and 72293.

C.7.5 Drawdown Recovery Tests

Drawdown recovery tests (aquifer permeability tests) were performed on 14 of the 16 newly installed OU 7 wells in March and April 1993 to estimate the hydraulic conductivity of saturated geologic materials including the Rocky Flats Alluvium, weathered Arapahoe and Laramie Formation, the uppermost sandstone unit in unweathered Arapahoe and Laramie Formation, and the artificial fill. Two of the 16 wells (71693 and 72493) were not tested because they were dry. Drawdown recovery tests were performed after wells were developed, the first month of groundwater sampling was completed, and the static water level had apparently stabilized. Table C-4 lists the monitoring wells in which drawdown recovery tests were performed. Figure C-8 shows their locations.

The drawdown recovery test method, which involves lowering a bailer into a well and withdrawing a volume of water from the well to lower the water level by approximately

2 to 6 feet, was used to evaluate hydraulic conductivity. This method was considered more appropriate than the slug injection test method, which involves lowering a "slug" into the water to raise the water level in the well. The slug injection test method was initially attempted, but was rejected because of an insignificant rise in the water level after the "slug" was lowered down the well.

All 14 drawdown recovery tests conducted during the Phase I field investigation were performed in accordance with Groundwater SOP GW.04, Slug Tests (EG&G 1992). After removing the well cap and monitoring the well for health and safety purposes, the static water level at the well was measured and verified to the nearest 0.01 foot from the measuring point using a Solinst® water-level meter. The total depth of the well was measured and verified using a weighted tape measure. Water level and total depth measurements were recorded and compared to previous measurements to confirm water-level stabilization. When it was determined that the water level had stabilized, the test setup was initiated.

A Hermit® SE 1000 data logger was coupled to a transducer with a sensitivity of 10 pounds per square inch and capable of measuring hydraulic head to an accuracy of approximately three one-thousandths of a foot. The data logger was programmed to record change in hydraulic head (in feet) above the transducer at a logarithmic rate. All transducer specifications provided by the manufacturer, including serial number, linearity, scale, and offset, were programmed into the data logger prior to the initiation of each test. The transducer was lowered into the well to a depth at which it would not be disturbed by a bailer and the transducer cable was secured to the well casing with tape to maintain the appropriate depth of the probe. To ensure that the transducer and logger were working and reading properly, the transducer cable was raised and lowered in the well while the change in hydraulic head was observed on the data logger visual read out screen. After the visual check was completed, the water level was allowed to stabilize, and the test was referenced to zero.

After the test was set up and instruments were checked for proper functioning, a 3-foot-long or 6-foot-long (depending on the length of the water column) Teflon® bailer was lowered down the well. Water was purged from the well quickly, to minimize disturbance to the transducer, until an appropriate drawdown (approximately 2 to 6 feet) was achieved. The test was started immediately following the removal of the last bailer of water from the well. The water purged from the well was containerized and

disposed in accordance with Field Operations SOP FO.05, Handling of Purge and Development Water (EG&G 1992). Purge rates, volumes of water removed, test-start times, and initial drawdowns were recorded.

The duration of the test was dependent on the drawdown recovery rate (the rate at which the drawdown approaches zero). The test was considered complete when the water level recovered to 90 percent of the drawdown depth. The drawdown and percent recovery were checked by scanning the measurements recorded in the data logger. After water levels had recovered, the test was terminated. Before and after each test, all equipment that came into contact with groundwater was decontaminated following procedures in Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992).

After a data logger had reached test storage capacity (10 tests), the data collected were downloaded into a computer. Two data files were downloaded from the data logger for each test. One file, identified by the extension ".DAT," includes programmed information for the test and transducer as well as the time versus drawdown data. The second file, identified by the extension ".ASC," includes only time versus drawdown data and is in an ASCII, two-column format. All test files were named according to well identification number. For example, the files for the test performed at well 70093 were labeled as 70093.DAT and 70093.ASC. The ".ASC" files were imported into a software program (AQTESOLV 1.1) (Geraghty and Miller, Inc. 1991), which computed the estimated hydraulic properties using the appropriate analytical solutions. Section 2.5.2 discusses analytical solution methods, data analysis, and drawdown recovery test results.

C.7.6 Groundwater Sampling

The groundwatering monitoring well network at the present landfill consists of 53 monitoring wells (Figure C-10); 37 wells installed prior to the OU 7 Phase I investigation and 16 wells installed during the investigation. Fifteen of the 16 new wells were sampled monthly for four months beginning in March 1993 and ending in June 1993. One well (72493) was dry. Slow recharge rates at 8 wells (70493, 70593, 70893, 71193, 71493, 71693, 72093, and 72293) resulted in collection of partial groundwater sample suites. Full groundwater sample suites were collected from the other 7 wells. The 37 pre-existing wells were sampled during the fourth quarter of 1992 and first quarter of 1993. Samples collected from upgradient monitoring wells

were used to determine site-specific background concentrations of analytes. Samples collected from monitoring wells within the landfill were used to characterize groundwater quality and evaluate the effectiveness of the groundwater intercept system by comparing analytical data from well pairs that straddle the system.

In addition to real groundwater samples, duplicate, equipment rinse, and trip blank QC samples were collected following QC sampling frequency guidelines in the OU 7 work plan (DOE 1991). Matrix spike (MS), matrix spike duplicate (MSD), and laboratory replicate QC samples were collected in accordance with Groundwater SOP GW.06, Groundwater Sampling (EG&G 1992). Each groundwater sample was assigned a unique sample number consisting of a two-letter prefix identifying the sample type (GW for groundwater) followed by a five-digit number and ending in a two-letter suffix identifying the subcontractor (ST for Stoller or WC for Woodward-Clyde). For matrix spikes and matrix spike duplicates, the suffix MS or MSD was added after the subcontractor suffix.

Groundwater samples were collected in accordance with the OU 7 work plan (DOE 1991) and Groundwater SOPs GW.06, Groundwater Sampling, and GW.01, Water Level Measurements in Wells and Piezometers (EG&G 1992). Water level and total depth measurements were taken to determine the volume of water in the well casing. The data were subsequently used to calculate the casing and purge volumes. Standing water was purged from the well with a Teflon® bailer. A minimum of three well casing volumes was purged to guarantee that the sample was representative of the groundwater in the formation.

Radiation screen samples were collected from the purge water. Field parameters including conductivity, pH, temperature, dissolved oxygen, and turbidity were measured from an aliquot of the first bailer of water in accordance with Groundwater SOP GW.05, Field Measurement of Groundwater Field Parameters (EG&G 1992). Conductivity, pH, and temperature were subsequently measured for every half-casing volume of water removed from the well. Turbidity and dissolved oxygen were measured a second time during well purging; the chosen sample for the second measurement was determined at the discretion of the field crew. If the well dewatered while purging, a final set of conductivity, pH, temperature, turbidity, and alkalinity parameters was measured prior to collecting groundwater samples. A well was considered dewatered when the water level required longer than 30 minutes to recover

to at least 90 percent of the static water level. Well purging was considered complete when one of the following conditions was met: (1) three casing volumes had been purged and the field parameter measurements had stabilized (measurements were within 10 percent of each other) or (2) the well dewatered. The purge and decontamination water were handled in accordance with Field Operations SOP F0.07, Handling of Decontamination and Wash Water (EG&G 1992).

After completion of well purging, groundwater samples were collected using a Teflon®bailer. VOC samples were collected from the first bailer of water. The bailer was equipped with a bottom-decanting control valve to transfer the sample to the appropriate container. Care was taken to prevent aeration of the sample. The remaining unfiltered samples were transferred directly from the bailer to the appropriate containers using a bottom-emptying device. Samples for dissolved analyses were transferred to a stainless-steel bucket and filtered using a peristaltic pump with a disposable 0.45-micron filter. The disposable filter was attached to the decontaminated sample delivery line so that the filtered samples could be transferred directly to the appropriate containers. All sampling equipment was decontaminated between locations in accordance with Field Operations SOP FO.03, General Equipment Decontamination (EG&G 1992).

Groundwater samples were containerized, preserved, handled, and shipped in accordance with the work plan (DOE 1991) and Field Operations SOP FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples (EG&G 1992). All samples were labeled, recorded, bagged, and placed in a cooler immediately after collection. The pH of preserved samples was checked before securing coolers.

Based on previous investigations of groundwater quality, IHSS 114 may contribute VOCs, SVOCs, metals, inorganics, and radionuclides to groundwater. Polychlorinated biphenyls are not expected in OU 7 groundwater because of the very low solubility of these compounds in water. In accordance with the OU 7 work plan (DOE 1991), groundwater samples were analyzed for VOCs; SVOCs; water-quality parameters (chloride, fluoride, sulfate, silicon, carbonate, bicarbonate, TDS, TSS) sulfide; nitrate/nitrite; dissolved and total metals; dissolved gross alpha; dissolved gross beta; dissolved uranium-233,234; dissolved uranium-235; dissolved uranium-238; total plutonium-239,240; total americium-241; dissolved cesium-137; dissolved strontium-

89,90; dissolved plutonium-239,240; dissolved americium-241; tritium; and cyanide. Table C-17 presents the groundwater samples collected and analyses requested for each of the four sampling events. Samples were collected by priority in the appropriate order listed above. The analytical suite for groundwater samples was developed to address the majority of chemicals and compounds that were landfilled, handled, or suspected to be present at OU 7. However, to evaluate the possible presence of additional hazardous constituents resulting from undocumented disposal at OU 7, one groundwater sample from well 72093 was analyzed for a complete Appendix IX analytical suite. Section 4.7 discusses the nature and extent of contamination in groundwater at OU 7.

C.8 Ecological Investigations

Ecological investigations included aquatic toxicity testing and field surveys, tissue sampling, and tissue analysis of vegetation, small mammals, benthic macroinvetebrates, and fishes. Aquatic toxicity tests were performed to provide preliminary screening data for OU 7 surface waters. Field surveys were performed to characterize current biological site conditions in terms of species composition, habitat characteristics, and community organization. Tissue sampling and analysis were conducted to assess the adverse effects of contaminants on receptor species.

Proposed field activities for the environmental evaluation also included field surveys, tissue sampling, and tissue analysis of arthropods; field surveys of large mammals, birds, reptiles, and amphibians; and periphyton and plankton sampling. These activities were not performed because of the limited habitat in OU 7.

Table C-18 presents biota samples collected and analyses requested for all sampling locations. Each sample was assigned a unique sample number beginning with a two-letter prefix identifying the sample type (BI for biota) followed by a five-digit number and ending with a two-letter suffix identifying the subcontractor (ST for Stoller). Section 2.7 discusses the ecological site characterization for OU 7.

C.8.1 Vegetation Sampling

The purpose of vegetation sampling was to identify species composition, richness dominance, and cover, and to provide tissue for analyses. The data provided information for the description of site vegetation characteristics and identification of

protected vegetation species or habitats for the ecological site characterization (Section 2.7).

Two of 10 50-meter transects proposed in the OU 7 work plan (DOE 1991) were sampled within the OU 7 boundary. The other eight transects were canceled because of the sparsity of vegetation in OU 7. Samples were collected using the techniques described in Ecology SOP EE.10, Sampling of Vegetation (EG&G 1992). Transect BI700092, sampled in October 1992, is located near IHSS 203, 5 meters west of the road. Transect BI600392, which is part of the Phase I RFI/RI for OU 6, was also sampled in October 1992. It is located in IHSS 167.3, 35 meters south of the East Landfill Pond. Figure C-11 shows the sampling locations. Six 30-gram tissue samples were collected from each transect, as specified in the OU 7 work plan (DOE 1991). The tissue samples included three forb and three grass samples. These samples were analyzed for metals (aluminum, arsenic, beryllium, chromium, copper, lead, mercury, nickel, selenium, and zinc) and radionuclides (gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; strontium-89,90; and cesium-137).

C.8.2 Small Mammal Surveying and Sampling

Small mammal populations were surveyed to determine habitat use and relative abundance. Individuals were collected for tissue analysis along trap lines collocated with vegetation transects at BI700092 and BI600392. Figure C-11 shows these sampling locations. The data were used to determine food-web relationships.

Two trap lines were set up for minimum of four trap nights in November 1992, and small mammals were collected using the live trapping techniques described in Ecology SOP EE.06, Sampling of Small Mammals (EG&G 1992). Three 30-gram tissue samples were collected from each location as specified in the OU 7 work plan (DOE 1991). The samples were analyzed for metals (aluminum, arsenic, beryllium, chromium, copper, lead, mercury, nickel, selenium, and zinc) and radionuclides (gross alpha; gross beta; plutonium-239,240; americium-241; uranium-233,234; uranium-235; uranium-238; strontium-89,90; and cesium-137).

C.8.3 Benthic Macroinvertebrate Sampling

Benthic macroinvertebrates were sampled to determine the composition and relative abundance of species present. Benthic macroinvertebrates are intimately exposed to both sediment and water, are important components of the food web and other ecosystems functions, and respond relatively predictably to both organic and inorganic contamination. The data were used to determine food web relationships and habitat viability.

Five benthic macroinvertebrate samples were collected at the East Landfill Pond in April 1993, in accordance with Ecology SOP EE.02, Sampling of Benthic Macroinvertebrates (EG&G 1992). One sample was collected at the mid-point of each of the north and south pond margins approximately 10 meters from shore. The inlet was sampled in the littoral zone, approximately 15 meters from shore. An additional sample was collected at the mid-point of the dam, approximately 10 meters from the dam. The fifth sample was collected in the middle of the pond at a location aligned with the north and south sample locations. Figure C-11 shows these sampling locations.

C.8.4 Fish Sampling

Fish sampling was attempted to determine composition of fish species present and provide tissue for analyses. Fish can be important components of ecological assessments because they are relatively long-lived, occupy upper trophic levels of aquatic ecosystems, and may spend their entire lives in small areas.

Sampling was performed with minnow traps at three locations in the East Landfill Pond for three consecutive nights in November 1992 and again in April 1993 in accordance with Ecology EE.04, Sampling of Fishes (EG&G 1992). Fish sampling was also performed with gill nets at two locations in the East Landfill Pond for three consecutive days in May 1993. Gill nets were placed at right angles to provide complete coverage of the pond, with one net trending north-south from the north side of the pond to the center and the other net trending east-west from the dam to the center of the pond. No fish were caught in the minnow traps or the gill nets.

C.8.5 Aquatic Toxicity Testing

Samples were collected for toxicological testing to provide a preliminary assessment of OU 7 surface waters and to ultimately establish the link between adverse ecological effects and known contamination.

Both the water and sediment toxicity tests were completed on samples collected at two locations in the East Landfill Pond (SED70093 and SED70293) in March 1993. One fish species, fathead minnows (*Pimephales promelas*), and one cladoceran (*Ceriodaphnia dubia*) were used to test the toxicity of water. Sediment toxicity tests were completed using the amphipod (*Hyallela azteca*) as a test species. Sediment samples were collected in accordance with Surface Water SOP SW.06, Sediment Sampling (EG&G 1992). Water samples were collected in accordance with Surface Water SOP SW.03, Surface Water Sampling (EG&G 1992). Sampling locations are shown in Figure C-11.

C.9 Conclusions

Results of the Phase I RFI/RI are discussed in the body of the main report. Section 2 presents the site characterization. Section 4 presents the nature and extent of contamination. Data are presented in the supporting appendices.

C.10 References

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Appendix C
Tables

Table C-1
Detection Limits for Phase I Target Analytes in Soil and Water

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane	630-20-6	NA	12 - 24	NA	µg/kg	NA	10 - 10	NA	µg/L
1,1,1-Trichloroethane*	71-55-6	5 - 58	6 - 12	5.00	µg/kg	5 - 25	5 - 5	5.00	µg/L
1,1,2,2-Tetrachloroethane*	79-34-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,1,2-Trichloroethane*	79-00-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,1-Dichloroethane*	75-34-3	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,1-Dichloroethene*	75-35-4	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,2,3-Trichloropropane	96-18-4	NA	12 - 24	NA	µg/kg	NA	10 - 10	NA	µg/L
1,2-Dibromoethane	106-93-4	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
1,2-Dichloroethane*	107-06-2	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	1.00	µg/L
1,2-Dichloroethene*	540-59-0	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,2-Dichloropropane*	78-87-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
2-Butanone*	78-93-3	11 - 210	12 - 62	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
2-Chloro-1,3-butadiene	126-99-8	NA	120 - 240	NA	µg/kg	NA	100 - 100	NA	µg/L
2-Hexanone*	591-78-6	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
3-Chloropropene	107-05-1	NA	12 - 24	NA	µg/kg	NA	10 - 10	NA	µg/L
4-Methyl-2-pentanone*	108-10-1	10 - 130	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Acetone*	67-64-1	11 - 250	12 - 62	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Acetonitrile	75-05-8	NA	120 - 240	NA	µg/kg	NA	100 - 100	NA	µg/L
Acrolein	107-02-8	NA	580 - 1200	NA	µg/kg	NA	500 - 500	NA	µg/L
Acrylonitrile	107-13-1	NA	120 - 240	NA	µg/kg	NA	100 - 100	NA	µg/L
Benzene*	71-43-2	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Bromodichloromethane*	75-27-4	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Bromoform*	75-25-2	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Bromomethane*	74-83-9	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Carbon Disulfide*	75-15-0	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Carbon Tetrachloride*	56-23-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Chlorobenzene*	108-90-7	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Volatile Organic Compounds (continued)									
Chloroethane*	75-00-3	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Chloroform*	67-66-3	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Chloromethane*	74-87-3	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
cis-1,3-Dichloropropene*	10061-01-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Dibromochloromethane*	124-48-1	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Dibromomethane	74-95-3	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Dichlorodifluoromethane	75-71-8	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Ethyl Cyanide	107-12-0	NA	58 - 120	NA	µg/kg	NA	50 - 50	NA	µg/L
Ethylbenzene*	100-41-4	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Iodomethane	74-88-4	NA	12 - 24	NA	µg/kg	NA	10 - 10	NA	µg/L
Isobutyl Alcohol	78-83-1	NA	2300 - 4800	NA	µg/kg	NA	2000 - 2000	NA	µg/L
Methacrylonitrile	126-98-7	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Methylene Chloride*	75-09-2	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
1,2-Dibromo-3-chloropropane	96-12-8	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Styrene*	100-42-5	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Tetrachloroethene*	127-18-4	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Tetraethyl Pyrophosphate	107-49-3	NA	17 - 17	NA	µg/kg	NA	NR	NA	NA
Total Xylenes*	1330-20-7	5 - 120	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
trans-1,3-Dichloropropene*	10061-02-6	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
trans-1,4-Dichloro-2-butene	110-57-6	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Trichloroethene*	79-01-6	5 - 58	6 - 12	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Trichlorofluoromethane	75-69-4	NA	12 - 24	NA	µg/kg	NA	10 - 10	NA	µg/L
Toluene*	108-88-3	5 - 310	6 - 310	5.00	µg/kg	5 - 10	5 - 5	5.00	µg/L
Vinyl Acetate*	108-05-4	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Vinyl Chloride*	75-01-4	10 - 120	12 - 24	10.00	µg/kg	10 - 20	10 - 10	10.00	µg/L
Semivolatile Organic Compounds									
(1,1'-Biphenyl)-4-amine	92-67-1	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
3,3'-Dimethyl-[1,1'-biphenyl]-4,4'-diamine	119-93-7	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
1,2,4,5-Tetrachlorobenzene	95-94-3	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
1,2,4-Trichlorobenzene*	120-82-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
1,2-Dichlorobenzene*	95-50-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Semivolatile Organic Compounds (continued)									
N,N-Dimethyl-N'-2-pyridinyl-N-(2-thienylmethyl)-1,2-ethanediamine	91-80-5	NA	950 - 2000	NA	µg/kg	NA	25 - 250	NA	µg/L
1,3,5-Trinitrobenzene	99-35-4	NA	3800 - 7900	NA	µg/kg	NA	100 - 1000	NA	µg/L
5-(1-Propenyl)-1,3-benzodioxole	120-58-1	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
1,3-Dichlorobenzene*	541-73-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
1,3-Dinitrobenzene	99-65-0	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
1,4-Dichlorobenzene*	106-46-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
1,4-Dioxane	123-91-1	NA	1500 - 3200	NA	µg/kg	NA	20 - 200	NA	µg/L
1,4-Naphthoquinone	130-15-4	NA	1900 - 3900	NA	µg/kg	NA	50 - 500	NA	µg/L
1-Naphthylamine	134-32-7	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
2,3,4,6-Tetrachlorophenol	58-90-2	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
2,4,5-Trichlorophenol*	95-95-4	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
2,4,6-Trichlorophenol*	88-06-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2,4-Dichlorophenol*	120-83-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2,4-Dimethylphenol*	105-67-9	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2,4-Dinitrophenol*	51-28-5	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
2,4-Dinitrotoluene*	121-14-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2,6-Dichlorophenol	87-65-0	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
2,6-Dinitrotoluene*	606-20-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Chloronaphthalene*	91-58-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Chlorophenol*	95-57-8	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Methylnaphthalene*	91-57-6	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Methylphenol*	95-48-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Nitroaniline*	88-74-4	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
2-Nitrophenol*	88-75-5	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-Picoline	109-06-8	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
3,3'-Dichlorobenzidine*	91-94-1	690 - 3500	760 - 1600	660.00	µg/kg	17 - 220	19 - 200	20.00	µg/L
3-Nitroaniline*	99-09-2	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
4,6-Dinitro-2-methylphenol*	534-52-1	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
4-Bromophenyl-phenyl ether*	101-55-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
4-Chloro-3-methylphenol*	59-50-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Semivolatile Organic Compounds (continued)									
4-Chloroaniline*	106-47-8	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
4-Chlorophenyl-phenyl ether*	7005-72-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
4-Methylphenol*	106-44-5	340 - 1700	NR	330.00	µg/kg	8 - 110	10 - 10	10.00	µg/L
4-Nitroaniline*	100-01-6	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
4-Nitrophenol*	100-02-7	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
5-Nitro-o-toluidine	99-55-8	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
7,12-Dimethylbenz(a)anthracene	57-97-6	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Acenaphthene*	83-32-9	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Acenaphthylene*	208-96-8	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
N-(4-Ethoxyphenyl)acetamide	62-44-2	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-9H-Fluoren-2-yl-acetamide	53-96-3	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Anthracene*	120-12-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
1,2-Dihydro-3-methylbenz(j)aceanthrylene	56-49-5	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
3,5-Dichloro-N-(1,1-dimethyl-2-propynl)benzamide	23950-58-5	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Benzenamine	62-53-3	NA	1900 - 3900	NA	µg/kg	NA	50 - 500	NA	µg/L
N,N-Dimethyl-4-phenylazo)benzenamine	60-11-7	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NR	µg/L
4-Chloro-alpha-(4-chlorophenyl)-alpha-hydroxybenzeneacetic acid ethyl ester	510-15-6	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
alpha, alpha-Dimethyl benzeneethanamine	122-09-8	NA	1900 - 3900	NA	µg/kg	NA	50 - 500	NA	µg/L
Benzo(a)anthracene*	56-55-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Benzo(a)pyrene*	50-32-8	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Benzo(b)fluoranthene*	205-99-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Benzo(ghi)perylene*	191-24-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Benzo(k)fluoranthene*	207-08-9	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Benzoic Acid*	65-85-0	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
Benzyl Alcohol*	100-51-6	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
beta-Naphthylamine	91-59-8	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Bis(2-chloroethoxy)methane*	111-91-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Bis(2-chloroethyl)ether*	111-44-4	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Bis(2-chloroisopropyl)ether*	108-60-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Bis(2-ethylhexyl)phthalate*	117-81-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Semivolatile Organic Compounds (continued)									
Butyl Benzyl Phthalate*	85-68-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Bis(1-methylethyl)carbamothioic acid S-(2,3-dichloro-2-propenyl) ester	2303-16-4	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Chrysene*	218-01-9	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Di-n-Butyl Phthalate*	84-74-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Di-n-Octyl Phthalate*	117-84-0	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Dibenzo(a,h)anthracene*	53-70-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Dibenzofuran*	132-64-9	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Diethyl Phthalate*	84-66-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Dimethyl Phthalate*	131-11-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Diphenylamine	122-39-4	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Pentachloroethane	76-01-7	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
1-Phenyethanone	98-86-2	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Ethyl Methacrylate	97-63-2	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Fluoranthene*	206-44-0	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Fluorene*	86-73-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Hexachlorobenzene*	118-74-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Hexachlorobutadiene*	87-68-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Hexachlorocyclopentadiene*	77-47-4	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Hexachloroethane*	67-72-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Hexachlorophene	70-30-4	NA	3800 - 7900	NA	µg/kg	NA	100 - 1000	NA	µg/L
Hexachloropropene	1888-71-7	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Indeno(1,2,3-cd)pyrene*	193-39-5	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Isophorone	78-59-1	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
m-Cresol	108-39-4	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Methanesulfonic acid ethyl ester	62-50-0	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Methyl Methacrylate	80-62-6	NA	23 - 48	NA	µg/kg	NA	20 - 20	NA	µg/L
Methyl Methanesulfonate	66-27-3	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-Nitroso-di-n-propylamine*	621-64-7	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
N-Nitroso-di-n-butylamine	924-16-3	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-Nitrosodiethylamine	55-18-5	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Semivolatile Organic Compounds (continued)									
N-Nitrosodimethylamine	62-75-9	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-Nitrosodiphenylamine*	86-30-6	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
N-Nitrosomethylethylamine	10595-95-6	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-Nitrosomorpholine	59-89-2	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
N-Nitrosopiperidine	100-75-4	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
N-Nitrosopyrrolidine	930-55-2	NA	1900 - 3900	NA	µg/kg	NA	50 - 500	NA	µg/L
Naphthalene*	91-20-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Nitrobenzene*	98-95-3	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
o-Toluidine	95-53-4	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
p-Phenylenediamine	106-50-3	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Pentachlorobenzene	608-93-5	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Pentachloronitrobenzene	82-68-8	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Pentachlorophenol*	87-86-5	1700 - 8700	1900 - 3900	1600.00	µg/kg	42 - 550	48 - 500	50.00	µg/L
Phenanthrene*	85-01-8	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Phenol*	108-95-2	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
2-(1-Methylpropyl)-4,6-dinitrophenol	88-85-7	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Pyrene*	129-00-0	340 - 1700	380 - 790	330.00	µg/kg	8 - 110	10 - 100	10.00	µg/L
Pyridine	110-86-1	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
4-Nitro-1-oxide-quinoline	56-57-5	NA	1900 - 3900	NA	µg/kg	NA	50 - 500	NA	µg/L
Safrole	94-59-7	NA	380 - 790	NA	µg/kg	NA	10 - 100	NA	µg/L
Sulfurous acid 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	NA	760 - 1600	NA	µg/kg	NA	20 - 200	NA	µg/L
Pesticides/PCBs, Herbicides, Dioxins									
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-dimethanonaphthalene	465-73-6	NA	9.1 - 19	NA	µg/kg	NA	0.052 - 0.52	NA	µg/L
1,1a,3,3a,4,5,5a,5b,6-Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]pentalen-2-one	143-50-0	NA	18 - 37	NA	µg/kg	NA	0.10 - 1.0	NA	µg/L
2,3,7,8-TCDD	1746-01-6	NA	0.2 - 0.2	NA	µg/kg	NA	0.0002 - 500	NA	µg/L
2,4,5-Trichlorophenoxyacetic acid	93-76-5	NA	120 - 240	NA	µg/kg	NA	0.52 - 0.52	NA	µg/L
2,4-Dichlorophenoxyacetic acid	94-75-7	NA	120 - 240	NA	µg/kg	NA	0.52 - 0.52	NA	µg/L
4,4'-DDD*	72-54-8	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Pesticides/PCBs, Herbicides, Dioxins (continued)									
4,4'-DDE*	72-55-9	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
4,4'-DDT*	50-29-3	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
Aldrin*	309-00-2	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
alpha-BBHC*	319-84-6	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.52 - 0.52	0.05	µg/L
alpha-Chlordane*	5103-71-9	83 - 100	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Aroclor-1016*	12674-11-2	41 - 520	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Aroclor-1221*	11104-28-2	41 - 520	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Aroclor-1232*	11141-16-5	41 - 520	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Aroclor-1242*	53469-21-9	41 - 520	91 - 190	80.00	µg/kg	0.54 - 2.8	5.2 - 5.2	0.50	µg/L
Aroclor-1248*	12672-29-6	41 - 520	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Aroclor-1254*	11097-69-1	83 - 1000	180 - 370	160.00	µg/kg	1.1 - 5.6	1 - 10	1.00	µg/L
Aroclor-1260*	11096-82-5	83 - 1000	180 - 370	160.00	µg/kg	1.1 - 5.6	1 - 10	1.00	µg/L
Azinphosmethyl	86-50-0	NA	20 - 43	NA	µg/kg	NA	NR	NA	NA
beta-BHC*	319-85-7	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
Bolstar	35400-43-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Chlorpyrifos	2921-88-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Coumaphos	56-72-4	NA	40 - 87	NA	µg/kg	NA	NR	NA	NA
delta-BHC*	319-86-8	8.3 - 10	9.1 - 19.0	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
Demeton	8065-48-3	NA	17 - 17	NA	µg/kg	NA	NR	NA	NA
Demeton-S	126-75-0	NA	8.1 - 8.1	NA	µg/kg	NA	NR	NA	NA
Diazinon	333-41-5	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Dichlorvos	62-73-7	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Dieldrin*	60-57-1	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
Dimethoate	60-51-5	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Disulfoton	298-04-4	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Endosulfan I*	959-98-8	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
Endosulfan II*	33213-65-9	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
Endosulfan Sulfate*	1031-07-8	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
Endrin*	72-20-8	17 - 20	18 - 37	16.00	µg/kg	0.11 - 0.56	0.10 - 1.0	0.10	µg/L
Endrin Aldehyde	7421-93-4	NA	18 - 37	NA	µg/kg	NA	0.10 - 1.0	NA	µg/L
Endrin Ketone*	53494-70-5	17 - 20	NA	16.00	µg/kg	0.11 - 0.56	NA	0.10	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Pesticides/PCBs, Herbicides, Dioxins (continued)									
ENP	2104-64-5	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Ethoprop	13194-48-4	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Famphur	52-85-7	NA	20 - 43	NA	µg/kg	NA	NR	NA	NA
Fensulfothion	115-90-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Fenthion	55-38-9	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
gamma-BHC (Lindane)*	58-89-9	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
gamma-Chlordane*	5103-74-2	83 - 100	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Heptachlor*	76-44-8	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 0.28	0.052 - 0.52	0.05	µg/L
Heptachlor Epoxide*	1024-57-3	8.3 - 10	9.1 - 19	8.00	µg/kg	0.054 - 2.28	0.052 - 0.52	0.05	µg/L
Hexachlorodibenzo-p-dioxin	34465-46-8	NA	0.1 - 0.2	NA	µg/kg	NA	0.0003 - 400	NA	µg/L
Hexachlorodibenzo-p-dioxins	10-64-0	NA	0.2 - 0.2	NA	µg/kg	NA	NR	NA	NA
Hexachlorodibenzofuran	55684-94-1	NA	0.1 - 0.2	NA	µg/kg	NA	0.0003 - 200	NA	µg/L
Hexachlorodibenzofurans	10-65-1	NA	0.2 - 0.2	NA	µg/kg	NA	NR	NA	NA
Malathion	121-75-5	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Merphos	150-50-5	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Methoxychlor*	72-43-5	83 - 100	91 - 190	80.00	µg/kg	0.54 - 2.8	0.52 - 5.2	0.50	µg/L
Mevinphos	7786-34-7	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Monocrotuphos	6923-22-4	NA	67 - 87	NA	µg/kg	NA	NR	NA	NA
Naled	300-76-5	NA	20 - 43	NA	µg/kg	NA	NR	NA	NA
o,o,o-Triethylphosphorothioate	126-68-1	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
o,p-DDT	789-02-6	NA	20 - 20	NA	µg/kg	NA	NR	NA	NA
Parathion, Ethyl	56-38-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Parathion, Methyl	298-00-0	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Pentachlorodibenzo-p-dioxin	36088-22-9	NA	0.3 - 0.3	NA	µg/kg	NA	0.0009 - 1000	NA	µg/L
Pentachlorodibenzo-p-dioxins	10-66-2	NA	0.3 - 0.3	NA	µg/kg	NA	NR	NA	NA
Pentachlorodibenzofuran	30402-15-4	NA	0.2 - 0.3	NA	µg/kg	NA	0.0006 - 500	NA	µg/L
Pentachlorodibenzofurans	10-67-3	NA	0.2 - 0.2	NA	µg/kg	NA	NR	NA	NA
Phorate	298-02-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
2-(2,4,5-Trichlorophenoxy)propionic acid	93-72-1	NA	120 - 240	NA	µg/kg	NA	0.52 - 0.52	NA	µg/L
Ronnel	299-84-3	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Stirophos	22248-79-9	NA	20 - 43	NA	µg/kg	NA	NR	NA	NA

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Pesticides/PCBs, Herbicides, Dioxins (continued)									
Sulfotep	3689-24-5	NA	7.7 - 17	NA	µg/kg	NA	NR	NA	NA
Tetrachlorodibenzo-p-dioxin	41903-57-5	NA	0.2 - 0.2	NA	µg/kg	NA	0.0003 - 500	NA	µg/L
Tetrachlorodibenzofuran	55722-27-5	NA	0.2 - 0.2	NA	µg/kg	NA	0.0005 - 700	NA	µg/L
Tetrachlorodibenzofurans	10-69-5	NA	0.2 - 0.2	NA	µg/kg	NA	NR	NA	NA
Thionazin	297-97-2	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Tokuthion	34643-46-4	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Toxaphene*	8001-35-2	170 - 200	180 - 370	160.00	µg/kg	1.1 - 5.6	1 - 10	1.00	µg/L
Trichloronate	327-98-0	NA	8.1 - 17	NA	µg/kg	NA	NR	NA	NA
Metals									
Aluminum*	7429-90-5	3.1 - 25.8	NA	40.00	mg/kg	18.7 - 200.0000	NA	200.00	µg/L
Antimony*	7440-36-0	3.1 - 22.5	3.7 - 7.4	12.00	mg/kg	19.7 - 60.0000	19.7 - 19.9	60.00	µg/L
Arsenic*	7440-38-2	0.13 - 2.6	0.27 - 0.42	2.00	mg/kg	0.70 - 10.0000	1.4 - 1.4	10.00	µg/L
Barium*	7440-39-3	0.33 - 2.5	0.57 - 2.4	40.00	mg/kg	2.1 - 200.0000	2.2 - 6.5	200.00	µg/L
Beryllium*	7440-41-7	0.059 - 0.34	0.17 - 0.33	1.00	mg/kg	0.60 - 5.0000	0.70 - 0.90	5.00	µg/L
Cadmium*	7440-43-9	0.43 - 2.7	0.51 - 0.98	1.00	mg/kg	2.7 - 5.0000	2.7 - 3.4	5.00	µg/L
Calcium*	7440-70-2	2.0 - 11.7	NA	2000.00	mg/kg	17.4 - 5000.0000	NA	5000.00	µg/L
Cesium	7440-46-2	78.8 - 190	94.9 - 94.9	200.00	mg/kg	500 - 1000.0000	NR	1000.00	µg/L
Chromium*	7440-47-3	0.4 - 3.3	0.49 - 1.0	2.00	mg/kg	2.4 - 10.0000	2.6 - 5.3	10.00	µg/L
Cobalt*	7440-48-4	0.41 - 1.6	0.49 - 1.1	10.00	mg/kg	2.6 - 50.0000	2.6 - 4.0	50.00	µg/L
Copper*	7440-50-8	0.4 - 2.9	0.55 - 1.1	5.00	mg/kg	2.4 - 25.0000	2.9 - 5.0	25.00	µg/L
Iron*	7439-89-6	0.79 - 2.8	NA	20.00	mg/kg	4.7 - 100.0000	NA	100.00	µg/L
Lead*	7439-92-1	0.16 - 17.2	1.1 - 3.8	1.00	mg/kg	0.90 - 5.5	1.0 - 1.0	3.00	µg/L
Lithium	7439-93-2	0.54 - 1.3	NA	20.00	mg/kg	3.0 - 100.0000	NA	100.00	µg/L
Magnesium*	7439-95-4	5.0 - 28.8	NA	2000.00	mg/kg	29.6 - 5000.0000	NA	5000.00	µg/L
Manganese*	7439-96-5	0.16 - 0.91	NA	3.00	mg/kg	1.5 - 15.0000	NA	15.00	µg/L
Mercury*	7439-97-6	0.071 - 0.32	0.078 - 0.14	0.20	mg/kg	0.20 - 0.20	0.20 - 0.20	0.20	µg/L
Molybdenum	7439-98-7	1.0 - 3.2	NA	40.00	mg/kg	6.5 - 200.0000	NA	8.00	µg/L
Nickel	7440-02-0	1.2 - 6.4	2.1 - 4.0	8.00	mg/kg	11.0 - 40.0000	5.8 - 11.0	40.00	µg/L
Potassium*	7440-09-7	93.9 - 312	NA	2000.00	mg/kg	779 - 5000.0000	NA	5000.00	µg/L
Selenium*	7782-49-2	0.20 - 1.1	0.27 - 0.50	1.00	mg/kg	1.1 - 8.0	1.3 - 1.8	5.00	µg/L
Silicon	7440-21-3	1.2 - 3.4	NA	NR	mg/kg	6.7 - 100.0000	NA	NR	µg/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Metals (continued)									
Silver*	7440-22-4	0.43 - 2.9	0.68 - 1.3	2.00	mg/kg	2.6 - 10.0000	3.6 - 5.0	10.00	µg/L
Sodium*	7440-23-5	4.7 - 31.0	NA	2000.00	mg/kg	28.3 - 5000.0000	NA	5000.00	µg/L
Strontium	7440-24-6	0.18 - 2.1	NA	40.00	mg/kg	1.7 - 200.0000	NA	200.00	µg/L
Thallium*	7440-28-0	0.26 - 1.1	0.37 - 0.61	2.00	mg/kg	1.5 - 10.0000	1.5 - 1.7	10.00	µg/L
Tin	7440-31-5	2.6 - 6.6	3.2 - 6.1	40.00	mg/kg	16.7 - 200.0000	16.7 - 38.6	200.00	µg/L
Vanadium*	7440-62-2	0.50 - 1.9	0.61 - 1.2	10.00	mg/kg	3.2 - 50.0000	2.5 - 3.2	50.00	µg/L
Zinc*	7440-66-6	0.35 - 2.2	0.46 - 0.87	4.00	mg/kg	2.1 - 20.0000	2.4 - 2.8	20.00	µg/L
Water-Quality Parameters									
% Solids	10-02-6	0.10- 0.10	NA	10.00	%	0.10 - 0.10	NA	NA	%
Alkalinity as $CaCO_3$	10-09-3	0.06 - 0.12	NA	NR	%	NA	NA	NR	NR
Ammonia	7664-41-7	NA	NA	NA	NA	0.1 - 0.1	NA	NA	mg/L
Bicarbonate as $CaCO_3$	10-13-9	NA	NA	NA	NA	1 - 10.0	NA	10.00	mg/L
Carbonate	10-14-0	NA	NA	NA	NA	1 - 10.0	NA	10.00	mg/L
Chemical Oxygen Demand	10-27-5	NR	NA	NR	NR	5 - 5	NA	NR	mg/L
Chloride	16887-00-6	NA	NA	NA	NA	0.2 - 12.5	NA	5.00	mg/L
Cyanide	57-12-5	NR	4500.0 - 4500.0	10.00	mg/kg	10.0 - 20.0	10.0 - 20.0	5.00	µg/L
Fluoride	16984-48-8	NA	NA	NA	NA	0.1 - 1.0	NA	5.00	mg/L
Nitrate*	14797-55-8	1000 - 1000	NA	NR	µg/kg	0.02 - 0.50	NA	1.00	mg/L
Nitrate/Nitrite	1-005	1000 - 1300	NA	NR	µg/kg	0.02 - 0.10	NA	NR	mg/L
Nitrate/Nitrite (Historical Code)	10-28-6	1000 - 1000	NA	NR	µg/kg	NA	NA	NR	NR
Nitrite	14797-65-0	NA	NA	NA	NA	0.02 - 0.02	0.020 - 0.020	NR	mg/L
Orthophosphate	14265-44-2	NR	NA	NR	NA	0.01 - 0.01	NA	NR	mg/L
pH	10-29-7	0.20 - 0.20	NA	NR	pH	NR	NA	NR	NR
Sulfate	14808-79-8	NR	NA	NR	NA	0.50 - 5.0	NA	5.00	mg/L
Sulfide	18496-25-8	9500.0 - 33200.0	9600.0 - 31400.0	4000.00	µg/kg	1.0 - 1.0	1.0 - 1.0	NR	mg/L
Total Dissolved Solids	10-33-3	NR	NA	NA	NA	10 - 14	NA	5.00	mg/L
Total Organic Carbon	10-35-5	0.05 - 500000	NA	NR	µg/kg	1 - 1	NA	NR	mg/L
Total Suspended Solids	10-32-2	NR	NA	NR	NA	4 - 5	NA	10.00	mg/L
Radionuclides									
Americium-241	14596-10-2	0.00215587 - 0.03	NA	0.02	pCi/g	0.00232365 - 0.0524424	NA	0.01	pCi/L
Cesium-134	13967-70-9	0.03061 - 0.07059	NR	0.5	pCi/g	0.6872 - 2.21	NR	1	pCi/L

	CAS No.	Soil				Water			
		TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit	TAL Reported Detection Limit Range	Appendix IX Reported Detection Limit Range	Required Detection Limit	Unit
Radionuclides (continued)									
Cesium-137	10045-97-3	0 - 0.584	0 - 0.0674	0.10	pCi/g	0.736 - 1.63	0.801 - 0.812	1.00	pCi/L
Gross Alpha	14127-62-9	2.08823 - 9	NA	4.00	pCi/g	0.491899 - 10.2	NA	2.00	pCi/L
Gross Alpha - Dissolved	10-79-7	4 - 4	NR	NR	pCi/g	2 - 2	NR	NR	pCi/L
Gross Alpha - Suspended	10-78-6	4 - 4	NR	NR	pCi/g	2 - 2	NR	NR	pCi/L
Gross Beta	12587-47-2	1.87555 - 10	NA	10.00	pCi/g	1.21026 - 7.7	NA	4.00	pCi/L
Gross Beta - Dissolved	10-81-1	10 - 10	NR	NR	pCi/g	4 - 4	NR	NR	pCi/L
Gross Beta - Suspended	10-80-0	10 - 10	NR	NR	pCi/g	4 - 4	NR	NR	pCi/L
Plutonium-239/240	10-12-8	0.00318224 - 0.1	NA	0.03	pCi/g	0.00289476 - 0.0152374	NA	0.01	pCi/L
Radium-226	13982-63-3	0 - 0.5	NA	0.50	pCi/g	0.211 - 0.232	NA	0.50	pCi/L
Radium-228	15262-20-1	0 - 0.5	NA	0.50	pCi/g	NR	NA	1.00	pCi/L
Strontium-89,90	11-10-9	0.355679 - 1	NA	1.00	pCi/g	0.635 - 1	NA	1.00	pCi/L
Total Radiocesium	13-00-0	NR	NA	NR	NA	0.784 - 0.924	NA	NR	pCi/L
Tritium	10028-17-8	0 - 400	NA	400.00	pCi/L	209.5 - 420	NA	400.00	pCi/L
Uranium-233,-234	11-08-5	0.0358179 - 0.3	NA	0.30	pCi/g	0.1353 - 0.6	NA	0.60	pCi/L
Uranium-235	15117-96-1	0.0331054 - 0.310436	NA	0.30	pCi/g	0.14776 - 0.6	NA	0.60	pCi/L
Uranium-238	7440-61-1	0.0298177 - 0.310436	NA	0.30	pCi/g	0.15244 - 0.6	NA	0.60	pCi/L

Definitions:

CAS No.	Chemical Abstracts Service Registry Number
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NA	not applicable
NR	not reported
PCBs	polychlorinated biphenyls
pCi/g	picocuries per gram
pCi/L	picocuries per liter
TAL	Target Analyte List
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
*	Contract Laboratory Program (CLP) analyte

Table C-2
Comparison of Proposed to Actual Field Activities

Proposed Field Activities	Actual Field Activities	Deviations	Comments
IHSS 114 — Present Landfill			
Review new data	Reviewed and evaluated new data and incorporated data into the revised work plan	No deviations	None
Perform a visual inspection	Inspected landfill for hazards and evaluated impact of daily waste operations on field activities	No deviations	None
Perform 38 cone penetration tests (CPTs)	Performed 36 CPTs (Tables C-3 and C-5)	2 CPT locations canceled	CPT01693 canceled due to inaccessibility; CPT02193 canceled because 2 other locations encountered the West Landfill Pond sediments
None	Performed a screening-level gas survey at 33 locations; total gas, methane, non-methane organic compounds, and carbon dioxide were measured at 5-foot intervals with field instruments (Tables C-3 and C-6)	Additional field activities	Survey performed to characterize the distribution of landfill-associated gases; samples MET00293–MET01593, MET01893–MET02093, MET02293–MET03793 collected
Collect 2 *in situ* soil-gas samples (SGS) from the vadose zone at 38 locations (76 total samples)	Collected *in situ* soil-gas samples at 33 locations (68 total samples) (Table C-3)	2 SGS locations canceled No samples collected at 3 SGS locations due to tip refusal on 3 attempts One additional sample collected on the second attempt at 4 locations due to tip refusal on the first attempt Only 1 sample collected at 3 locations due to shallow tip refusal on 3 attempts	SGS01693 and SGS02193 SGS00193, SGS01793, and SGS03893; deviations due to field conditions SGS00493, SGS00993, SGS01293, and SGS01393 SGS02693, SGS02793, and SGS03593; deviations due to field conditions
Analyze *in situ* soil-gas samples for methane, hydrogen sulfide, trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), acetone, 2-butanone, methylene chloride, toluene, and total xylenes using a field gas chromatogram (GC)	Analyses were conducted (Table C-7)	No deviations	None

Proposed Field Activities	Actual Field Activities	Deviations	Comments
Collect up to 3 *in situ* leachate–groundwater samples with the BAT® system from the saturated zone at 38 locations (maximum of 114 samples)	Attempted to collect 66 *in situ* leachate–groundwater samples at 30 locations (Table C-3)	Proposed number of samples per location revised due to limited thickness of saturated zone	3 samples if saturated zone greater than 10 feet thick; 2 samples if saturated zone 5-10 feet thick; 1 sample if saturated zone less than 5 feet thick
		5 locations canceled (see above)	BAT01693, BAT02193, BAT00193, BAT01793, and BAT03893; deviations due to field conditions
		2 locations canceled because nearby wells were dry	BAT03393 and BAT03693; deviations due to field conditions
	Collected 26 *in situ* leachate–groundwater samples at 16 locations (Table C-3)	1 location canceled because water level was below landfill–bedrock contact	BAT02093; deviations due to field conditions
		Samples not collected due to tip refusal at 7 locations	BAT00293, BAT00993, BAT01493, BAT02693, BAT02793, BAT03093, BAT03193; deviations due to field conditions
		No leachate–groundwater encountered at 7 locations	BAT00393, BAT00493, BAT00593, BAT01293, BAT02293, BAT02593, BAT03593; deviations due to field conditions
Analyze headspace of the leachate–groundwater samples for methane, hydrogen sulfide, TCE, 1,2-DCE, 1,1,1-TCA, acetone, 2-butanone, methylene chloride, toluene, and total xylenes using a field GC	Analyses were performed (Table C-8)	No deviations	None
Drill 11 boreholes	Drilled 11 boreholes (Table C-4)	No deviations	None
Collect continuous borehole samples at 11 locations	Collected continuous borehole samples at 9 locations (Table C-4)	2 upgradient borehole locations not sampled as per work plan modification (letter 93-RF-0498)	70293 and 70893; work plan modification approved via formal correspondence from the Colorado Department of Health (CDH)
		Continuous samples collected where core recovery allowed	Deviations due to field conditions

Proposed Field Activities	Actual Field Activities	Deviations	Comments
Analyze borehole samples for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, radionuclides, and inorganics	Analyses were performed (Table C-16)	No deviations	None
Perform borehole packer tests at 8 locations	Performed drawdown recovery tests at 14 locations (Table C-4)	Drawdown recovery tests performed rather than packer tests as per work plan modification (letter 93-RF-0498)	Drawdown recovery tests not performed in dry wells (71693 and 72493); work plan modification approved via formal correspondence from CDH
Drill and install 15 monitoring wells	Installed 16 monitoring wells (Table C-4)	No weathered bedrock well installed at location 11	Weathered bedrock not identified in designated borehole 2 wells installed at work plan locations 5 and 6 in the landfill because thickness of saturated material is greater than 10 feet
Measure leachate–groundwater levels monthly	Measured leachate–groundwater levels in existing and newly installed wells monthly from December 1992 to March 1993	No deviations	None
Collect leachate–groundwater samples at 16 newly installed wells quarterly for one year	Collected leachate–groundwater samples at 15 newly installed wells monthly for 4 months (Table C-4) Collected a full sample suite from 7 wells, and a partial suite from 8 wells (Table C-17)	1 well dry for 4 months Samples collected monthly rather than quarterly as per work plan modification (letter 93-RF-0498) Partial sample suites were collected due to low volume and slow recharge	72493 Deviation due to schedule constraints; work plan modification approved via formal correspondence from CDH Deviations due to field conditions
Measure field parameters and analyze groundwater samples for VOCs, SVOCs, water-quality parameters, dissolved and total metals, dissolved and total radionuclides, sulfide, nitrate, and cyanide	Field parameters were measured and analyses were performed (Table C-17)	No deviations	None
Collect 1 sediment sample from each 10-inch depth interval at 3 locations at the East Landfill Pond	Collected 1 sediment sample from the 0- to 10-inch depth interval at each of 3 locations (Table C-10)	No deviations	Sample depth only 10 inches because sediment was thinner than anticipated
Analyze sediment samples for VOCs, SVOCs, metals, radionuclides, and inorganics	Analyses were performed (Table C-10)	No deviations	None

Proposed Field Activities	Actual Field Activities	Deviations	Comments
Collect 1 leachate–surface-water sample monthly from 2 locations at the East Landfill Pond	Collected 1 leachate–surface-water sample monthly at surface-water (SW) stations SW097 and SW098 from December 1992 to March 1993 (Table C-9)	No deviations	None
Measure field parameters and analyze leachate–surface-water samples for VOCs, SVOCs, water-quality parameters, dissolved and total metals, dissolved and total radionuclides, nitrate, cyanide, and sulfide	Field parameters were measured and analyses were performed (Table C-9)	No deviations	None
Measure discharge from leachate seep	Discharge was estimated during sampling at SW097	No deviations	None
Collect effluent–surface water samples monthly from the groundwater intercept system discharge points	Collected 1 surface-water sample at SW099 in March 1993 (Table C-9)	Stations SW099 and SW100 were frozen in December 1992, January 1993, and February 1993; station SW100 was dry in March 1993	Deviations due to field conditions
Measure field parameters and analyze effluent samples for VOCs, SVOCs, water-quality parameters, dissolved and total metals, dissolved and total radionuclides, nitrate, cyanide, and sulfide	Field parameters were measured and analyses were performed on samples collected (Table C-9)	No deviations	None
Measure discharge flow rate from groundwater intercept system at two discharge points	Discharge flow rate was measured at SW099	Station SW100 was dry	Deviation due to field conditions
Survey all sample location points	Surveyed 36 CPT, 11 borehole, and 16 monitoring well locations	No deviations	None
None	Collected 22 surface-soil samples at the Present Landfill (IHSS 114) (Table C-14)	Additional field activities	Surface-soil samples collected as per the OU 7 work plan addendum, approved via formal correspondence from CDH
None	Analyzed surface-soil samples for SVOCs, metals, radionuclides, asbestos, total organic carbon (TOC), pH, alkalinity, bulk density, and grain size (Table C-14)	Additional field activities	Surface-soil samples analyzed as per the OU 7 work plan addendum, approved via formal correspondence from CDH
IHSS 203 — Inactive Hazardous Waste Storage Area			
Review new data	Reviewed and evaluated new data and incorporated data into the revised work plan	No deviations	None
Perform a visual inspection	Inspected IHSS 203 for soil staining or stressed vegetation	No deviations	None

Proposed Field Activities	Actual Field Activities	Deviations	Comments
Perform radiation field screening	Performed a prework radiation survey on a 25-foot grid using a Bicron Analyst Field Instrument for the Detection of Low Energy Radiation (FIDLER)	Shielded Geiger-Mueller detector survey not performed as per work plan modification (letter 93-RF-3428)	Surface-soil (SS) samples were collected and analyzed for radionuclides instead; work plan modification approved via formal correspondence from CDH
Collected 1 soil-gas sample at 35 grid locations	Collected 1 soil-gas sample at 49 grid locations (Table C-11)	Added 14 grid locations based on results of initial soil-gas analyses	Original locations SS712593 - SS715993 Additional locations SS716093 - SS717393
Analyze soil-gas samples with a field GC for methane, hydrogen sulfide, TCE, 1,2-DCE, 1,1,1-TCA, acetone, 2-butanone, methylene chloride, toluene, and total xylene using a detection limit of 1 microgram per liter (µg/L)	Analyses were conducted for all target analytes except methane and hydrogen sulfide using a detection limit of 1 milligram per liter (mg/L) (Table C-11)	Detection limit changed as per work plan modification (letter 93-RF-0498) Photoionization detector specified in the work plan was unable to detect methane or hydrogen sulfide	Higher detection limit acceptable for screening level data; work plan modification approved via formal correspondence from CDH Methane and hydrogen sulfide are not appropriate target analytes for IHSS 203 according to the operational history
Collect 1 surface-soil sample at 35 grid locations	Collected 1 surface-soil sample at 49 grid locations (Table C-12)	Sampled the 14 locations added for soil-gas survey	Deviations due to field results
Collect 1 subsurface geologic material sample at each location where analyte concentrations were measured above background in surface-soil samples	Collected 1 subsurface geologic material sample at 18 locations (Table C-12)	Systematic rather than biased sampling was used because analytes were measured above background at random locations across the site	Deviations due to analytical results
Analyze subsurface geologic material samples for PCBs, metals, radionuclides, TOC, and nitrate	Analyses were conducted (Table C-12)	No deviations	None
Survey all 35 sample location points	Surveyed 49 soil–soil-gas sampling locations	Surveyed 14 additional soil–soil-gas sampling locations	None
Areas Around East Landfill Pond			
Review new data	Reviewed and evaluated new data and incorporated data into the revised work plan	No deviations	None
Perform a visual inspection	Inspected area around East Landfill Pond to delineate areas impacted by spray evaporation	No deviations	None
Perform radiation field screening	Performed a prework radiation survey on a 25-foot grid using a Bicron Analyst FIDLER	Shielded Geiger-Mueller detector for survey not conducted as per work plan modification (letter 93-RF-3428)	Surface-soil samples were collected and analyzed for radionuclides instead; work plan modification approved via formal correspondence from CDH

Proposed Field Activities	Actual Field Activities	Deviations	Comments
Collect 1 surface-soil sample at 124 grid locations	Collected 1 surface-soil sample at 133 grid locations (Table C-13)	9 sample locations added to ensure complete coverage of spray evaporation areas	Deviations due to field conditions
Analyze surface-soil samples for metals, radionuclides, TOC, and nitrate	Analyses were conducted (Table C-13)	Analyzed 9 additional samples	None
Collect 1 subsurface geologic material sample at each location where analyte concentrations were measured above background in surface-soil samples	Collected 1 subsurface geologic material sample at 67 locations (Table C-13)	Biased sampling performed at spray evaporation areas where analyte concentrations frequently exceeded background. Systematic sampling performed at remaining locations because analyte concentrations were measured above background at random locations across the site	Deviations due to analytical results
Analyze subsurface geologic material samples for metals, radionuclides, TOC, and nitrate	Analyses were conducted (Table C-13)	No deviations	None
Survey all 124 sample location points	Surveyed 133 soil sampling locations	Surveyed 9 additional soil sampling locations	None

Definitions:

CDH	Colorado Department of Health
CPT	cone penetration test
DCE	dichloroethene
FIDLER	Field Instrument for the Detection of Low Energy Radiation
GC	gas chromatogram
mg/L	milligrams per liter
OU	operable unit
PCB	polychlorinated biphenyl
SGS	soil-gas sample
SS	surface soil
SVOC	semivolatile organic compound
SW	surface water
TCA	trichloroethane
TCE	trichloroethene
TOC	total organic carbon
VOC	volatile organic compound
µg/L	microgram per liter

Table C-3
Summary of Landfill Investigations — CPT and BAT

Phase I Location[1]	Cone Penetration Test (CPT)	Methane Survey (MET)	Soil-Gas Sampling (SGS)	Leachate-Groundwater Sampling (BAT)
00193	X	NP-REF	NP-REF	NP-REF
00293	X	X	X	X
00393	X	X	X	X
00493	X	X	X	X
00593	X	X	X	X
00693	X	X	X	X
00793	X	X	X	X
00893	X	X	X	X
00993	X	X	X	X
01093	X	X	X	X
01193	X	X	X	X
01293	X	X	X	X
01393	X	X	X	X
01493	X	X	X	X
01593	X	X	X	X
01693	NP-ACC	NP-ACC	NP-ACC	NP-ACC
01793	X	NP-REF	NP-REF	NP-REF
01893	X	X	X	X
01993	X	X	X	X
02093	X	X	X	NS-DRY
02193	NP-DUP	NP-DUP	NP-DUP	NP-DUP
02293	X	X	X	X
02393	X	X	X	X
02493	X	X	X	X
02593	X	X	X	X
02693	X	X	X	X
02793	X	X	X	X
02893	X	X	X	X
02993	X	X	X	X
03093	X	X	X	X
03193	X	X	X	X
03293	X	X	X	X
03393	X	X	X	NS-DRY
03493	X	X	X	X
03593	X	X	X	X
03693	X	X	X	NS-DRY
03793	X	X	X	X
03893	X	NP-REF	NP-REF	NP-REF

[1] Figure C-1 presents the CPT locations. The methane survey, soil gas sampling, and BAT sampling locations are all in the immediate vicinity (within approximately 10 feet) of the initial CPT location.

Definitions:

NP-ACC	CPT not performed - access; no investigations were performed at this location due to safety concerns associated with mobilizing the CPT rig to the sampling location.
NP-DUP	CPT not performed - duplication of effort; two other locations (CPT01593 and CPT02293) encountered the buried sediments of the West Landfill Pond and sediment profiles were obtained at these locations.
NP-REF	CPT not performed - refusal; methane survey, soil gas sampling, and leachate–groundwater sampling were not performed at this location due to shallow refusals encountered during the CPT investigation.
NS-DRY	not sampled - dry; leachate–groundwater sampling was not performed at this location because nearby groundwater monitoring wells (71193 and 71693) installed during recent OU 7 field activities were dry or nearly dry or the water table surface was interpreted as being below the top of bedrock which could not be penetrated by the cone penetrometer.
X	denotes that tests or surveys were completed or that samples were collected or sampling was attempted

Table C-4
Summary of Landfill Investigations — Boreholes and Wells

Work Plan Designation	Site Location	Phase I Location[1]	Borehole Drilling	Borehole Sampling	Monitoring Well Installation	Hydraulic Conductivity Testing	Groundwater Sampling
1	IHSS 114 Groundwater	71193	X	X	X	X	X
	Intercept System - North	71293	NR-WP	NR-WP	NC-DUP	NC-DUP	NC-DUP
2	IHSS 114 Groundwater	71393	X	X	NR-WP	NR-MOD	NR-WP
	Intercept System - North	71493	NR-WP	NR-WP	X	X	X
3	IHSS 114 Groundwater	71593	X	X	NR-WP	NR-MOD	NR-WP
	Intercept System - South	71693	NR-WP	NR-WP	X	NT-DRY	X
4	IHSS 114 Groundwater	71793	X	X	NR-WP	NR-MOD	NR-WP
	Intercept System - South	71893	NR-WP	NR-WP	X	X	X
5	IHSS 114	71993	X	X	NR-WP	NR-MOD	NR-WP
	Near Center of Landfill	72093	NR-WP	NR-WP	X	X	X
		72393	NR-WP	NR-WP	X	X	X
6	IHSS 114	72193	X	X	NR-WP	NR-MOD	NR-WP
	Near Face of Landfill	72293	NR-WP	NR-WP	X	X	X
		72493	NR-WP	NR-WP	X	NT-DRY	NS-DRY
7	Downgradient	70993	X	X	NR-WP	NR-MOD	NR-WP
8	Downgradient	71093	X	X	NR-WP	NR-MOD	NR-WP
9	Upgradient Well Cluster	70093	NR-WP	NR-WP	X	X	X
	- Northwest	70193	NR-WP	NR-WP	X	X	X
		70293	X	NR-MOD	X	X	X
10	Upgradient Well Cluster	70393	NR-WP	NR-WP	X	X	X
	- West	70493	NR-WP	X	X	X	X
		70593	X	X	X	X	X
11	Upgradient Well Cluster	70693	NR-WP	NR-WP	X	X	X
	- Southwest	70793	NR-WP	NR-WP	NC-NWBR	NC-NWBR	NC-NWBR
		70893	X	NR-MOD	X	X	X

[1] Figure C-7 presents Phase I borehole drilling and sampling locations; Figure C-8 presents Phase I monitoring well locations.

Definitions:

IHSS	individual hazardous substance site
NC-DUP	not completed - duplication; trash was not encountered in borehole 71193 so a well was installed in that borehole instead of drilling and completing well 71293.
NC-NWBR	not completed - no weathered bedrock; weathered bedrock was not encountered in borehole so well 70793 was not installed.
NR-MOD	not required - modification; not required in accordance with a modification to the OU 7 work plan (DOE 1993).
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
NS-DRY	not sampled - dry
NT-DRY	not tested - dry
X	denotes that tests or surveys were completed or samples were collected

Table C-5
Summary of CPT Investigation

CPT Location[1]	Date(s) Tested	Number of Attempts[2]	Offset Designation[3]	Depth of Penetration (feet)	Depth(s) of Dissipation Test (feet)
CPT00193	12/10/92	4	A	1.48	NR-WP
			B	1.97	
			C	3.77	
			D	1.64	
CPT00293	12/11/92	5	A	10.50	NR-WP
			B	2.79	
			C	10.01	
	01/15/93		D	2.30	
			E	10.99	
CPT00393	01/07/93	1	A	45.77	NR-WP
CPT00493	01/06/93	3	A	11.32	19.68 and 37.88
			B	5.74	
			C	4.76	
	01/07/93	4	D	0.66	
			E	5.74	
			F	10.33	
			G	43.14	
CPT00593	01/05/93	1	A	46.75	NR-WP
CPT00693	01/18/93	3	A	25.26	NR-WP
			B	8.69	
	04/08/93		C	42.98	
CPT00793	01/16/93	2	A	23.29	NR-WP
			B	92.03	
CPT00893	01/16/93	3	A	0.66	22.96
			B	0.66	
			C	70.37	
CPT00993	12/16/92	1	A	47.90	24.60 and 41.00
CPT01093	12/21/92	1	A	51.84	22.96
CPT01193	12/22/92	3	A	15.75	18.04, 30.34, and 33.62
			B	30.35	
			C	58.07	
CPT01293	12/23/92	1	A	50.36	NR-WP
CPT01393	12/23/92	7	A	15.75	NR-WP
			B	1.64	
			C	5.25	
			D	9.51	
			E	0.98	
			F	0.66	
			G	60.86	

CPT Location[1]	Date(s) Tested	Number of Attempts[2]	Offset Designation[3]	Depth of Penetration (feet)	Depth(s) of Dissipation Test (feet)
CPT01493	01/08/93	6	A	0.66	19.84 and 40.34
			B	20.51	
			C	0.66	
			D	25.92	
			E	0.82	
			F	92.85	
CPT01593	01/11/93	1	A	104.66	27.88
CPT01693	NP-ACC	NP-ACC	NP-ACC	NP-ACC	NP-ACC
CPT01793	01/15/93	3	A	4.92	NR-WP
			B	0.66	
			C	0.66	
CPT01893	01/15/93	1	A	58.40	NR-WP
CPT01993	04/12/93	3	A	27.89	NR-WP
			B	5.09	
			C	5.41	
CPT02093	04/14/93	2	A	17.39	NR-WP
			B	41.99	
CPT02193	NP-DUP	NP-DUP	NP-DUP	NP-DUP	NP-DUP
CPT02293	01/14/93	2	A	29.53	20.50 and 39.36
			B	60.20	
CPT02393	01/13/93	4	A	32.64	24.76
			B	30.02	
			C	4.10	
	01/14/93		D	51.35	
CPT02493	01/12/93	5	A	12.80	NR-WP
			B	0.66	
			C	6.89	
			D	15.26	
			E	10.33	
CPT02593	01/12/93	3	A	0.66	19.68 and 33.62
			B	8.53	
			C	40.03	
CPT02693	12/17/92	3	A	2.13	21.32 and 41.16
			B	2.79	
			C	6.23	
	12/18/92	1	D	41.67	
CPT02793	12/17/92	3	A	19.85	21.32 and 41.16
			B	19.85	
			C	43.80	
CPT02893	12/16/92	1	A	55.45	39.36 and 54.94
CPT02993	12/14/92	1	A	38.88	24.60 and 39.03
CPT03093	12/15/92	5	A	2.46	NR-WP
			B	8.86	
			C	7.71	
			D	11.65	
			E	12.30	

CPT Location[1]	Date(s) Tested	Number of Attempts[2]	Offset Designation[3]	Depth of Penetration (feet)	Depth(s) of Dissipation Test (feet)
CPT03193	12/18/92	4	A	2.79	19.68 and 22.47
			B	5.58	
			C	23.62	
			D	24.11	
CPT03293	12/21/92	4	A	1.97	19.68 and 24.60
			B	2.62	
			C	4.10	
			D	36.91	
CPT03393	12/11/92	4	A	3.61	NR-WP
			B	2.46	
			C	2.62	
			D	1.64	
	01/07/93	2	E	7.05	
			F	0.66	
CPT03493	01/05/93	4	A	19.69	NR-WP
			B	0.66	
			C	19.69	
			D	37.57	
CPT03593	01/04/93	4	A	5.58	NR-WP
			B	5.09	
			C	0.66	
			D	23.79	
	01/05/93	2	E	6.89	
			F	6.40	
	01/06/93	2	G	4.92	
			H	4.76	
CPT03693	01/06/93	1	A	37.73	NR-WP
CPT03793	01/06/93	2	A	1.48	NR-WP
			B	35.76	
CPT03893	12/11/92	3	A	1.97	NR-WP
			B	4.27	
			C	0.98	

1 CPT locations are presented in Figure C-1.

2 In order to reach unweathered bedrock, it was often necessary to conduct more than one attempt per location due to shallow refusals.

3 Offsets were labeled alphabetically in ascending order (that is, the first attempt was labeled with an "A", the second attempt was labeled with a "B", etc.).

Definitions:

CPT cone penetration test

NP-ACC not performed - access; CPT not performed at this location due to safety concerns associated with mobilizing the CPT rig down the hillside to the sampling location located below the steep face of the landfill along the western boundary of the East Landfill Pond.

NP-DUP not performed - duplication of effort; CPT not performed at this site because two other locations (CPT01593 and CPT02293) encountered the buried sediments of the West Landfill Pond and sediment profiles were obtained at these locations.

NR-WP not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991)

Table C-6
Summary of Methane Survey

Methane Survey Location[1]	Date Survey Performed	Sample Depth (feet)	Landfill Gases Measured			
			Total[3]	NMOCs	Methane	Carbon Dioxide
MET00193	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF
MET00293	01/25/93	3.28	X	X	X	NP-EQUIP
MET00393	01/25/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	NP-EQUIP
		13.12	X	X	X	X
		16.73	X	X	X	NP-EQUIP
MET00493	01/30/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
		22.96	X	X	X	NP-EQUIP
MET00593	01/29/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
		22.96	X	X	X	X
MET00693	02/04/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	NP-EQUIP
MET00793	02/03/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.14	X	X	X	NP-EQUIP
MET00893	02/04/93	3.28	X	X	X	X
		8.20	X	X	X	X
		8.20 (Dup)[2]	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	NP-EQUIP
MET00993	02/01/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
MET01093	02/01/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	NP-EQUIP

Methane Survey Location[1]	Date Survey Performed	Sample Depth (feet)	Landfill Gases Measured			
			Total[3]	NMOCs	Methane	Carbon Dioxide
MET01193	02/05/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
MET01293	02/05/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	NP-EQUIP
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
MET01393	02/05/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
		22.96	X	X	X	X
		27.88	X	X	X	NP-EQUIP
		32.80	X	X	X	NP-EQUIP
		37.72	X	X	X	NP-EQUIP
MET01493	02/06/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	X
		32.80	X	X	X	X
		37.72	X	X	X	X
		42.64	X	X	X	X
MET01593	02/08/93	3.28	X	X	X	NP-EQUIP
		3.28 (Dup)[2]	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	X
		32.80	X	X	X	X
MET01693	NP-ACC	NP-ACC	NP-ACC	NP-ACC	NP-ACC	NP-ACC
MET01793	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF
MET01893	02/06/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	NP-EQUIP
		8.20 (Dup)[2]	X	X	X	NP-EQUIP
		13.12	X	X	X	NP-EQUIP
MET01993	04/13/93	3.28	X	X	X	X
		8.20	X	X	X	NP-EQUIP
		8.20 (Dup)[2]	X	X	X	NP-EQUIP
		13.10	X	X	X	NP-EQUIP

Methane Survey Location[1]	Date Survey Performed	Sample Depth (feet)	Landfill Gases Measured			
			Total[3]	NMOCs	Methane	Carbon Dioxide
MET02093	04/14/93	3.28	X	X	X	NP-EQUIP
		3.28 (Dup)[2]	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		8.20 (Dup)[2]	X	X	X	X
		13.10	X	X	X	X
		13.10 (Dup)[2]	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	NP-EQUIP
		27.88	X	X	X	X
		32.80	X	X	X	NP-EQUIP
MET02193	NP-DUP	NP-DUP	NP-DUP	NP-DUP	NP-DUP	NP-DUP
MET02293	02/08/93	3.28	X	X	X	X
		3.28 (Dup)[2]	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	X
		32.80	X	X	X	X
		37.72	X	X	X	X
		41.00	X	X	X	X
	02/09/93	42.64	X	X	X	X
MET02393	02/09/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		13.12 (Dup)[2]	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	X
MET02493	02/09/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		17.71	X	X	X	NP-EQUIP
MET02593	02/10/93	3.28	X	X	X	NP-EQUIP
		3.28 (Dup)[2]	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	NP-EQUIP
MET02693	02/03/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
MET02793	02/03/93	3.28	X	X	X	NP-EQUIP
		5.90	X	X	X	NP-EQUIP

Methane Survey Location[1]	Date Survey Performed	Sample Depth (feet)	Landfill Gases Measured			
			Total[3]	NMOCs	Methane	Carbon Dioxide
MET02893	02/03/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
		27.88	X	X	X	X
		27.88 (Dup)[2]	X	X	X	X
		32.80	X	X	X	NP-EQUIP
MET02993	02/04/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
		22.96	X	X	X	NP-EQUIP
		22.96 (Dup)[2]	X	X	X	NP-EQUIP
MET03093	02/02/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	NP-EQUIP
		27.88	X	X	X	NP-EQUIP
		32.80	X	X	X	NP-EQUIP
MET03193	02/02/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	NP-EQUIP
		13.12	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	X
MET03293	02/02/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	NP-EQUIP
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
MET03393	01/26/93	3.28	X	X	X	NP-EQUIP
MET03493	01/27/93	3.28	X	X	X	X
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	X
MET03593	01/30/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		18.04	X	X	X	NP-EQUIP
		22.47	X	X	X	NP-EQUIP
MET03693	02/10/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	X
		13.12 (Dup)[2]	X	X	X	X
		18.04	X	X	X	X
		22.96	X	X	X	NP-EQUIP

Methane Survey Location[1]	Date Survey Performed	Sample Depth (feet)	Landfill Gases Measured			
			Total[3]	NMOCs	Methane	Carbon Dioxide
MET03793	02/10/93	3.28	X	X	X	NP-EQUIP
		8.20	X	X	X	X
		13.12	X	X	X	NP-EQUIP
		18.04	X	X	X	NP-EQUIP
		22.96	X	X	X	NP-EQUIP
MET03893	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF	NP-REF

1 Each methane survey location is within approximately 10 feet of the corresponding CPT location. CPT locations are presented in Figure C-1.

2 Thirteen duplicate (Dup) samples were collected as part of the methane survey as noted.

3 Total gas includes methane and non-methane organic compounds.

Definitions:

NMOCs non-methane organic compounds

NP-ACC not performed - access; methane survey not performed at this location due to safety concerns associated with mobilizing the rig down the hillside to the sampling location located below the steep face of the landfill along the western boundary of the East Landfill Pond.

NP-DUP not performed - duplication of effort; methane survey not performed at this site because two other locations (CPT01593 and CPT002293) encountered the buried sediments of the West Landfill Pond and landfill gas measurements were obtained at these locations.

NP-EQUIP not performed - equipment; instrument used was not capable of detecting low concentrations (that is, <2000 parts per million) of carbon dioxide.

NP-REF not performed - refusal; methane survey was not performed at this location due to shallow refusals encountered at this site during the CPT investigation.

X denotes that surveys were completed

Table C-7
Soil-Gas Sampling and Analyses at IHSS 114

Sampling Location[1]	Date Samples Collected	Depth (feet)	Sample Number[2]	Soil Gas Analyses[3]	QC Sample Number[4]
SGS00193	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP
SGS00293	02/18/93	4.92	SGS002-1.50m	X	NR-WP
		8.20	SGS002-2.50m	X	NR-WP
SGS00393	02/25/93	4.92	SGS003-1.50m	X	SG70001ST
		14.76	SGS003-4.50m	X	SG70002ST
SGS00493	02/26/93	4.92	SGS004-1.50m	X	NR-WP
		14.17	SGS004-4.32m	X	NR-WP
		18.04	SGS004-5.50m	X	NR-WP
		18.04	SGS004-5.50m(Dup)	X	NR-WP
SGS00593	02/25/93	4.92	SGS005-1.50m	X	SG70003ST
		18.24	SGS005-5.56m	X	SG70004ST
SGS00693	02/23/93	4.92	SGS006-1.50m	X	NR-WP
		13.94	SGS006-4.25m	X	NR-WP
SGS00793	02/25/93	4.92	SGS007-1.50m	X	SG70008ST
		10.66	SGS007-3.25m	X	SG70009ST
SGS00893	02/23/93	4.92	SGS008-1.50m	X	NR-WP
		4.92	SGS008-1.50m(Dup)	X	NR-WP
		10.66	SGS008-3.25m	X	NR-WP
SGS00993	02/23/93	4.92	SGS009-1.50m	X	NR-WP
		7.87	SGS009-2.40m	X	NR-WP
		10.66	SGS009-3.25m	X	NR-WP
SGS01093	02/19/93	4.92	SGS010-1.50m	X	NR-WP
		13.12	SGS010-4.00m	X	NR-WP
SGS01193	03/02/93	4.92	SGS011-1.50m	X	SG70012ST
		9.84	SGS011-3.00m	X	SG70013ST
SGS01293	02/19/93	4.92	SGS012-1.50m	X	NR-WP
		9.84	SGS012-3.00m	X	NR-WP
		15.58	SGS012-4.75m	X	NR-WP
SGS01393	02/20/93	4.92	SGS013-1.50m	X	NR-WP
		19.02	SGS013-5.80m	X	NR-WP
		23.78	SGS013-7.25m	X	NR-WP
		23.78	SGS013-7.25m(Dup)	X	NR-WP
SGS01493	03/03/93	4.92	SGS014-1.50m	X	SG70014ST
		36.08	SGS014-11.00m	X	SG70015ST
SGS01593	02/20/93	4.92	SGS015-1.50m	X	NR-WP
		27.88	SGS015-8.50m	X	NR-WP
SGS01693	NP-ACC	NP-ACC	NP-ACC	NP-ACC	NR-WP
SGS01793	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP
SGS01893	02/20/93	4.92	SGS018-1.50m	X	NR-WP
		7.38	SGS018-2.25m	X	NR-WP
SGS01993	04/13/93	4.92	SGS019-1.50m	X	NR-WP
		4.92	SGS019-1.50m (Dup)	X	NR-WP
		8.20	SGS019-2.50m	X	NR-WP
		8.20	SGS019-2.50m(Dup)	X	NR-WP

Sampling Location[1]	Date Samples Collected	Depth (feet)	Sample Number[2]	Soil Gas Analyses[3]	QC Sample Number[4]
SGS02093	04/14/93	4.92	SGS020-1.50m	X	SG70018ST
		27.88	SGS020-8.50m	X	SG70019ST
		32.80	SGS020-10.00m	X	NR-WP
SGS02193	NP-DUP	NP-DUP	NP-DUP	NP-DUP	NR-WP
SGS02293	02/20/93	4.92	SGS022-1.50m	X	NR-WP
		35.26	SGS022-10.75m	X	NR-WP
SGS02393	03/03/93	4.92	SGS023-1.50m	X	SG70016ST
		18.04	SGS023-5.50m	X	SG70017ST
SGS02493	02/22/93	4.92	SGS024-1.50m	X	NR-WP
		10.66	SGS024-3.25m	X	NR-WP
SGS02593	02/22/93	4.92	SGS025-1.50m	X	NR-WP
		8.20	SGS025-2.50m	X	NR-WP
SGS02693	02/25/93	4.10	SGS026-1.25m	X	SG70007ST
SGS02793	02/22/93	4.92	SGS027-1.50m	X	NR-WP
SGS02893	02/22/93	4.92	SGS028-1.50m	X	NR-WP
		22.14	SGS028-6.75m	X	NR-WP
SGS02993	02/19/93	4.92	SGS029-1.50m	X	NR-WP
		9.84	SGS029-3.00m	X	NR-WP
SGS03093	03/02/93	4.92	SGS030-1.50m	X	SG70010ST
		16.40	SGS030-5.00m	X	SG70011ST
SGS03193	02/18/93	4.92	SGS031-1.50m	X	NR-WP
		13.12	SGS031-4.00m	X	NR-WP
SGS03293	02/18/93	4.92	SGS032-1.50m	X	NR-WP
		9.84	SGS032-3.00m	X	NR-WP
		9.84	SGS032-3.00m(Dup)	X	NR-WP
SGS03393	02/26/93	4.26	SGS033-1.30m	X	NR-WP
		4.26	SGS033-1.30m(Dup)	X	NR-WP
		5.12	SGS033-1.56m	X	NR-WP
SGS03493	02/26/93	4.92	SGS034-1.50m	X	NR-WP
		18.04	SGS034-5.50m	X	NR-WP
		18.04	SGS034-5.50m(Dup)	X	NR-WP
SGS03593	02/18/93	4.92	SGS035-1.50m	X	NR-WP
SGS03693	02/25/93	4.92	SGS036-1.50m	X	SG70005ST
		18.86	SGS036-5.75m	X	SG70006ST
SGS03793	02/18/93	4.92	SGS037-1.50m	X	NR-WP
		18.86	SGS037-5.75m	X	NR-WP
SGS03893	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP

1 Each soil-gas sampling location is within approximately 10 feet of the corresponding cone penetration test (CPT) location. For example, SGS02093 is within approximately 10 feet of CPT02093. CPT locations are presented in Figure C-1.

2 The soil-gas sampling (SGS) numbers consist of the sampling location and the sample depth in meters. These samples were analyzed using the onsite field gas chromatogram (GC). Eight duplicate (Dup) samples were also collected as noted.

3 Parameters for soil-gas sample analyses included methane, hydrogen sulfide, trichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, acetone, 2-butanone, methylene chloride, toluene, and total xylenes.

4 QC = quality control; Nineteen split samples were collected and transported to an offsite laboratory for analysis in accordance with the QC procedures for the OU 7 investigation.

Definitions:

NP-ACC	not performed - access; soil-gas sampling was not performed at this location due to safety concerns associated with mobilizing the rig down the hillside to the sampling location located below the steep face of the landfill along the western boundary of the East Landfill Pond.
NP-DUP	not performed - duplication of effort; soil-gas sampling was not performed at this location because two other locations (CPT01593 and CPT02293) encountered the buried sediments of the West Landfill Pond and soil-gas samples were collected from these locations.
NP-REF	not performed - refusal; soil-gas sampling was not performed at this location due to shallow refusals encountered at this site during the CPT investigation.
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
X	denotes that samples were collected and analyzed

Table C-8
Leachate–Groundwater Sampling Using BAT® System and Analyses

Sampling Location[1]	Date Samples Collected	Depth Interval[2] (feet)	Sample Number[3]	Headspace Analyses[4]	QC Sample Number[5]	Leachate–Groundwater Analyses[6]
BAT00193	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP	NR-WP
BAT00293	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT00393	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT00493	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT00593	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT00693	04/12/93	18.99 - 19.35	BAT006-5.79-5.90m	X	NR-WP	NR-WP
BAT00793	03/29/93	20.30 - 20.66	BAT007-6.19-6.30m	X	NR-WP	NR-WP
		16.86 - 17.22	BAT007-5.15-5.25m	X	NR-WP	NR-WP
BAT00893	03/04/93	25.06 - 25.42	BAT008-7.64-7.75m	X	NR-WP	NR-WP
		20.14 - 20.50	BAT008-6.14-6.25m	X	NR-WP	NR-WP
		17.68 - 18.04	BAT008-5.39-5.50m	X	NR-WP	NR-WP
BAT00993	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT01093	03/06/93	33.26 - 33.62	BAT010-10.14-10.25m	X	NR-WP	NR-WP
		27.52 - 28.70	BAT010-8.39-8.75m	X	NR-WP	NR-WP
		21.78 - 22.14	BAT010-6.64-6.75m	X	NR-WP	NR-WP
BAT01193	04/05/93	37.03 - 37.39	BAT011-11.29-11.40m	X	NR-WP	NR-WP
	04/03/93	27.68 - 28.37	BAT011-8.44-8.65m	X	GW70003ST	X
	04/05/93	14.73 - 15.09	BAT011-4.49-4.60m	X	NR-WP	NR-WP
BAT01293	03/09/93	10.30-10.66	BAT012-3.14-3.25m	X	NR-WP	NR-WP
BAT01393	03/10/93	34.90 - 35.26	BAT013-10.64-10.75m	X	NR-WP	NR-WP
		34.90 - 35.26	BAT013-10.64-10.75m(Dup)	X	NR-WP	NR-WP
		32.44 - 32.80	BAT013-9.89-10.00m	X	NR-WP	NR-WP
BAT01493	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT01593	03/12/93	35.72 - 36.08	BAT015-10.89-11.00m	X	NR-WP	NR-WP
BAT01693	NP-ACC	NP-ACC	NP-ACC	NP-ACC	NR-WP	NR-WP
BAT01793	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP	NR-WP
BAT01893	03/09/93	9.48 - 9.84	BAT018-2.89-3.00m	X	NR-WP	NR-WP
BAT01993	04/13/93	22.83 - 23.19	BAT019-6.96-7.07m	X	NR-WP	NR-WP
BAT02093	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT02193	NP-DUP	NP-DUP	NP-DUP	NP-DUP	NR-WP	NR-WP
BAT02293	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT02393	03/22/93	29.00 - 29.36	BAT023-8.84-8.95m	X	GW70000ST	X
BAT02493	03/16/93	15.22 - 15.58	BAT024-4.64-4.75m	X	NR-WP	NR-WP
BAT02593	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP	NR-WP
BAT02693	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT02793	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT02893	03/30/93	26.04 - 26.40	BAT028-7.94-8.05m	X	GW70002ST	X
BAT02993	03/13/93	21.78 - 22.14	BAT029-6.64-6.75m	X	NR-WP	NR-WP
	03/15/93	19.32 - 19.68	BAT029-5.89-6.00m	X	NR-WP	NR-WP
BAT03093	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT03193	NS-REF	NS-REF	NS-REF	NS-REF	NR-WP	NR-WP
BAT03293	03/26/93	18.50 - 18.86	BAT032-5.64-5.75m	X	GW70001ST	X
	03/27/93	16.04 - 16.40	BAT032-4.85-5.00m	X	NR-WP	NR-WP
BAT03393	NP-DRY	NP-DRY	NP-DRY	NP-DRY	NR-WP	NR-WP

Sampling Location[1]	Date Samples Collected	Depth Interval[2] (feet)	Sample Number[3]	Headspace Analyses[4]	QC Sample Number[5]	Leachate–Groundwater Analyses[6]
BAT03493	04/06/93	20.14 - 20.50	BAT034-6.14-6.25m	X	NR-WP	NR-WP
		20.14 - 20.50	BAT034-6.14-6.25m(Dup)	X	NR-WP	NR-WP
BAT03593	NP-DRY	NP-DRY	NP-DRY	NP-DRY	NR-WP	NR-WP
BAT03693	NP-DRY	NP-DRY	NP-DRY	NP-DRY	NR-WP	NR-WP
BAT03793	04/07/93	23.09 - 23.45	BAT037-7.04-7.15m	X	NR-WP	NR-WP
BAT03893	NP-REF	NP-REF	NP-REF	NP-REF	NR-WP	NR-WP

1 Each leachate–groundwater sampling location is within approximately 10 feet of the corresponding cone penetration test (CPT) location. For example, BAT02093 is within approximately 10 feet of CPT02093. CPT locations are presented in Figure C-1.

2 In general, the depth interval sampled was 11 centimeters (0.36 foot), which is the length of the filter screen used in the BAT® Enviroprobe. Due to insufficient volume, two 11-centimeter sample intervals were sometimes combined for the purpose of collecting a sufficient sample volume.

3 The leachate–groundwater sample numbers consist of the location and the sample interval in meters. The headspaces of these samples were analyzed using the onsite field gas chromatogram (GC). Two duplicate (Dup) samples were also collected as noted.

4 Parameters for headspace sample analyses included methane, hydrogen sulfide, trichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, acetone, 2-butanone, methylene chloride, toluene, and total xylenes.

5 QC = quality control; Four split samples were collected and transported to an offsite laboratory for analysis in accordance with the QC procedures for the OU 7 investigation.

6 Parameters for leachate–groundwater sample analyses included Contract Laboratory Program (CLP) volatile organic compounds.

Definitions:

NP-ACC not performed - access; leachate–groundwater sampling was not performed at this location due to safety concerns associated with mobilizing the rig down the hillside to the sampling location located below the steep face of the landfill along the western boundary of the East Landfill Pond.

NP-DRY not performed - dry; leachate–groundwater sampling was not performed at this location because nearby groundwater monitoring wells (71193 and 71693) installed during recent OU 7 field activities were dry or nearly dry.

NP-DUP not performed - duplication of effort; leachate–groundwater sampling was not performed at this site because two other locations (CPT01593 and CPT02293) encountered the buried sediments of the West Landfill Pond, and leachate–groundwater samples were collected from one of these locations.

NP-REF not performed - refusal; leachate–groundwater sampling was not performed at this location due to shallow refusals encountered at this site during the CPT investigation.

NR-WP not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).

NS-DRY not sampled - dry; leachate–groundwater samples were not collected at this location because leachate–groundwater was not encountered during BAT® sampling or because the water table surface was interpreted as below the top of bedrock.

NS-REF not sampled - refusal; leachate–groundwater samples were not collected at this location due to shallow refusal encountered during BAT® sampling.

X denotes that samples were collected and analyzed

Table C-9
Surface-Water Sampling and Analyses

Sampling Location[1]	Date Sample Collected	Sample Number[2]	QC Type	Analyses																							
				Radiation Screen	VOCs	SVOCs	Pest-icides	Metals[3]		Radionuclides									Water Quality Parameters							Nitrate as N	Cyanide	Sulfide	App. IX
										Gross α/β		$^{239,240}Pu$ ^{241}Am		$^{233,234}U$ ^{235}U ^{238}U		^{137}Cs $^{90,89}Sr$		H_3	TDS	TSS	Cl	F	SO_4	CO_3	HCO_3				
								Total	Diss.	Total	Diss.	Total	Diss	Total	Diss.	Total	Diss.												
SW097	12/17/92	SW70013ST	Real				NR											X											NR
		SW70014ST	Real				NR														X	ERR	X	X	X				NR
		SW70015ST	Real				NR																					X	NR
		SW70016ST	Real				NR																			X			NR
		SW70017ST	Real				NR	X																					NR
		SW70018ST	Real				NR																				X		NR
		SW70019ST	Real				NR												X	ERR									NR
		SW70020ST	Real	X			NR																						NR
		SW70021ST	Real				NR			X		X		X		X													NR
		SW70022ST	Real				NR				X		X		X		X												NR
		SW70023ST	Real		X		NR																						NR
		SW70024ST	Real			X	NR																						NR
		SW70025ST	Real				NR		X																				NR
	01/25/93	SW70026ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR
		SW70027ST	Equip Rinse	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR
	02/26/93	SW70030ST	Real	X	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
		SW70031ST	Equip Rinse	NR	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
		SW70036ST	Field Blank	NR	NR	NR	NR	X	X	X	X	X	X	X	X	X	X	NR	NR	NR	NR	NR	NR	NR	X	NR	NR	NR	NR
	03/24/93	SW70046ST	Real	X	X	X	NR	NS-IX	NS-IX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	X
	03/29/93	SW70050ST	Real	X	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	X

Sampling Location[1]	Date Samples Collected	Sample Number[2]	QC Type	Analyses: Radiation Screen	VOCs	SVOCs	Pest-icides	Metals[3] Total	Metals[3] Diss.	Radionuclides: Gross α/β Total	Gross α/β Diss.	$^{238,240}Pu$ ^{241}Am Total	$^{238,240}Pu$ ^{241}Am Diss	$^{233,234}U$ ^{236}U ^{238}U Total	$^{233,234}U$ ^{236}U ^{238}U Diss.	^{137}Cs $^{89,90}Sr$ Total	^{137}Cs $^{89,90}Sr$ Diss.	H_3	Water-Quality Parameters: TDS	TSS	Cl	F	SO_4	CO_3	HCO_3	Nitrate as N	Cyanide	Sulfide	App. IX
SW098	12/17/92	SW70000ST	Real	X			NR																						NR
		SW70001ST	Real		X		NR																						NR
		SW70002ST	Real			X	NR																						NR
		SW70003ST	Real				NR		X																				NR
		SW70004ST	Real				NR	X																					NR
		SW70005ST	Real				NR																						NR
		SW70006ST	Real				NR																				X		NR
		SW70007ST	Real				NR																					X	NR
		SW70008ST	Real				NR														X	ERR	X	X	X				NR
		SW70009ST	Real				NR																			X			NR
		SW70010ST	Real				NR			X		X		X		X			X	ERR									NR
		SW70011ST	Real				NR				X		X		X		X												NR
		SW70012ST	Real				NR																						NR
	01/25/93	SW70028ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR
		SW70029ST	DUP	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR
		SW70032ST	Trip Blank	NR	X	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	02/26/93	SW70036ST	Real	X	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
		SW70037ST	DUP	NR	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
	03/24/93	SW70043ST	Real	X	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
SW099	12/17/92	None	Real	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	01/25/93	None	Real	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	02/26/93	None	Real	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	03/24/93	SW70048ST	Equip Rinse	NR	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
	03/24/93	SW70049ST	Real	X	X	X	NR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ERR	ERR	NR
SW100	12/17/92	None	Real	DRY	DRY	DRY	NR	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	01/25/93	None	Real	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	02/26/93	None	Real	DRY	DRY	DRY	NR	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR
	03/24/93	None	Real	DRY	DRY	DRY	NR	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NR

[1] Figure C-3 presents surface-water sampling locations.

[2] One sample number was used per sample container for the first sampling event. One sample number was used for all sample containers/analytes on subsequent sampling events, except radiation screening samples, which had an additional sample number for the second sample. Missing sample numbers are for duplicate radiation screen samples that were collected but not shipped to an analytical laboratory.

[3] Includes standard and additional metals.

Definitions:

Am	americium
App.	appendix
Cl	chloride
CO_3	carbonate
Cs	cesium
Diss.	*dissolved*
DRY	not sampled due to dry or frozen conditions.
DUP	not sampled - duplicate; sample number SW70050ST is for Appendix IX dioxins/furans only to replace Appendix IX dioxins/furans sample number SW70046ST collected in the wrong type of sample container.
ERR	not sampled due to sampling error or sampled but analysis was inadvertently not requested.
F	fluoride
Gross α/β	gross alpha/beta
H_3	tritium
HCO_3	bicarbonate
N	nitrogen
NR	not required in accordance with the OU 7 work plan (DOE 1991).
NS-IX	not sampled because the Appendix IX analytical suite includes all VOCs, SVOCs, and metals.
Pu	plutonium
QC	quality control
SO_4	*sulfate*
Sr	strontium
SVOCs	semivolatile organic compounds
TDS	total dissolved solids
TSS	total suspended solids
U	uranium
VOCs	volatile organic compounds
X	denotes that samples were collected and analyzed

Table C-10
Sediment Sampling and Analyses

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Analyses													
				Radiation Screen	VOCs	SVOCs	Metals	Radionuclides					TOC	Nitrate/ Nitrite	Nitrate as N	pH	Appendix IX
								Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3[2]					
SED70093	03/18/93	SD70002ST	Real	X	NS-IX	NS-IX	NS-IX	X	X	X	X	NR-WP	X	X	X	X	X
SED70193	03/19/93	SD70003ST	Equipment Rinse	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
SED70193	03/22/93	SD70004ST	Real	X	X	X	X	X	X	X	X	NR-WP	X	X	X	X	NR-WP
SED70293	03/22/93	SD70005ST	Real	X	X	X	X	X	X	X	X	NR-WP	X	X	X	X	NR-WP
SED70293	03/22/93	SD70006ST	Duplicate	X	X	X	X	X	X	X	X	NR-WP	X	X	X	X	NR-WP

1 Figure C-3 presents sediment sampling locations.
2 Tritium samples were only collected for equipment rinse blanks.

Definitions:

Am	americium
Cs	cesium
Gross α/β	gross alpha/beta
H_3	tritium
N	nitrogen
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
NS-IX	not sampled - Appendix IX; not sampled because the Appendix IX analytical suite includes all VOCs, SVOCs, and metals.
Pu	plutonium
QC	quality control
Sr	strontium
SVOCs	semivolatile organic compounds
TOC	total organic carbon
U	uranium
VOCs	volatile organic compounds
X	denotes that samples were collected and analyzed

Table C-11
Soil-Gas Sampling and Analyses at IHSS 203

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Soil Gas Analyses[2]
SS712593	12/02/92	712593	Real	X
None	12/02/92	EQ BLK I	Equipment Blank	X
SS712693	12/02/92	712693	Real	X
SS712893	12/02/92	712793	Real	X
SS712993	12/02/92	712993	Real	X
SS713093	12/02/92	713093	Real	X
SS713193	12/02/92	713193	Real	X
SS713293	12/02/92	713293	Real	X
SS713393	12/02/92	713393	Real	X
SS713493	12/02/92	713493	Real	X
SS713593	12/02/92	713593	Real	X
SS713693	12/02/92	713693	Real	X
None	12/02/92	EQ BLK II	Equipment Blank	X
None	12/03/92	EQ BLK I	Equipment Blank	X
SS713793	12/03/92	713793	Real	X
SS713893	12/03/92	713893	Real	X
SS713993	12/03/92	713993	Real	X
SS714093	12/03/92	714093	Real	X
SS714193	12/03/92	714193	Real	X
SS714293	12/03/92	714293	Real	X
SS714393	12/03/92	714393	Real	X
SS714493	12/03/92	714493	Real	X
SS714593	12/03/92	714593	Real	X
SS714693	12/03/92	714693	Real	X
SS714793	12/03/92	714793	Real	X
SS714893	12/03/92	714893	Real	X
SS714993	12/03/92	714993	Real	X
SS715093	12/03/92	715093	Real	X
None	12/03/92	EQ BLK II	Equipment Blank	X
SS715193	12/04/92	715193	Real	X
SS715293	12/04/92	715293	Real	X
None	12/04/92	EQ BLK I	Equipment Blank	X
SS715393	12/04/92	715393	Real	X
SS715493	12/04/92	715493	Real	X
SS715493	12/04/92	715493 DUP	Duplicate	X
SS715593	12/04/92	715593	Real	X
SS715693	12/04/92	715693	Real	X
SS715793	12/04/92	715793	Real	X
SS715893	12/04/92	715893	Real	X
SS715993	12/04/92	715993	Real	X
None	12/04/92	EQ BLK II	Equipment Blank	X
None	12/04/92	EQ BLK I	Equipment Blank	X
SS716093	12/08/92	716093	Real	X

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Soil Gas Analyses[2]
SS716193	12/08/92	716193	Real	X
SS716293	12/08/92	716293	Real	X
SS716393	12/08/92	716393	Real	X
SS716493	12/08/92	716493	Real	X
SS716593	12/08/92	716593	Real	X
SS716693	12/08/92	716693	Real	X
SS716793	12/08/92	716793	Real	X
SS716893	12/08/92	716893	Real	X
SS716893	12/08/92	716893 DUP	Duplicate	X
SS716993	12/08/92	716993	Real	X
SS717093	12/08/92	717093	Real	X
SS717193	12/08/92	717193	Real	X
SS717293	12/08/92	717293	Real	X
SS717393	12/08/92	717393	Real	X

[1] Figure C-4 presents Phase I soil-gas sampling locations.

[2] Soil–gas samples were analyzed for trichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, acetone, 2-butanone, methylene chloride, toluene, xylenes (total), and benzene.

Definitions:

DUP	duplicate
EQ BLK	equipment blank
IHSS	individual hazardous substance site
QC	quality control
X	denotes that samples were collected and analyzed

Table C-12
Surface- and Subsurface-Soil Sampling and Analyses at IHSS 203

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses											
							Metals[2]		Radionuclides							
					Radiation Screen	PCBs	S	A	Gross α/β	$^{239,240}Pu$ ^{214}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3	TOC	Nitrate as N	Appendix IX
SS712593	11/30/92	SS70000ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70236ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS712693	12/02/92	SS70001ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS712793	12/02/92	SS70002ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/30/93	SS70235ST	0-10	Real	X	NS-IX	NS-IX	NS-IX	X	X	X	X	NS-ERR	X	X	X
SS712893	12/02/92	SS70003ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS712993	12/02/92	SS70004ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/30/93	SS70234ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS713093	12/02/92	SS70005ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713193	12/02/92	SS70006ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/30/93	SS70233ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR			NR-WP
SS713293	12/02/92	SS70007ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713393	12/02/92	SS70008ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70242ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS713493	12/02/92	SS70009ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713593	12/02/92	SS70010ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70036ST	None	Equipment Rinse	X	X	X	NS-ERR	X	X	X	X	NS-ERR	S-NA	X	NR-WP
SS713693	12/02/92	SS70011ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70035ST	0-2	Duplicate	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713793	12/02/92	SS70012ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713893	12/02/92	SS70013ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS713993	12/02/92	SS70014ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70237ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
		SS70238ST	0-10	Duplicate	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses											
					Radiation Screen	PCBs	Metals[1]		Radionuclides					TOC	Nitrate as N	Appendix IX
							S	A	Gross α/β	$^{239,240}Pu$ ^{214}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3			
SS714093	12/02/92	SS70015ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714193	12/02/92	SS70016ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70239ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS714293	12/02/92	SS70017ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714393	12/02/92	SS70018ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70240ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS714493	12/04/92	SS70019ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714593	12/04/92	SS70020ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70241ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS714693	12/03/92	SS70021ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714793	12/04/92	SS70022ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714893	12/03/92	SS70023ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS714993	12/03/92	SS70024ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715093	12/03/92	SS70025ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715193	12/03/92	SS70026ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715293	12/03/92	SS70027ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70037ST	0-2	Duplicate	NR-WP	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715393	12/03/92	SS70028ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70247ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS715493	12/03/92	SS70029ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70038ST	0-2	Duplicate	NR-WP	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715593	12/03/92	SS70030ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70246ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS715693	12/03/92	SS70031ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715793	12/03/92	SS70032ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70244ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
		SS70245ST	0-10	Duplicate	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS715893	12/03/92	SS70033ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS715993	12/03/92	SS70034ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70243ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS716093	12/09/92	SS70039ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (inches)	QC Type	Analyses											
					Radiation Screen	PCBs	Metals[2]		Radionuclides					TOC	Nitrate as N	Appendix IX
							S	A	Gross α/β	$^{239,240}Pu$ ^{214}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3			
SS716193	12/09/92	SS70040ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS716293	12/09/92	SS70041ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS716393	12/09/92	SS70042ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70043ST	0-2	Duplicate	NR-WP	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS716493	12/09/92	SS70044ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS716593	12/09/92	SS70045ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS716693	12/09/92	SS70046ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70048ST	None	Equipment Rinse	NR-WP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NR-WP
SS716793	12/09/92	SS70047ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	04/01/93	SS70252ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS716893	12/09/92	SS70049ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70050ST	None	Equipment Rinse	NR-WP	X	X	NS-ERR	X	X	X	X	NS-ERR	X	X	NR-WP
SS716993	12/09/92	SS70051ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	04/01/93	SS70251ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS717093	12/09/92	SS70052ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS717193	12/09/92	SS70053ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	04/01/93	SS70250ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
SS717293	12/09/92	SS70054ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
SS717393	12/09/92	SS70055ST	0-2	Real	X	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
		SS70056ST	0-2	Duplicate	NR-WP	X	X	NS-ERR	X	X	X	X	X	X	X	NR-WP
	03/31/93	SS70248ST	0-10	Real	X	X	X	X	X	X	X	X	NS-ERR	X	X	NR-WP
		SS70249ST	None	Equipment Rinse	X	X	X	X	X	X	X	X	X	X	X	NR-WP

Figure C-4 presents Phase I soil sampling locations at IHSS 203.

Standard (S) and additional (A) metals. Additional metals include cesium, lithium, molybdenum, strontium, and tin.

Definitions:

Am	americium
Cs	cesium
Gross α/β	gross alpha/beta
H_3	tritium
IHSS	individual hazardous substance site
N	nitrogen
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
NS-DUP	not sampled - duplication of effort; a complete suite was collected as sample number SS70036ST.
NS-ERR	not sampled - error; additional metals were inadvertently not requested for surface-soil samples; tritium analyses were inadvertently not requested for subsurface geologic material samples.
NS-IX	not sampled - Appendix IX; not sampled because Appendix IX analyses include volatile organic compounds, semivolatile organic compounds, PCBs, pesticides, herbicides, dioxins, furans, and metals.
PCBs	polychlorinated biphenyls
Pu	plutonium
QC	quality control
S-NA	sampled - not analyzed; TOC analysis for equipment rinse sample SS70036ST not run because sample was incorrectly preserved. Equipment rinse was resampled for TOC analysis (SS70048ST).
Sr	strontium
TOC	total organic carbon
U	uranium
X	denotes that samples were collected and analyzed

Table C-13
Surface- and Subsurface-Soil Sampling and Analyses at East Landfill Pond

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{90,98}Sr$	H_3[3]		
SS700093	12/18/92	SS70205ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70206ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
		SS70207ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
SS700193	12/18/92	SS70201ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70202ST	0-2	Real	X	NR-WP	NS-WP	NS-WP	NS-WP	NS-WP	NR-WP	NR-WP	NR-WP	NR-WP
SS700293	12/18/92	SS70195ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70196ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	04/08/93	SS70289ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70290ST	0-10	Duplicate	NR-WP	X	X	X	X	X	X	X	X	X
SS700393	12/18/92	SS70197ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70198ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	04/07/93	SS70288ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700493	12/17/92	SS70193ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70194ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70287ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700593	12/17/92	SS70192ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70285ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700693	12/17/92	SS70191ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70286ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700793	12/17/92	SS70190ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70284ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700893	12/17/92	SS70187ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70283ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS700993	12/17/92	SS70188ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70281ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701093	12/17/92	SS70189ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70282ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701193	12/17/92	SS70180ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70279ST	0-10	Real	X	X	X	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3[3]		
SS701293	12/17/92	SS70179ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70280ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701393	12/17/92	SS70181ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70183ST	None	Equip Rinse	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70278ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701493	12/17/92	SS70185ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70277ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701593	12/17/92	SS70186ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70274ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS701693	12/17/92	SS70184ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS701793	12/17/92	SS70182ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70275ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70276ST	0-10	Duplicate	NR-WP	X	X	X	X	X	X	X	X	X
SS701893	12/17/92	SS70177ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70178ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70262ST	0-10	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70264ST	None	Equip Rinse	NR-WP	X	X	X	X	X	X	X	X	X
SS701993	12/17/92	SS70176ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70263ST	0-10	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS702093	12/17/92	SS70175ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70260ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702193	12/17/92	SS70174ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70261ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702293	12/17/92	SS70173ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70258ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70259ST	0-10	Duplicate	X	X	X	X	X	X	X	X	X	X
	12/17/92	SS70172ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70257ST	0-10	Real	X	X	X	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{238}U ^{235}U	^{137}Cs $^{90,89}Sr$	H_3[3]		
SS702493	12/17/92	SS70171ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS702593	12/17/92	SS70170ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70255ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702693	12/16/92	SS70167ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70168ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70254ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702793	12/16/92	SS70169ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/06/93	SS70253ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702893	12/16/92	SS70166ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70270ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS702993	12/16/92	SS70165ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70271ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS703093	12/16/92	SS70164ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70273ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS703193	12/16/92	SS70163ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70272ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS703293	12/16/92	SS70161ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS703393	12/16/92	SS70160ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70162ST	None	Equip Rinse	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS703493	12/16/92	SS70158ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS703593	12/16/92	SS70159ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70268ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS703693	12/16/92	SS70156ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70157ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS703793	12/16/92	SS70155ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70266ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70267ST	0-10	Duplicate	X	X	X	X	X	X	X	X	X	X
SS703893	12/16/92	SS70153ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS703993	12/16/92	SS70154ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704093	12/16/92	SS70152ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{238}U ^{235}U	^{137}Cs $^{89,90}Sr$	H_3[3]		
SS704193	12/16/92	SS70151ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70269ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS704293	12/16/92	SS70149ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704393	12/16/92	SS70150ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/07/93	SS70265ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS704493	12/15/92	SS70148ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704593	12/15/92	SS70147ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704693	12/15/92	SS70145ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70146ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS704793	12/15/92	SS70144ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704893	12/15/92	SS70143ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS704993	12/15/92	SS70142ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705093	12/15/92	SS70140ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705193	12/15/92	SS70138ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705293	12/15/92	SS70137ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70139ST	None	Equip Rinse	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS705393	12/15/92	SS70136ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70306ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS705493	12/15/92	SS70135ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705593	12/15/92	SS70134ST	0-2	Real	X	X	NS-ERR	S-NA	S-NA	S-NA	S-NA	S-NA	X	X
	04/08/93	SS70303ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS705693	12/15/92	SS70133ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705793	12/15/92	SS70132ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS705893	12/15/92	SS70130ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70131ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS705993	12/15/92	SS70129ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706093	12/15/92	SS70128ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706193	12/15/92	SS70126ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70318ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS706293	12/15/92	SS70125ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses									
						Metals[2]		Radionuclides						
					Radiation Screen	S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3[2]	TOC	Nitrate as N
SS706393	12/15/92	SS70124ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70317ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS706493	12/15/92	SS70127ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706593	12/14/92	SS70120ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706693	12/14/92	SS70119ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706793	12/14/92	SS70121ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS706893	12/14/92	SS70122ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70123ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS706993	12/14/92	SS70112ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS707093	12/14/92	SS70114ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70319ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS707193	12/14/92	SS70115ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70116ST	None	Equip Rinse		X	NS-ERR	X	X	X	X	X	X	X
SS707293	12/14/92	SS70117ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70320ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS707393	12/14/92	SS70118ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS707493	12/14/92	SS70107ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS707593	12/14/92	SS70111ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS707693	12/14/92	SS70110ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70321ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS707793	12/14/92	SS70113ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70324ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS707893	12/11/92	SS70102ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70326ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS707993	12/11/92	SS70098ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70099ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
		SS70101ST	None	Equip Rinse	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70327ST	0-10	Real	X	X	X	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{238}U ^{235}U	^{137}Cs $^{89,90}Sr$	H_3[3]		
SS708093	12/14/92	SS70108ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70109ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70325ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708193	12/14/92	SS70105ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/12/93	SS70322ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70323ST	0-10	Duplicate	X	X	X	X	X	X	X	X	X	X
SS708293	12/14/92	SS70106ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70330ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708393	12/14/92	SS70103ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70332ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708493	12/14/92	SS70104ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70331ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708593	12/11/92	SS70096ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70328ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70329ST	0-10	Duplicate	NR-WP	X	X	X	X	X	X	X	X	X
SS708693	12/11/92	SS70094ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70335ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708793	12/11/92	SS70097ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70334ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708893	12/11/92	SS70100ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70333ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS708993	12/15/92	SS70141ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/92	SS70338ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS709093	12/11/92	SS70095ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70337ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70339ST	None	Equip Rinse	NR-WP	X	X	X	X	X	X	X	X	X
SS709193	12/11/92	SS70093ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/13/93	SS70336ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS709293	12/11/92	SS70091ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS709393	12/11/92	SS70090ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS709493	12/11/92	SS70092ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{238}U ^{235}U	^{137}Cs $^{89,90}Sr$	H_3[3]		
SS709593	12/10/92	SS70058ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70059ST	None	Equip Rinse	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	NR-WP	NR-WP
	04/08/93	SS70302ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS709693	12/10/92	SS70057ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS709793	12/10/92	SS70060ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70300ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS709893	12/10/92	SS70061ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS709993	12/10/92	SS70062ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70297ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS710093	12/11/92	SS70063ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS710193	12/18/92	SS70199ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70200ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
SS710293	12/10/92	SS70064ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70291ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
		SS70293ST	None	Equip Rinse	NR-WP	X	X	X	X	X	X	X	X	X
SS710393	12/10/92	SS70074ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS710493	12/11/92	SS70082ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS710593	12/11/92	SS70081ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS710693	12/11/92	SS70083ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70299ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS710793	12/11/92	SS70087ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70088ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS710893	12/11/92	SS70089ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70301ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS710993	12/11/92	SS70086ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS711093	12/11/92	SS70084ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS711193	12/11/92	SS70085ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70298ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS711293	12/10/92	SS70078ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70079ST	None	Equip Rinse	NR-WP	NR-WP	NS-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	NR-WP	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (inches)	QC Type	Analyses									
					Radiation Screen	Metals[2]		Radionuclides					TOC	Nitrate as N
						S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$	H_3[3]		
SS711393	12/11/92	SS70080ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS711493	12/10/92	SS70070ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70296ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS711593	12/18/92	SS70203ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70204ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
SS711693	12/10/92	SS70071ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70292ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS711793	12/10/92	SS70065ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS711893	12/10/92	SS70066ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS711993	12/10/92	SS70067ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70068ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70295ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS712093	12/10/92	SS70069ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
SS712193	12/10/92	SS70072ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70073ST	None	Equip Rinse	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS712293	12/10/92	SS70077ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
	04/08/93	SS70294ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS712393	12/10/92	SS70075ST	0-2	Real	X	X	NS-ERR	X	X	X	X	X	X	X
		SS70076ST	0-2	Duplicate	NR-WP	X	NS-ERR	X	X	X	X	X	X	X
SS719693	04/12/93	SS70314ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
		SS70315ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS719793	04/12/93	SS70316ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
SS719893	04/12/93	SS70305ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
	04/08/93	SS70304ST	0-10	Real	X	X	X	X	X	X	X	X	X	X
SS719993	04/12/93	SS70308ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
		SS70309ST	0-2	Duplicate	X	X	X	X	X	X	X	X	X	X
SS720093	04/12/93	SS70307ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
SS720193	04/12/93	SS70310ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
SS720293	04/12/93	SS70311ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
SS720393	04/12/93	SS70312ST	0-2	Real	X	X	X	X	X	X	X	X	X	X
SS720493	04/12/93	SS70313ST	0-2	Real	X	X	X	X	X	X	X	X	X	X

[1] Figure C-5 presents soil-sampling locations at East Landfill Pond.
[2] Standard (S) and additional (A) metals. Additional metals include cesium, lithium, molybdenum, strontium, and tin.
[3] Equipment rinse samples SS70059ST and SS70079ST were analyzed for tritium only to fulfill the QC requirements for equipment rinse samples SS70036ST and SS70050ST, which were not analyzed for tritium.

Definitions:

Am	americium
Cs	cesium
Equip Rinse	equipment rinse
Gross α/β	gross alpha/beta
H_3	tritium
N	nitrogen
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
NS-ERR	not sampled - error; additional metals were inadvertantly not requested for most surface-soil samples.
Pu	plutonium
QC	quality control
S-NA	sampled - not analyzed; no analytical results because the sample bottle was broken at the analytical laboratory.
Sr	strontium
TOC	total organic carbon
U	uranium
X	denotes that samples were collected and analyzed

Table C-14
Surface-Soil Sampling and Analyses at IHSS 114

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (Inches)	Analyses														
							Metals[2]		Radionuclides									
				QC Type	Radiation Screen	SVOCs	S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{90,89}Sr$	Alkalinity	TOC	pH	Asbestos	Bulk Density	Grain Size
SS717493	03/05/93	SS70223ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS717593	03/08/93	SS70229ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS717693	03/06/93	SS70227ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		SS70228ST	0-2	Duplicate	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS717793	03/06/93	SS70226ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS717893	03/05/93	SS70222ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS717993	03/05/93	SS70221ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718093	03/04/93	SS70220ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718193	03/06/93	SS70225ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718293	03/04/93	SS70217ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718393	03/04/93	SS70218ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718493	03/04/93	SS70219ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718593	03/06/93	SS70224ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718693	03/03/93	SS70216ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718793	03/03/93	SS70215ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718893	03/03/93	SS70214ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS718993	03/02/93	SS70213ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS719093	03/01/93	SS70208ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		SS70209ST	0-2	Duplicate	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS719193	03/02/93	SS70210ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS719293	03/02/93	SS70211ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS719393	03/02/93	SS70212ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SS719493	03/08/93	SS70230ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		SS70232ST	None	Equipment Rinse	NR-MOD	X	X	X	X	X	X	X	NR-MOD	X	NR-MOD	X	NR-MOD	NR-MOD
SS719593	03/08/93	SS70231ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X

[1] Figure C-6 presents soil-sampling locations at IHSS 114.

[2] Standard (S) and additional (A) metals. Additional metals include cesium, lithium, molybdenum, strontium, and tin.

Definitions:

Am	americium
Cs	cesium
Gross α/β	gross alpha/beta
NR-MOD	not required - modification; not required in accordance with the OU 7 work plan addendum (DOE 1993); equipment rinse sample was analyzed for tritium and was not analyzed for alkalinity, pH, bulk density, or grain size.
Pu	plutonium
QC	quality control
Sr	strontium
SVOCs	semivolatile organic compounds
TOC	total organic carbon
U	uranium
X	denotes that samples were collected and analyzed

Table C-15
Drilling and Completion Details for Boreholes and Wells

Location[1]	Well (W) or Borehole (BH)	Date Completed or Abandoned	Alluvium–Bedrock Contact (feet)	Weathered/ Unweathered Bedrock Contact (feet)	Total Depth (feet)	Depth of Surface Casing (feet)	Screen Interval (feet)	Geologic Material Screened[2]
70093	W	01/02/93	22.3	NE	24.4	None	7.0-22.0	A
70193	W	01/15/93	19.5	36.4	39.4	None	22.3-37.3	WBR
70293	BH/W	01/11/93	21.5	~38 to 42	73.3	28.2	52.1-67.1	BR
70393	W	02/02/93	22.8	NE	26.0	None	7.8-22.8	A
70493	W	02/01/93	21.3	44.0	46.0	None	24.0-44.0	WBR
70593	BH/W	01/28/93	~22	55.1	151.5	30.3	121.0-136.0	BR
70693	BH/W	12/04/92	28.5	NE	30.5	None	8.4-28.4	A
70793	NC-NWBR	NC-NWBR	NC-NWBR	NC-NWBR	NC-NWBR	NC-NWBR	NC-NWBR	NC-NWBR
70893	BH/W	01/06/93	26.3	~32	153.5	32	51.0-66.0	BR
70993	BH	02/03/93	7.2	28.0	31.3	None	None	None
71093	BH	02/05/93	8.4	32.7	36.1	None	None	None
71193	W	02/18/93	20.2	33.9	36.0	None	10.0-20.0	A/F
71293	NC-DUP	NC-DUP	NC-DUP	NC-DUP	NC-DUP	NC-DUP	NC-DUP	NC-DUP
71393	BH	02/23/93	21.8	38.0	40.0	23.5	None	None
71493	W	03/04/93	22.8	NE	26.0	18.6	18.8-22.8	F
71593	BH	03/04/93	27.0	37.0	41.0	28.2	None	None
71693	W	03/05/93	26.3	NE	28.3	None	16.3-26.3	F
71793	BH	03/02/93	25.6	31.8	34.0	26.5	None	None
71893	W	03/04/93	26.0	NE	28.0	None	10.7-25.7	F
71993	BH	02/20/93	36.4	42.5	46.5	38.4	None	None
72093	W	02/23/93	35.4	NE	37.6	None	30.4-35.4	F
72193	BH	02/27/93	39.6	58.2	60.5	39.8	None	None
72293	W	03/04/93	32.7	NE	34.6	None	27.6-32.6	F
72393	W	02/23/93	NE	NE	24.4	None	12.0-22.0	F
72493	W	02/27/93	NE	NE	30.2	None	17.9-27.9	F

[1] Figure C-7 presents Phase I borehole drilling locations; Figure C-8 presents Phase I monitoring well locations.

[2] Alluvium (A), Fill (F), Weathered Bedrock (WBR), or Bedrock (BR)

Definitions:

NC-DUP not completed - duplication; trash was not encountered in borehole 71193 so a well was installed in that borehole instead of drilling and installing well 71293.

NC-NWBR not completed - no weathered bedrock; weathered bedrock was not encountered in borehole so well 70793 was not installed.

NE not encountered; alluvium–bedrock or weathered bedrock–unweathered bedrock contact was not encountered.

Table C-16
Borehole Sampling and Analyses

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
										Radionuclides										
					Radiation Screen	VOCs	SVOCs	PCBs[2]	Metals[3]	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{238}U	^{137}Cs ^{90}Sr	N_t	TOC	Nitrate as N	Nitrate/ Nitrite	pH	Sulfide	Appendix IX
70493[4]	01/29/93	BH70044ST	None	Equipment Rinse[5]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/29/93	BH70045ST	0-2	Real	X	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/29/93	BH70046ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/29/93	BH70047ST	3.75-4.0	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/29/93	BH70048ST	4-6	Real	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	NS-DUP	NS-DUP	NR-WP
	01/29/93	BH70049ST	6-8	Real	X	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
		BH70050ST	6-8	Dup	NR-WP	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
	01/29/93	BH70051ST	8-10	Real	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	NS-DUP	NS-DUP	NR-WP
	01/29/93	BH70052ST	10-12	Real	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NR-WP
	01/30/93	BH70053ST	12-14	Real	X	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
	01/30/93	BH70054ST	14-16	Real	X	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
	01/30/93	BH70055ST	16-18	Real	X	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
	01/30/93	BH70056ST	18-20	Real	X	NS-DUP	NS-DUR	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
		BH70057ST	18-20	Dup	NR-WP	NS-DUP	NS-DUP	NS-DUP	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	X	X	NR-WP
	01/30/93	BH70058ST	20-22	Real	X	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	NS-DUP	X	X	X	NS-DUP	NS-DUP	NR-WP
70593[4]	01/18/93	BH70000ST	None	Equipment Rinse[5]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/18/93	BH70001ST	0-2	Real	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70002ST	0-2	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/18/93	BH70003ST	2-4	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70004ST	2-4	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/18/93	BH70005ST	4-6	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70006ST	4-6	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/18/93	BH70007ST	6-8	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70008ST	6-8	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70009ST	8-10	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70010ST	8-10	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70011ST	10-12	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70012ST	10-12	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70013ST	12-14	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70014ST	12-14	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70015ST	14-16	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
										Radionuclides										
					Radiation Screen	VOCs	SVOCs	PCBs[2]	Metals[3]	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{234,235,238}U$ ^{235}U	^{137}Cs ^{90}Sr	H_3	TOC	Nitrate as N	Nitrate/ Nitrite	pH	Sulfide	Appendix IX
		BH70016ST	14-16	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70017ST	16-18	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70018ST	16-18	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70019ST	18-20	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70020ST	18-20	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70021ST	20-22	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
		BH70022ST	20-22	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/19/93	BH70023ST	22-26	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70024ST	22-26	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
		BH70025ST	22-26	Dup	NR-WP	NR-WP		X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/19/93	BH70026ST	26-30	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70027ST	26-30	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/22/93	BH70028ST	30.4-34.0	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70029ST	30.4-34.0	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/22/93	BH70030ST	34.0-38.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70031ST	34.0-38.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/22/93	BH70032ST	38.1-42.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70033ST	38.1-42.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
		BH70034ST	38.1-42.1	Dup	NR-WP	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/22/93	BH70035ST	42.1-46.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70036ST	42.1-46.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
		BH70037ST	42.1-46.1	Dup	NR-WP	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	01/22/93	BH70038ST	46.1-50.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70039ST	46.1-50.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/29/93	BH70040ST	50.1-54.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70041ST	50.1-54.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	01/29/93	BH70042ST	54.1-58.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70043ST	54.1-58.1	Real	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
70993	02/03/93	BH70059ST	None	Equipment Rinse[6]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70060ST	0.2-2.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70061ST	2.2-4.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70062ST	4.2-6.2	Real	X	NS-NCR	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
	02/03/93	BH70063ST	7.2-11.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70064ST	7.2-11.2	Dup	NR-WP	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70065ST	11.2-15.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70066ST	15.2-19.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
					Radiation Screen	VOCs	SVOCs	PCBs[1]	Metals[1]	Radionuclides					TOC	Nitrate as N	Nitrate/ Nitrite	pH	Sulfide	Appendix IX
										Gross α/β	$^{238,240}Pu$ ^{241}Am	$^{234,238}U$ ^{235}U	^{137}Cs ^{90}Sr	H_3						
	02/03/93	BH70067ST	19.2-23.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70068ST	23.2-27.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/03/93	BH70069ST	27.2-31.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
71093	02/04/93	BH70070ST	None	Equipment Rinse[5]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70071ST	0-2.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70072ST	2.1-4.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70073ST	4.1-6.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70074ST	6.1-8.1	Real	X	NS-NCR	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP
	02/04/93	BH70075ST	8.4-12.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70076ST	8.4-12.1	Dup	NR-WP	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70077ST	12.1-16.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70078ST	16.1-20.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70079ST	20.1-24.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70080ST	24.1-28.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/04/93	BH70081ST	28.1-32.1	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
71193	02/10/93	BH70089ST	None	Equipment Rinse[5]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70090ST	0-2	Real	X	NS-NCR	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70091ST	2-4	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70092ST	4-6	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70093ST	6-8	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70094ST	8-10	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70095ST	10-12	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70096ST	12-14	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70097ST	14-16	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/10/93	BH70098ST	16-18	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/10/93	BH70099ST	18-20	Real	X	X	S-NA	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/11/93	BH70100ST	20-24	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/11/93	BH70101ST	24-28	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70102ST	24-28	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/11/93	BH70103ST	28-32	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70104ST	28-32	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/11/93	BH70105ST	32-36	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
					Radiation Screen	VOCs	SVOCs	PCBs[2]	Metals[3]	Radionuclides					TOC	Nitrate as N	Nitrate/ Nitrite	pH	Sulfide	Appendix IX
										Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{234,235,238}U$ ^{235}U ^{238}U	^{137}Cs ^{90}Sr	H_3						
71393	02/12/93	BH70106ST	None	Equipment Rinse[6]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70107ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70108ST	2-4	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70109ST	4-6	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/12/93	None	6-8	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/12/93	None	8-10	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/12/93	BH70110ST	10-11.8	Real	X	NS-NCR	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/12/93	None	11.8-14	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/12/93	BH70111ST	14-16	Real	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/12/93	BH70112ST	16-18	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70113ST	18-20	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70114ST	20-22	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/12/93	BH70115ST	22-24	Real	X	NS-NCR	NS-NCR	NS-NCR	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NS-NCR	NR-WP
	02/12/93	None	24-26	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/23/93	BH70129ST	26-30	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70130ST	26-30	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/23/93	BH70131ST	30-34	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70132ST	30-34	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/23/93	BH70133ST	34-36	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/23/93	None	36-38	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/23/93	BH70134ST	38-40	Real	X	S-NA	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
71593	03/01/93	BH70156ST	None	Equipment Rinse[6]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/01/93	BH70157ST	0-1.9	Real	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	03/01/93	BH70158ST	1.9-3.9	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	03/01/93	BH70159ST	3.9-5.9	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/01/93	None	5.9-7.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	None	7.9-9.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	None	9.9-11.0	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	BH70160ST	11.9-13.9	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	03/01/93	BH70161ST	13.9-15.9	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/01/93	None	15.9-17.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	None	17.9-19.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	None	19.9-21.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	None	21.9-23.9	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	03/01/93	BH70162ST	23.9-25.9	Real	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
										Radionuclides										
					Radiation Screen	VOCs	SVOCs	PCBs[2]	Metals[3]	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{234,235,238}U$ ^{235}U ^{238}U	^{137}Cs ^{90}Sr	K_d	TOC	Nitrate as N	Nitrate/ Nitrate	pH	Sulfide	Appendix IX
	03/01/93	BH70163ST	25.9-27.9	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	03/01/93	BH70164ST	27.9-28.9	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/03/93	BH70168ST	29-33	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/03/93	BH70169ST	33-37	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70170ST	33-37	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/03/93	BH70171ST	37-41	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
71793	02/25/93	BH70135ST	None	Equipment Rinse[4]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70136ST	0-2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70137ST	2-4	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70138ST	4-5	Real	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/25/93	None	5-6.7	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/25/93	BH70139ST	6.7-8	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/25/93	None	8-11	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/25/93	BH70140ST	11-12	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70141ST	12-14	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70142ST	14-16	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70143ST	16-18	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70144ST	18-20	Real	X	NS-NCR	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70145ST	20-22	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70146ST	22-24	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70147ST	24-26	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/25/93	BH70148ST	26-28	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/02/93	BH70165ST	28-32	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70166ST	28-32	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/02/93	BH70167ST	32-34	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
71993	02/08/93	BH70062ST	None	Equipment Rinse[4]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/08/93	BH70063ST	0-2.2	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/08/93	None	2.2-4.4	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/08/93	None	4.4-6.4	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/08/93	BH70064ST	6.4-8.4	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/08/93	BH70065ST	8.4-10.4	Real	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/08/93	BH70066ST	10.4-12.4	Real	X	NS-NCR	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/08/93	BH70067ST	12.4-14.4	Real	X	NS-NCR	X	X	X	X	X	X	X	X					X	NR-WP
	02/08/93	None	14.4-36.4	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/08/93	BH70068ST	36.4-38.4	Real	X	X	X	X	X	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	Sample Depth (feet)	QC Type	Analyses															
										Radionuclides										
					Radiation Screen	VOCs	SVOCs	PCBs[2]	Metals[3]	Gross α/β	$^{239,240}Pu$ / ^{241}Am	$^{233,234}U$ / ^{238}U	^{137}Cs / ^{90}Sr	H_3	TOC	Nitrate as N	Nitrate/ Nitrite	pH	Sulfide	Appendix IX
	02/08/93	None	38.4-40.5	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/20/93	BH70116ST	40.5-44.5	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70117ST	40.5-44.5	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
72193	02/22/93	BH70118ST	None	Equipment Rinse[6]	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/22/93	BH70119ST	0-2.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/22/93	BH70120ST	2.3-4.3	Real	X	NS-NCR	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/22/93	None	4.3-6.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	None	6.3-8.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	None	8.3-10.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	BH70121ST	10.3-12.3	Real	X	S-NA	S-NA	S-NA	S-NA	S-NA	S-NA	S-NA	S-NA	S-NA	X	X	X	S-NA	S-NA	NR-WP
	02/22/93	BH70122ST	12.3-14.3	Real	X	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/22/93	None	14.3-16.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	BH70123ST	16.3-18.3	Real	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/22/93	None	18.3-20.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	BH70124ST	20.3-22.3	Real	X	X	X	X	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	X	NR-WP
	02/22/93	None	22.3-24.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	BH70125ST	24.3-26.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	02/22/93	BH70126ST	26.3-28.3	Real	X		X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/22/93	BH70127ST	28.3-30.3	Real	X	X	X	X	X										X	NR-WP
	02/22/93	None	30.3-32.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	None	32.3-34.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	None	34.3-36.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	None	36.3-38.3	Real	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NS-NCR	NR-WP
	02/22/93	BH70128ST	38.3-40.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/26/93	BH70149ST	40.3-44.2	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/26/93	BH70150ST	44.2-48.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70151ST	44.2-48.3	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/26/93	BH70152ST	48.3-52.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
		BH70153ST	48.3-52.3	Dup	X	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/26/93	BH70154ST	52.3-56.3	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	02/26/93	BH70155ST	56.3-60.0	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP

[1] Figure C-7 presents Phase I borehole sampling locations.
[2] Samples BH70000ST through BH70058ST were analyzed for pesticides and PCBs; samples following BH70058ST were analyzed for PCBs only.
[3] Includes standard and additional metals. Additional metals include cesium, lithium, molybdenum, strontium, and tin.
[4] Analytical samples from 70493 and 70593 provide one complete suite for site-specific background characterization.
[5] Equipment rinse samples were analyzed for total suspended solids (TSS).

Definitions:

Am	americium
Cs	cesium
Dup	duplicate
Gross α/β	gross alpha/beta
H_3	tritium
N	nitrogen
NS-DUP	not sampled - duplicate; analytical samples from designated interval were collected in borehole 70593.
NS-NCR	not sampled - no core recovery; analytical samples from designated interval were collected in borehole 70493.
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
PCBs	polychlorinated biphenyls
Pu	plutonium
QC	quality control
S-NA	sampled - not analyzed; sample bottle was broken at the analytical laboratory for SVOC sample BH70099ST, so there are no analytical results; sample BH70121ST contained pieces of asphalt and was never shipped except for TOC, nitrate/nitrite, and nitrate and N samples; holding time was exceeded for VOC sample
Sr	strontium
SVOCs	semivolatile organic compounds
TOC	total organic carbon
U	uranium
VOCs	volatile organic compounds
X	denotes that samples were collected and analyzed

Table C-17
Groundwater Sampling and Analyses

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Analyses: Radiation Screen	VOCs	SVOCs	Water-Quality Parameters	Sulfide	Nitrate/Nitrite	Metals[2] Total	Metals[2] Dissolved	Gross α/β (dissolved)	$^{233,234}U$, ^{234}U, ^{238}U (dissolved)	$^{239,240}Pu$, ^{241}Am Total	$^{239,240}Pu$, ^{241}Am Dissolved	^{137}Cs, $^{89,90}Sr$ (dissolved)	H_3	Cyanide	Appendix IX
70093	03/25/93	GW70011ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/25/93	GW70013ST	Dup	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/20/93	GW00638WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/24/93	GW00830WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/14/93	GW00988WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70193	03/25/93	GWS70012ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/20/93	GW00639WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/24/93	GW00831WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/15/93	GW00994WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70293	03/27/93	GW70015ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/28/93	GW00640WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/24/93	GW00832WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/15/93	GW00990WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70393	03/24/93	GW70010ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/22/93	GW00641WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/1/93	GW00833WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/15/93	GW00991WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70493	03/27/93	GW70017ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/22/93	GW00642WC	Real	X	X	X	X	NS-DW	X	X	X	X	X	X	NS-DW	NS-DW	X	X	NR-WP
	05/25/93	GW00834WC	Real	X	X	X	X	X	X	X	X	X	X	NS-DW	X	NS-DW	X	NS-DW	NR-WP
	06/22/93	GW00989WC	Real	X	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	X	X	NR-WP
	06/22/93	GW00989WC	Trip Blank	NR-WP	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP
	06/22/93	GW00989WC	Field Blank	NR-WP	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Analyses: Radiation Screen	VOCs	SVOCs	Water-Quality Parameters	Sulfide	Nitrate/ Nitrite	Metals[2] Total	Metals[2] Dissolved	Gross α/β (dissolved)	$^{233,234}U$ ^{235}U, ^{238}U (dissolved)	$^{239,240}Pu$, ^{241}Am Total	$^{239,240}Pu$, ^{241}Am Dissolved	^{137}Cs $^{90,89}Sr$ (dissolved)	H_2	Cyanide	Appendix IX
70593	04/02/93	GW70026ST	Real	X	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	X	X	NR-WP
	04/28/93	GW00643WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/02/93	GW00835WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/16/93	GW00995WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70693	03/26/93	GW70014ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/27/93	GW00644WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/25/93	GW00836WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/15/93	GW00996WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
70893	04/02/93	GW70027ST	Real	X	X	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	X	NS-DW	NR-WP
	04/27/93	GW00645WC	Real	X	X	X	X	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NR-WP
	05/26/93	GW00837WC	Real	X	X	X	X	X	X	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NR-WP
	06/16/93	GW00997WC	Real	X	X	X	X	NS-DW	X	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	X	NS-DW	NR-WP
71193	03/27/93	GW70016ST	Real	X	X	X	X	X	X	X	NS-DW	X	X	NS-DW	X	NS-DW	X	X	NR-WP
	04/28/93	GW00646WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/26/93	GW00838WC	Real	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	NS-DW	X	X	NR-WP
	06/18/93	GW00998WC	Real	X	X	X	X	X	X	NS-DW	X	X	X	NS-DW	NS-DW	X	X	NS-DW	NR-WP
71493	03/30/93	GW70018ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	NS-DW	X	X	NR-WP
	04/28/93	GW00647WC	Real	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	NS-DW	X	X	NR-WP
	05/26/93	GW00839WC	Real	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	NS-DW	X	NS-DW	NR-WP
	06/16/93	GW00999WC	Real	X	X	X	X	X	X	NS-DW	NS-DW	X	X	NS-DW	NS-DW	X	NS-DW	NS-DW	NR-WP
71693	04/01/93	None	Real	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP
	04/26/93	None	Real	NS-DRY	NS-DRY	NS-DRY	NS-DRY.	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP
	05/28/93	GW00915WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/17/93	GW01000WC	Real	X	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NS-DW	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Analyses															
				Radiation Screen	VOCs	SVOCs	Water-Quality Parameters	Sulfide	Nitrate/ Nitrite	Metals[2]		Gross α/β (dissolved)	$^{233,234}U$ ^{236}U, ^{238}U (dissolved)	$^{238,240}Pu$, ^{241}Am		^{137}Cs $^{89,90}Sr$ (dissolved)	H_3	Cyanide	Appendix IX
										Total	Dissolved			Total	Dissolved				
71893	03/29/93	GW70019ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	03/29/93	GW70019STMS	MS	NR-WP	X	NR-WP	X	NR-WP	X	NR-WP	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	NR-WP
	03/29/93	GW70019STMSD	MSD	NR-WP	X	NR-WP	X	NR-WP	X	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	NR-WP
	03/29/93	GW70021ST	Lab Repl.	X	X	X	X	X	X	X	X	NR-SOP	NR-SOP	X	X	X	X	X	NR-WP
	03/29/93	GW70022ST	Dup	X	X	X	X	X	X	X	X	NR-WP	NR-WP	X	X	X	X	X	NR-WP
	04/26/93	GW00654WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/26/93	GW00655WC	Dup	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/26/93	GW00654WCMSD	MSD	NR-SOP	X	X	X	X	X	NR-SOP	NR-SOP	NR-SOP	NR-SOP	NR-SOP	X	NR-SOP	NR-SOP	X	NR-WP
	04/26/93	GW00656WC	Equip Rinse	NR-WP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/26/93	GW00654WCMS	MS	NR-SOP	X	X	X	X	X	X	X	NR-SOP	NR-SOP	NR-SOP	NR-SOP	NR-SOP	NR-SOP	X	NR-WP
	05/27/93	GW00841WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/18/93	GW01001WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
72093	03/31/93	GW70024ST	Real	X	NS-IX	NS-IX	X	NS-IX	X	NS-IX	NS-IX	NS-DW	NS-DW	X	X	X	X	NS-IX	X
	03/31/93	GW70025ST	Equip Rinse	NR-WP	X	X	X	X	X	X	X	NS-DW	NS-DW	X	X	X	X	X	NR-WP
	04/26/93	GW00649WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/27/93	GW00842WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/21/93	GW01002WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
72293	03/31/93	GW70023ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/26/93	GW00650WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/27/93	GW00843WC	Real	X	X	X	X	X	X	X	X	X	X	X	NS-DW	NS-DW	X	X	NR-WP
	06/16/93	GW01003WC	Real	X	X	X	X	X	X	X	X	X	X	NS-DW	X	NS-DW	X	X	NR-WP
72393	03/29/93	GW70020ST	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	04/26/93	GW00651WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	05/27/93	GW00844WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP
	06/15/93	GW01004WC	Real	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NR-WP

Sampling Location[1]	Date Samples Collected	Sample Number	QC Type	Analyses															
				Radiation Screen	VOCs	SVOCs	Water-Quality Parameters	Sulfide	Nitrate/ Nitrite	Metals[2]		Gross α/β (dissolved)	$^{233,234}U$ ^{235}U, ^{238}U (dissolved)	$^{239,240}Pu$, ^{241}Am		^{137}Cs $^{89,90}Sr$ (dissolved)	H_3	Cyanide	Appendix IX
										Total	Dissolved			Total	Dissolved				
72493	03/30/93	None	Real	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DR	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP
	04/26/93	None	Real	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP
	05/27/93	GW00922WC	Real	X	NS-DRY	ND-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP
	06/15/93	None	Real	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NS-DRY	NR-WP

Figure C-8 presents groundwater sampling locations.

Includes standard and additional metals. Additional metals include cesium, lithium, molybdenum, strontium, and tin.

Definitions:

Am	americium
Cs	cesium
Dup	duplicate
Equip Rinse	equipment rinse
Gross α/β	gross alpha/beta
H_3	tritium
Lab Repl.	laboratory replicate
MS	matrix spike
MSD	matrix spike duplicate
NR-SOP	not required - standard operating procedure (SOP); not required in accordance with Groundwater SOP GW.06 (EG&G 1992).
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
NS-DRY	not sampled - dry; not sampled due to dry conditions.
NS-DW	not sampled - dewatered; not sampled because well dewatered.
NS-IX	not sampled - Appendix IX; not sampled because Appendix IX sample suite includes VOCs, SVOCs, and metals.
Pu	plutonium
QC	quality control
Sr	strontium
SVOCs	semivolatile organic compounds
U	uranium
VOCs	volatile organic compounds
X	denotes that sample was collected and analyzed

Table C-18
Biota Sampling and Analyses

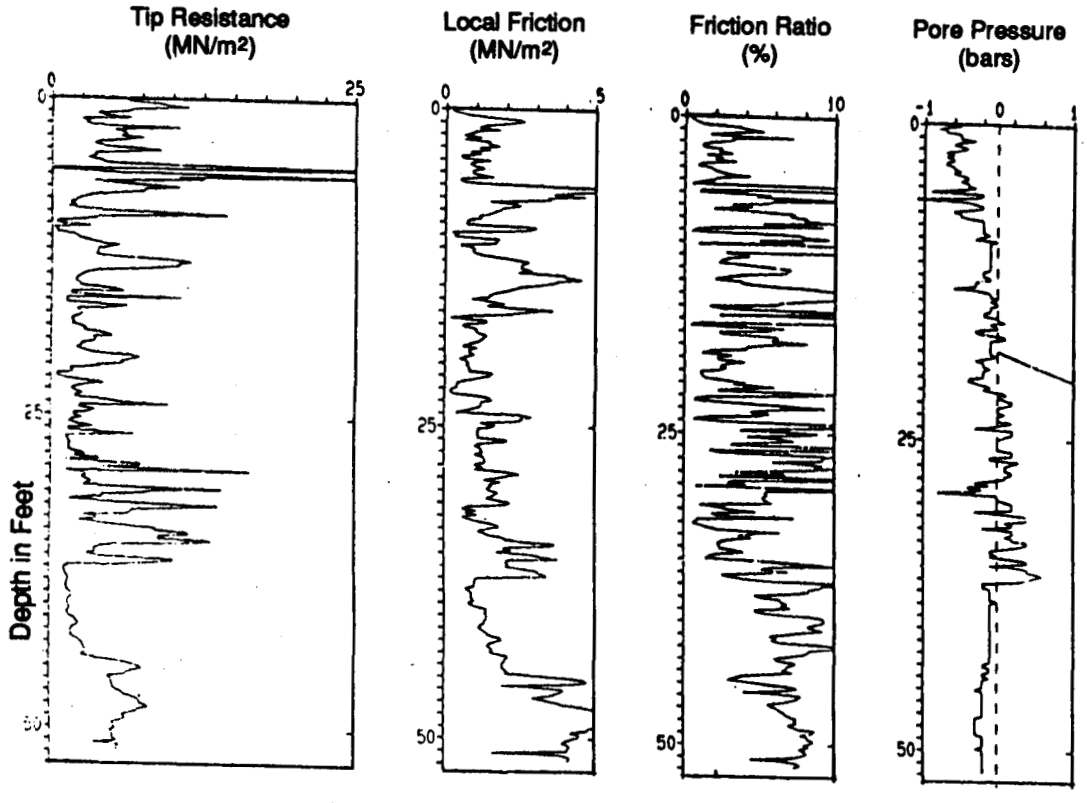
Sampling Location[1]	Date Samples Collected	Sample Number	Sample Type	Analyses							
				Metals		Radionuclides				Radiation Screen	Acute Toxicity
				S	A	Gross α/β	$^{239,240}Pu$ ^{241}Am	$^{233,234}U$ ^{235}U ^{238}U	^{137}Cs $^{89,90}Sr$		
BI700092	10/27/92	BI70000ST	Mammal	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70001ST	Mammal	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70002ST	Mammal	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70003ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70004ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70005ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70006ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70007ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
	10/27/92	BI70008ST	Vegetation	X	X	X	X	X	X	NR-WP	NR-WP
SED70093	03/23/93	SW70041ST	Surface Water	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	X
	03/18/93	SD70000ST	Sediment	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	X
SED70293	03/23/93	SW70042ST	Surface Water	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	X
	03/18/93	SD70001ST	Sediment	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	NR-WP	X	X

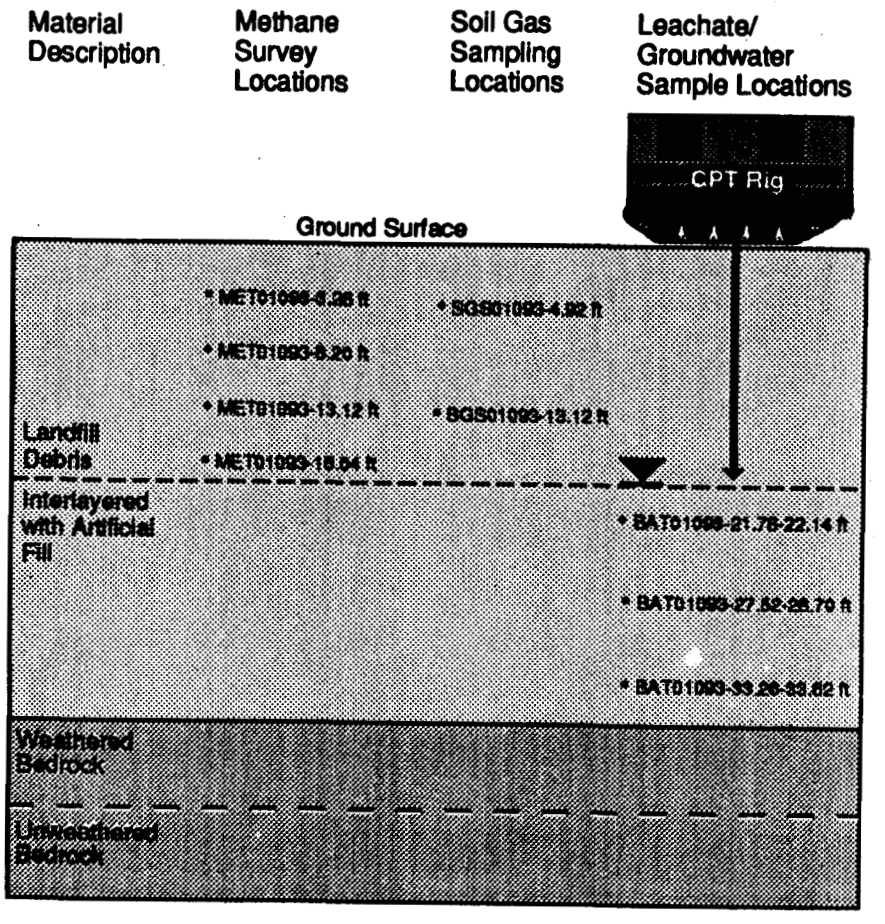
[1] Figure C-11 presents ecological sampling locations.

Definitions:

A	additional metals, including cesium, lithium, molybdenum, strontium, and tin
Am	americium
Cs	cesium
Gross α/β	gross alpha/beta
NR-WP	not required - work plan; not required in accordance with the OU 7 work plan (DOE 1991).
Pu	plutonium
S	standard metals
Sr	strontium
U	uranium
X	denotes that samples were collected

CPT Profile for Location CPT01093





MN/m^2 = Meganewton per square meter

U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

CPT Profile and Associated Methane Survey, Soil Gas, and Leachate/Groundwater Sample Depths

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-2

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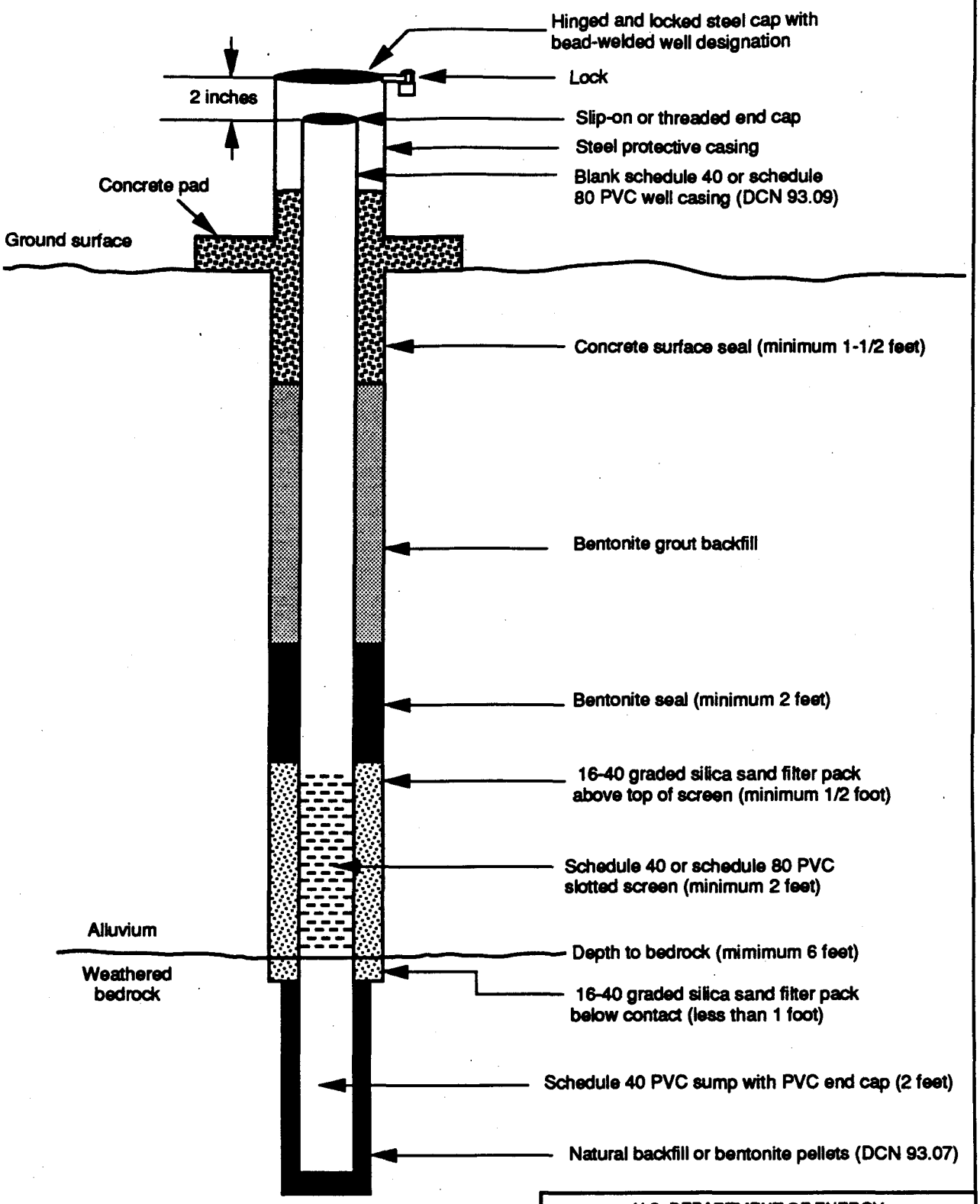


Not to scale
PVC – Polyvinyl chloride

U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Monitoring Well Construction Guidelines

Revised Work Plan	Operable Unit No. 7
Date: April 1994	Figure C-9

M:\ES\Fig. 2-9 Mon Wells.mdw3-8-94

Appendix D

Cone Penetration Test Profiles and Interpretations

KEY TO CONE PENETRATION TEST PROFILES AND INTERPRETATIONS

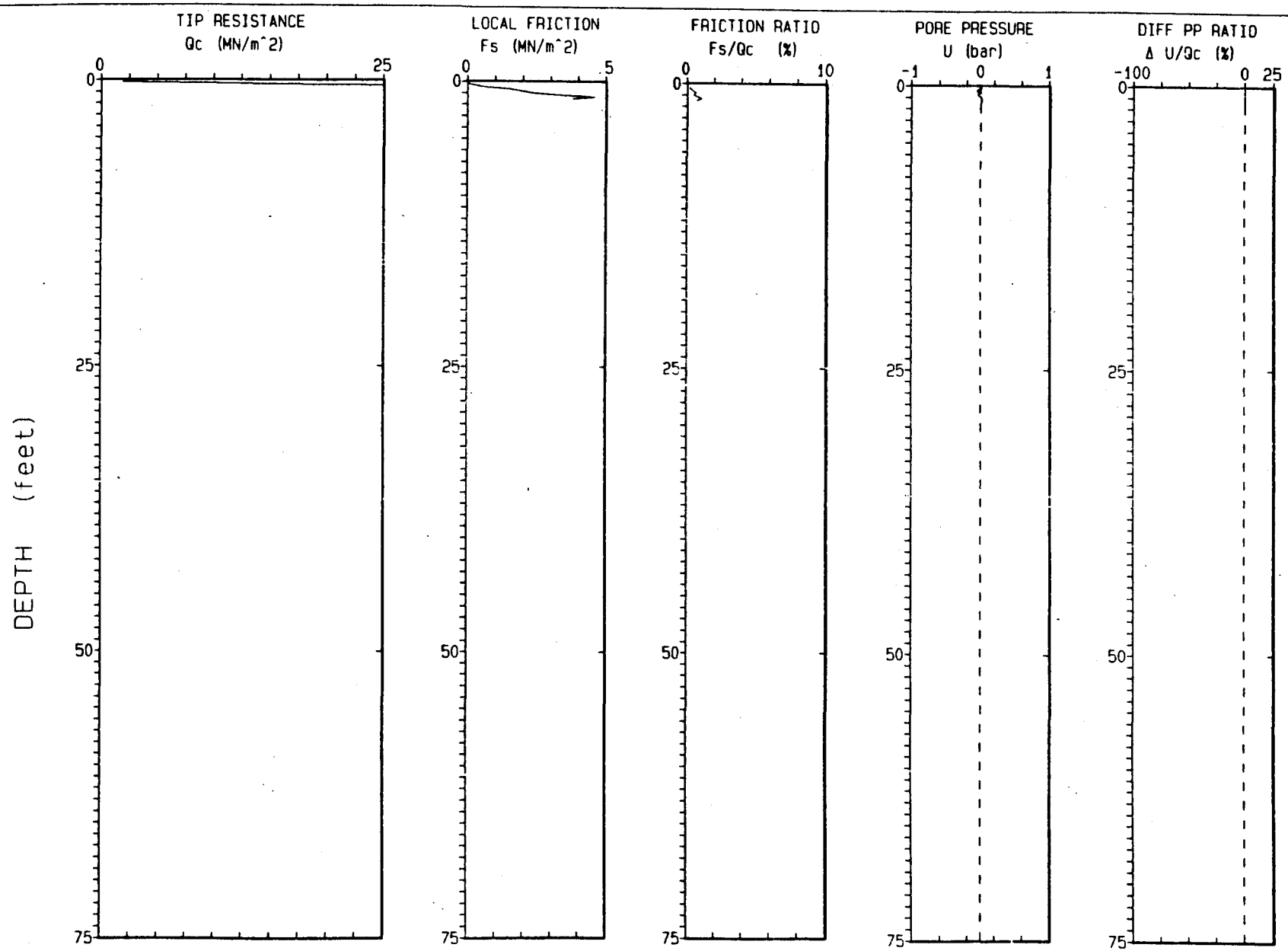
Eq-Dr	equivalent density; the mass or quantity of a substance per unit volume based on a theoretical maximum of 100 percent and a minimum of 0 percent. Most soils are in the range of 60 to 80 percent.
Fs	local friction or drag measured along the cone sleeve during a cone penetration test measured in megaNewtons per square meter (MN/m^2).
ft	feet
m	meters
Nk	derived relationship between the undrained shear strength of a soil and the measured tip resistance.
pcf	pounds per cubic foot
Phi	phi angle; the angle of internal friction within a homogeneous soil mass. The flow of water is directly related to the phi angle of a soil given uniform hydraulic conditions.
Qc	measured tip resistance from the cone penetrometer uncorrected for unequal end area affects, measured in MN/m^2.
Rf	friction ratio of a soil expressed as a percentage of local friction (Fs) divided by the tip resistance (Qc) multiplied by 100.
SigV	vertical overburden pressure measured in tons per square foot (tsf).
SPT	standard penetration test measured by number of blow counts per foot (N)
Su	undrained shear strength; a property reserved for cohesive soils in which their resistance to shearing is determined, measured in tsf.

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 10 DEC 92
ELEVATION : 5997.4 MSL

CPT NO. : 00193A
TERRA JOB NO. : 92-1023



Depth Increment : 05 m

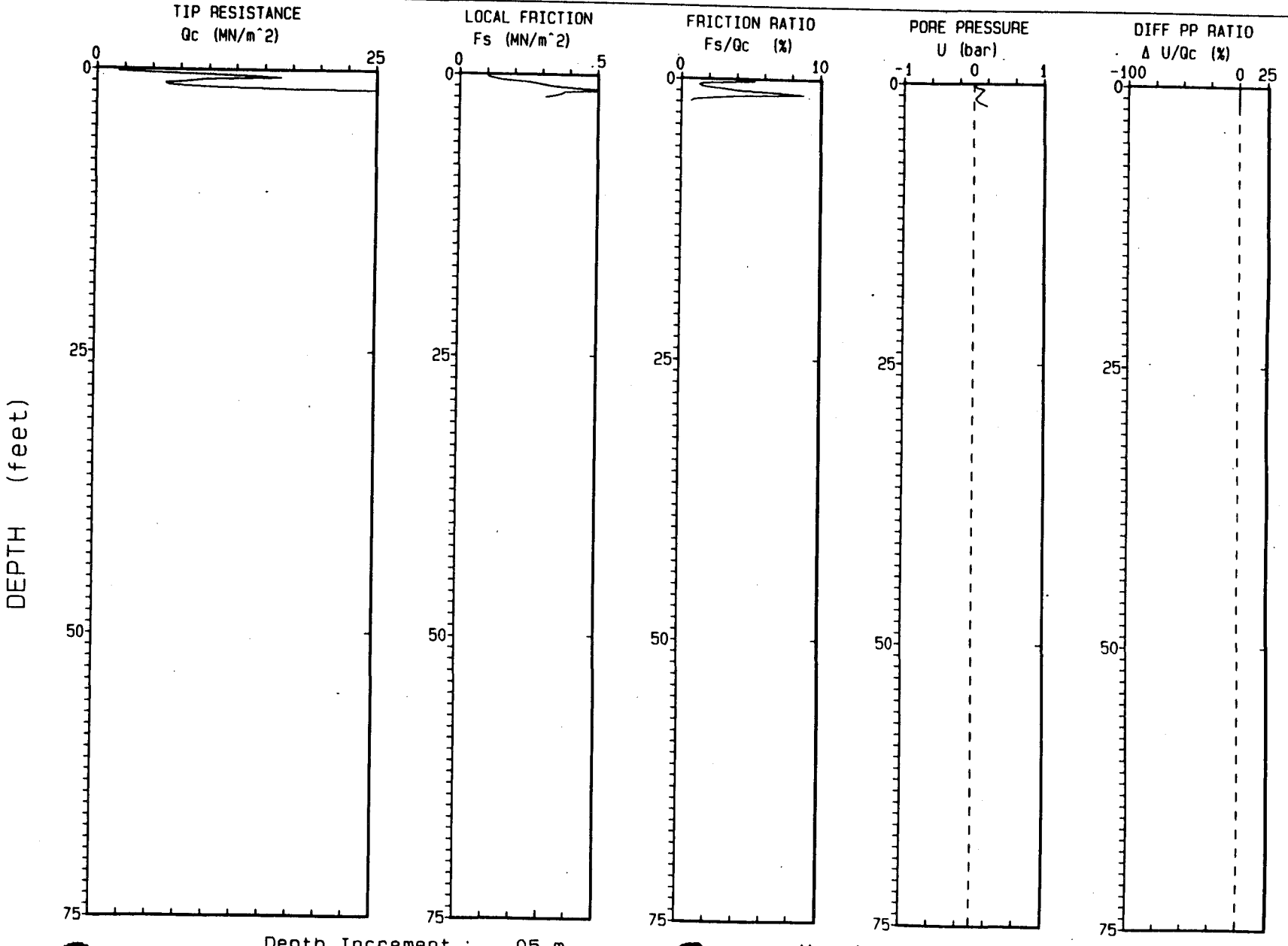
Max Depth : 1.48 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 10 DEC 92
ELEVATION : 5997.4 MSL

CPT NO. : 00193B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

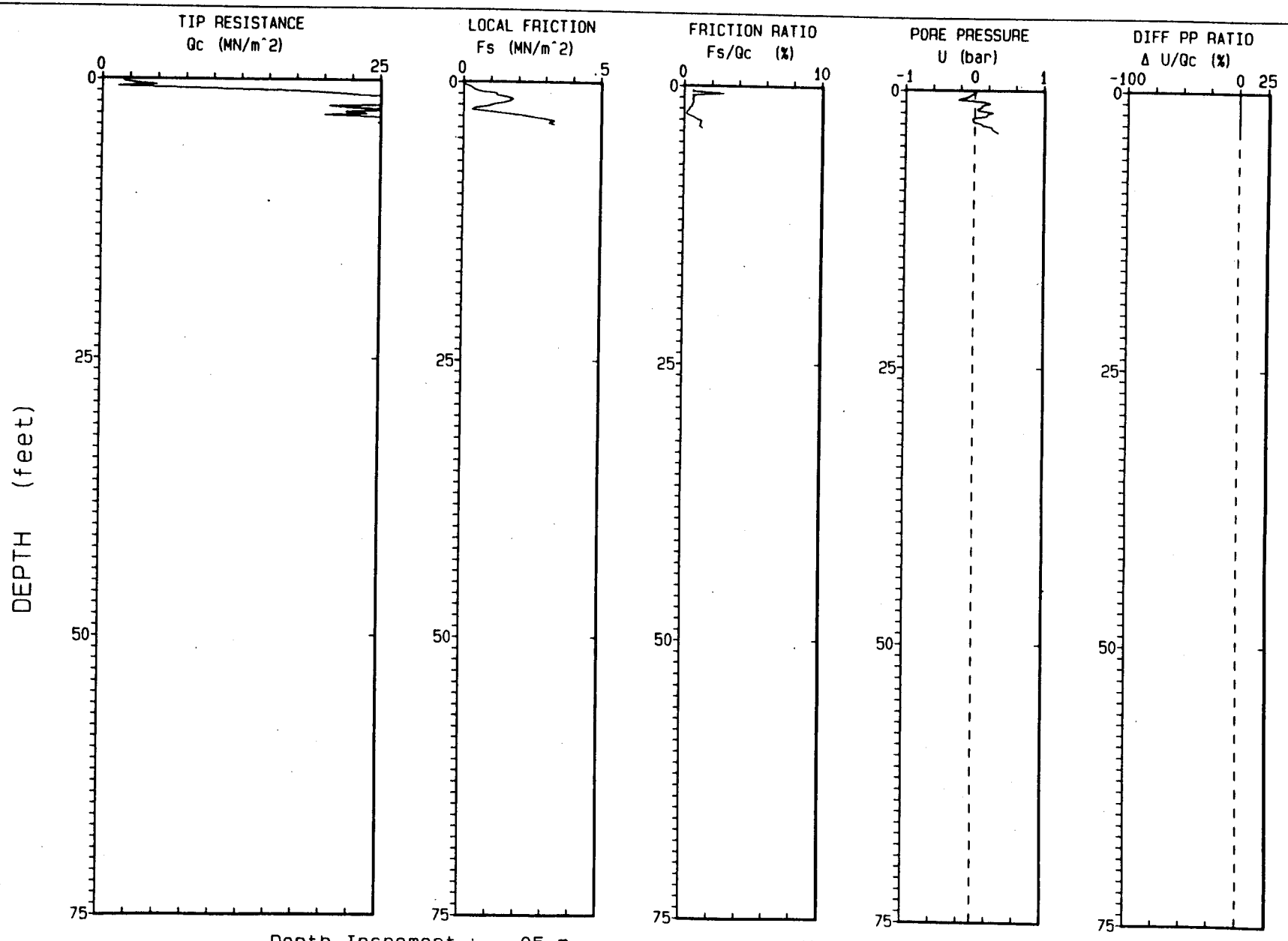
Max Depth : 1.97 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 10 DEC 92
ELEVATION : 5997.4 MSL

CPT NO. : 00193C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

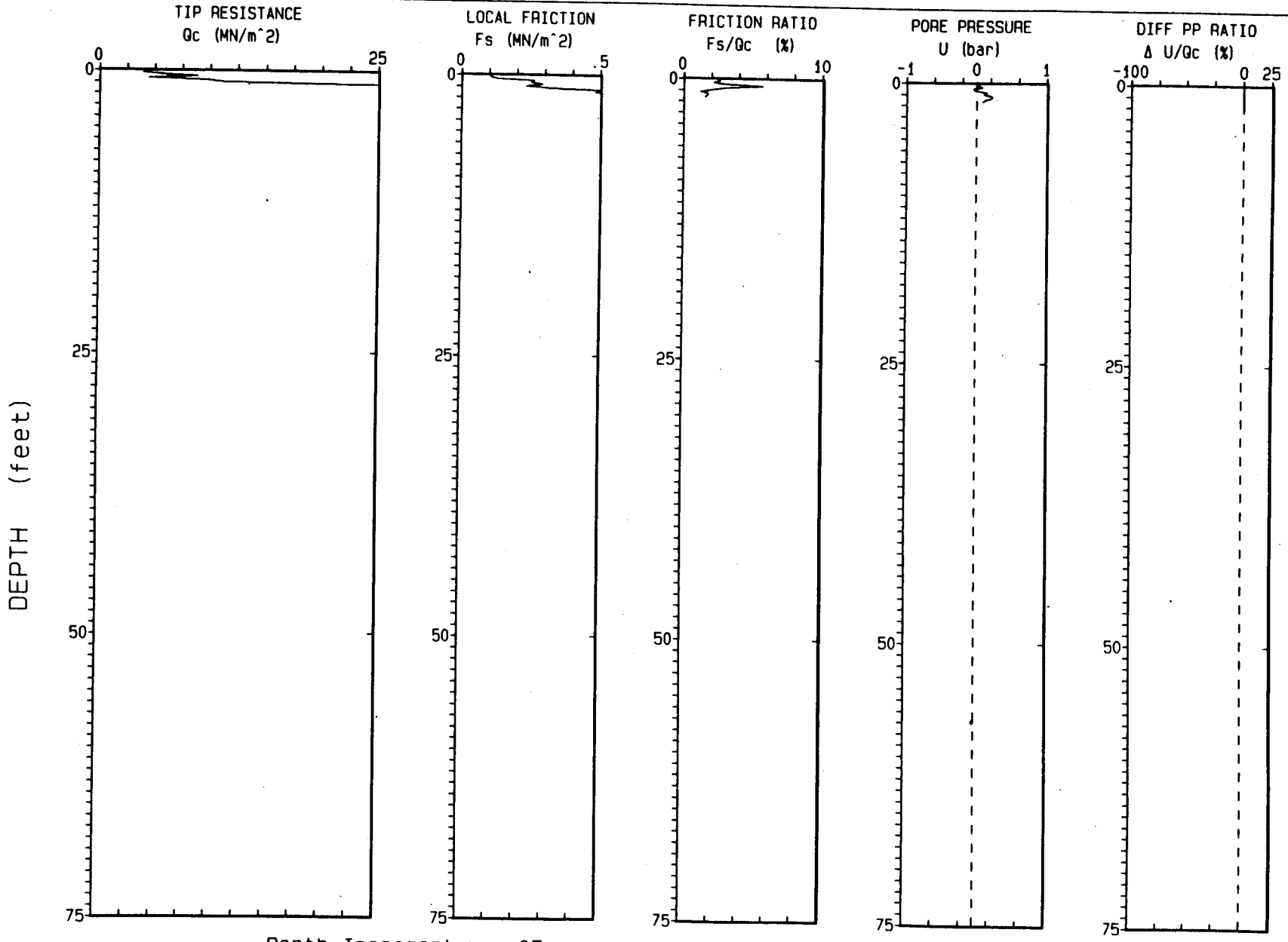
Max Depth : 3.77 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 10 DEC 92
ELEVATION : 5997.4 MSL

CPT NO. : 00193D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

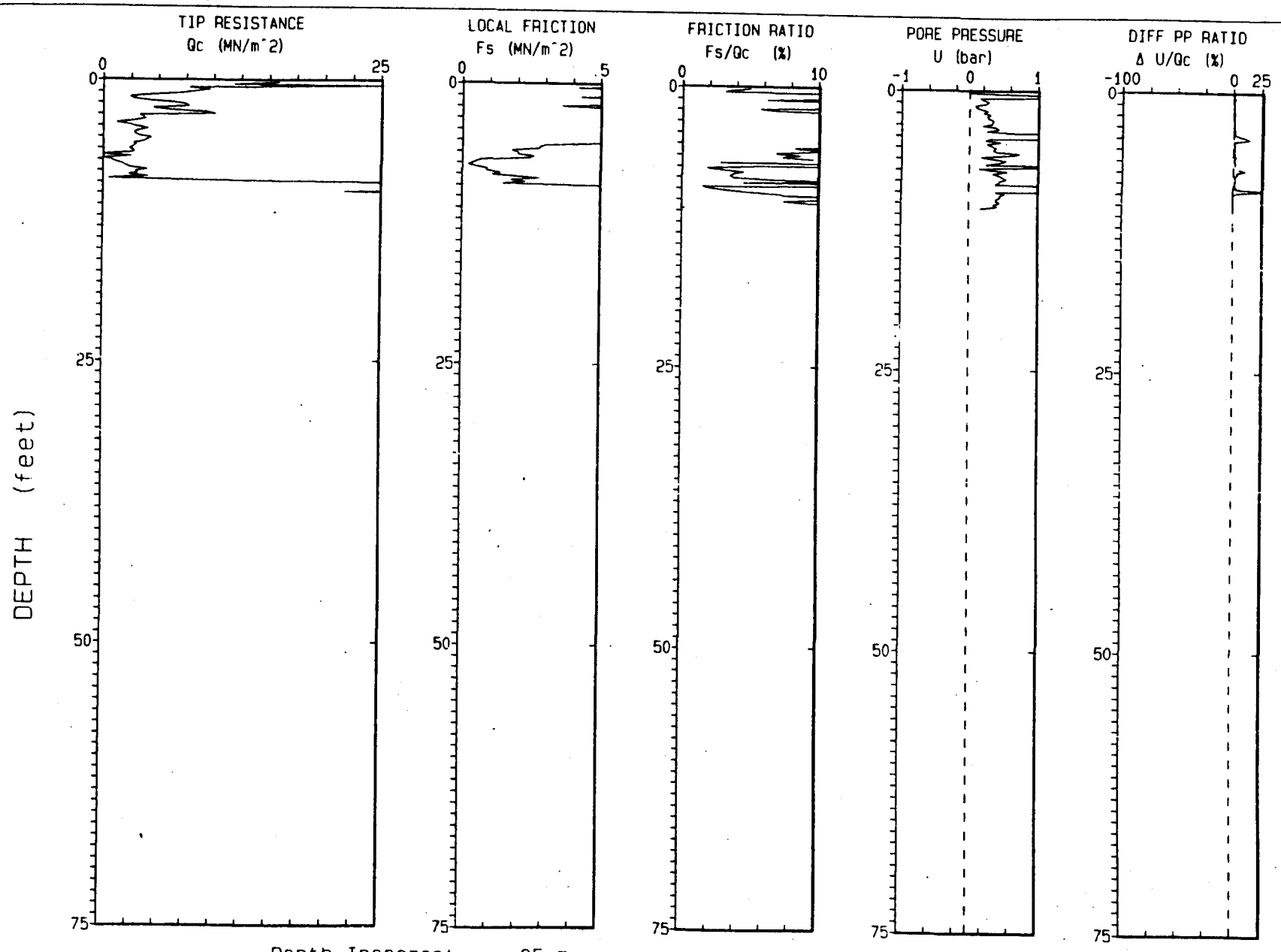
Max Depth : 1.64 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5993.1 MSL

CPT NO. : 00293A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

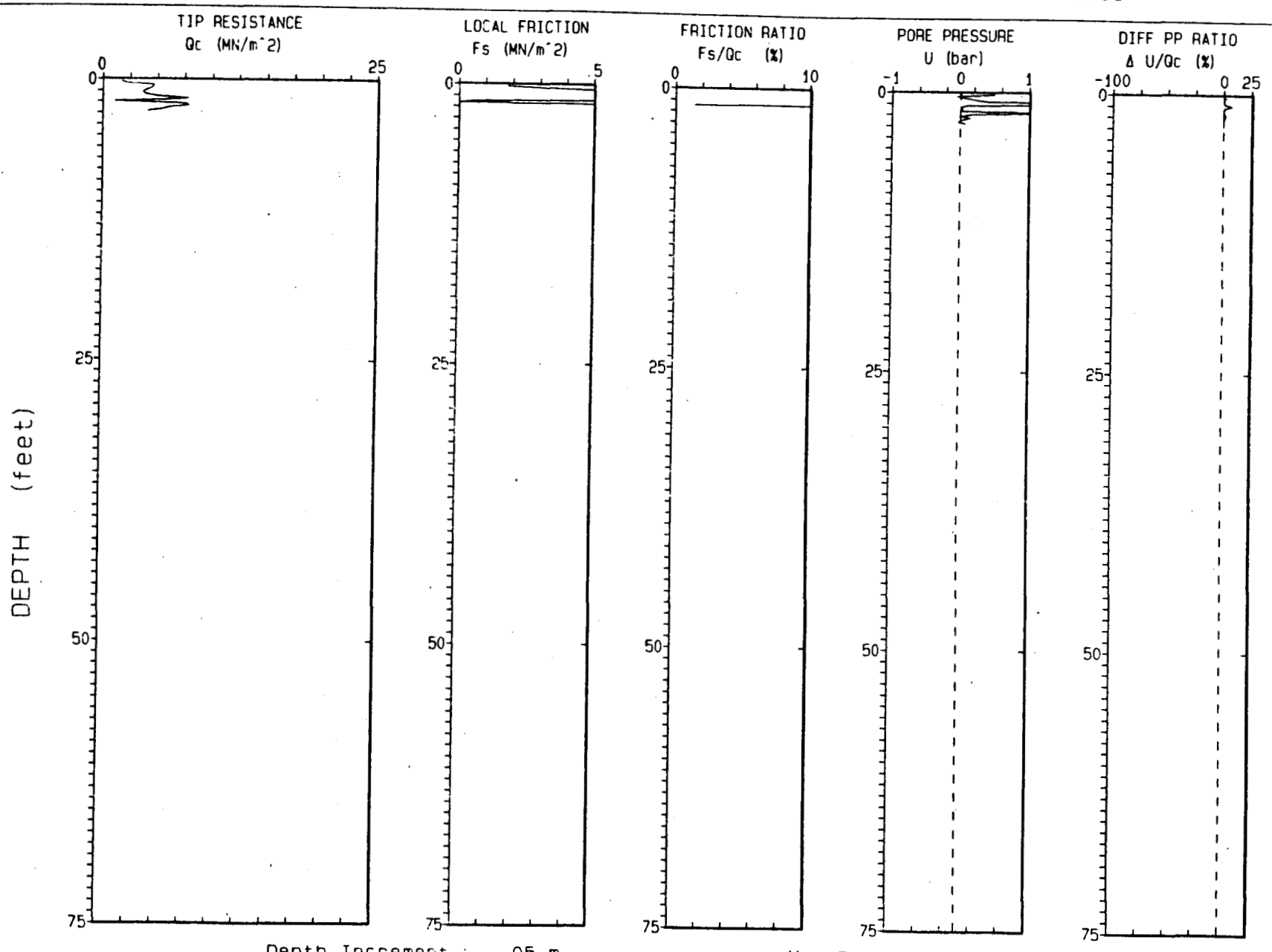
Max Depth : 10.50 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5993.1 MSL

CPT NO. : 00293B
TERRA JOB NO. : 92-1023



Depth Increment : 05 m

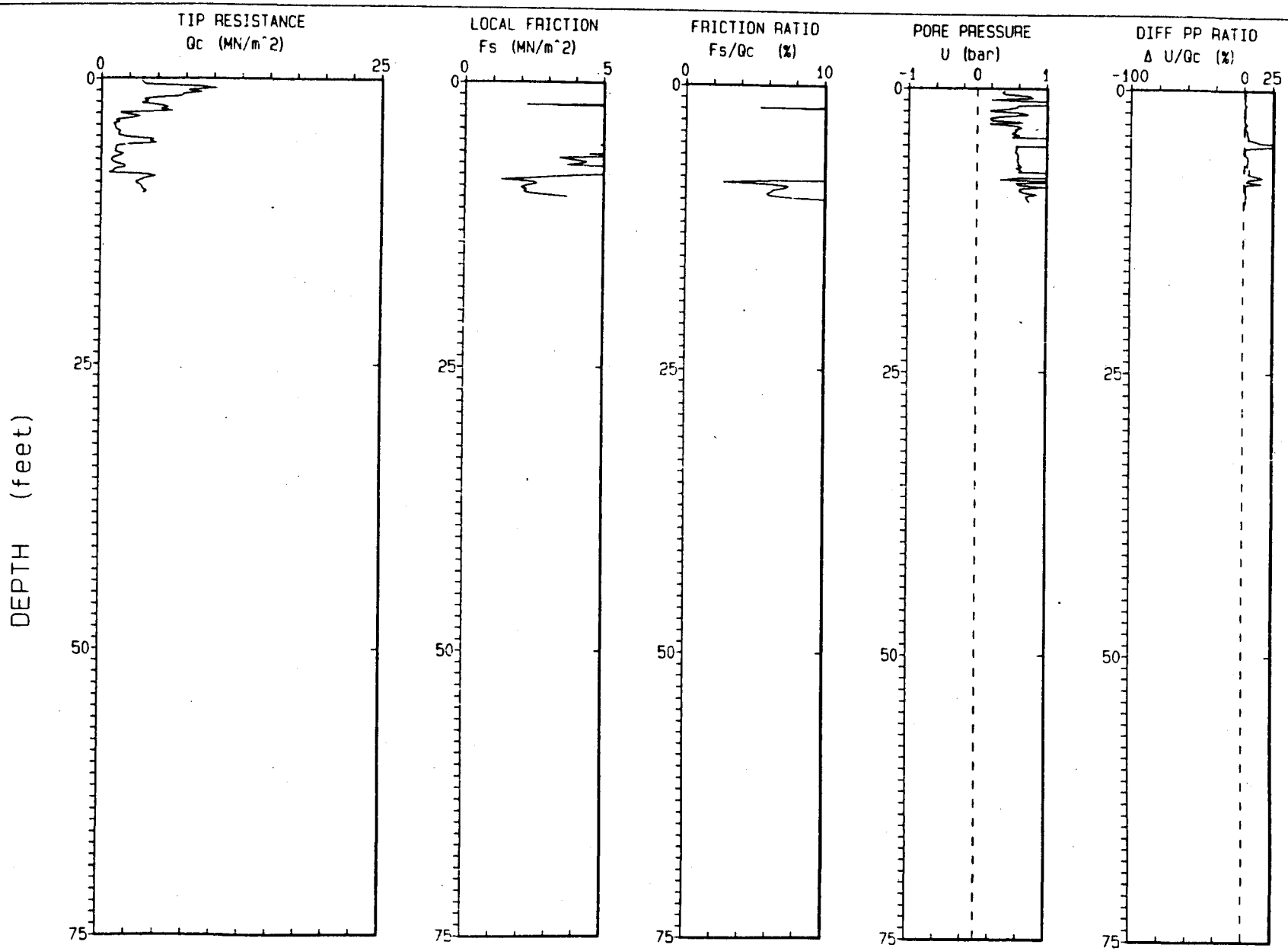
Max Depth : 2.79 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5993.1 MSL

CPT NO. : 00293C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

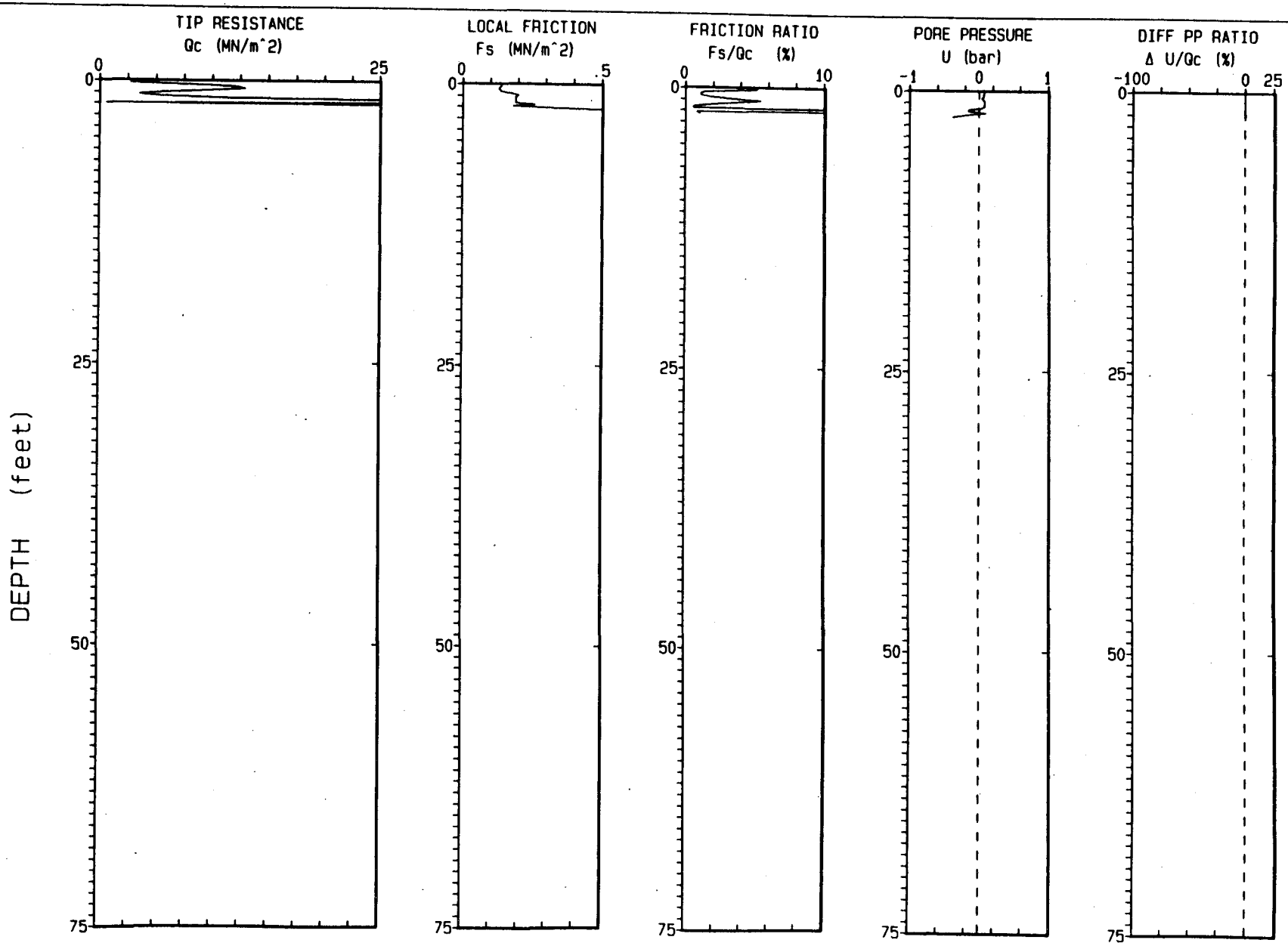
Max Depth : 10.01 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5993.1 MSL

CPT NO. : 00293D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

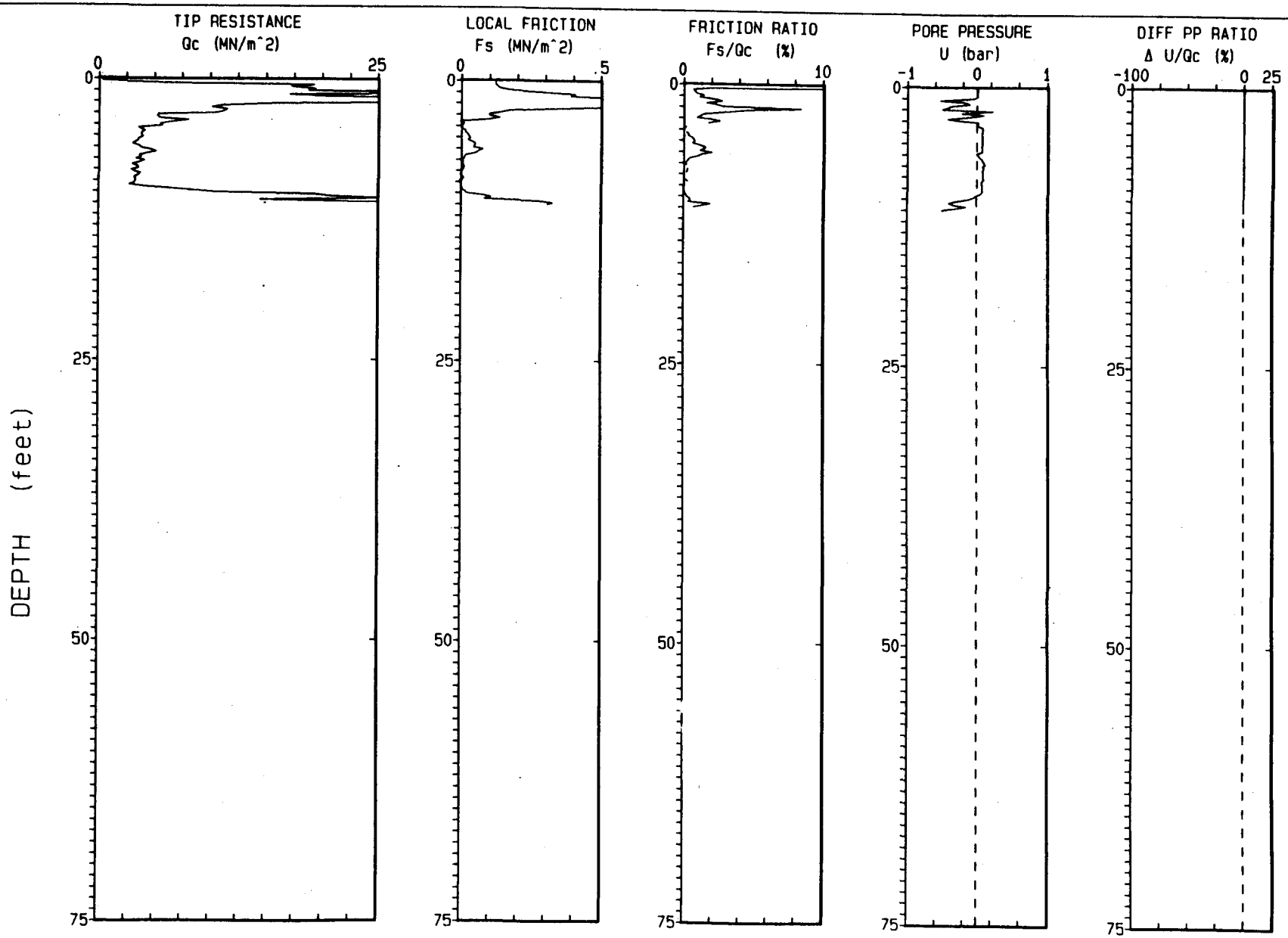
Max Depth : 2.30 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5993.1 MSL

CPT NO. : 00293E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

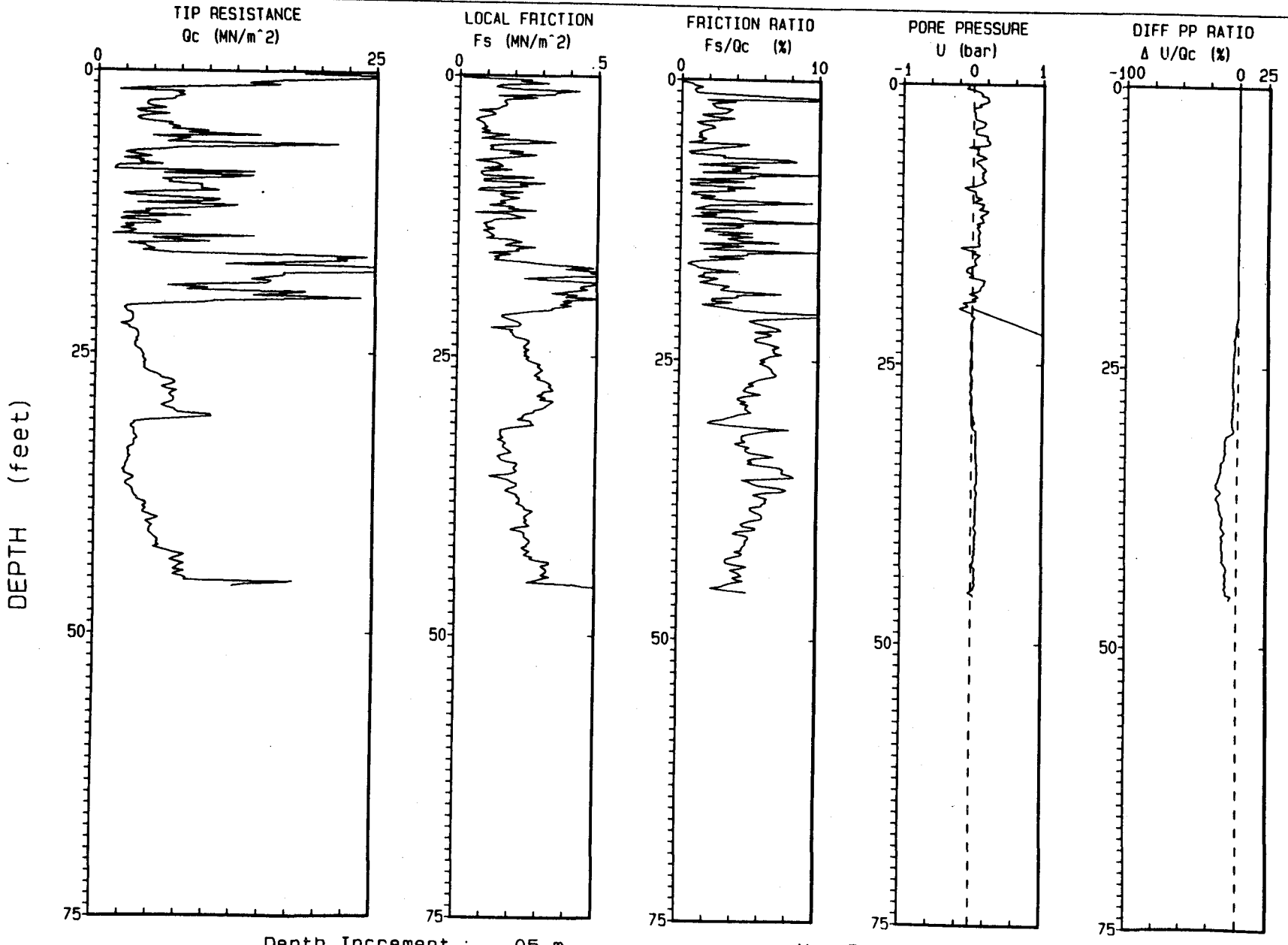
Max Depth : 10.99 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5992.5 MSL

CPT NO. : 00393A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

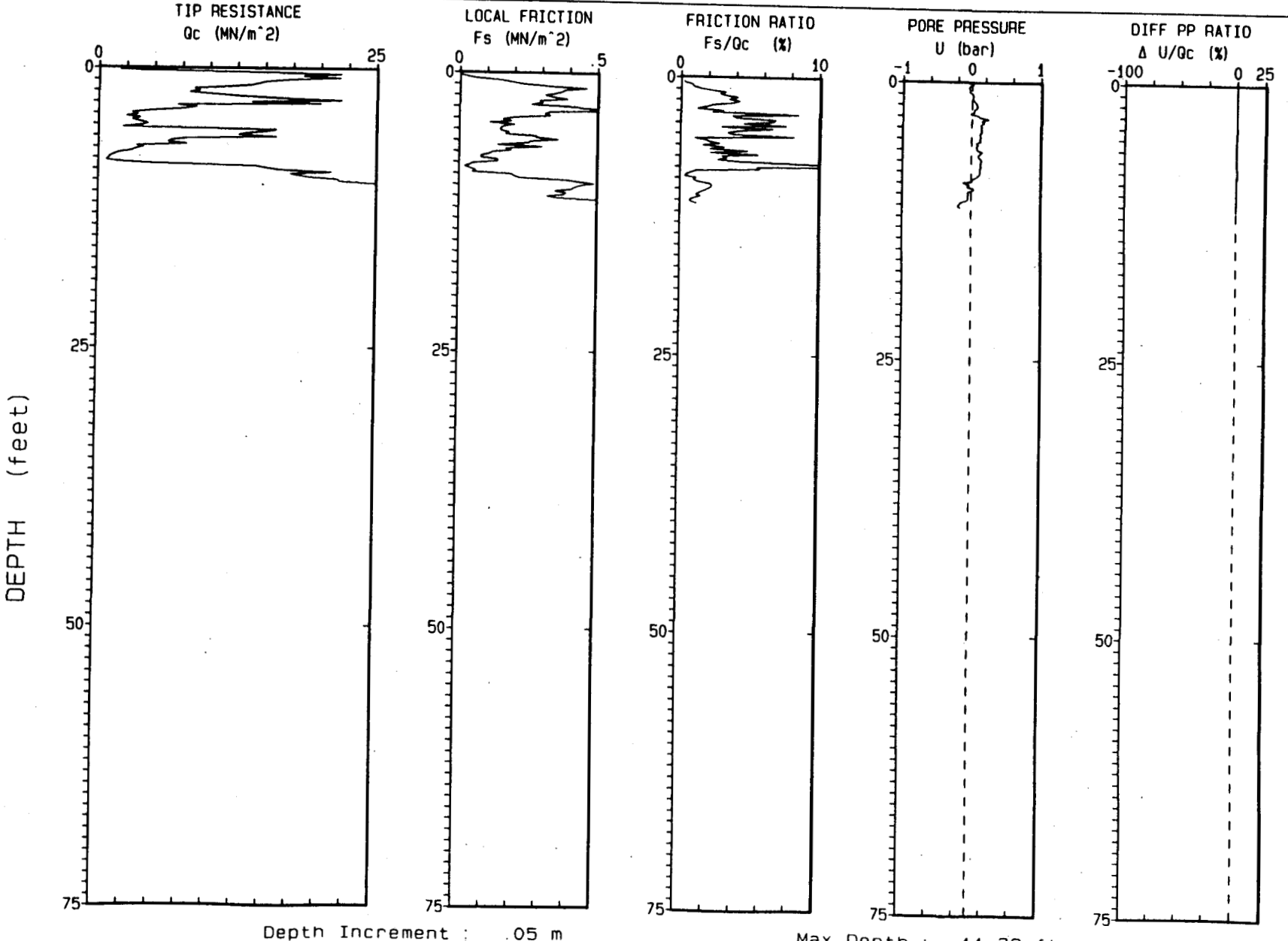
Max Depth : 45.77 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 00493A Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

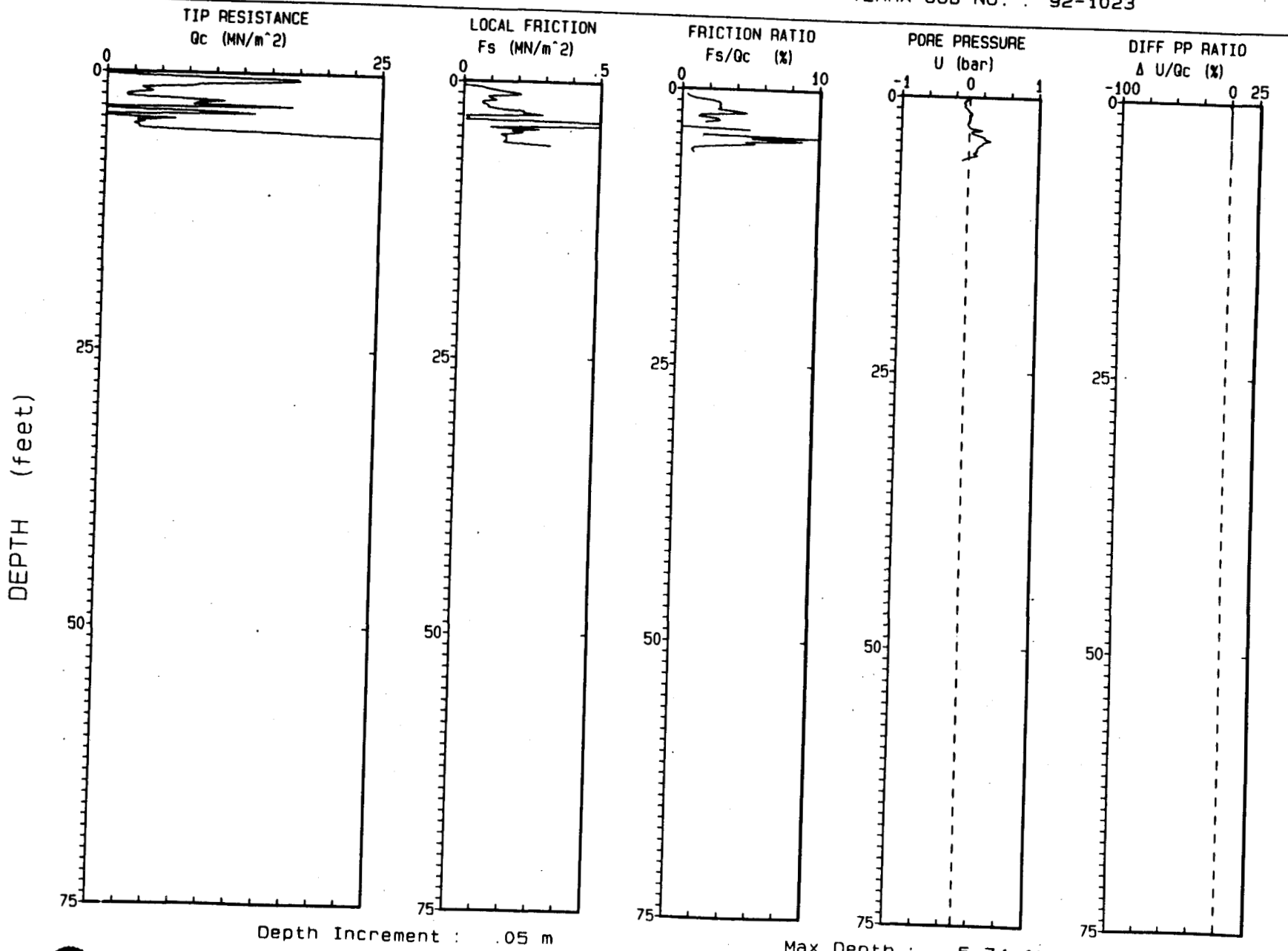
Max Depth : 11.32 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 004938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

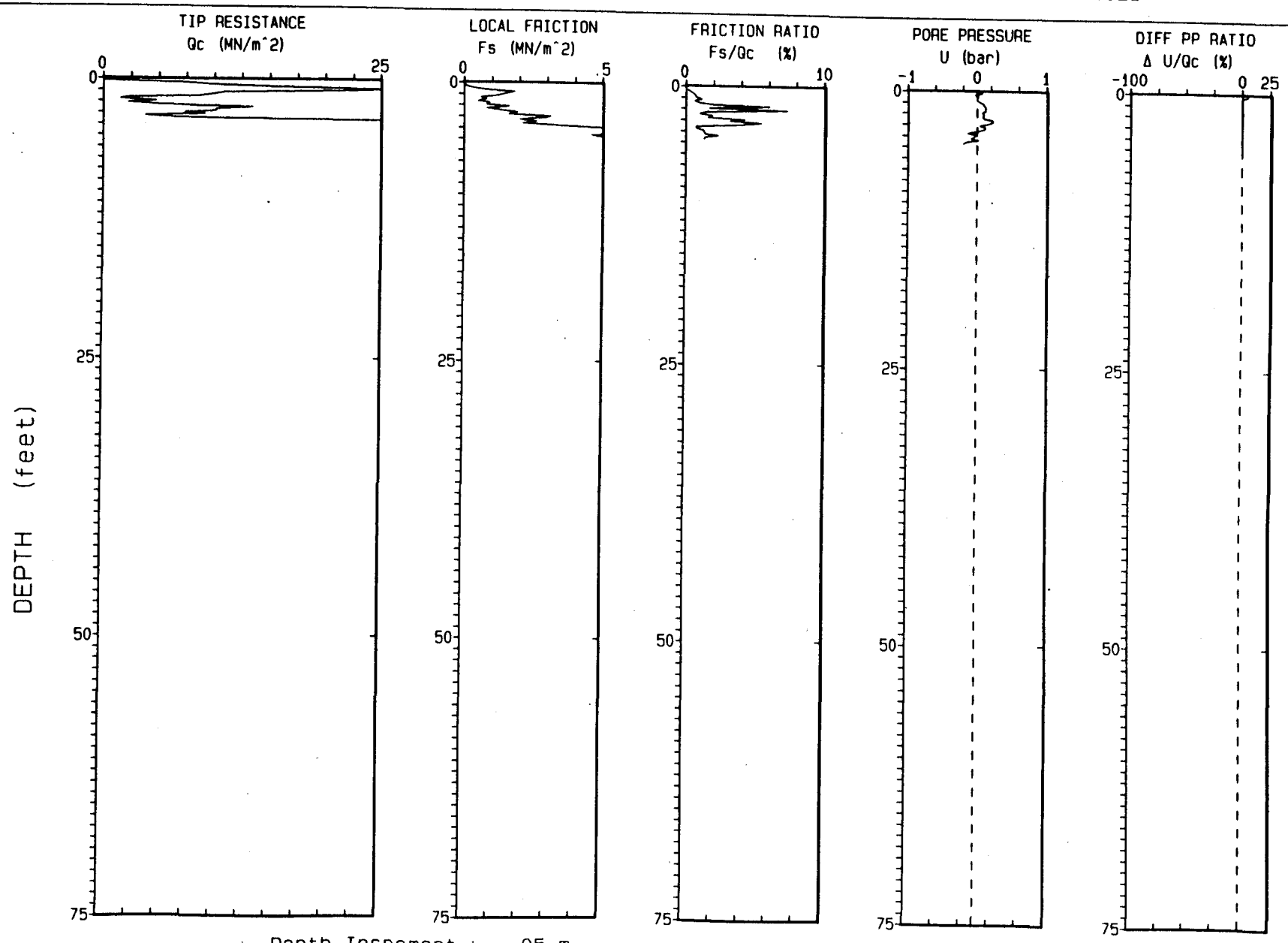
Max Depth : 5.74 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 00493C Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

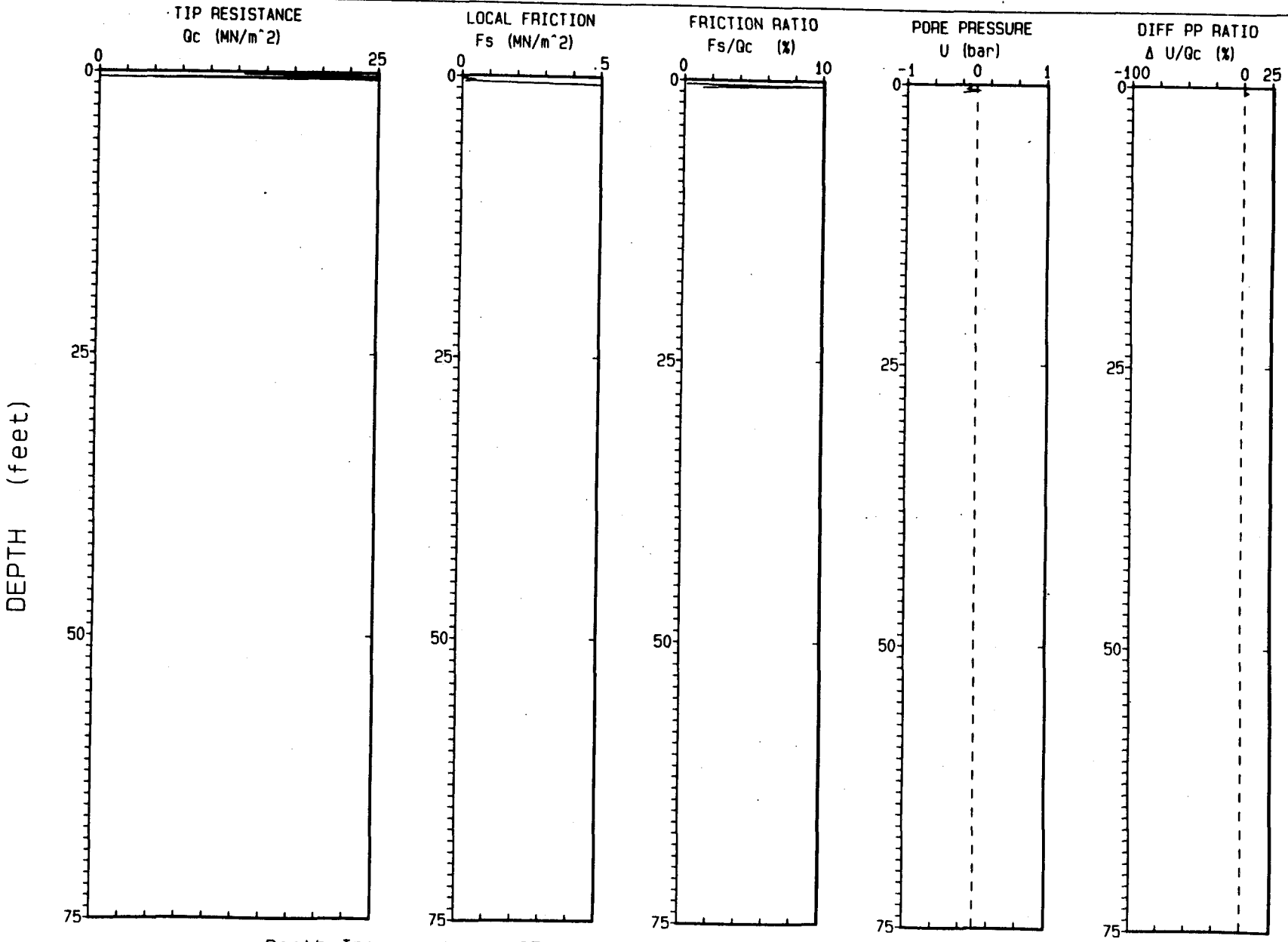
Max Depth : 4.76 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 00493D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

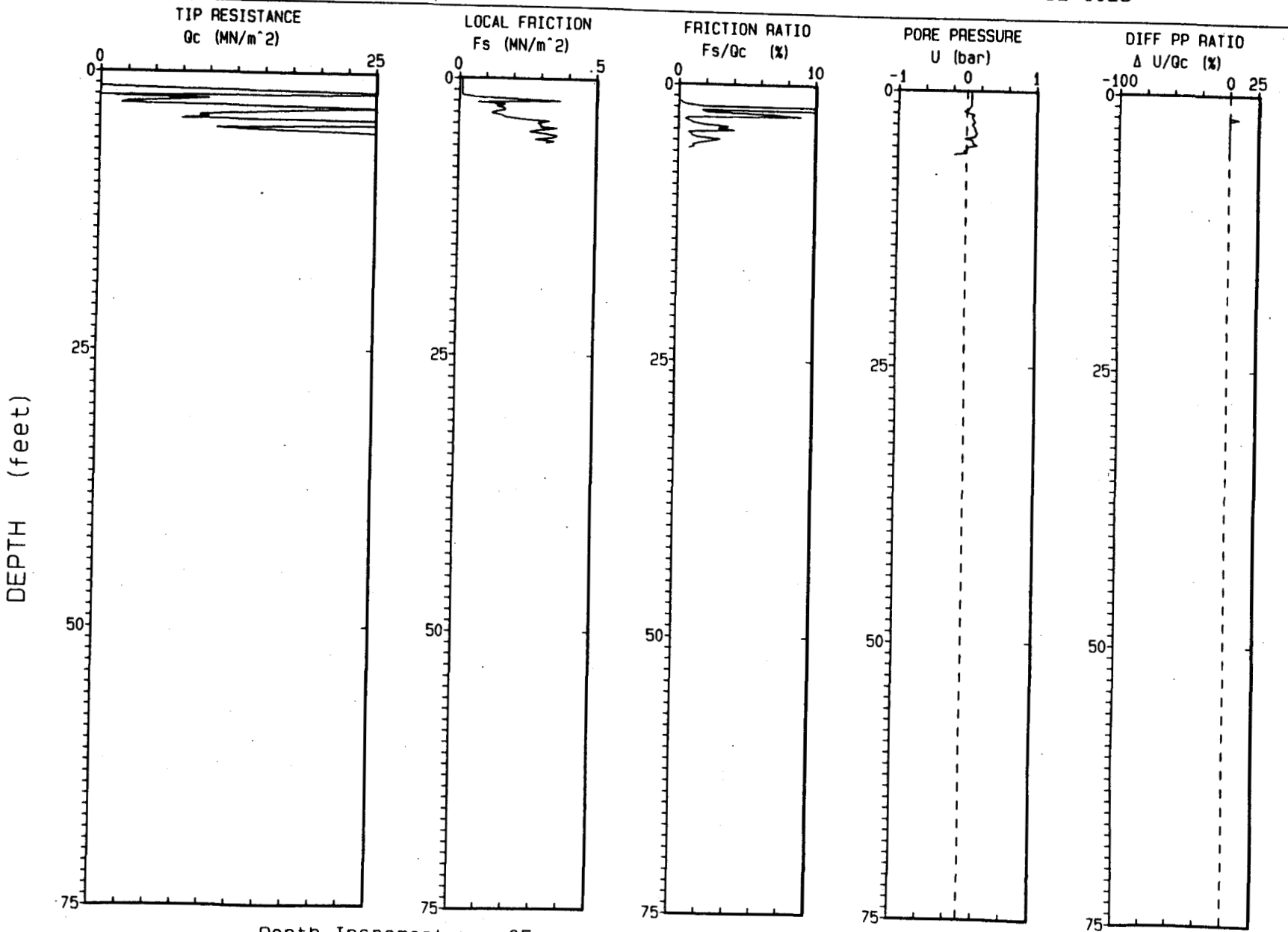
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 00493E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

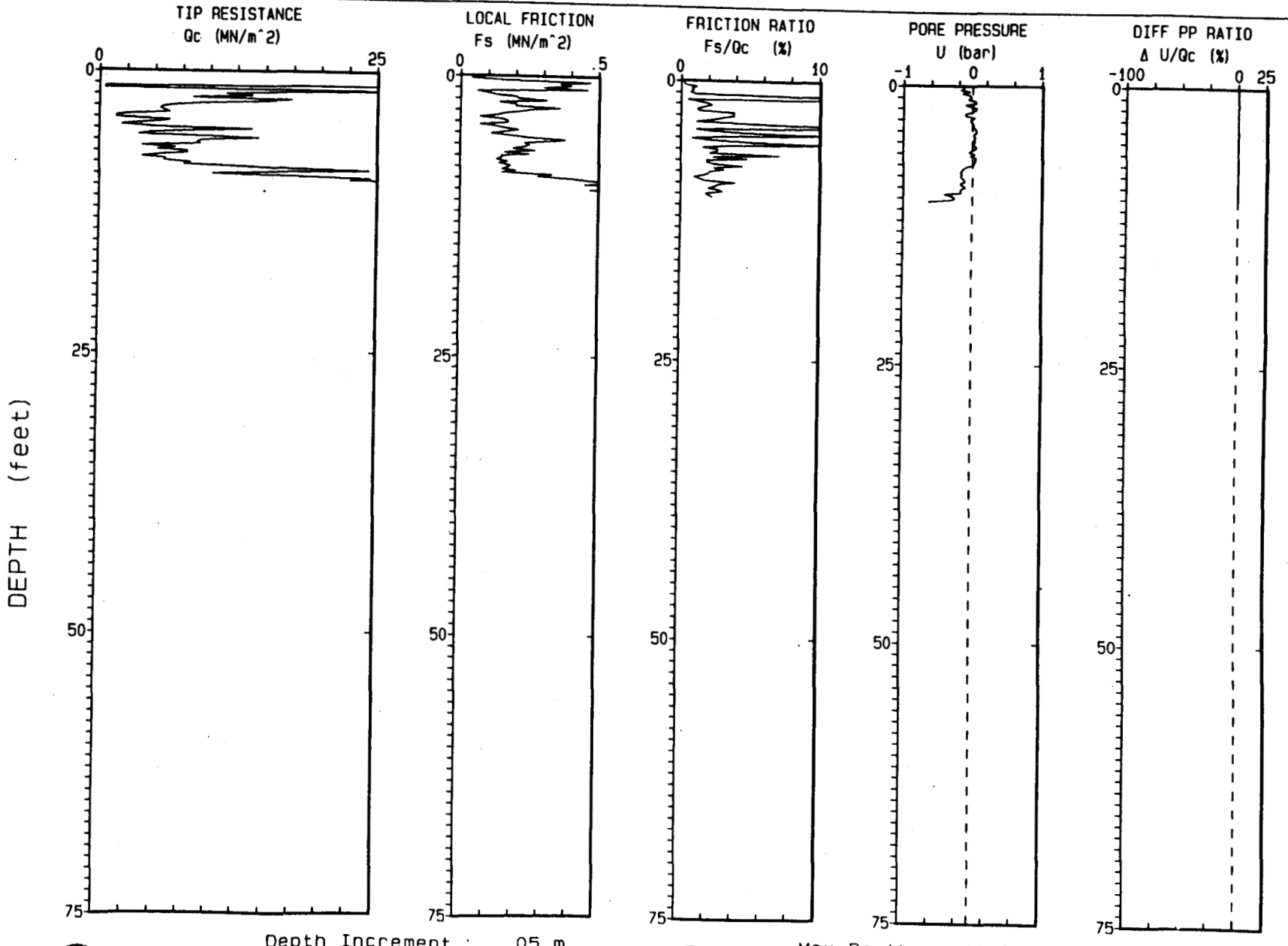
Max Depth : 5.74 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5090.6 MSL

CPT NO. : 00493F Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

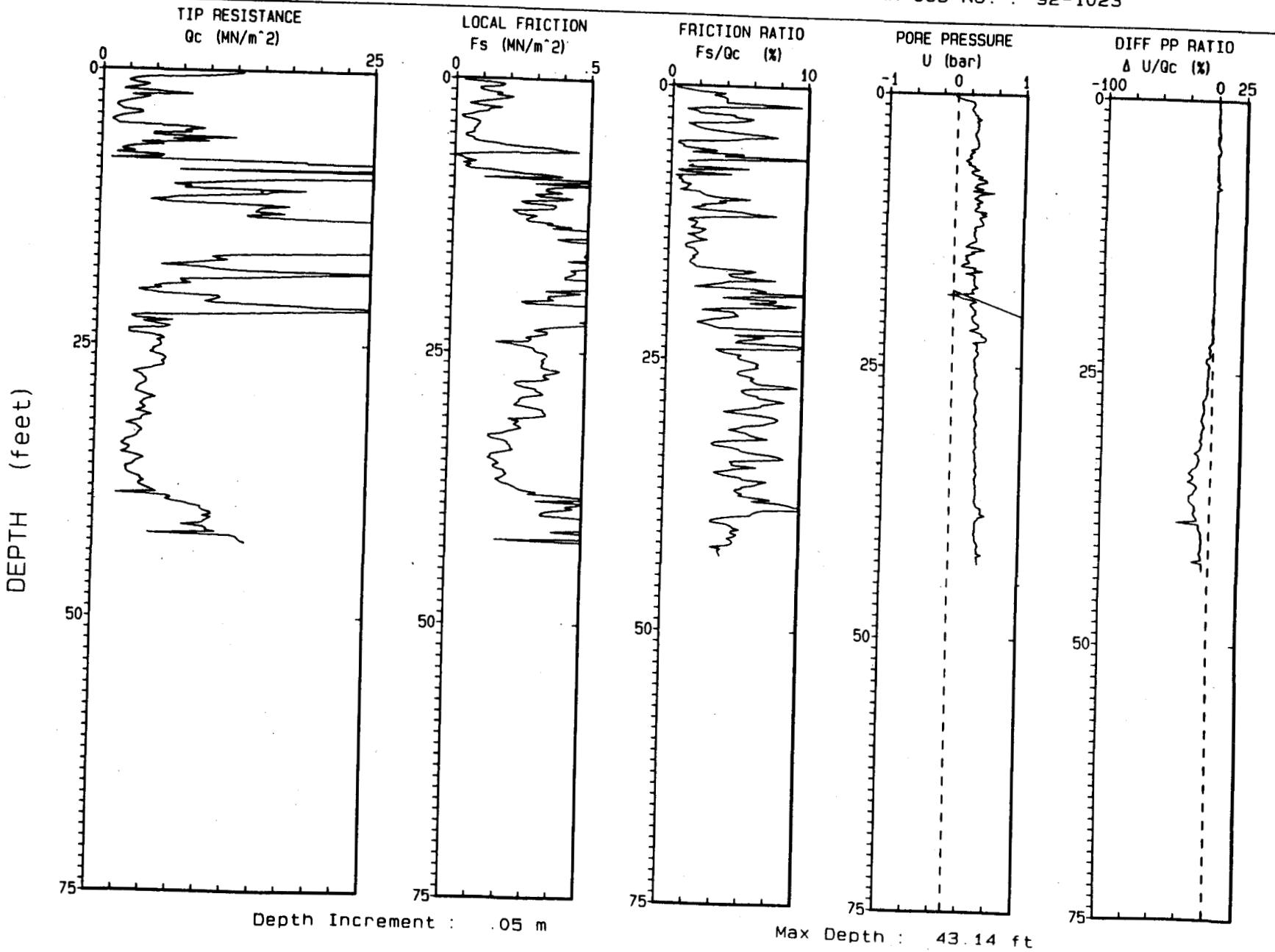
Max Depth : 10.33 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5990.6 MSL

CPT NO. : 00493G
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

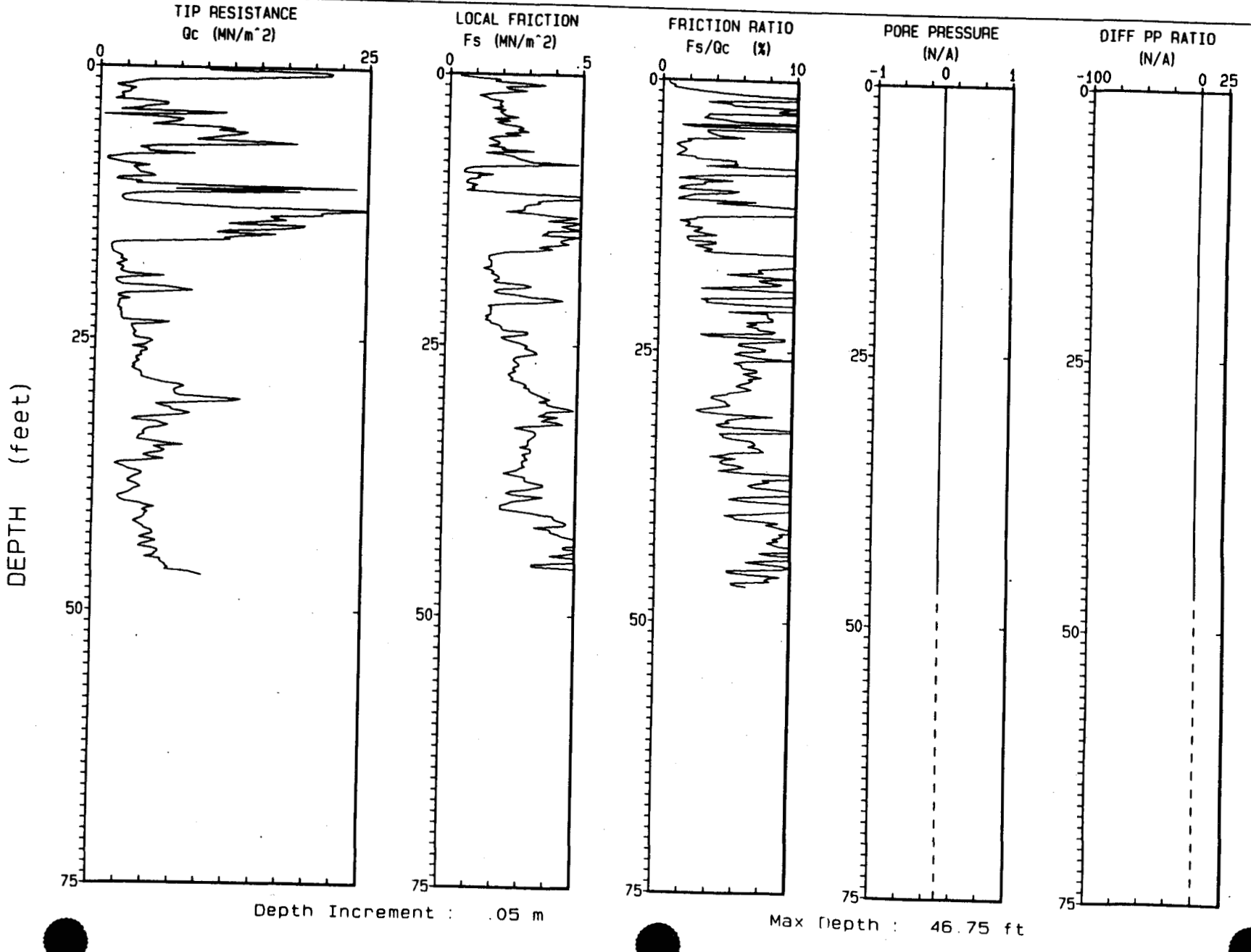
Max Depth : 43.14 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5990.3 MSL

CPT NO. : 00593A
TERRA JOB NO. : 92-1023

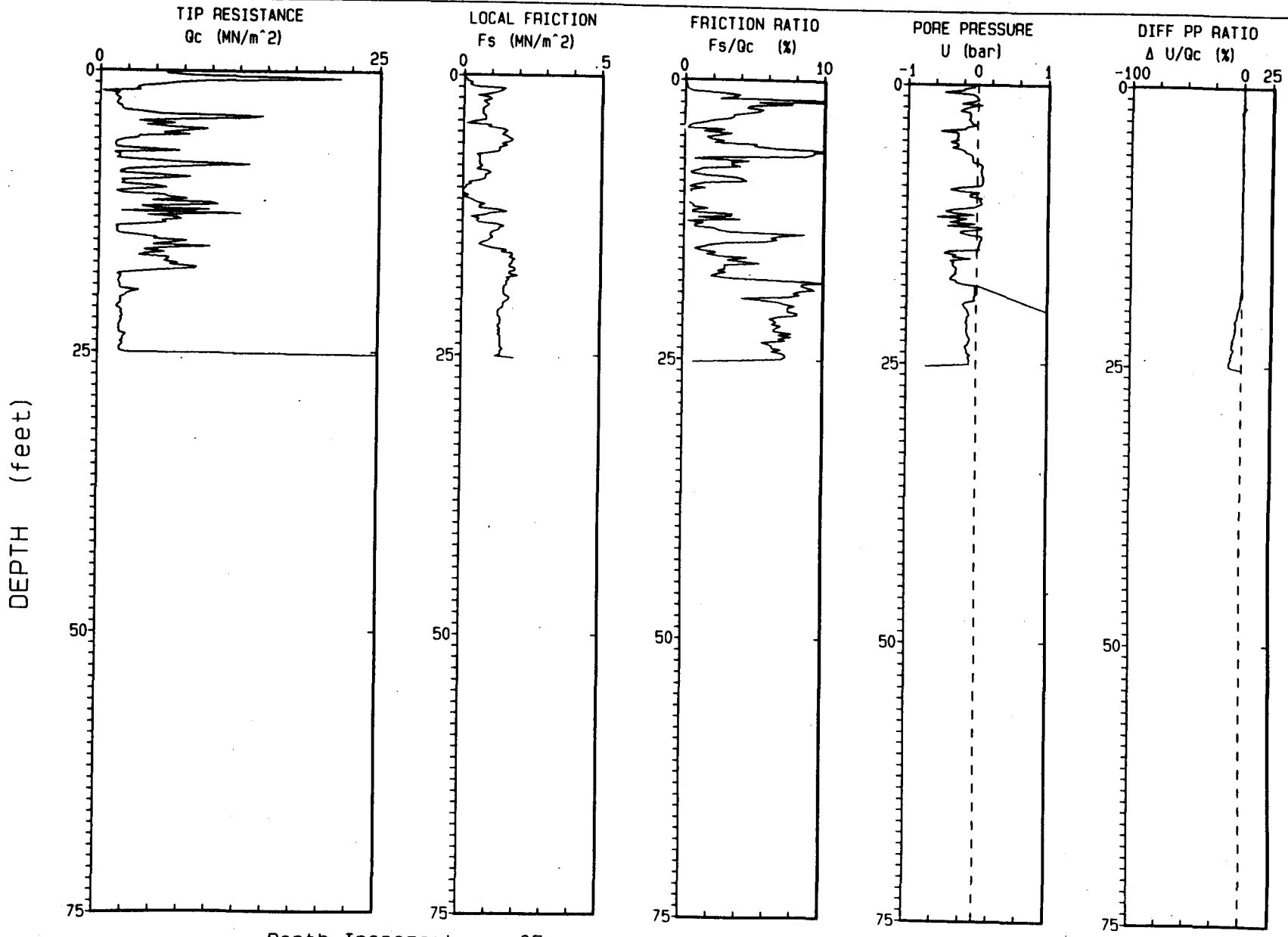


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 JAN 93
ELEVATION : UNKNOWN

CPT NO. : 00693A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

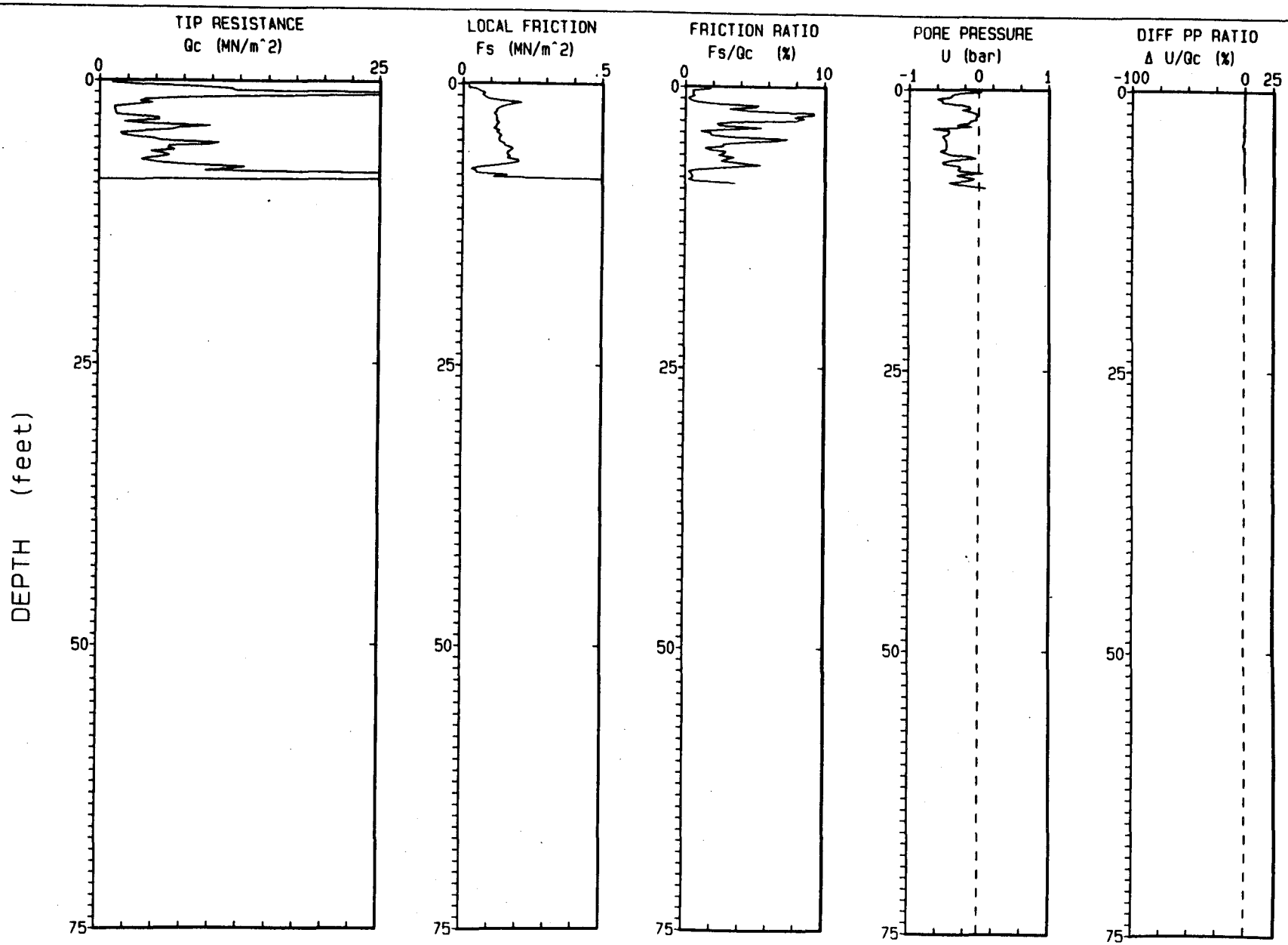
Max Depth : 25.26 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 JAN 93
ELEVATION : UNKNOWN

CPT NO. : 00693B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

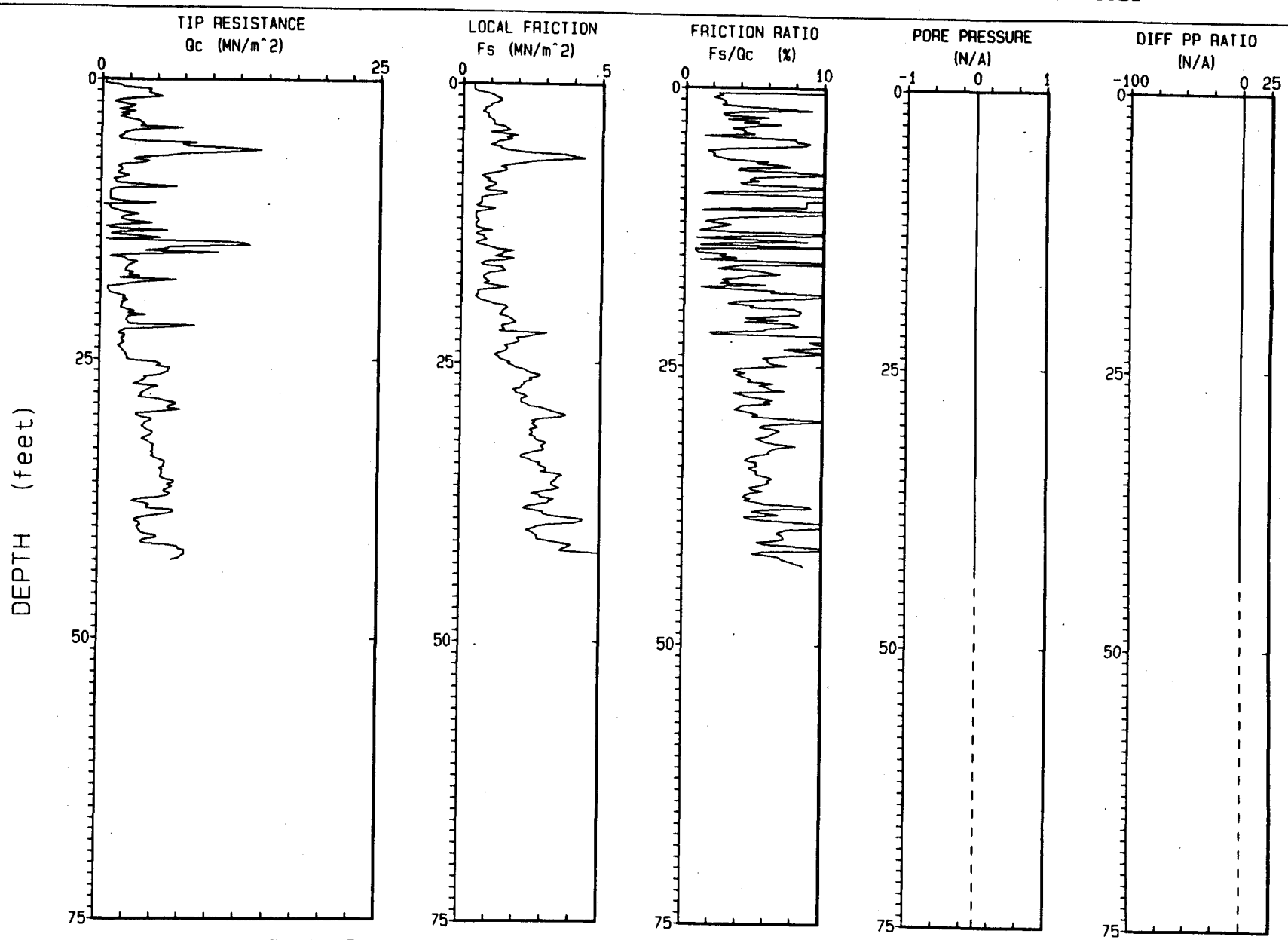
Max Depth : 8.69 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 APR 93
ELEVATION : UNKNOWN

CPT NO. : 00693C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

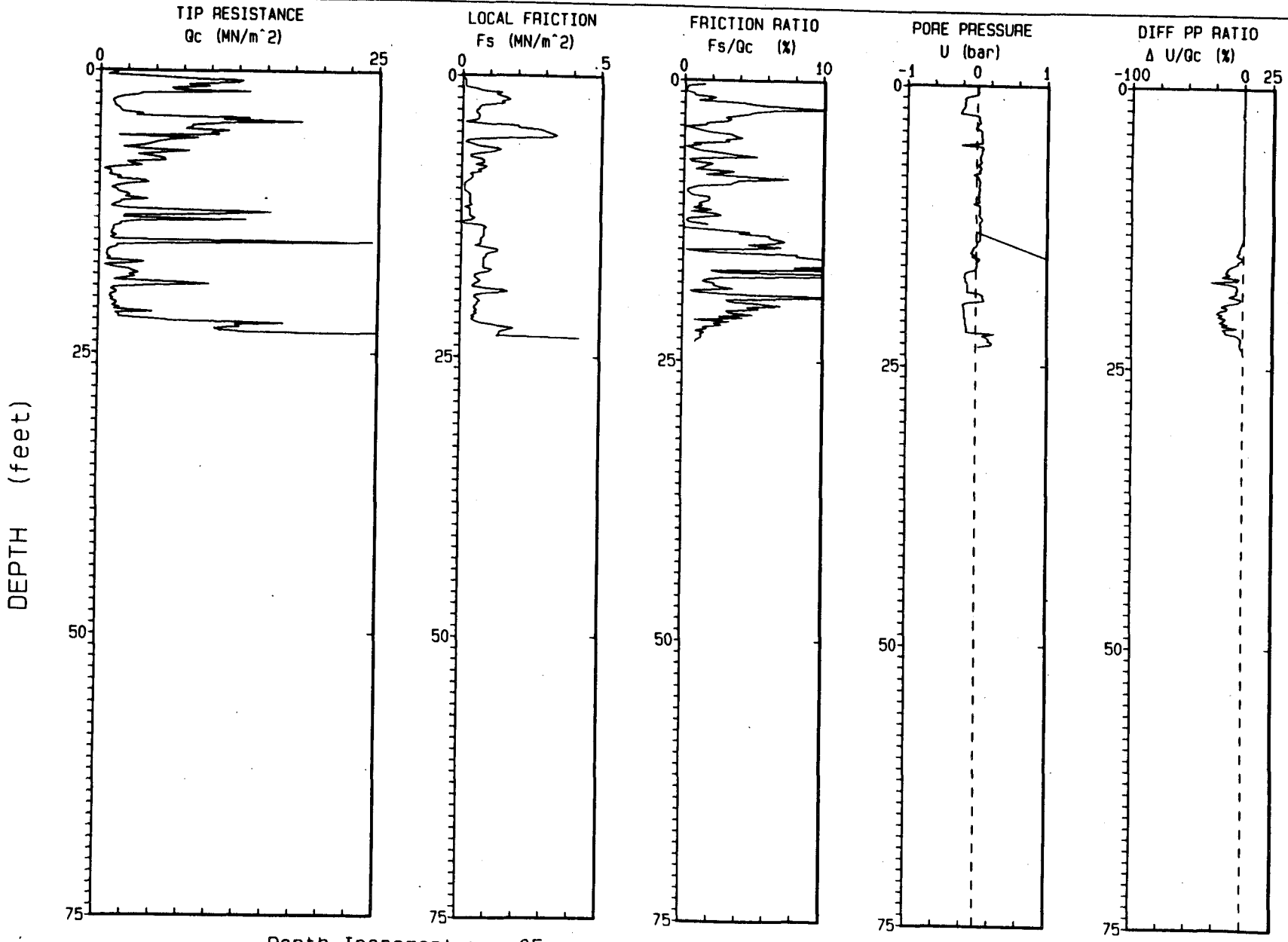
Max Depth : 42.98 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.7 MSL

CPT NO. : 00793A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

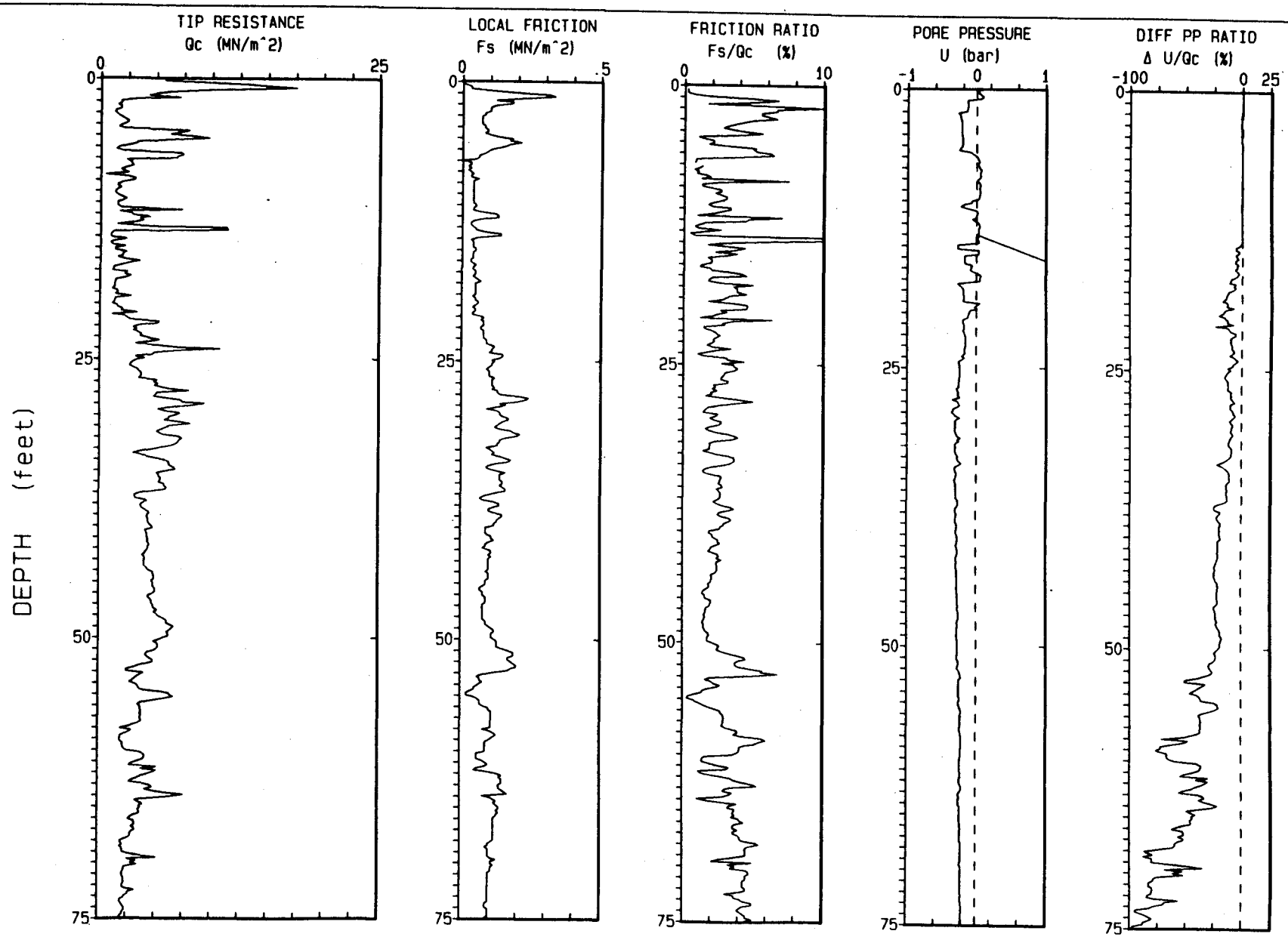
Max Depth : 23.29 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.7 MSL

CPT NO. : 007938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

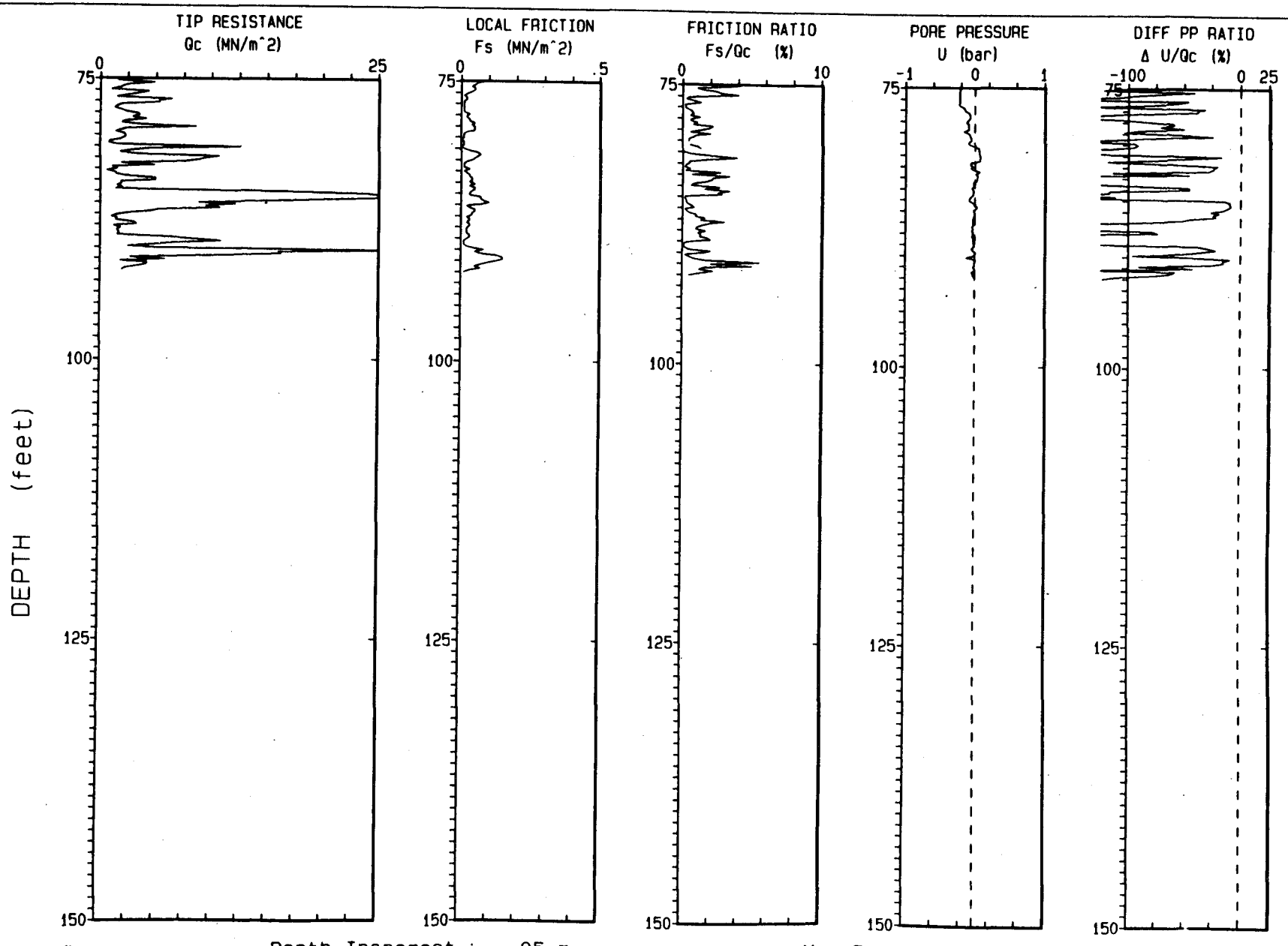
Max Depth : 92.03 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.7 MSL

CPT NO. : 00793B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

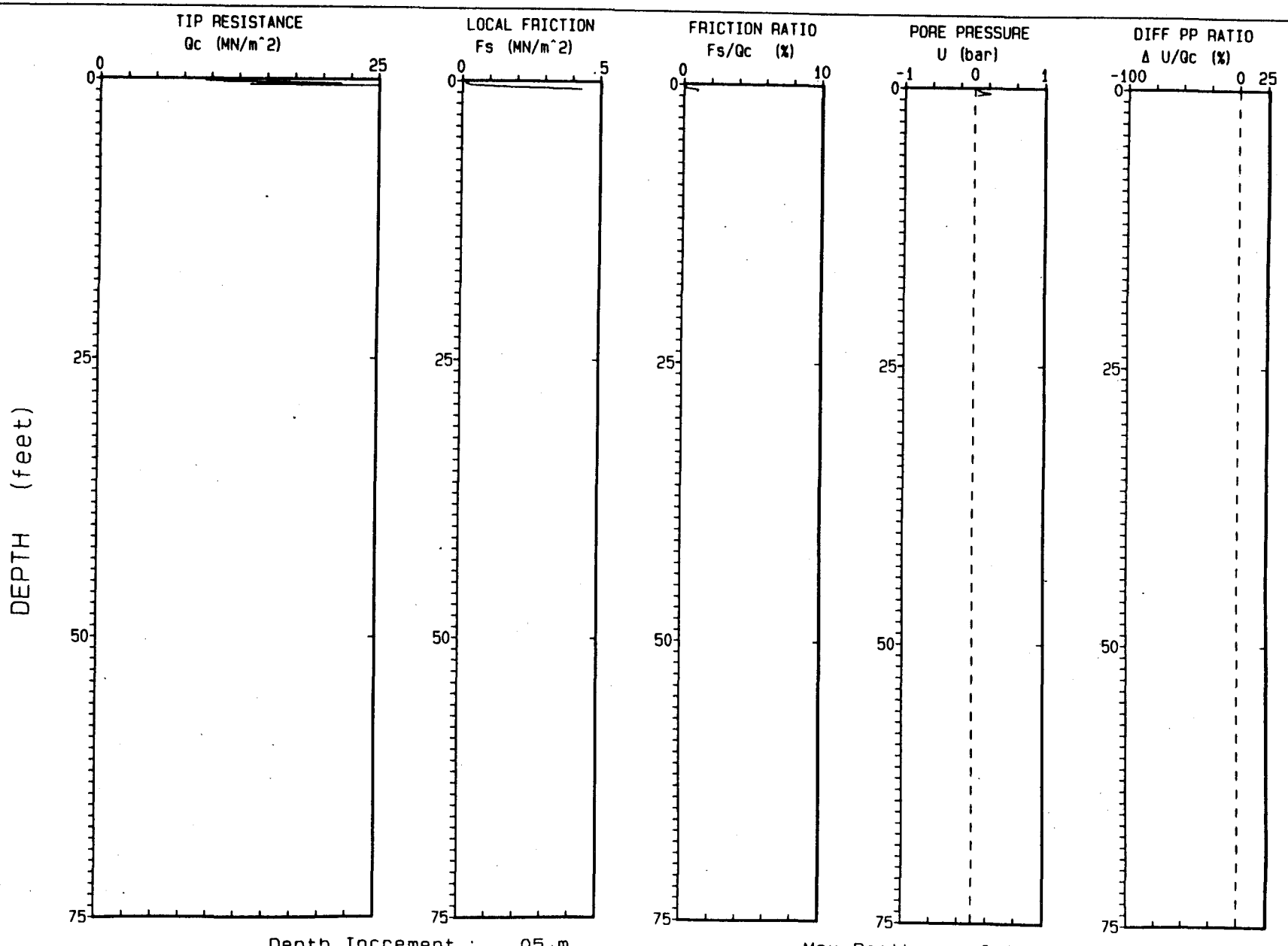
Max Depth : 92.03 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.6 MSL

CPT NO. : 00893A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

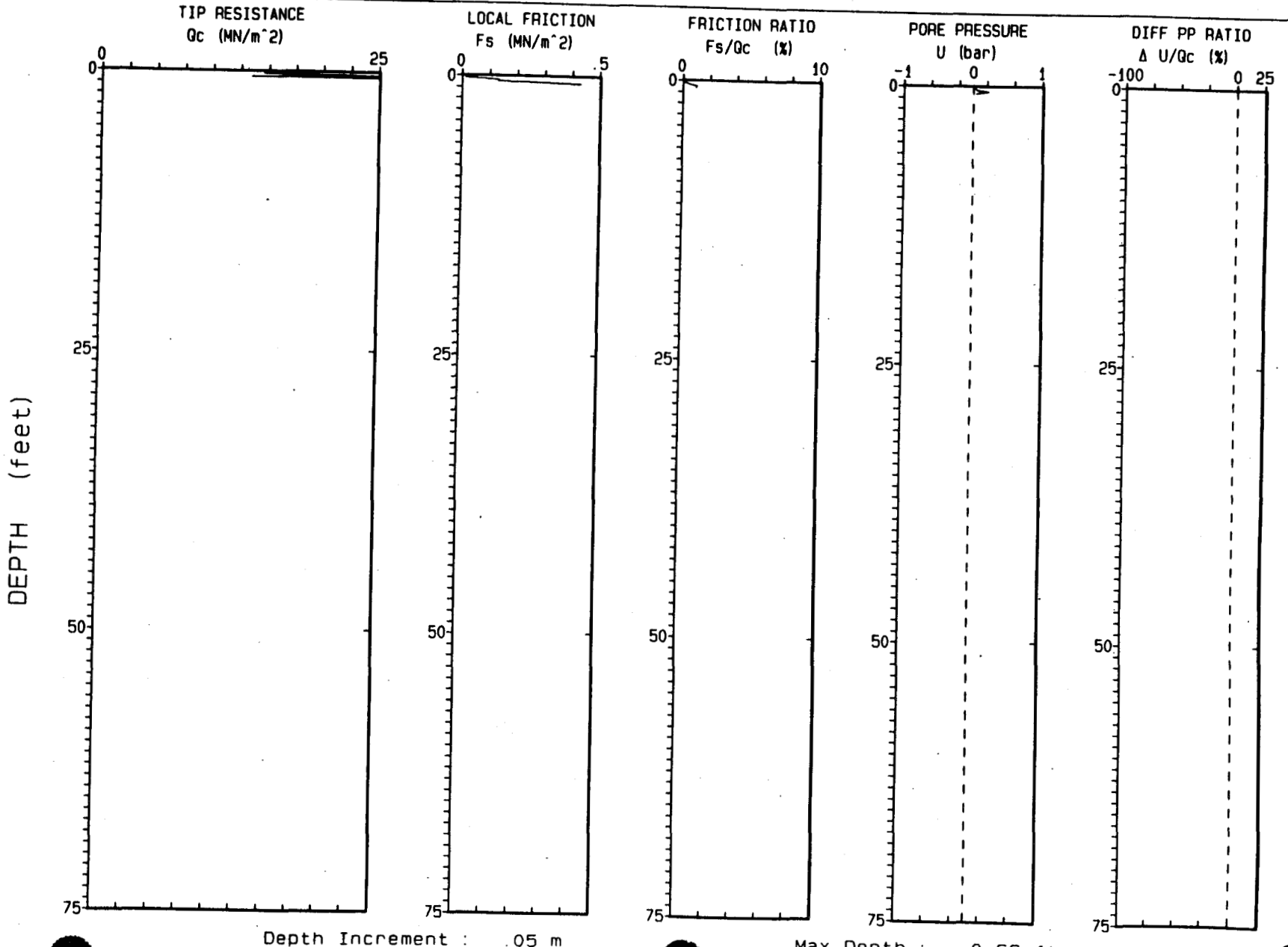
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.6 MSL

CPT NO. : 00893B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

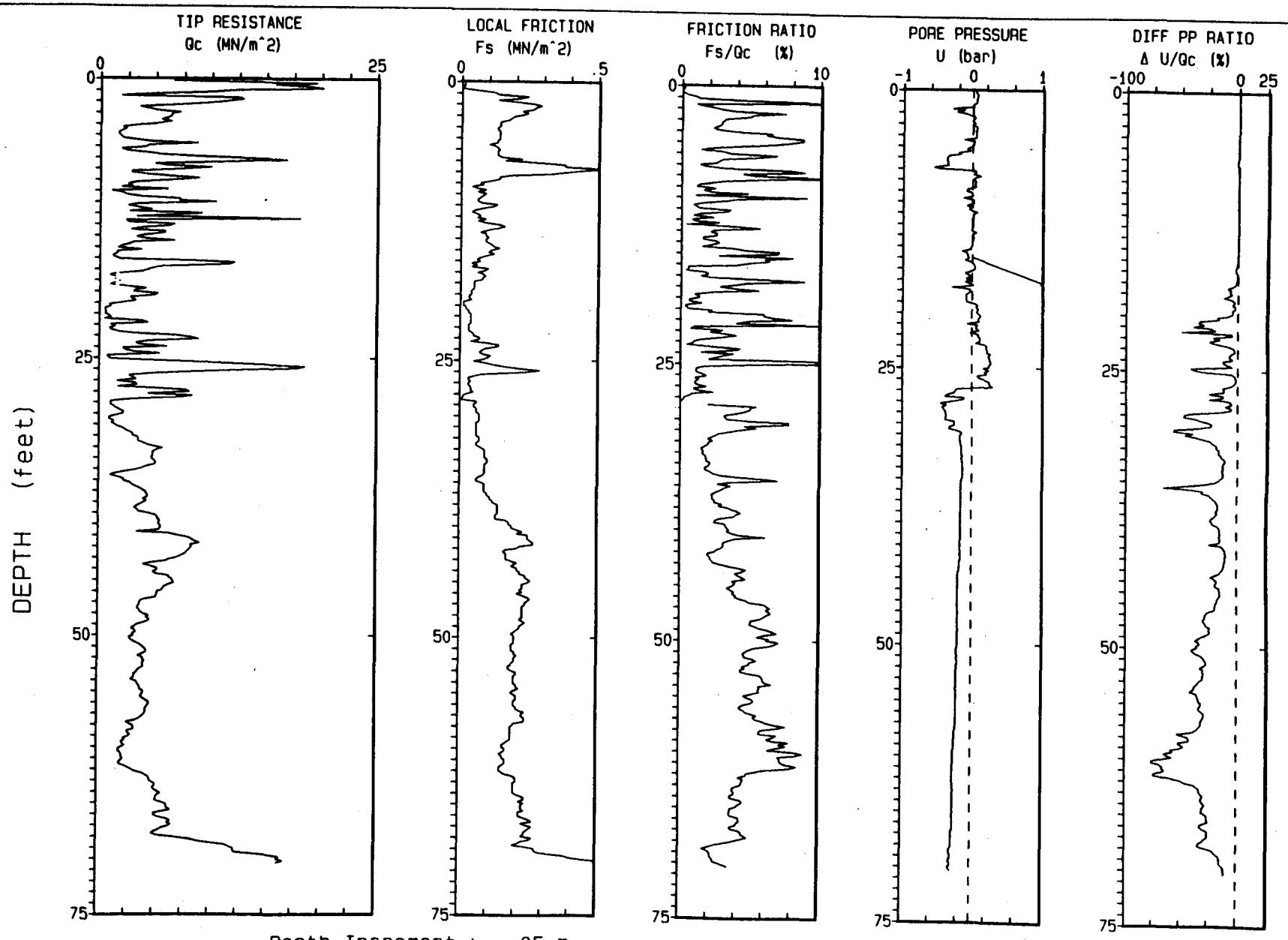
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 JAN 93
ELEVATION : 5985.6 MSL

CPT NO. : 00893C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

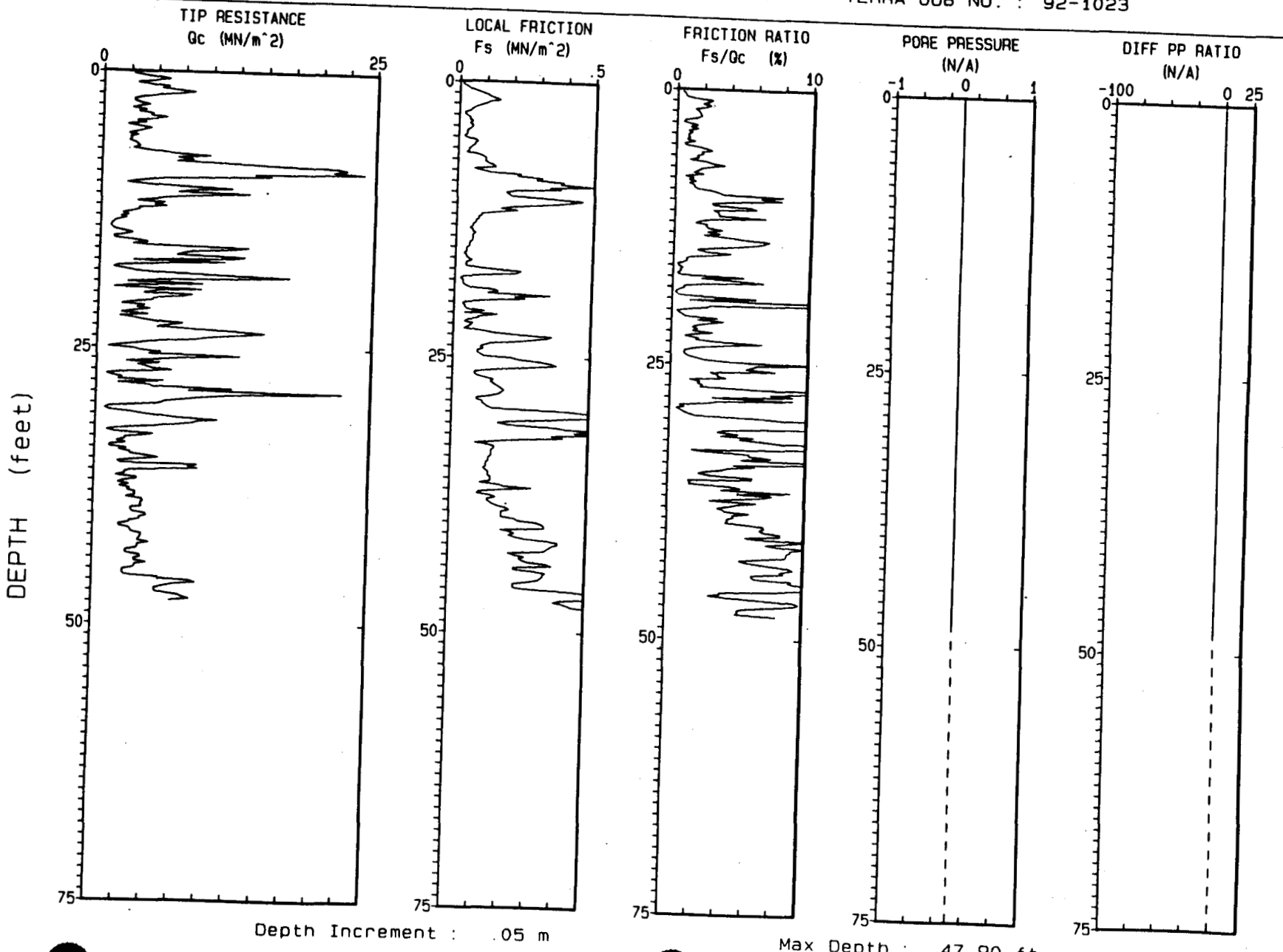
Max Depth : 70.37 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 DEC 92
ELEVATION : 5986.6 MSL

CPT NO. : 00993A
TERRA JOB NO. : 92-1023

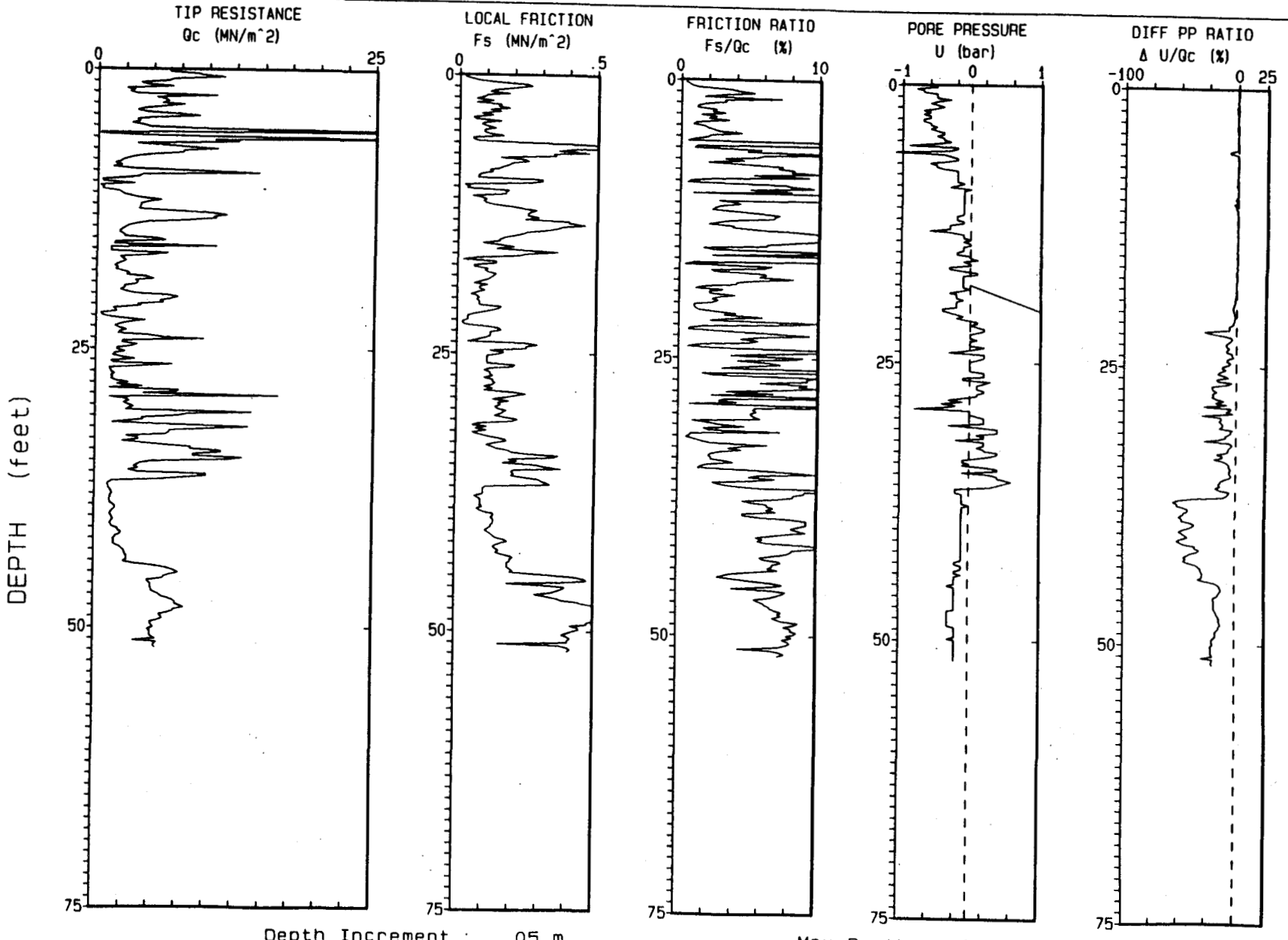


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 21 DEC 92
ELEVATION : 5988.9 MSL

CPT NO. : 01093A
TERRA JOB NO. : 92-1023



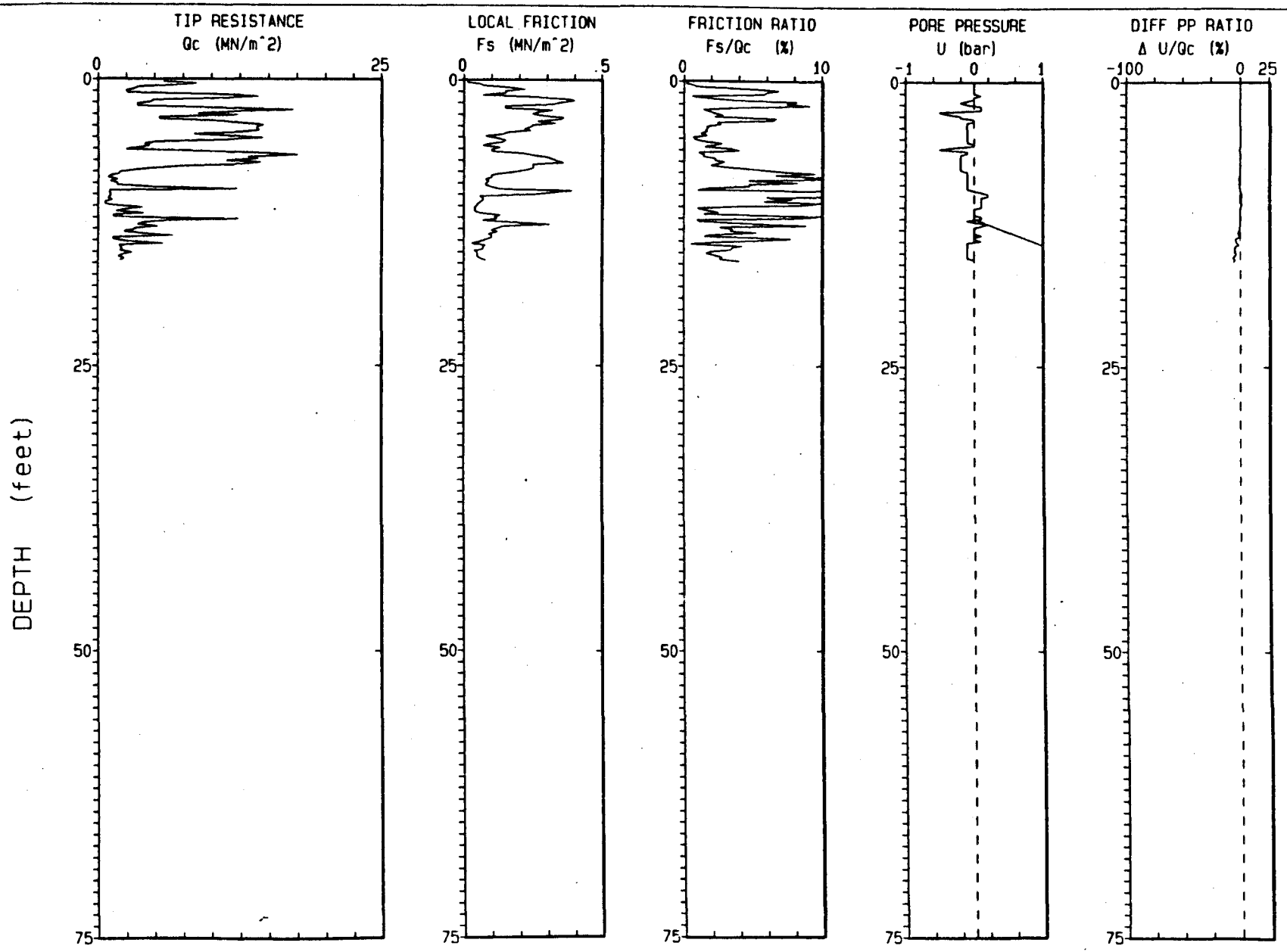
Depth Increment : .05 m

Max Depth : 51.84 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW DATE : 22 DEC 92 CPT NO. : 01193A Pg 1 / 1

LOCATION : OU7 LANDFILL ELEVATION : 5981.9 MSL TERRA JOB NO. : 92-1023



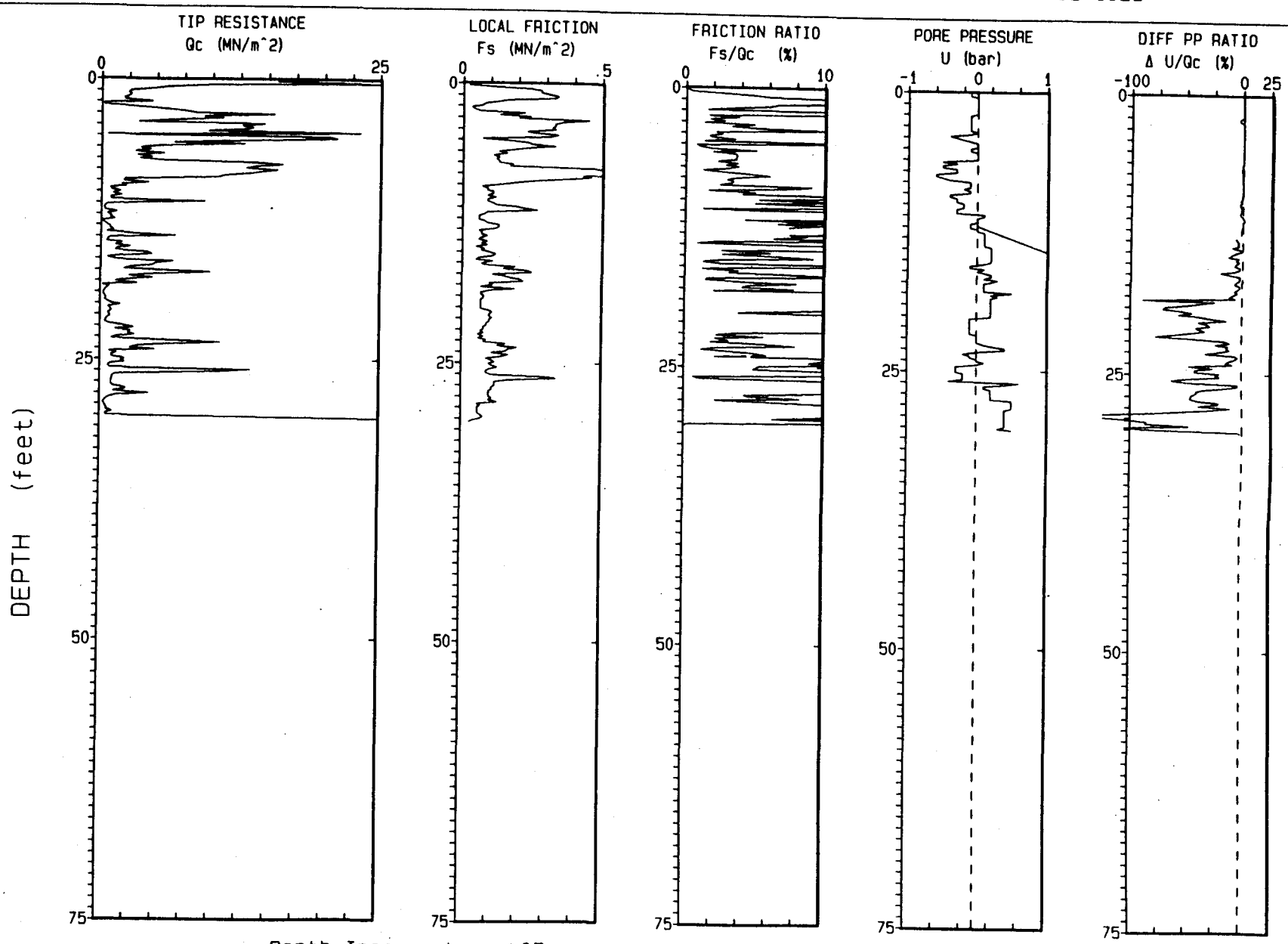
Depth Increment : .05 m Max Depth : 15.75 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 22 DEC 92
ELEVATION : 5981.9 MSL

CPT NO. : 01193B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

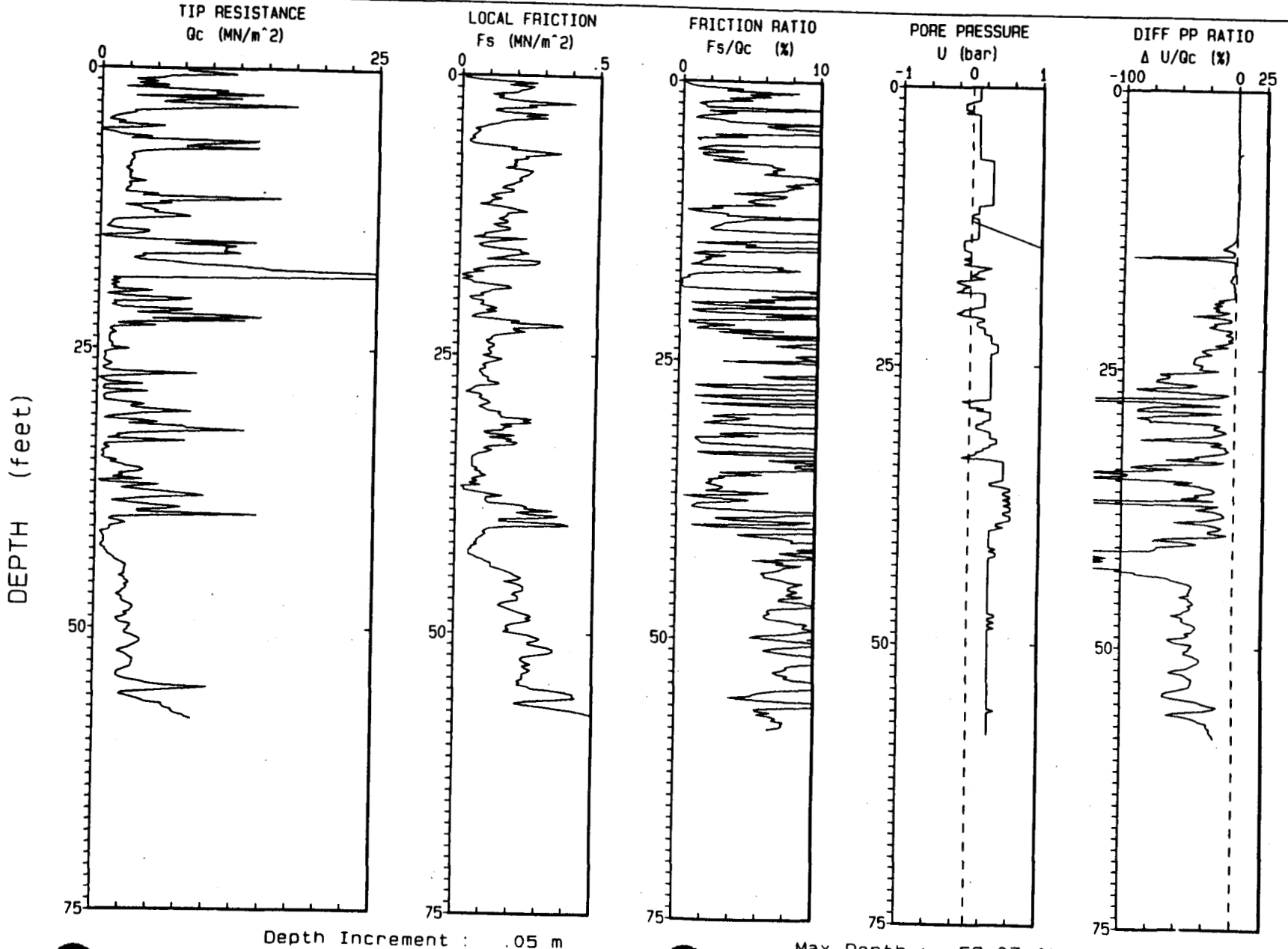
Max Depth : 30.35 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 22 DEC 92
ELEVATION : 5981.9 MSL

CPT NO. : 01193C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

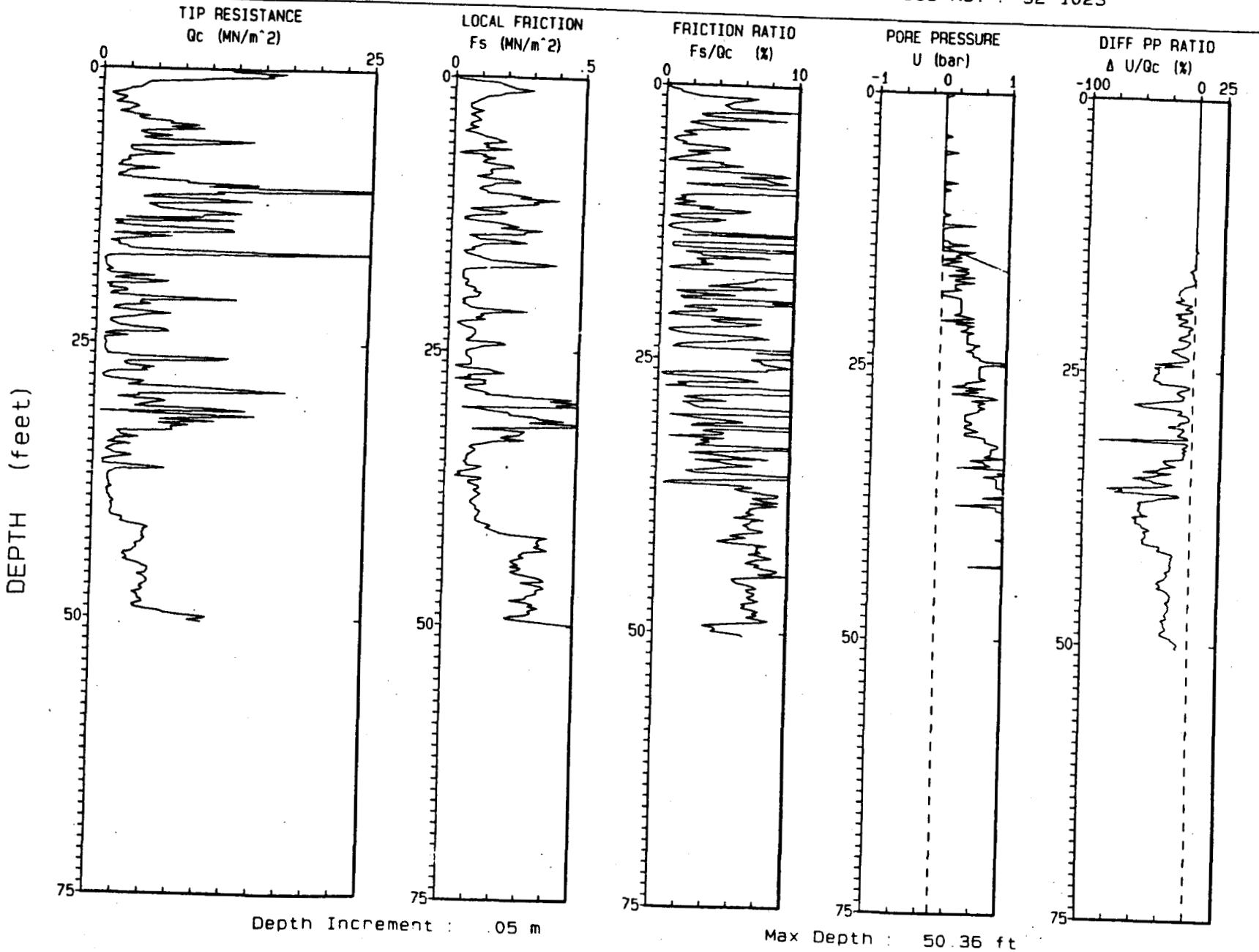
Max Depth : 58.07 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5981.5 MSL

CPT NO. : 01293A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

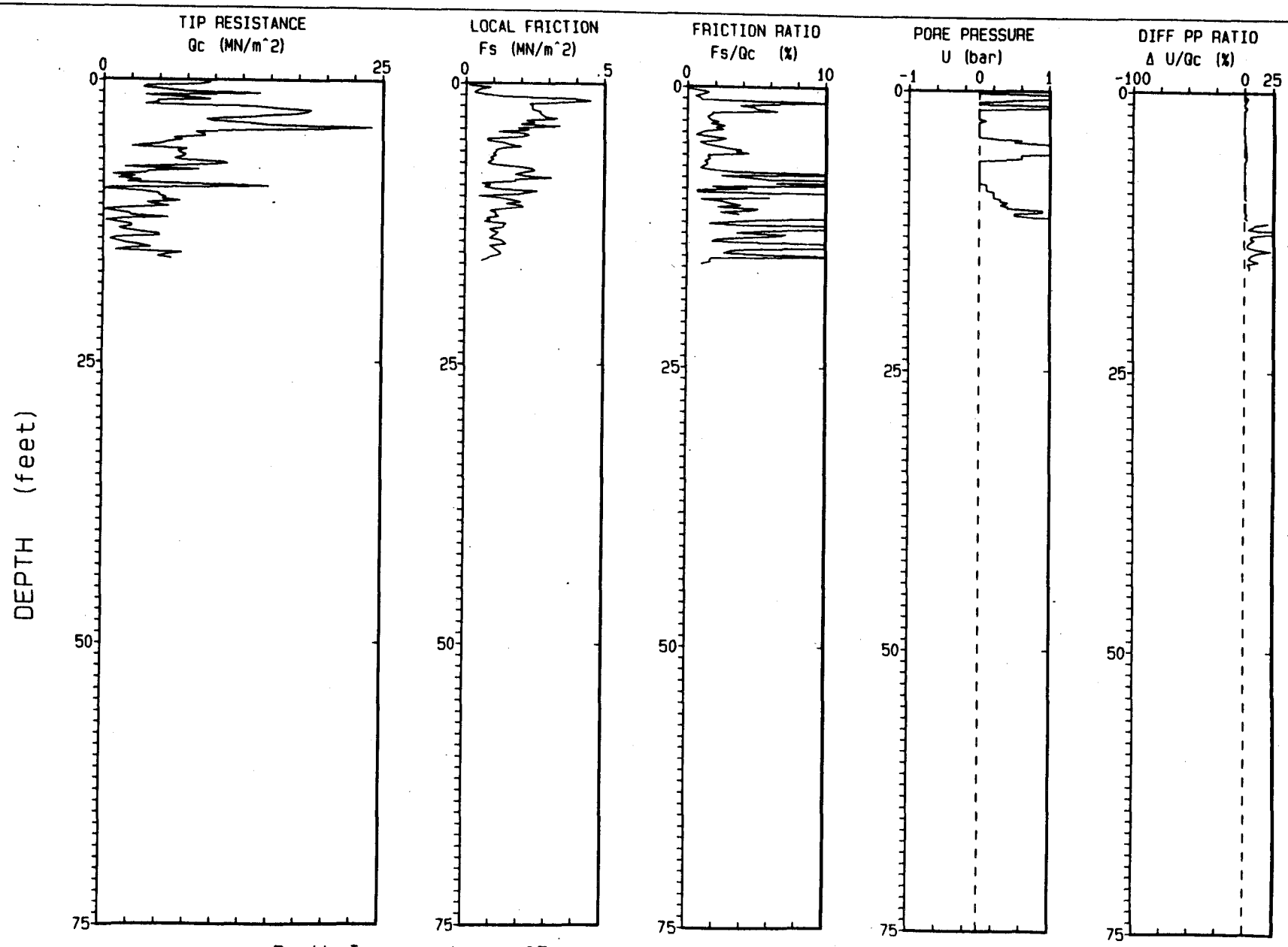
Max Depth : 50.36 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

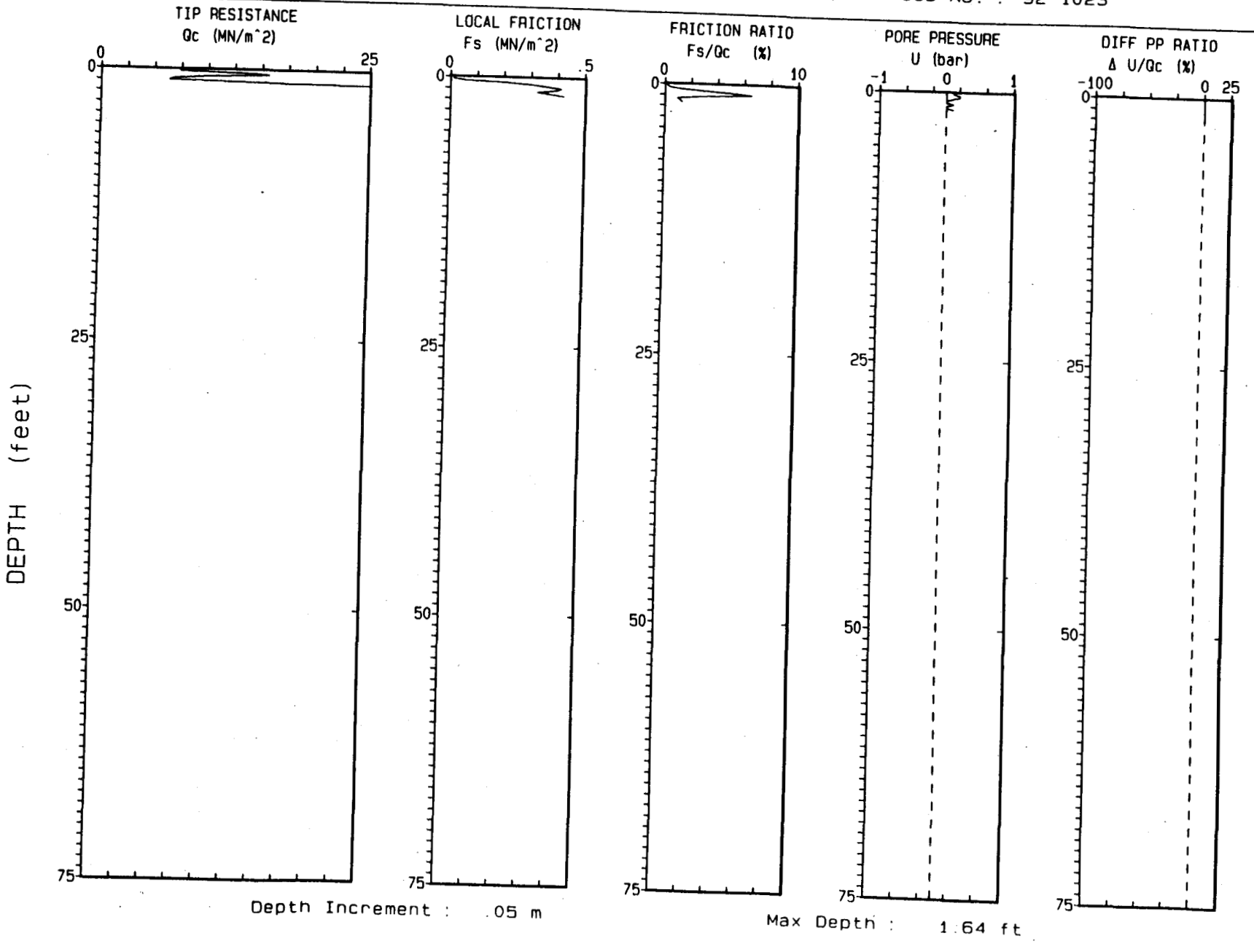
Max Depth : 15.75 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 013938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

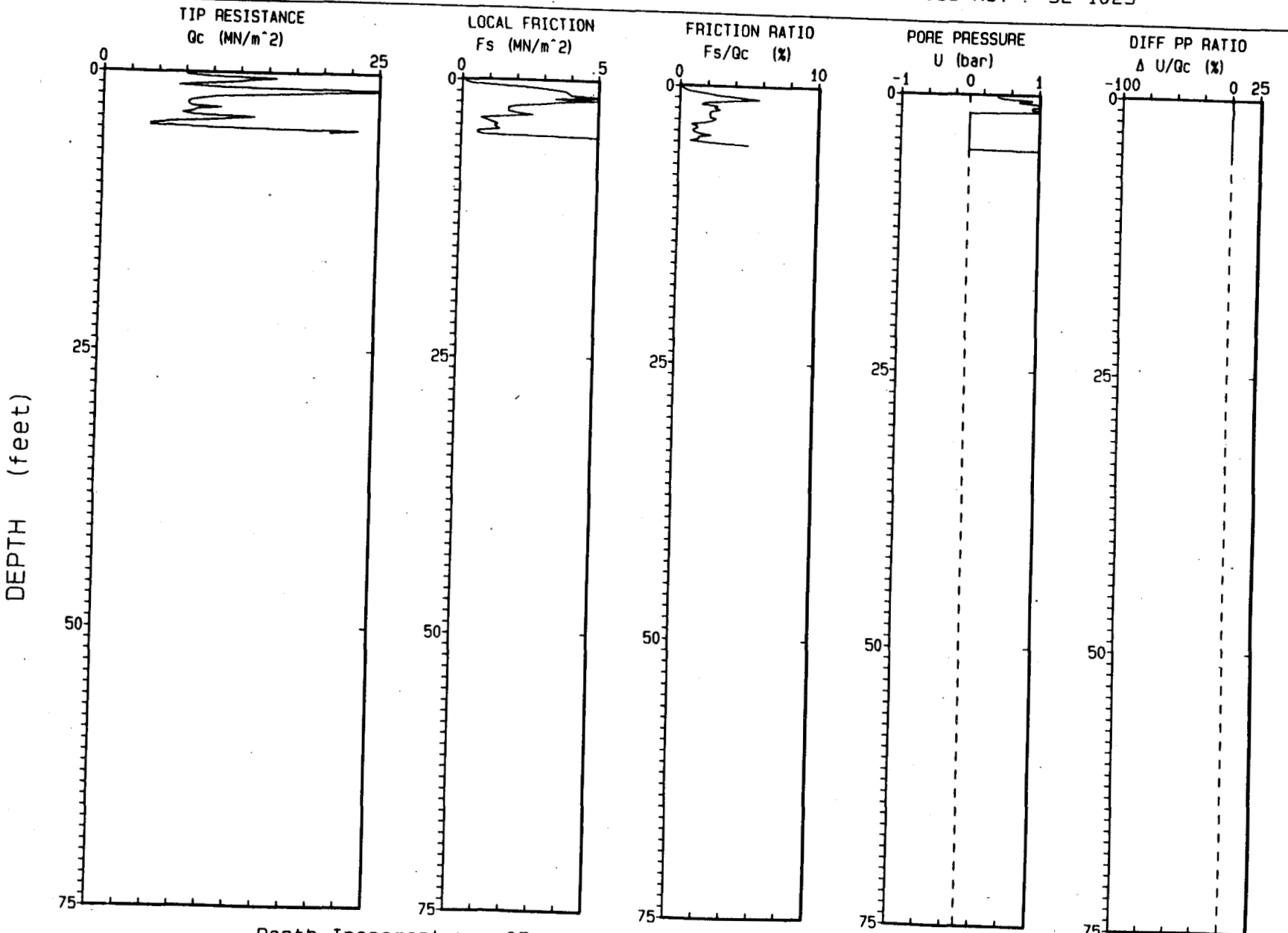
Max Depth : 1.64 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

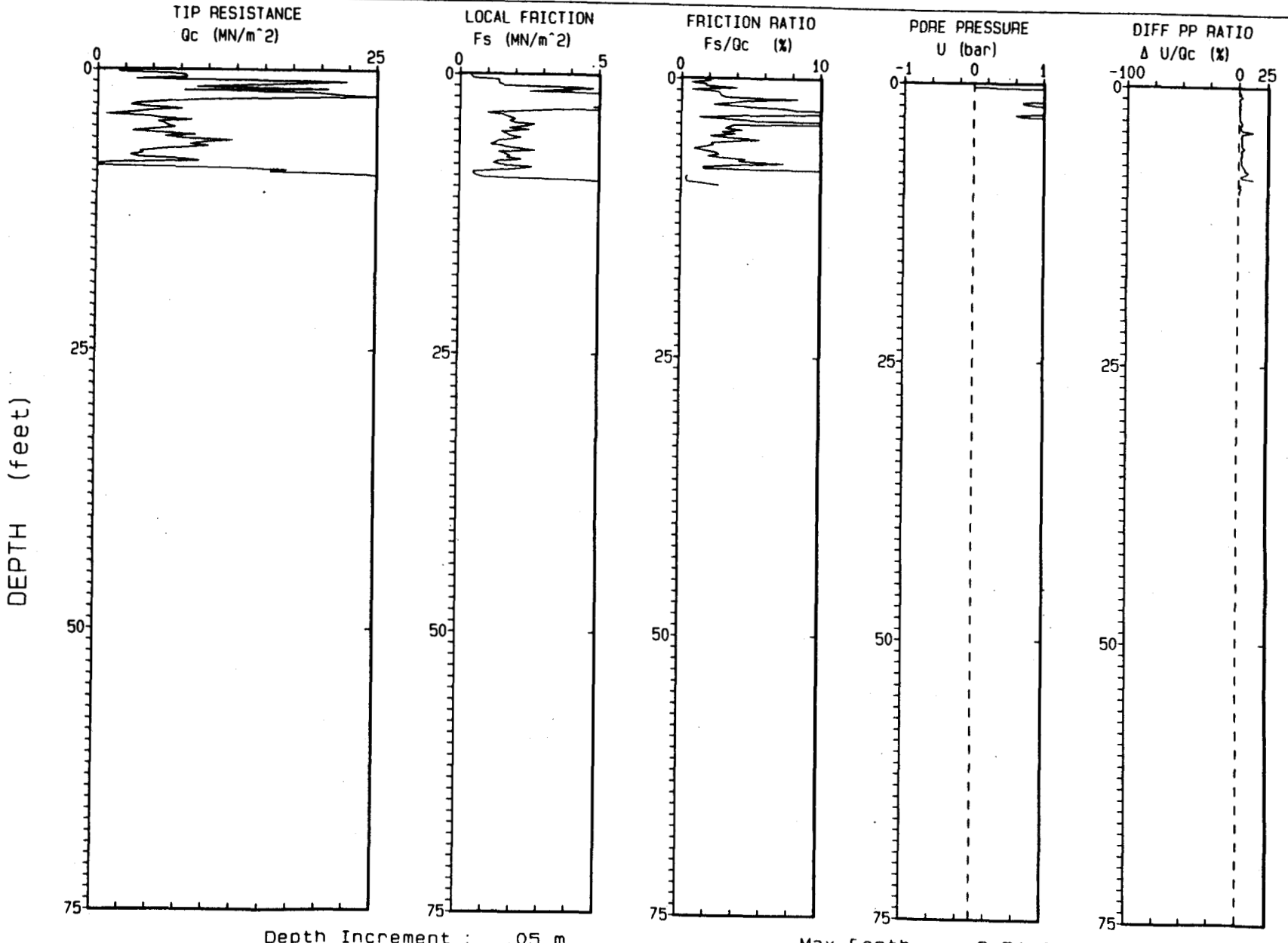
Max Depth : 5.25 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

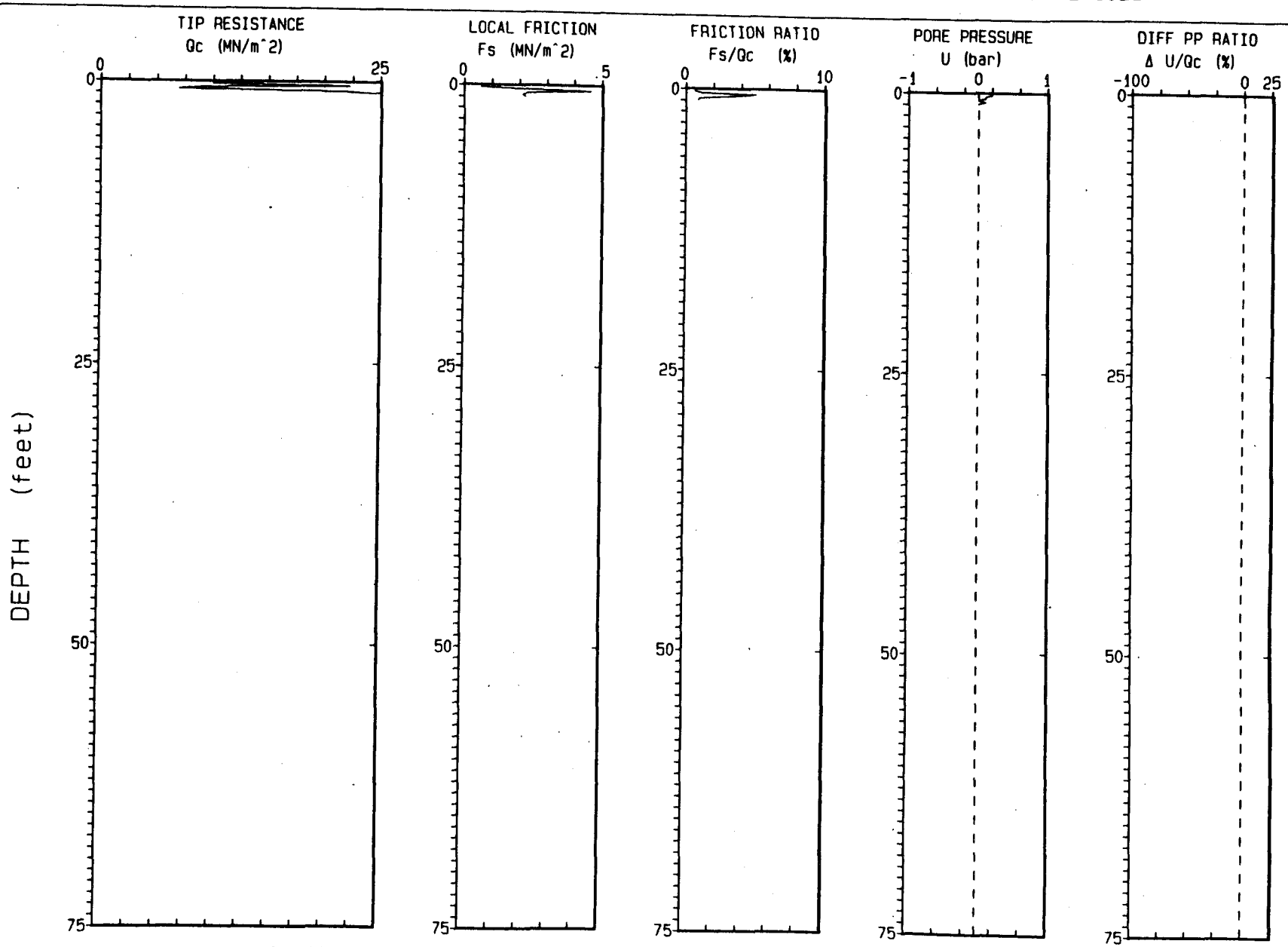
Max Depth : 9.51 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

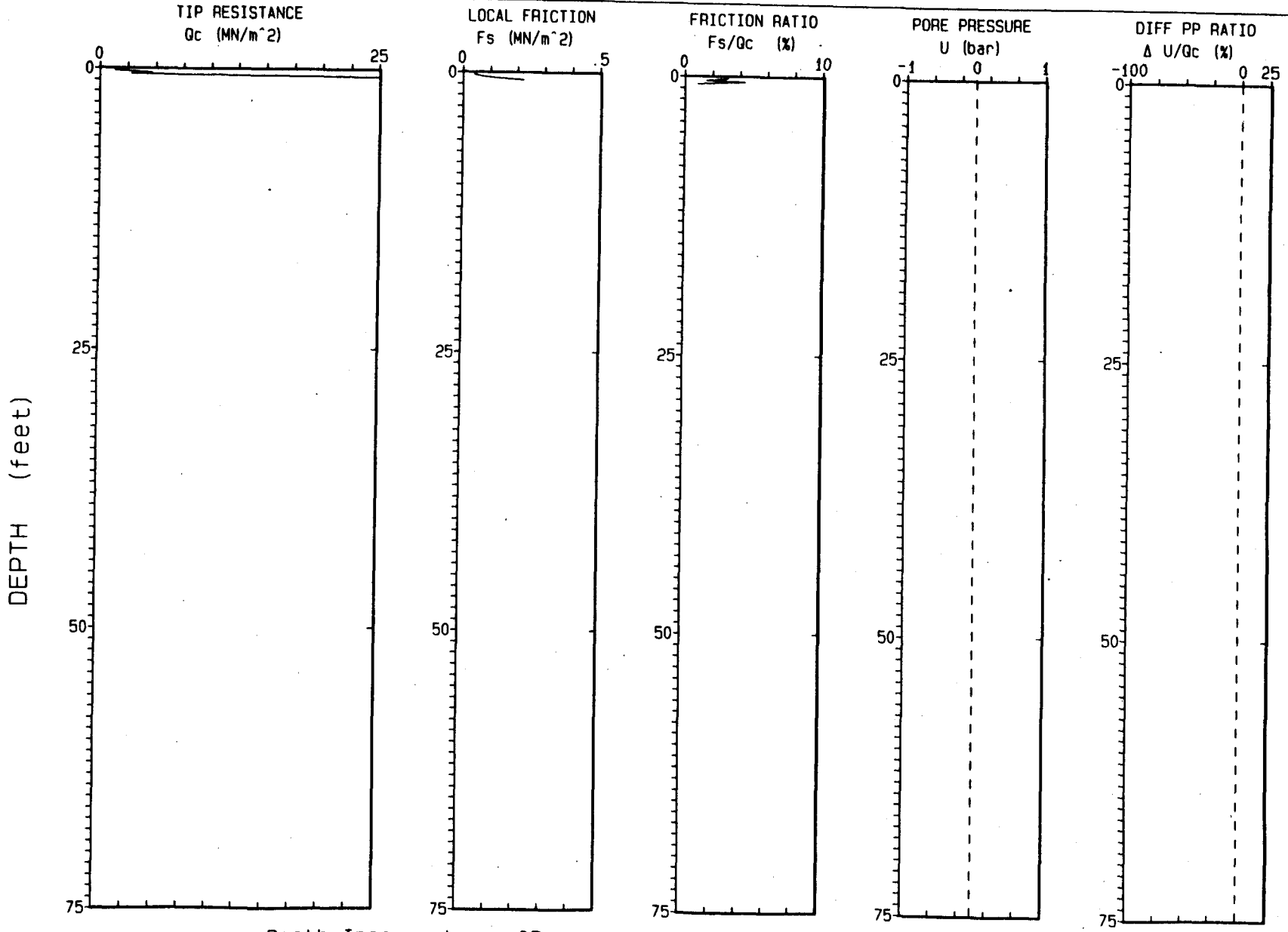
Max Depth : 0.98 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393F
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

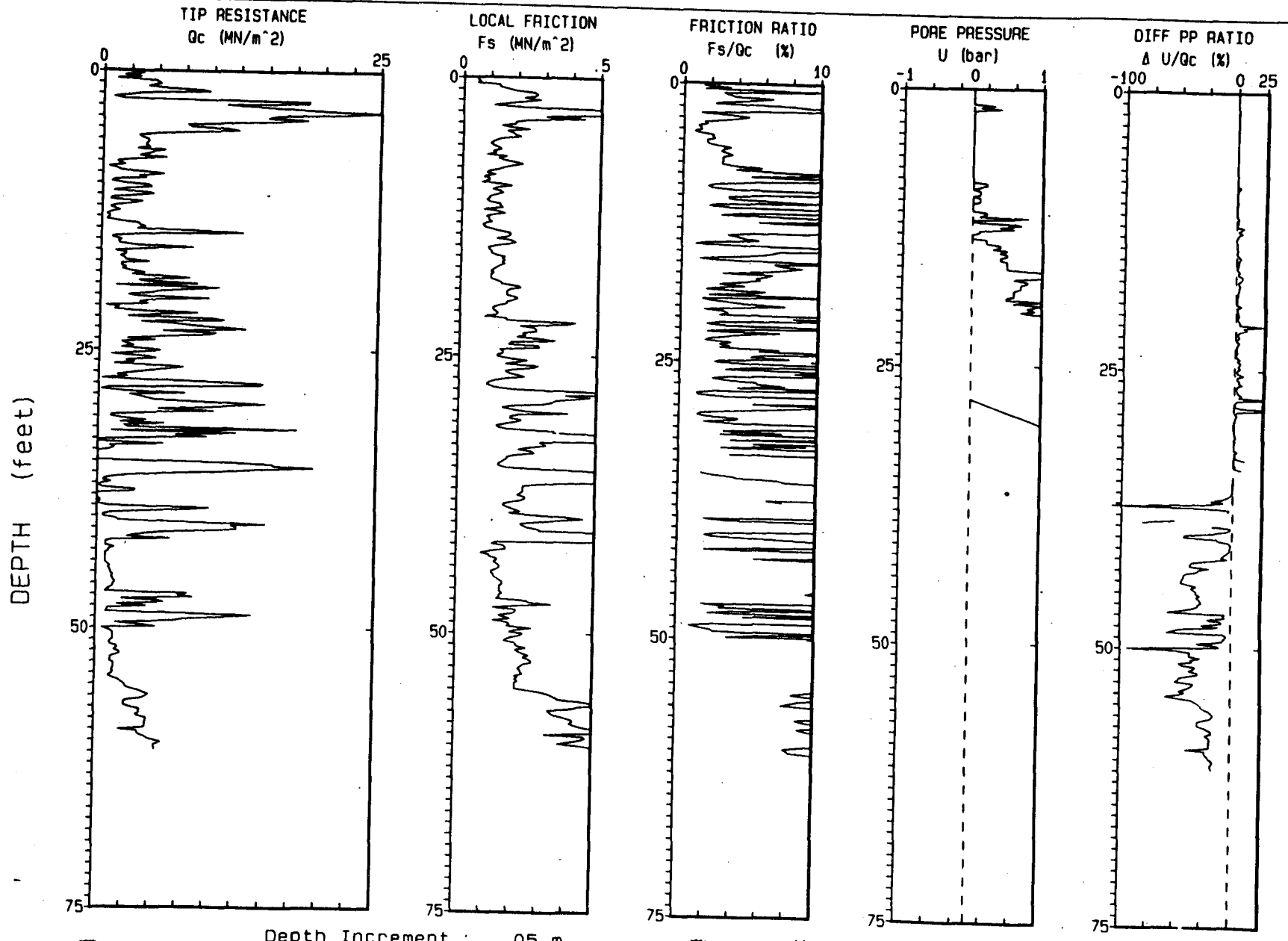
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 23 DEC 92
ELEVATION : 5976.8 MSL

CPT NO. : 01393G
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

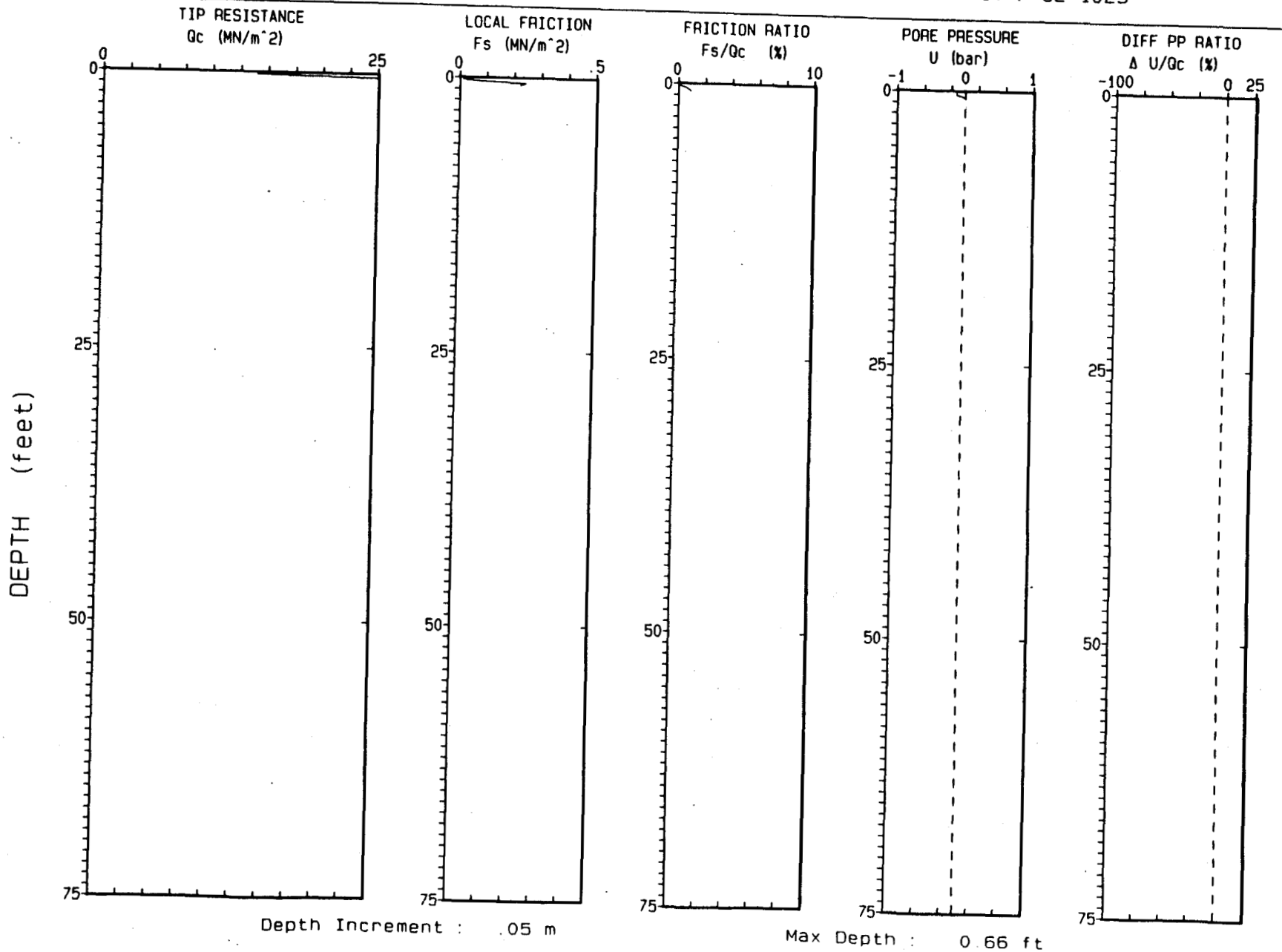
Max Depth : 60.86 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

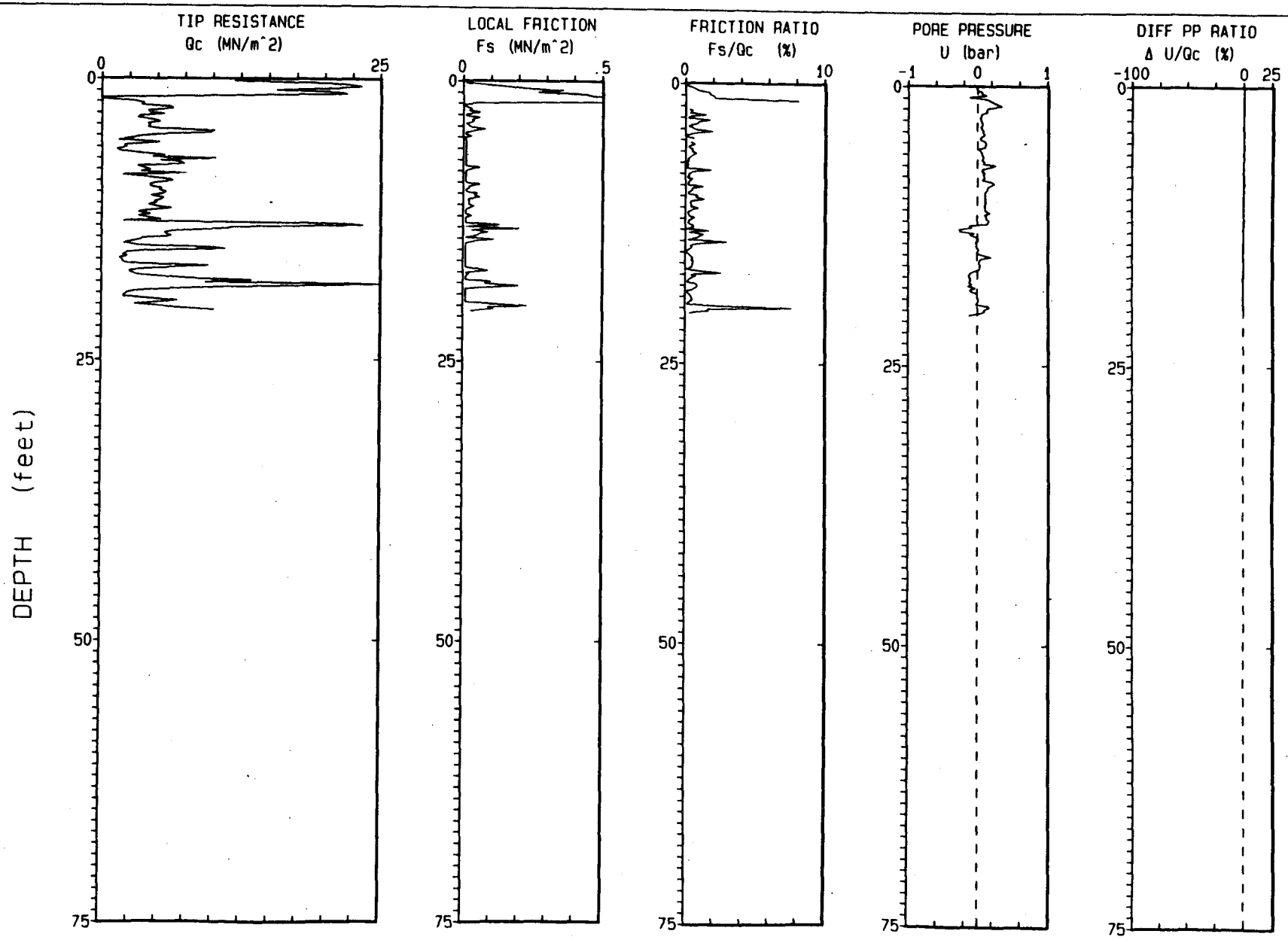
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

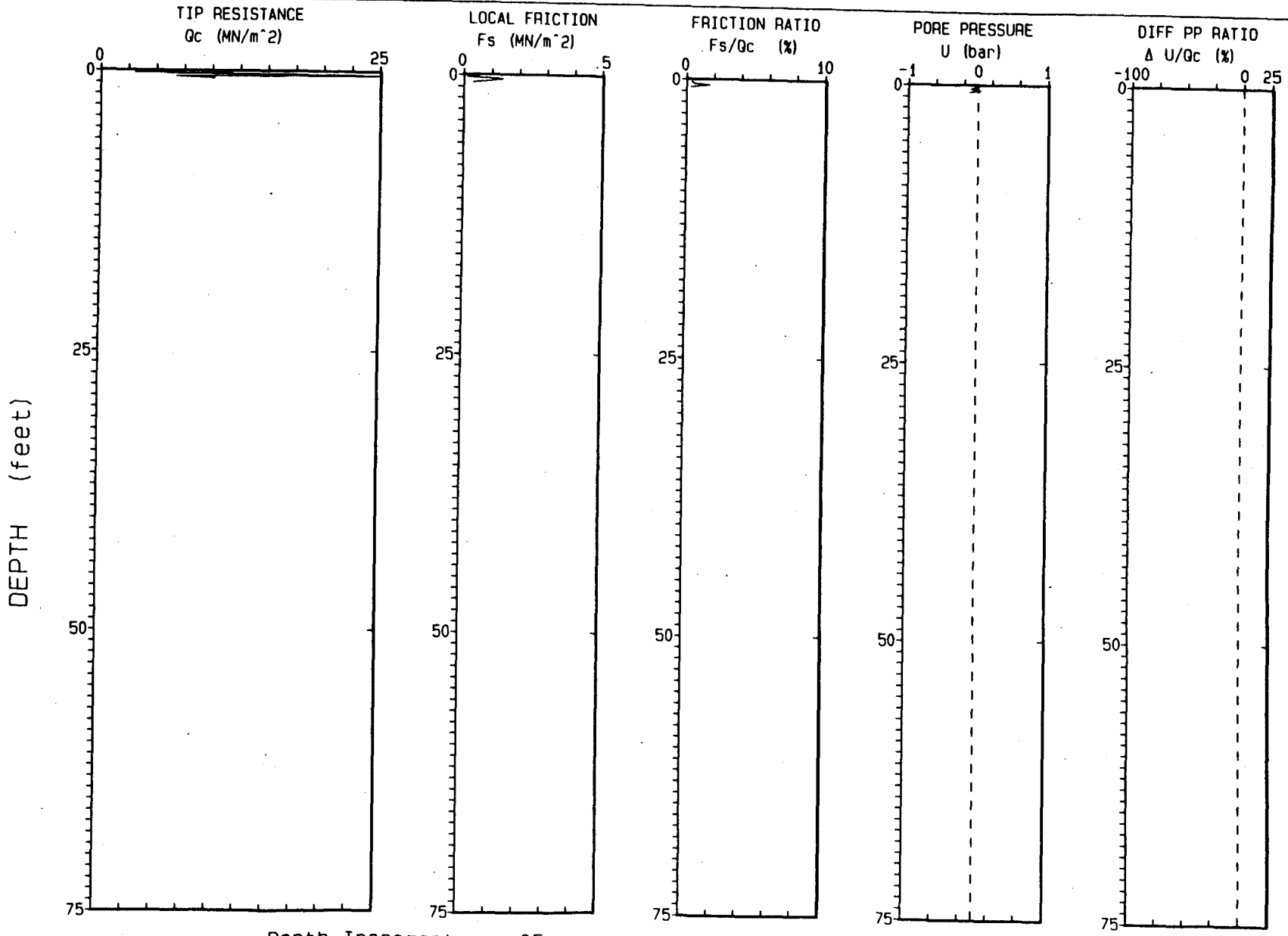
Max Depth : 20.51 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

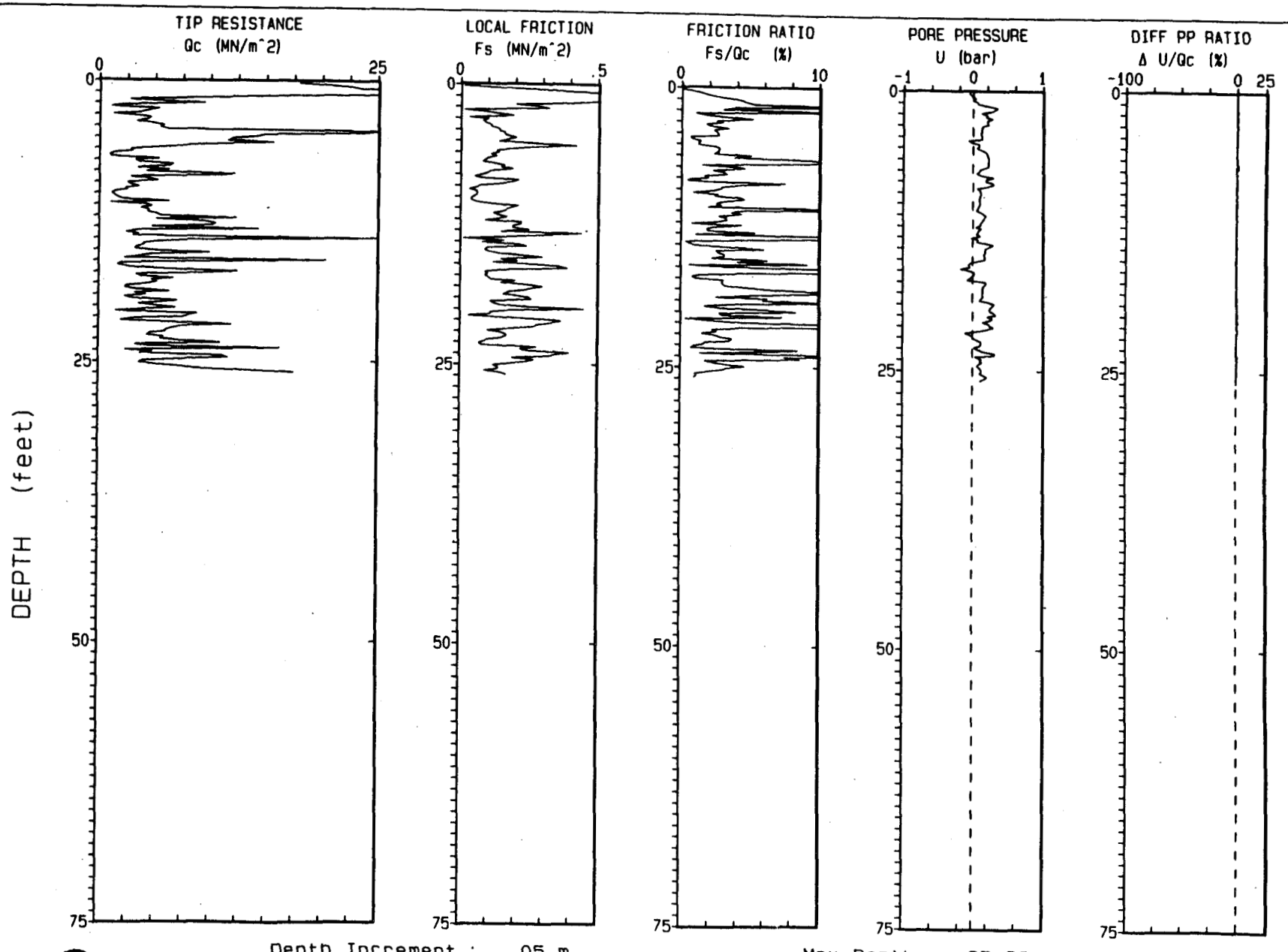
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

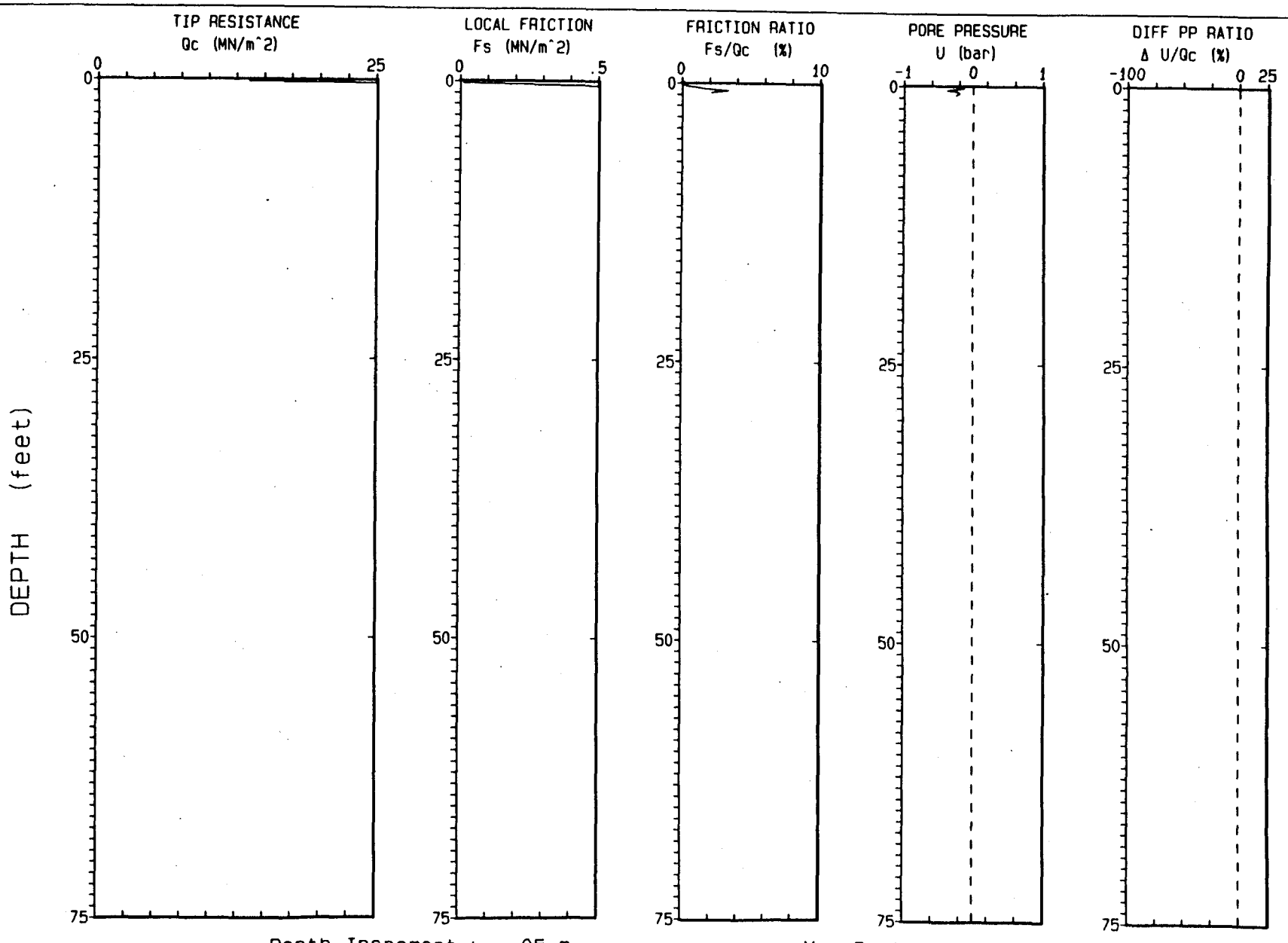
Max Depth : 25.92 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

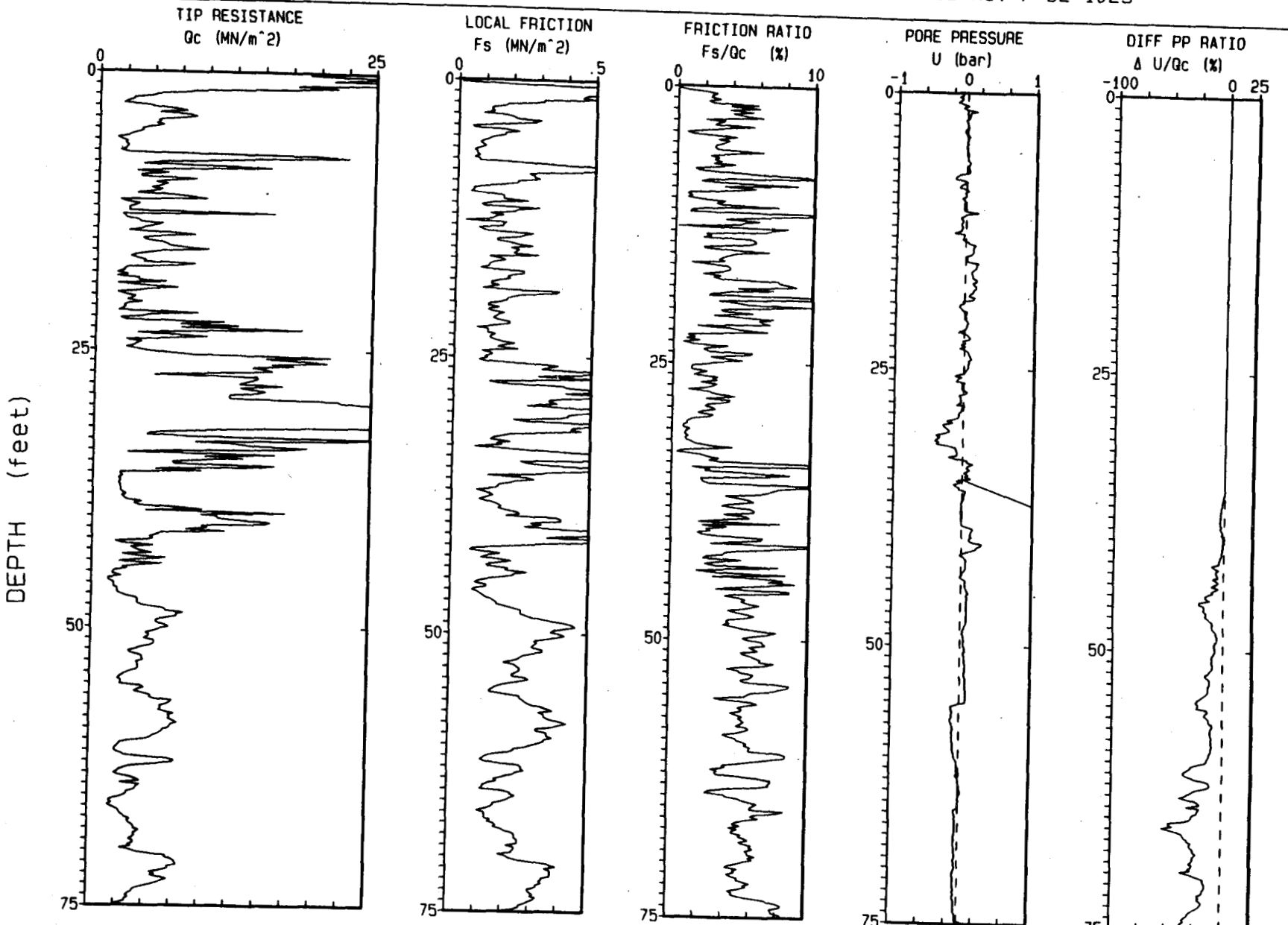
Max Depth : 0.82 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493F
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

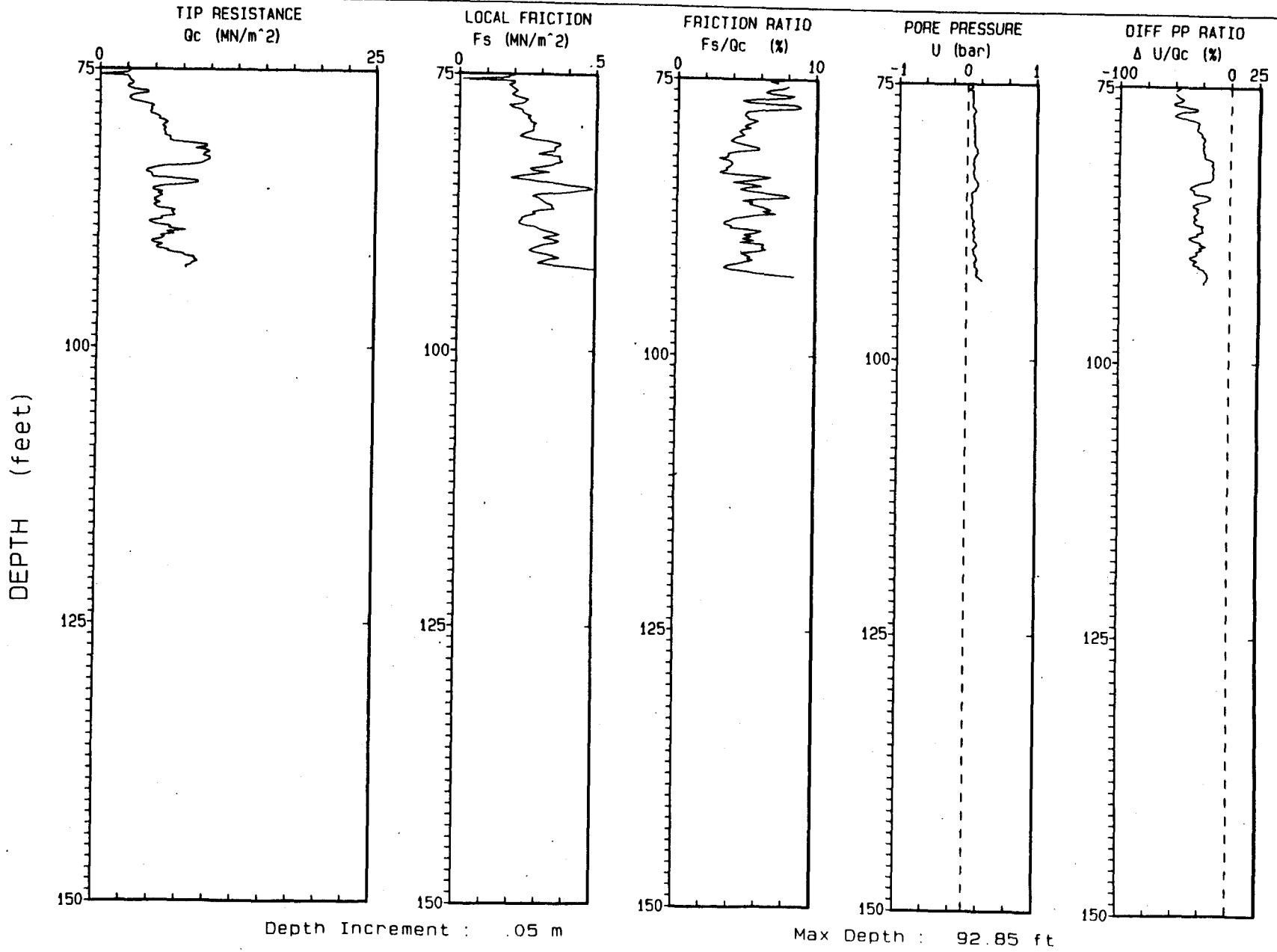
Max Depth : 92.85 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 08 JAN 93
ELEVATION : 5974.6 MSL

CPT NO. : 01493F
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

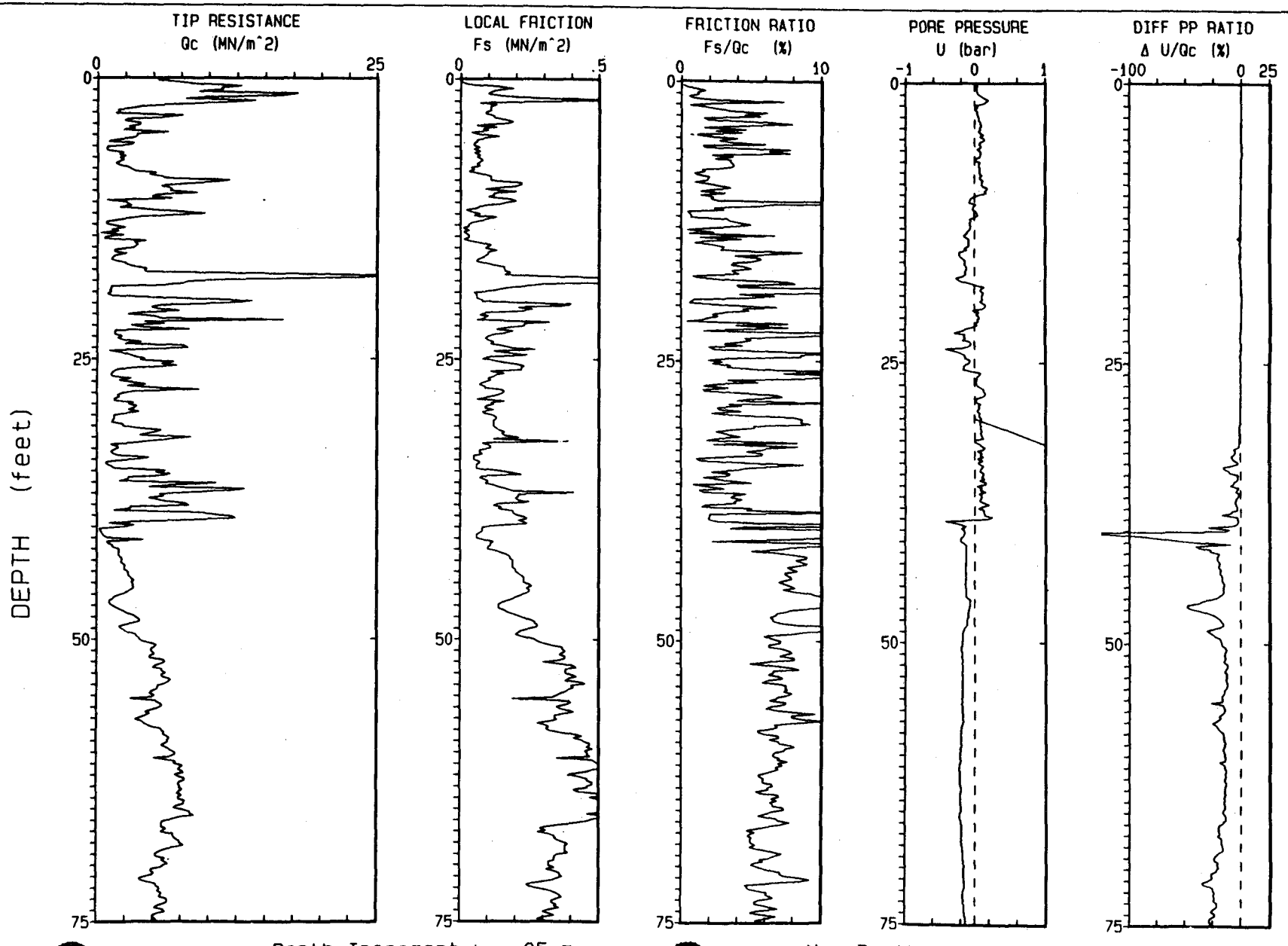
Max Depth : 92.85 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 JAN 93
ELEVATION : 5973.4 MSL

CPT NO. : 01593A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

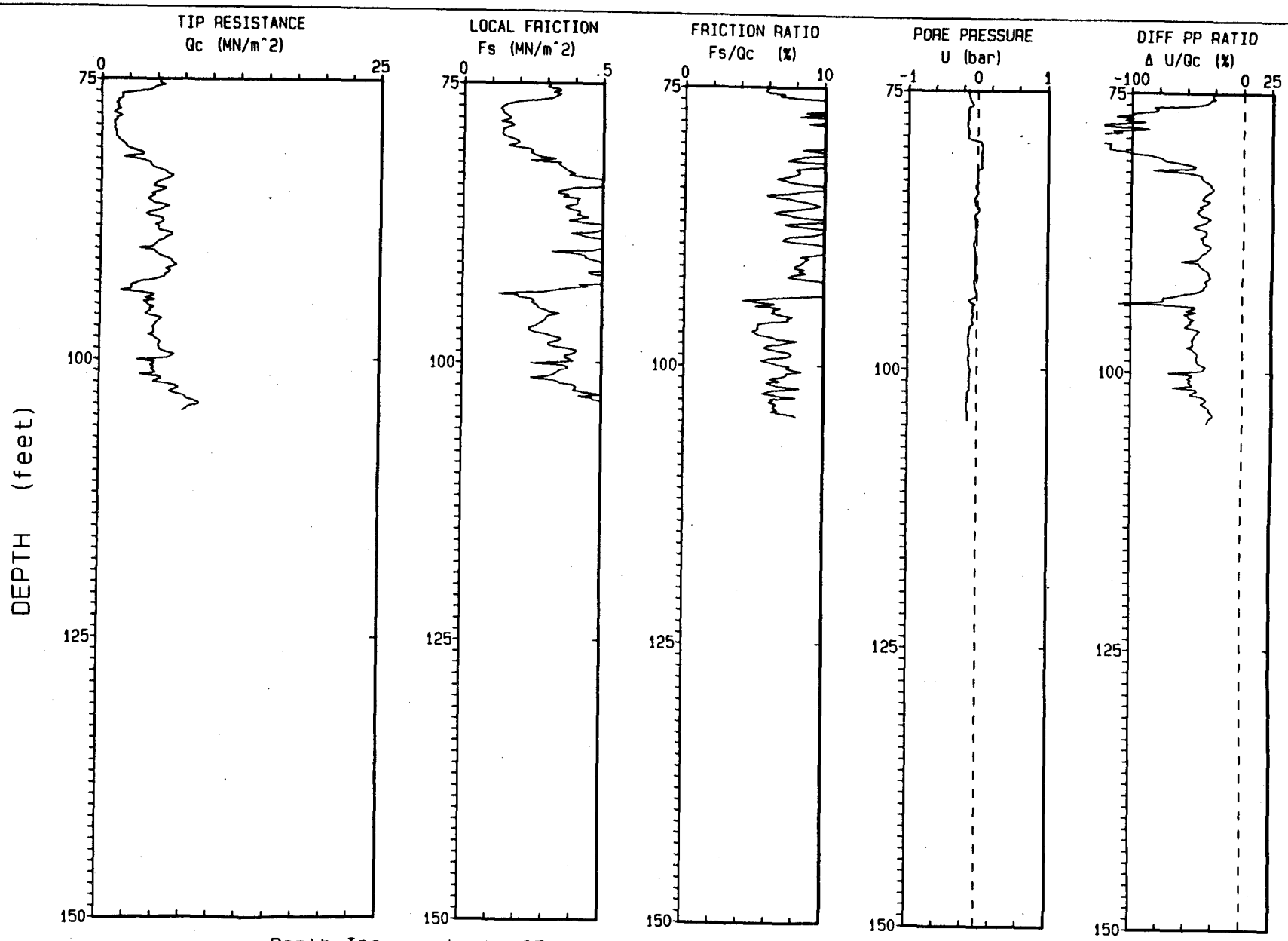
Max Depth : 104.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 JAN 93
ELEVATION : 5973.4 MSL

CPT NO. : 01593A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

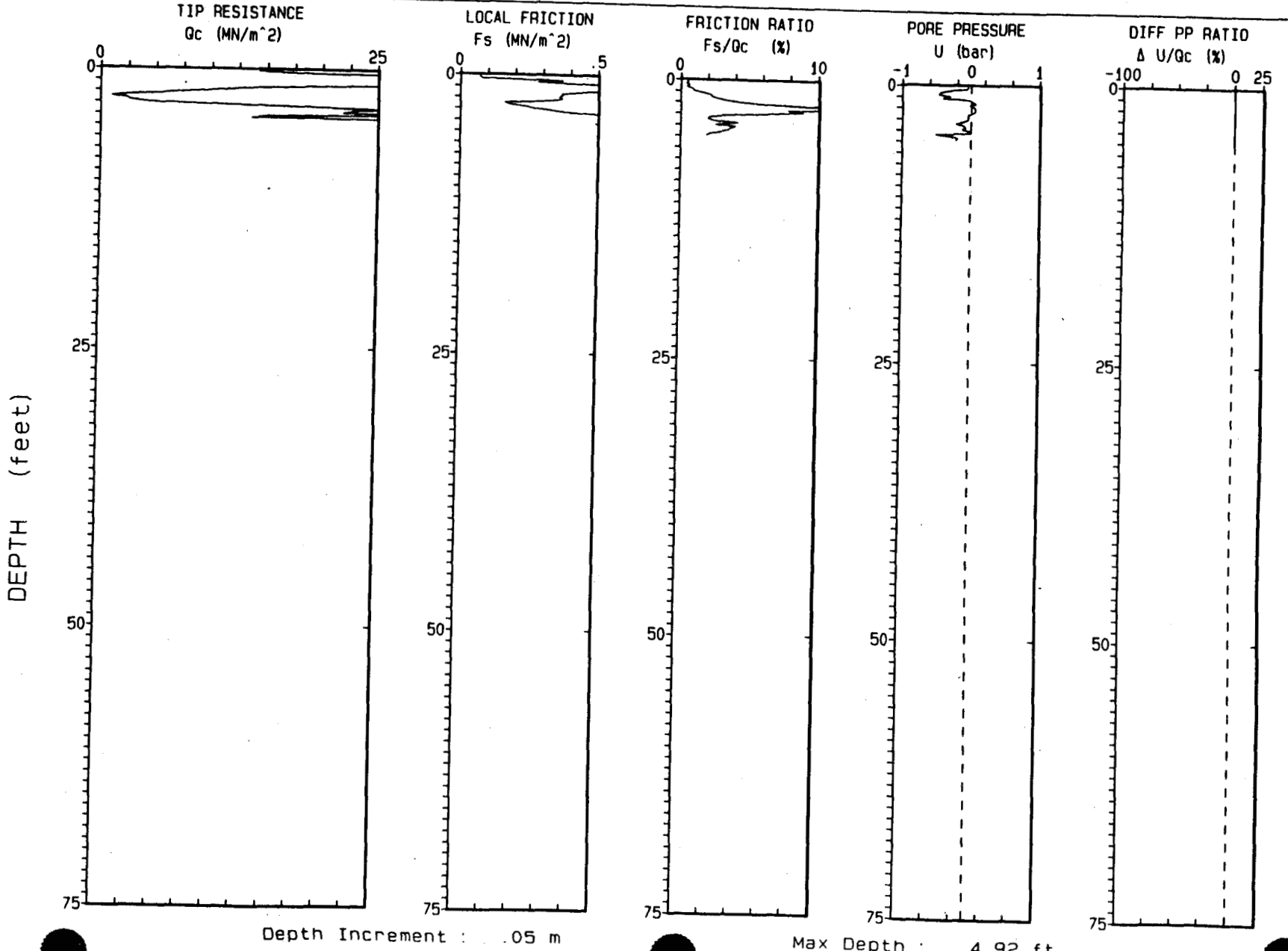
Max Depth : 104.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5969.7 MSL

CPT NO. : 01793A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

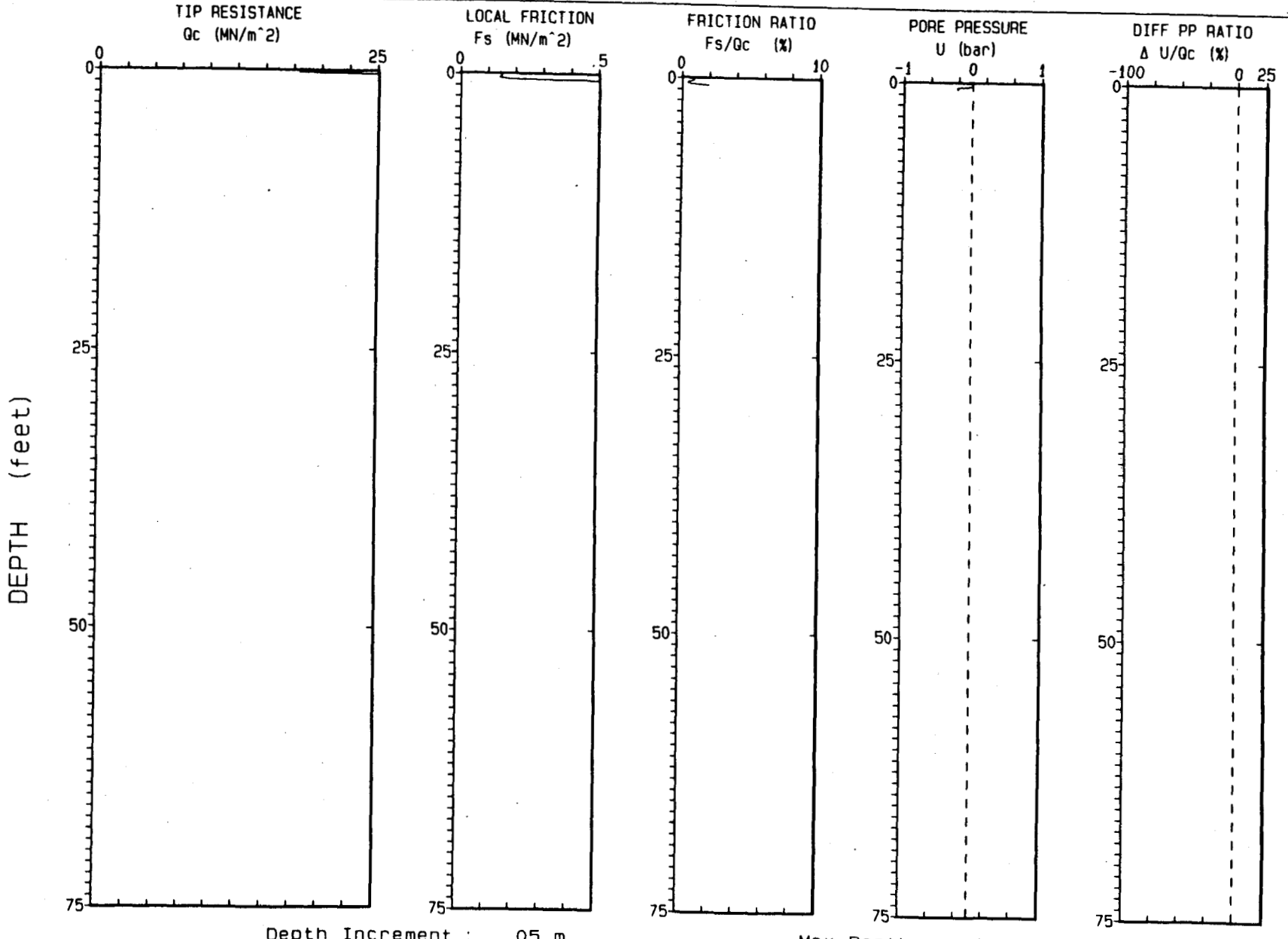
Max Depth : 4.92 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5969.7 MSL

CPT NO. : 017938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

Max Depth : 0.66 ft

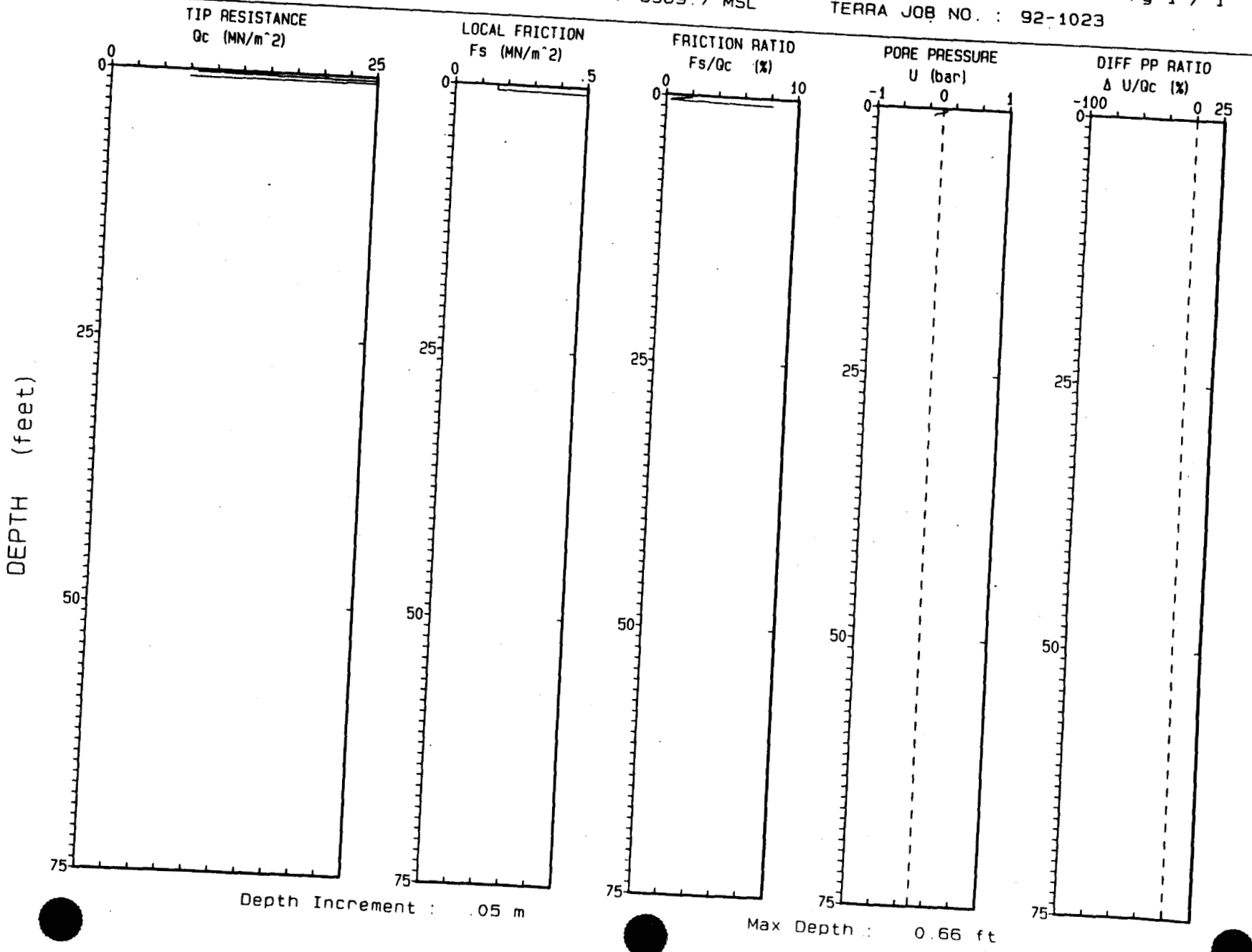
ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5969.7 MSL

CPT NO. : 01793C
TERRA JOB NO. : 92-1023

Pg 1 / 1



Depth Increment : .05 m

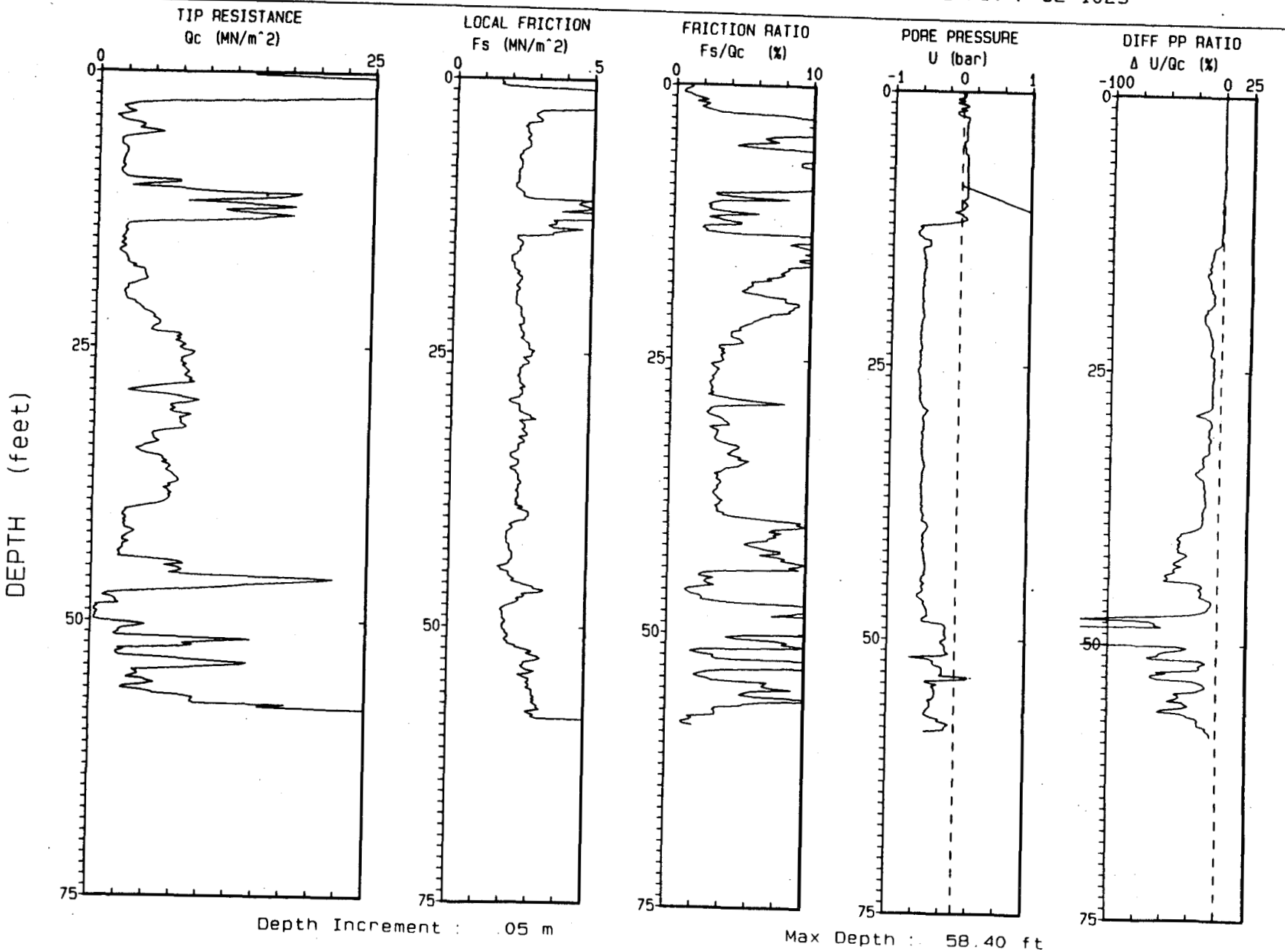
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 JAN 93
ELEVATION : 5969.0 MSL

CPT NO. : 01893A
TERRA JOB NO. : 92-1023

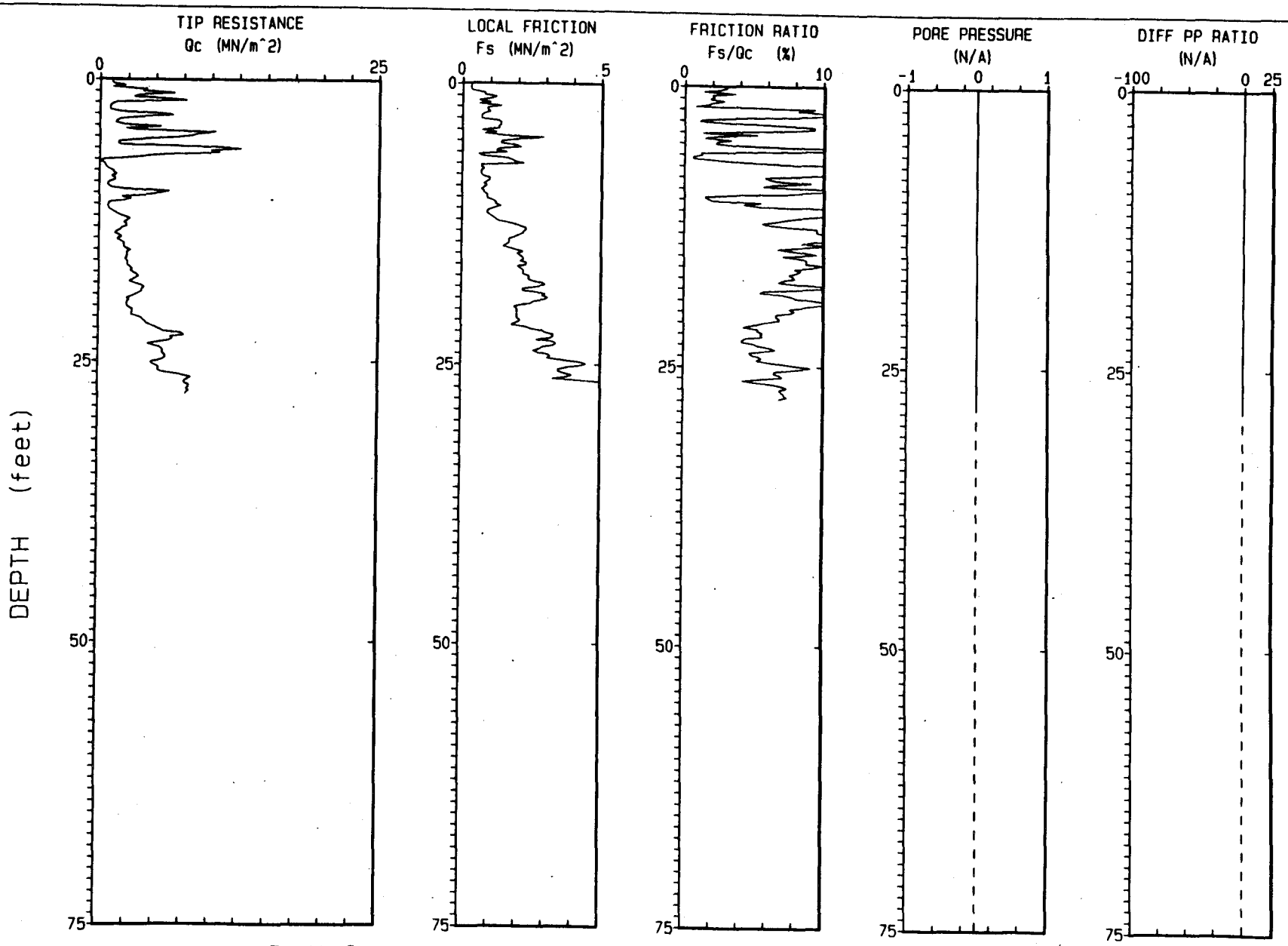


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 APR 93
ELEVATION : UNKNOWN

CPT NO. : 01993A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

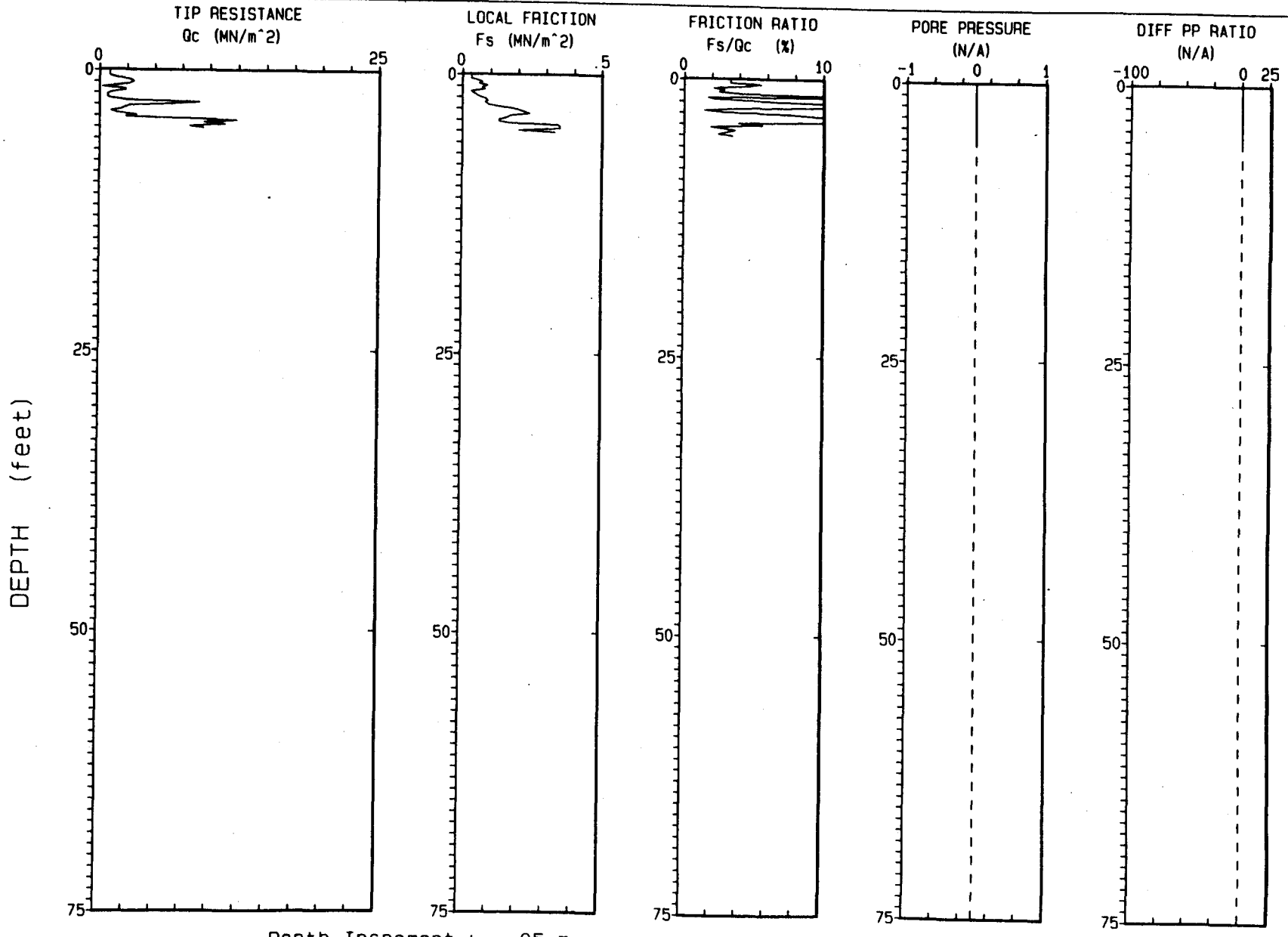
Max Depth : 27.89 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 APR 93
ELEVATION : UNKNOWN

CPT NO. : 019938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

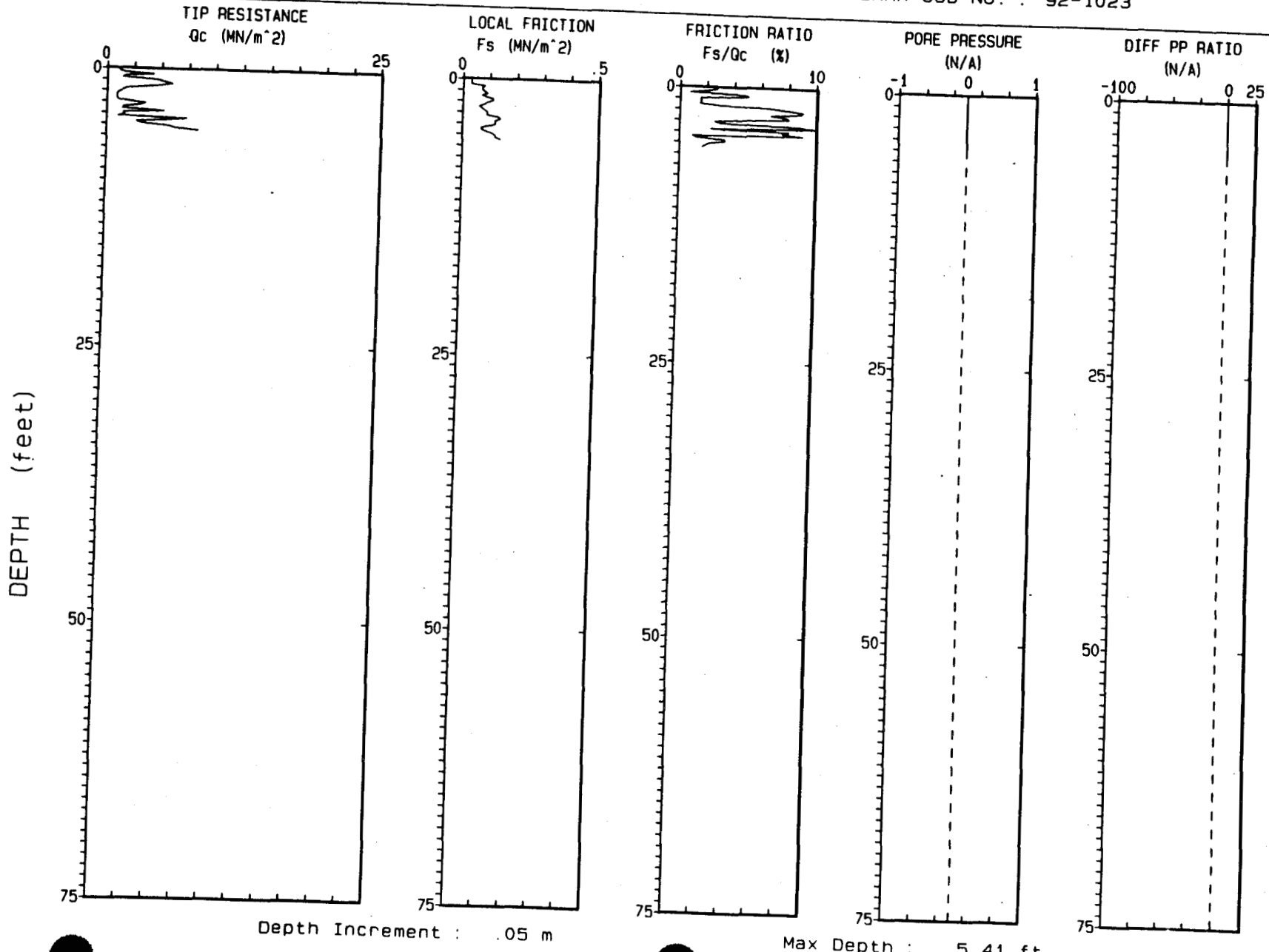
Max Depth : 5.09 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 APR 93
ELEVATION : UNKNOWN

CPT NO. : 01993C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

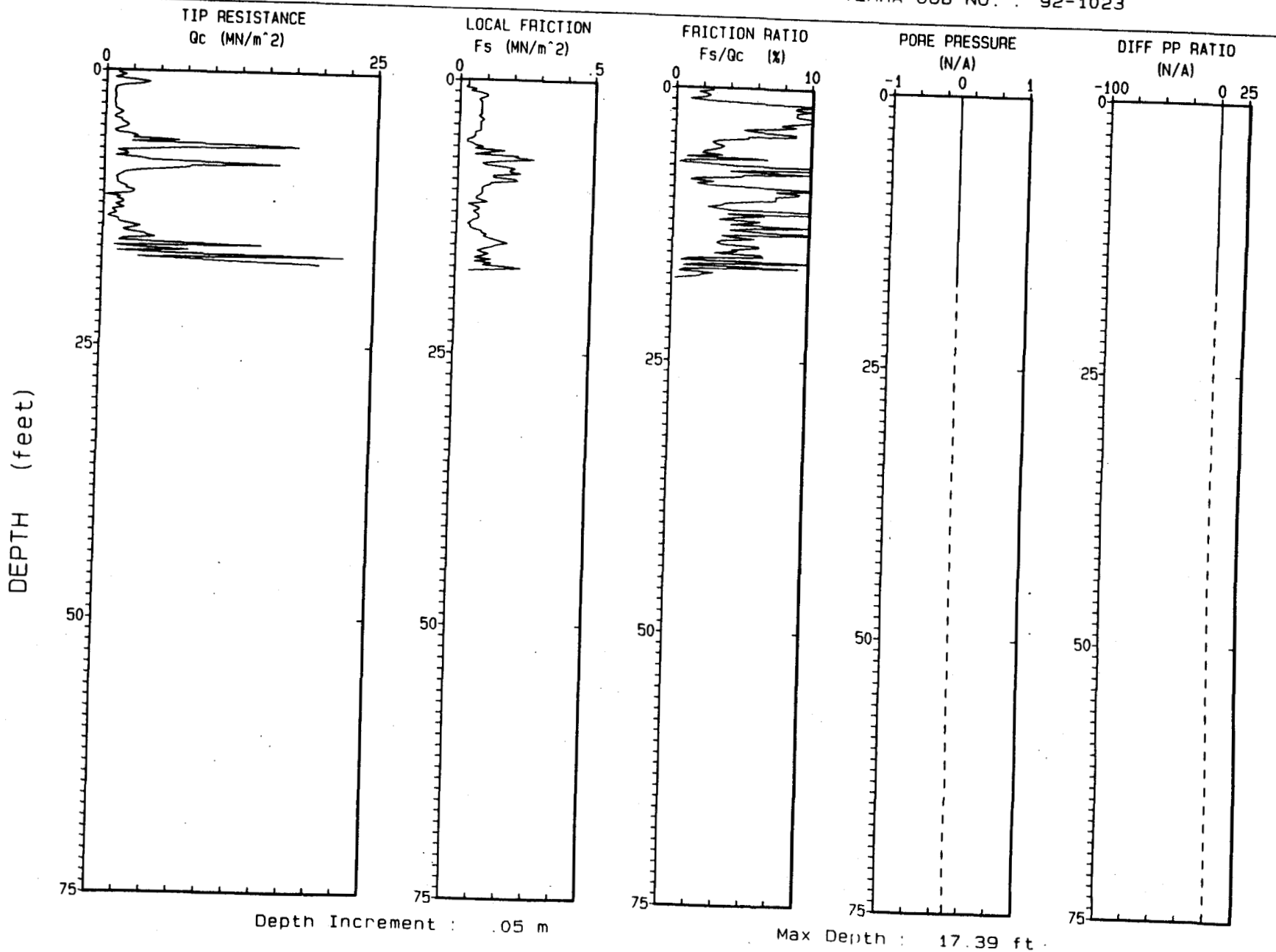
Max Depth : 5.41 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 APR 93
ELEVATION : 5963.1 MSL

CPT NO. : 02093A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

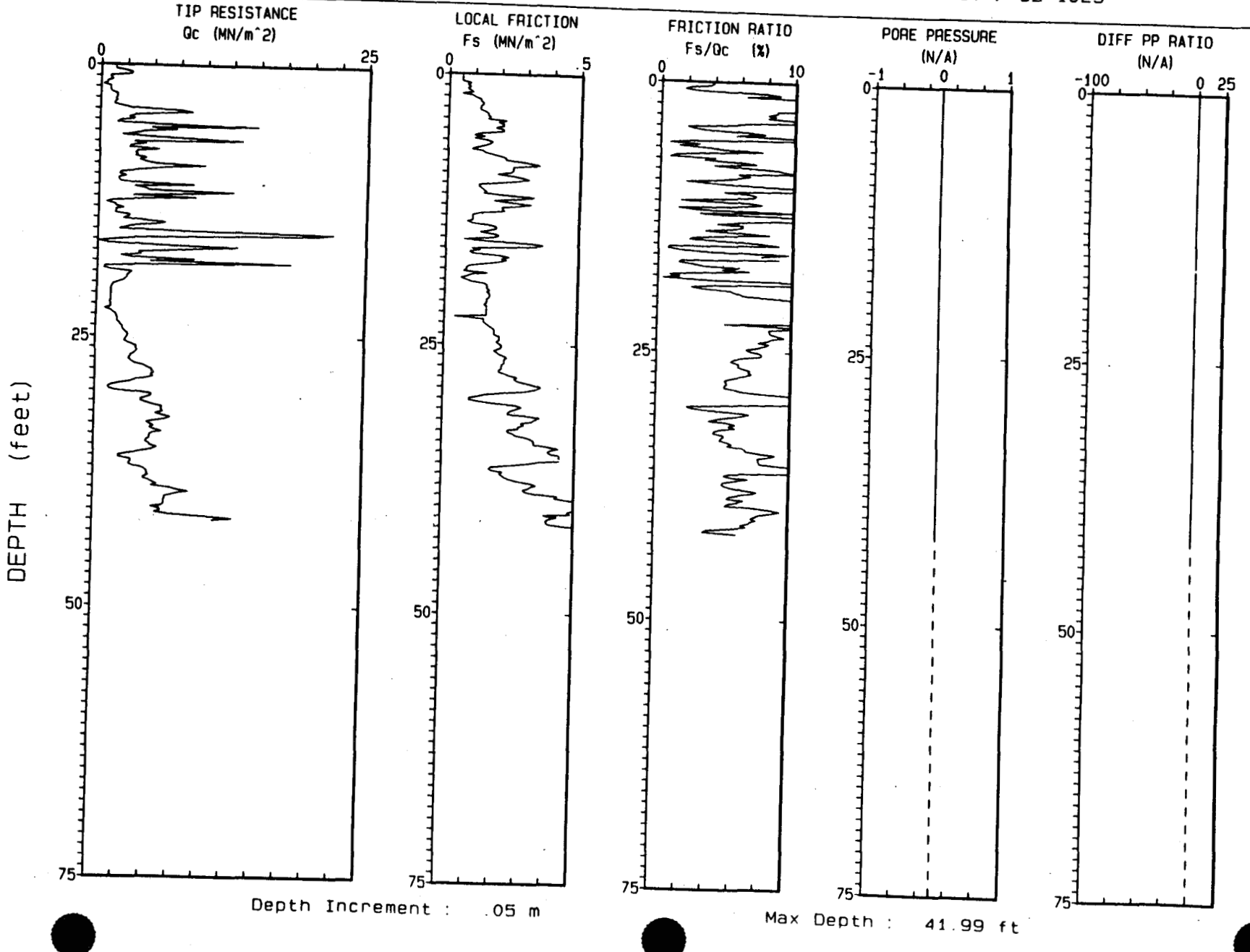
Max Depth : 17.39 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 APR 93
ELEVATION : UNKNOWN

CPT NO. : 020938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

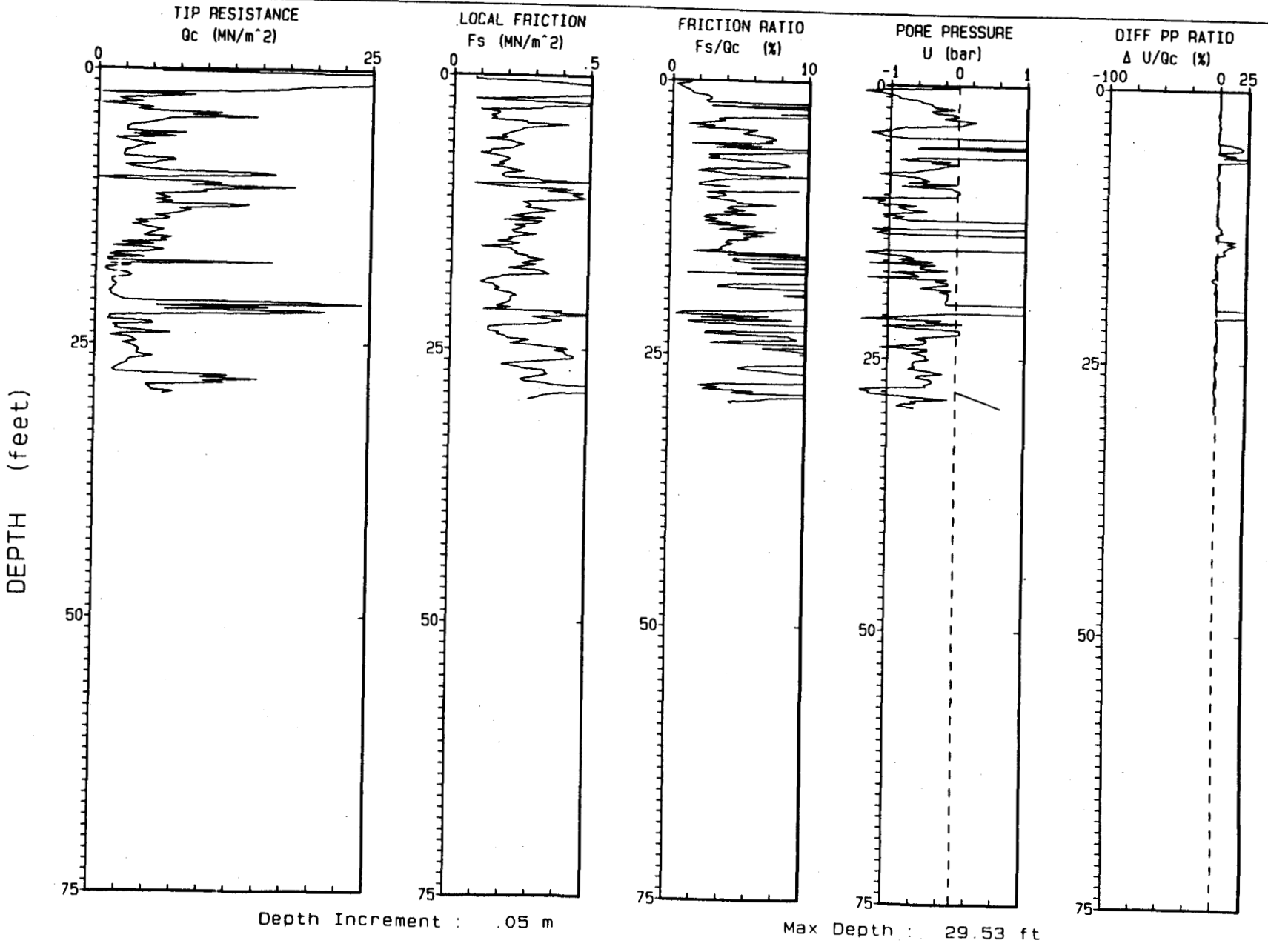
Max Depth : 41.99 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 JAN 93
ELEVATION : 5972.1 MSL

CPT NO. : 02293A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

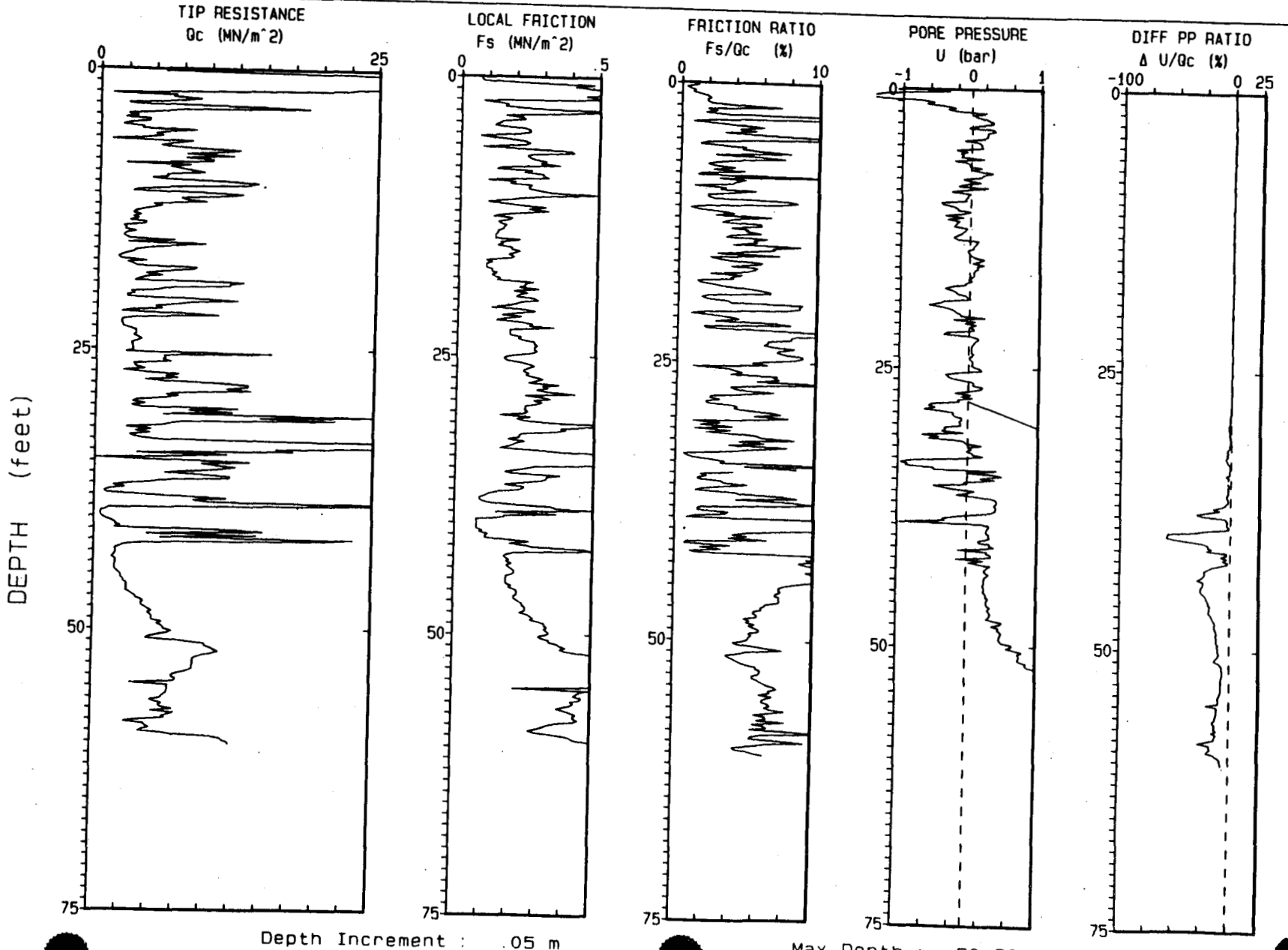
Max Depth : 29.53 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 JAN 93
ELEVATION : 5972.1 MSL

CPT NO. : 02293B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

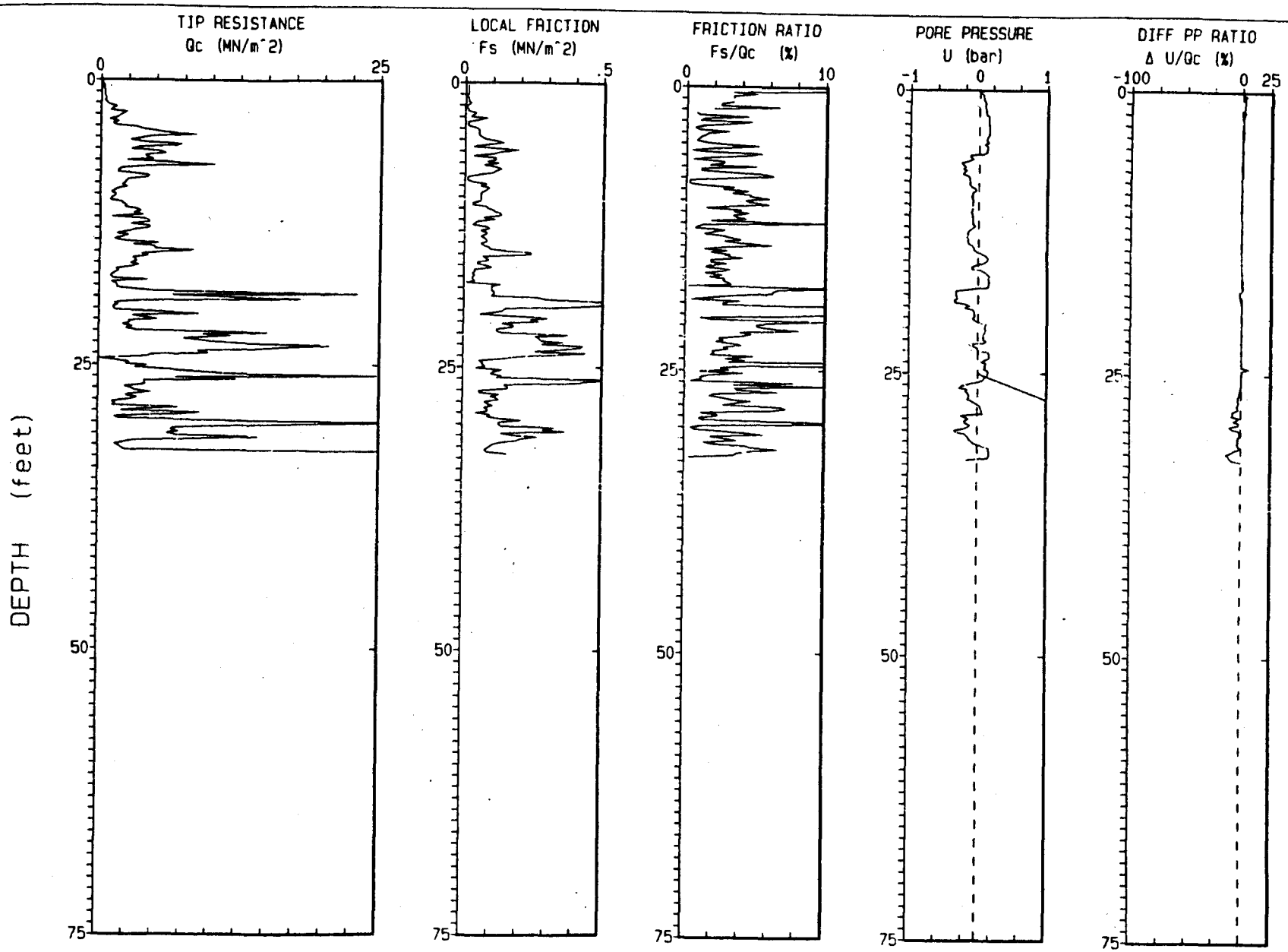
Max Depth : 60.20 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 13 JAN 93
ELEVATION : 5973.2 MSL

CPT NO. : 02393A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

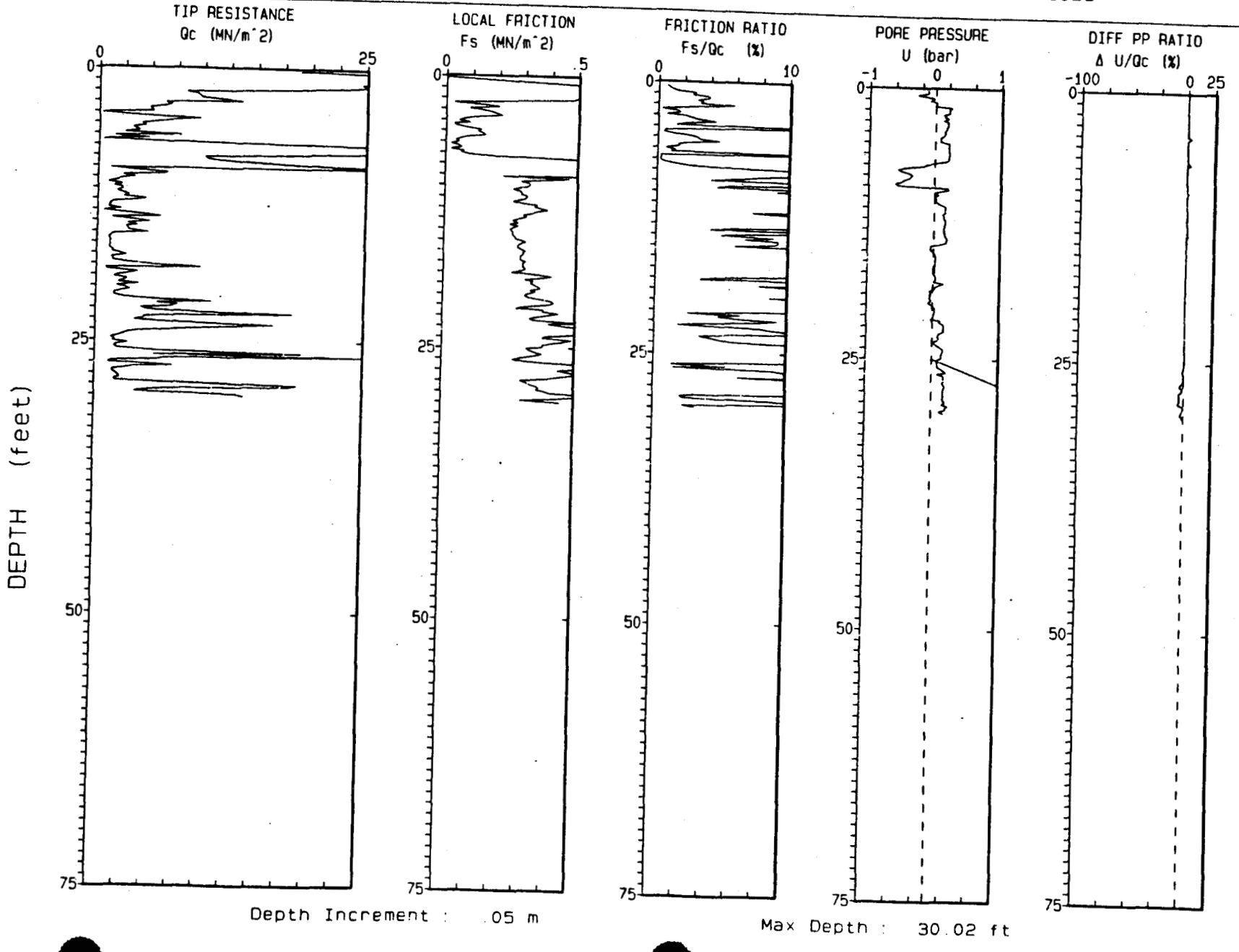
Max Depth : 32.64 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 13 JAN 93
ELEVATION : 5973.2 MSL

CPT NO. : 02393B
TERRA JOB NO. : 92-1023

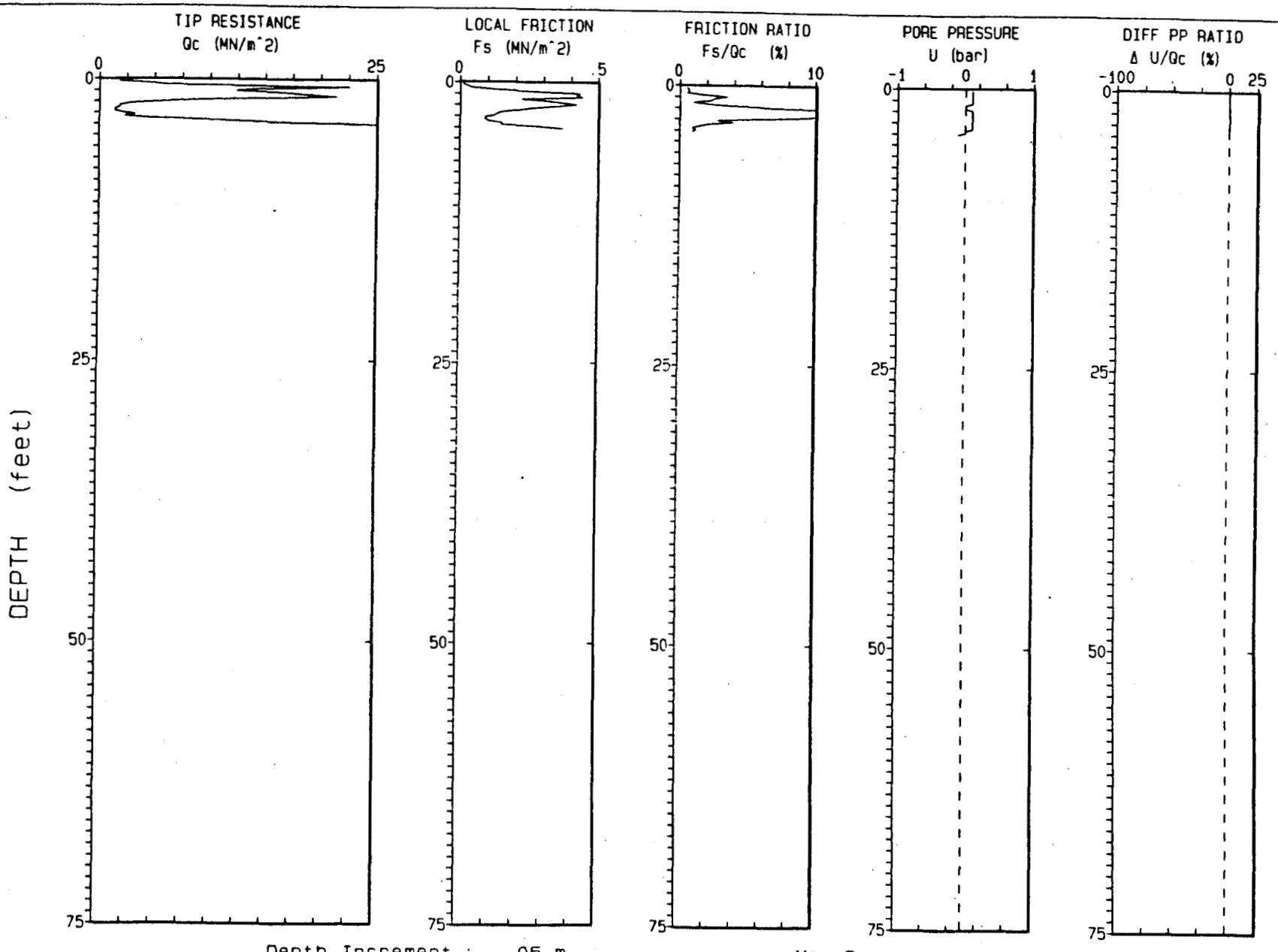


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 13 JAN 93
ELEVATION : 5973.2 MSL

CPT NO. : 02393C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

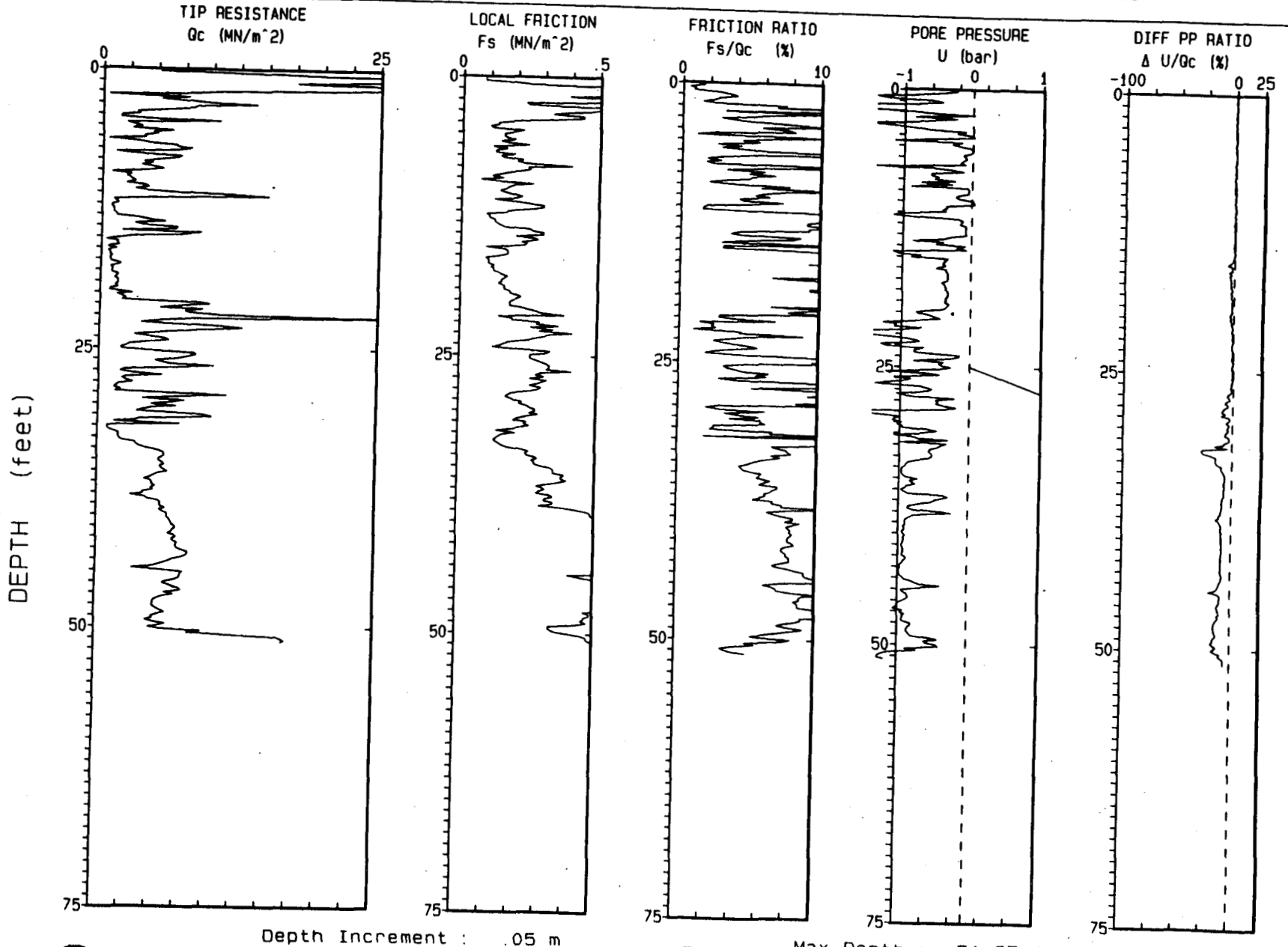
Max Depth : 4.10 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 JAN 93
ELEVATION : 5973.2 MSL

CPT NO. : 02393D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

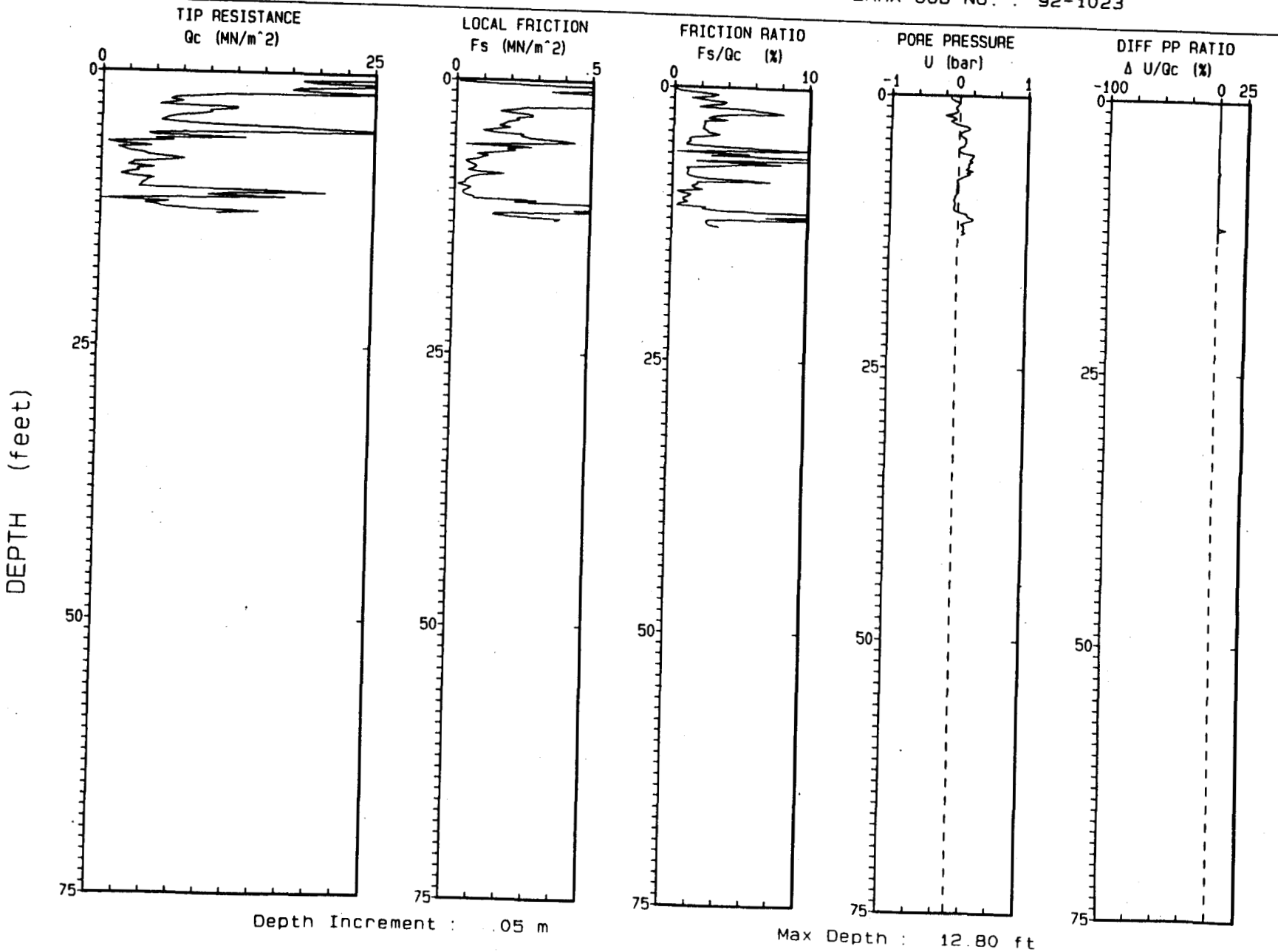
Max Depth : 51.35 ft.

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5969.9 MSL

CPT NO. : 02493A
TERRA JOB NO. : 92-1023



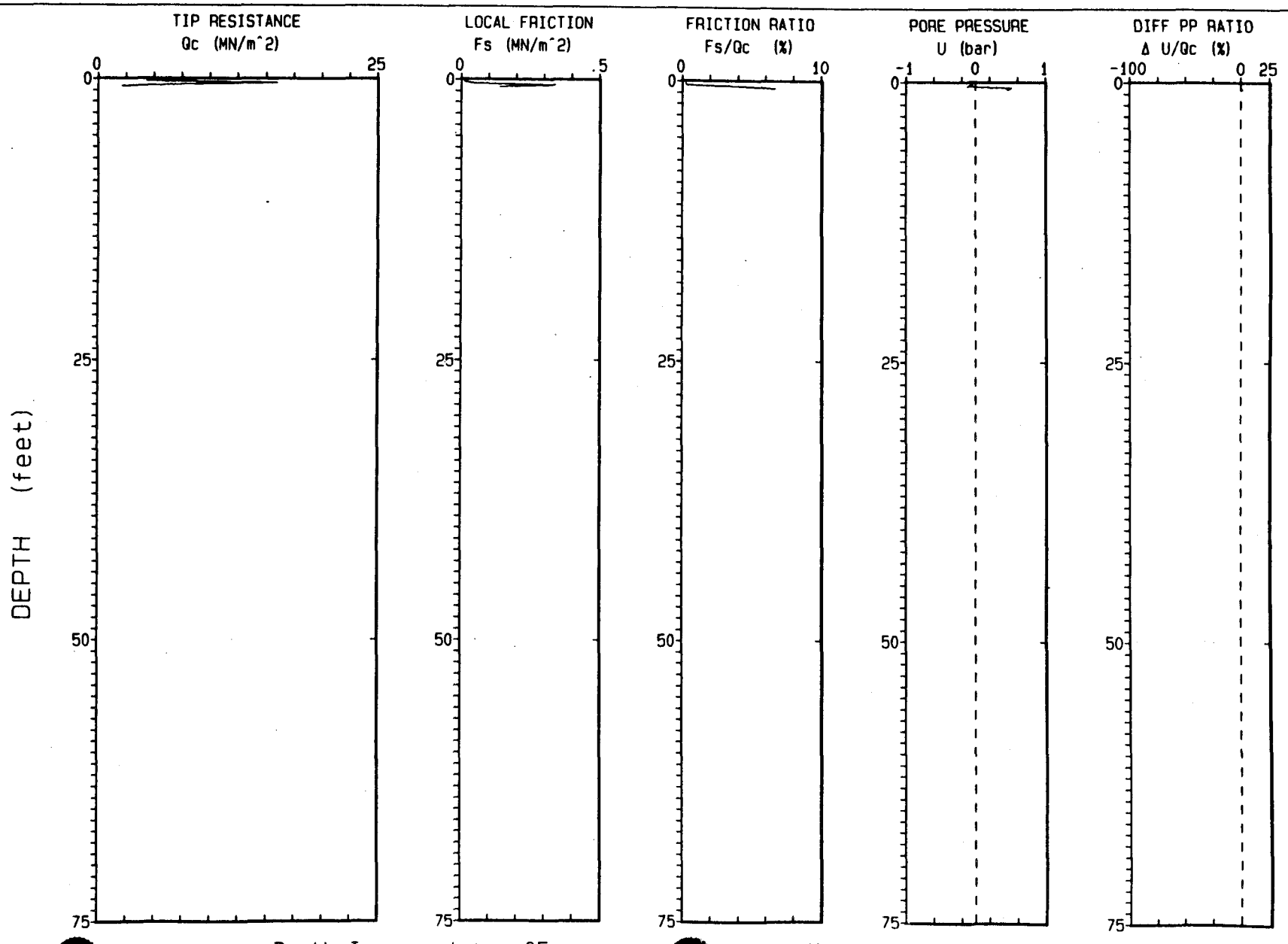
Depth Increment : .05 m

Max Depth : 12.80 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW DATE : 12 JAN 93 CPT NO. : 02493B Pg 1 / 1

LOCATION : OU7 LANDFILL ELEVATION : 5969.9 MSL TERRA JOB NO. : 92-1023



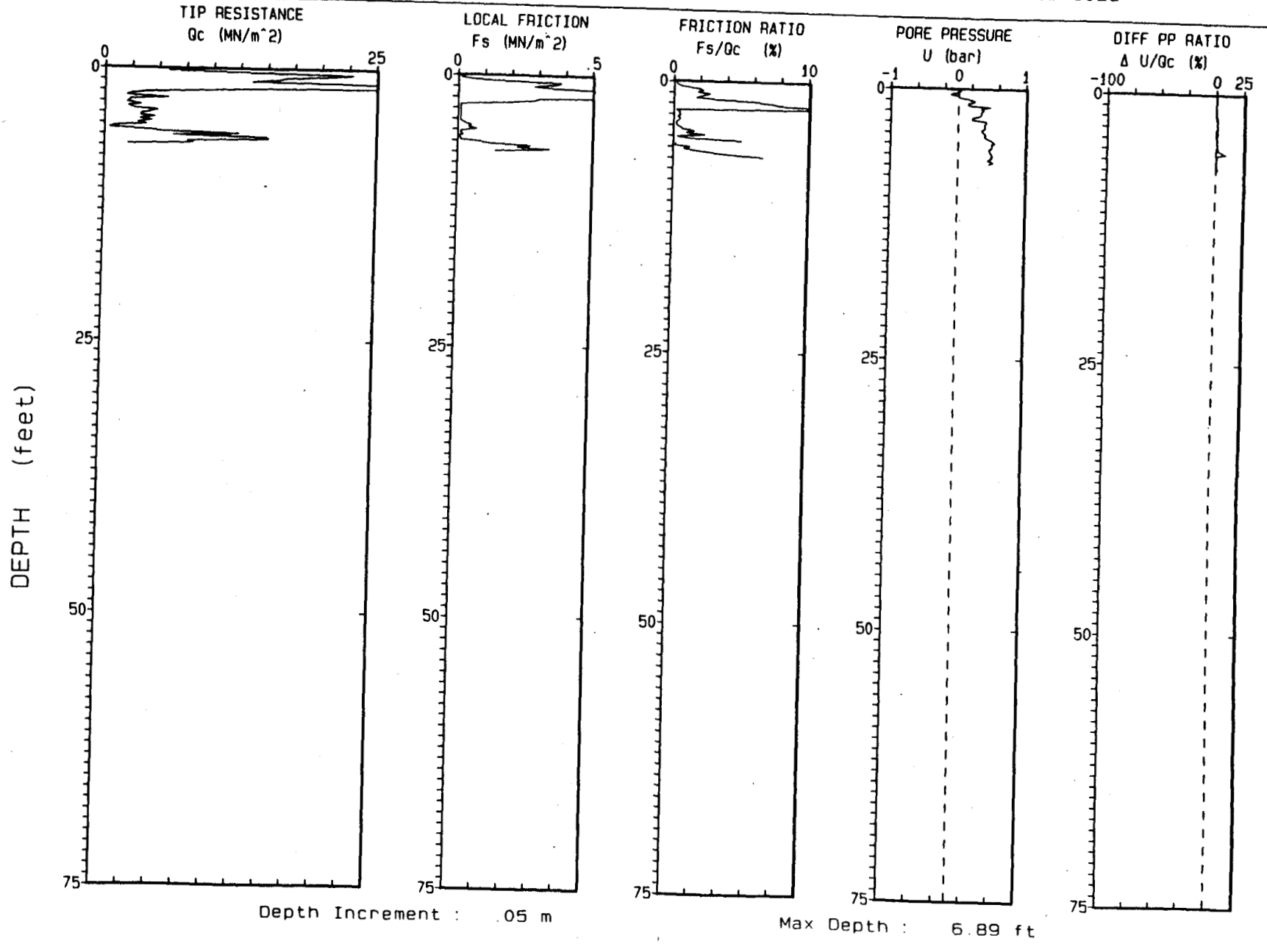
Depth Increment : .05 m Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5969.9 MSL

CPT NO. : 02493C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

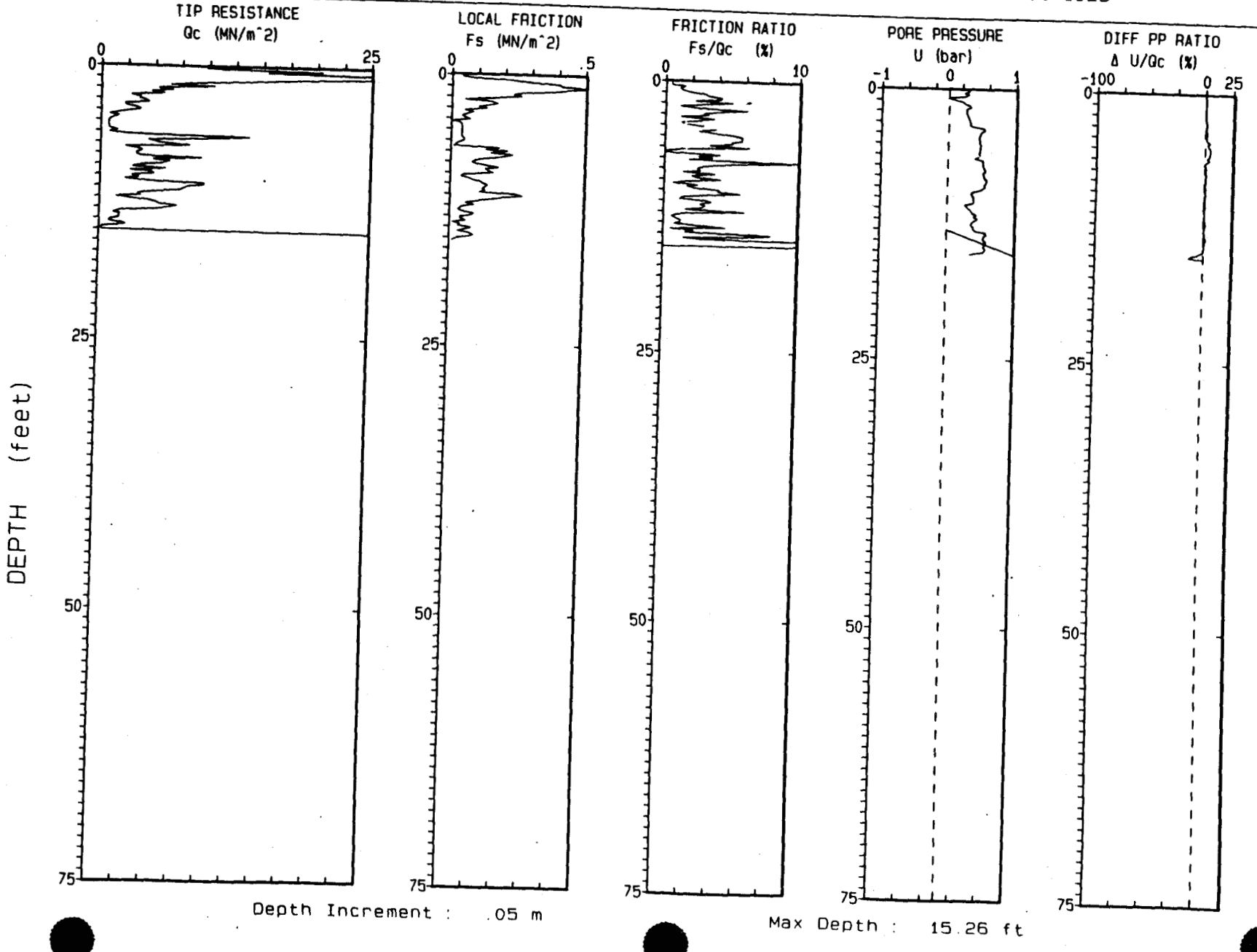
Max Depth : 6.89 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5969.9 MSL

CPT NO. : 02493D
TERRA JOB NO. : 92-1023

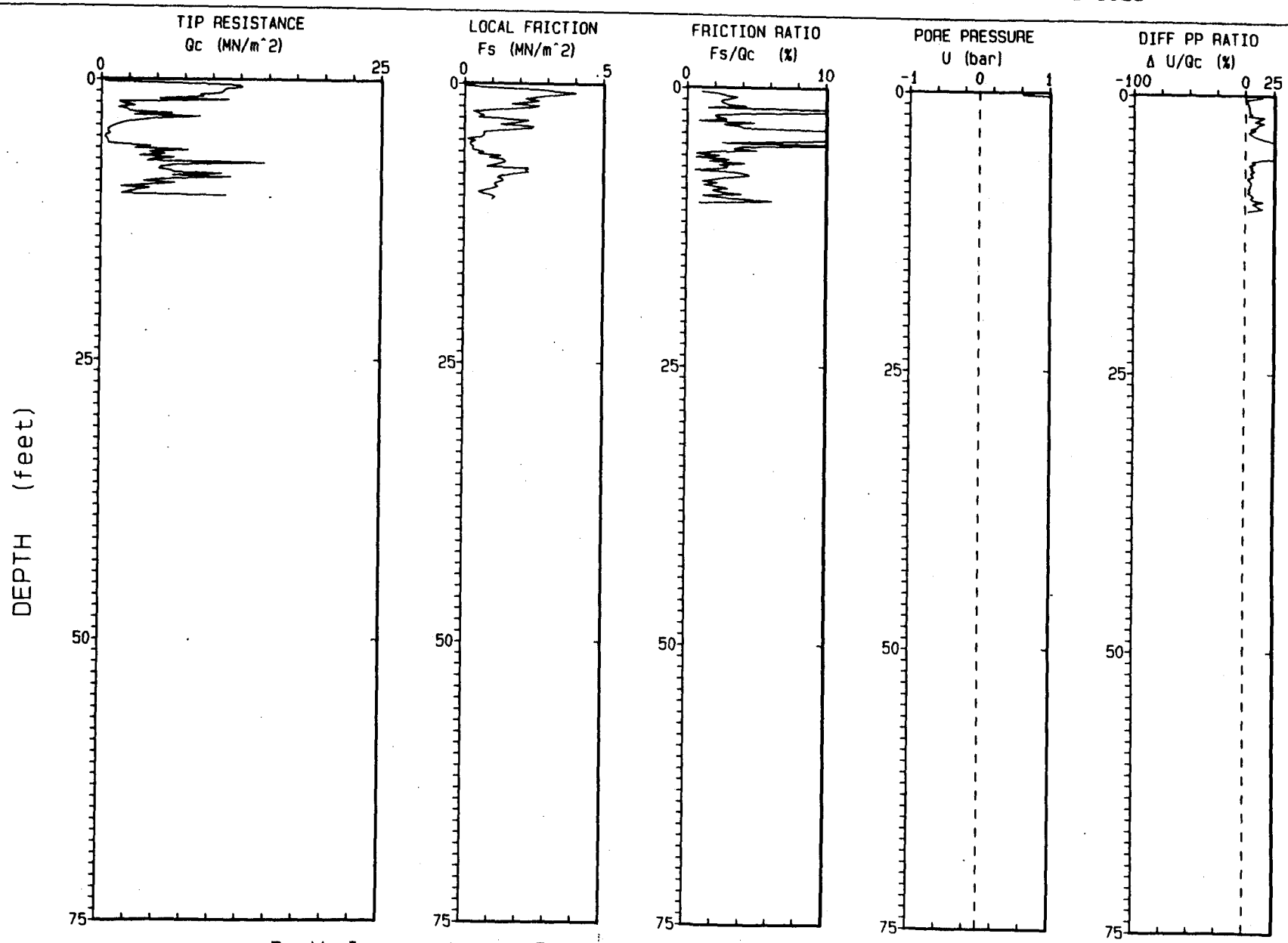


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5969.9 MSL

CPT NO. : 02493E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

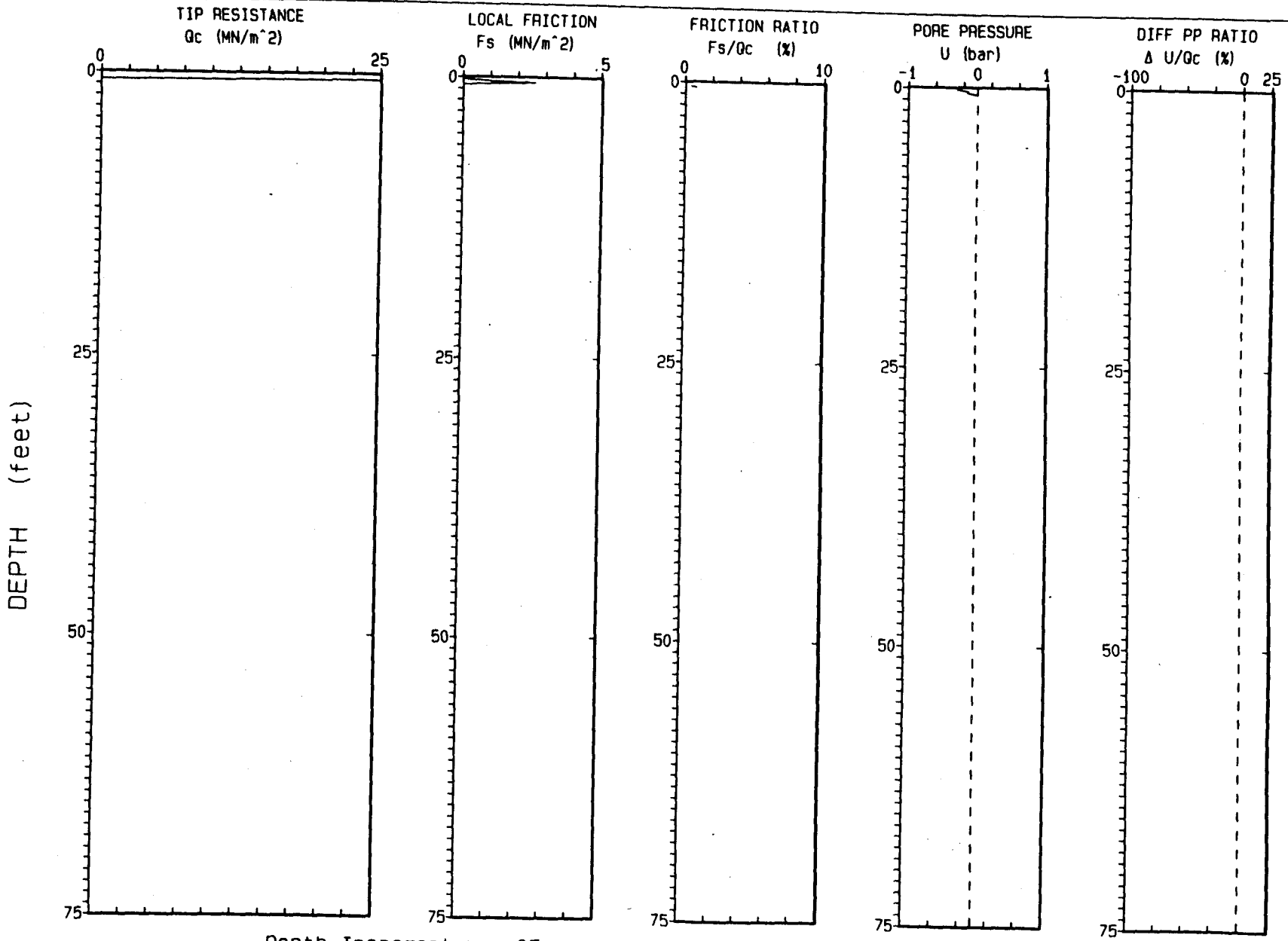
Max Depth : 10.33 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5970.2 MSL

CPT NO. : 02593A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

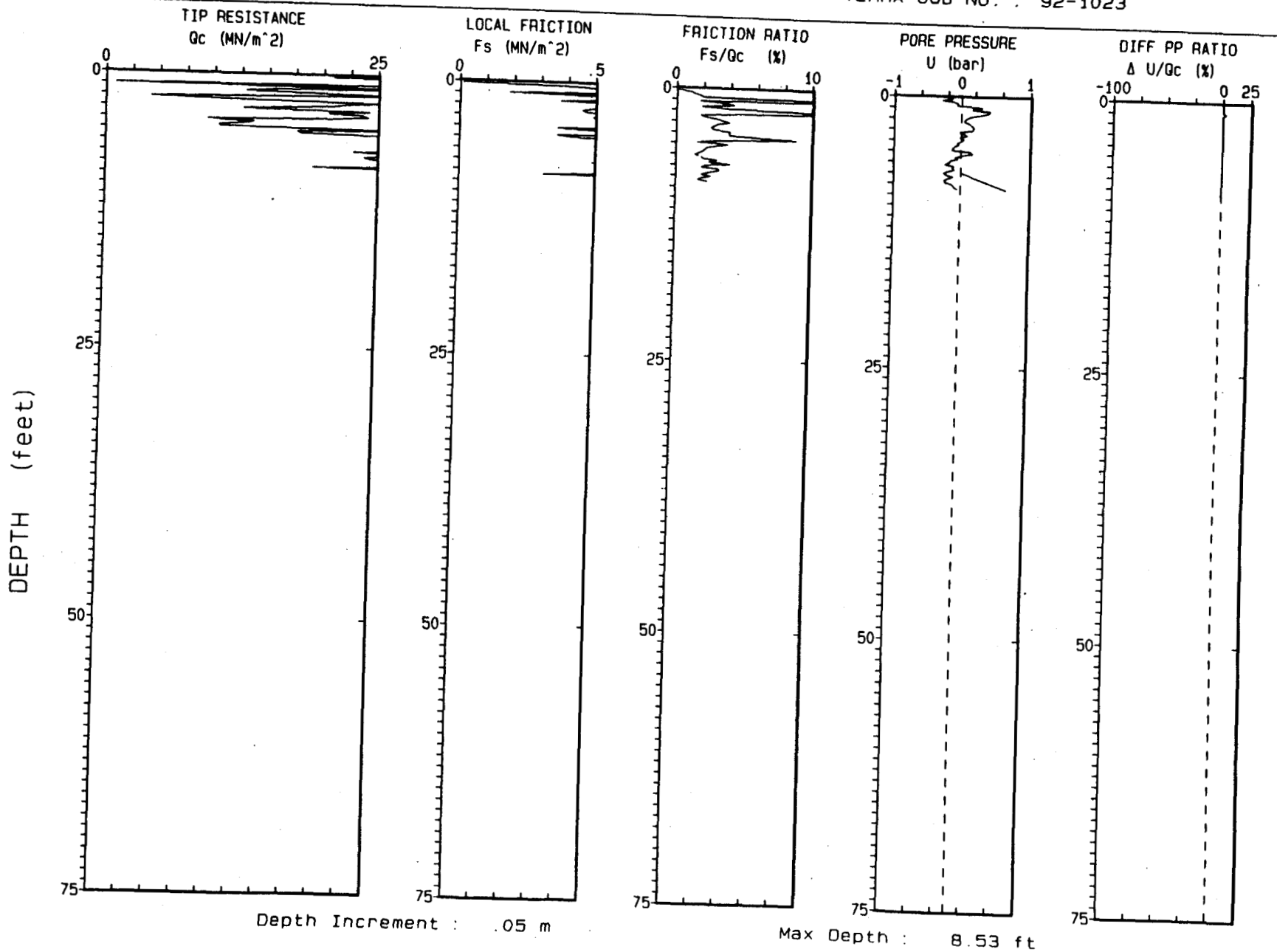
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5970.2 MSL

CPT NO. : 025938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

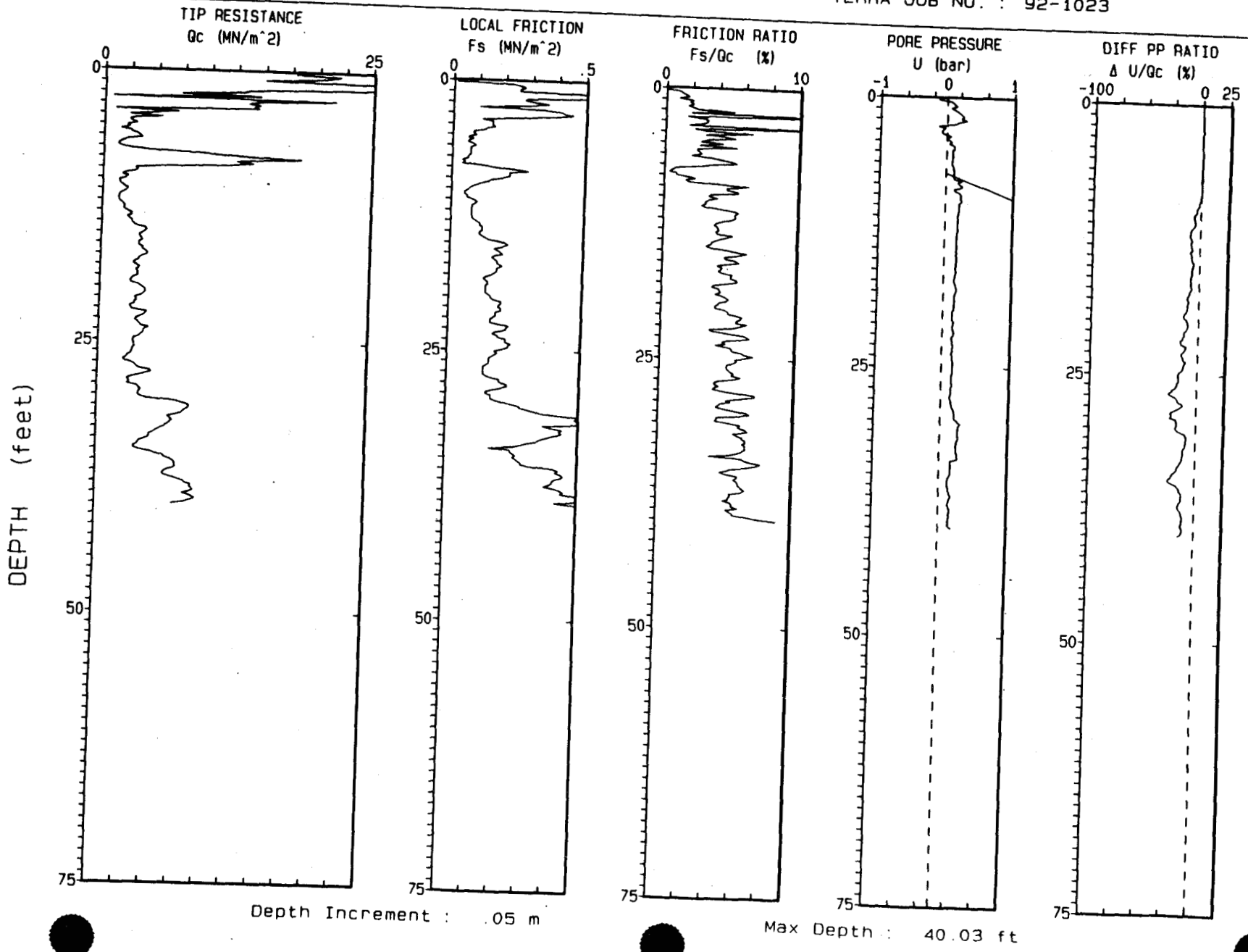
Max Depth : 8.53 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 12 JAN 93
ELEVATION : 5970.2 MSL

CPT NO. : 02593C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

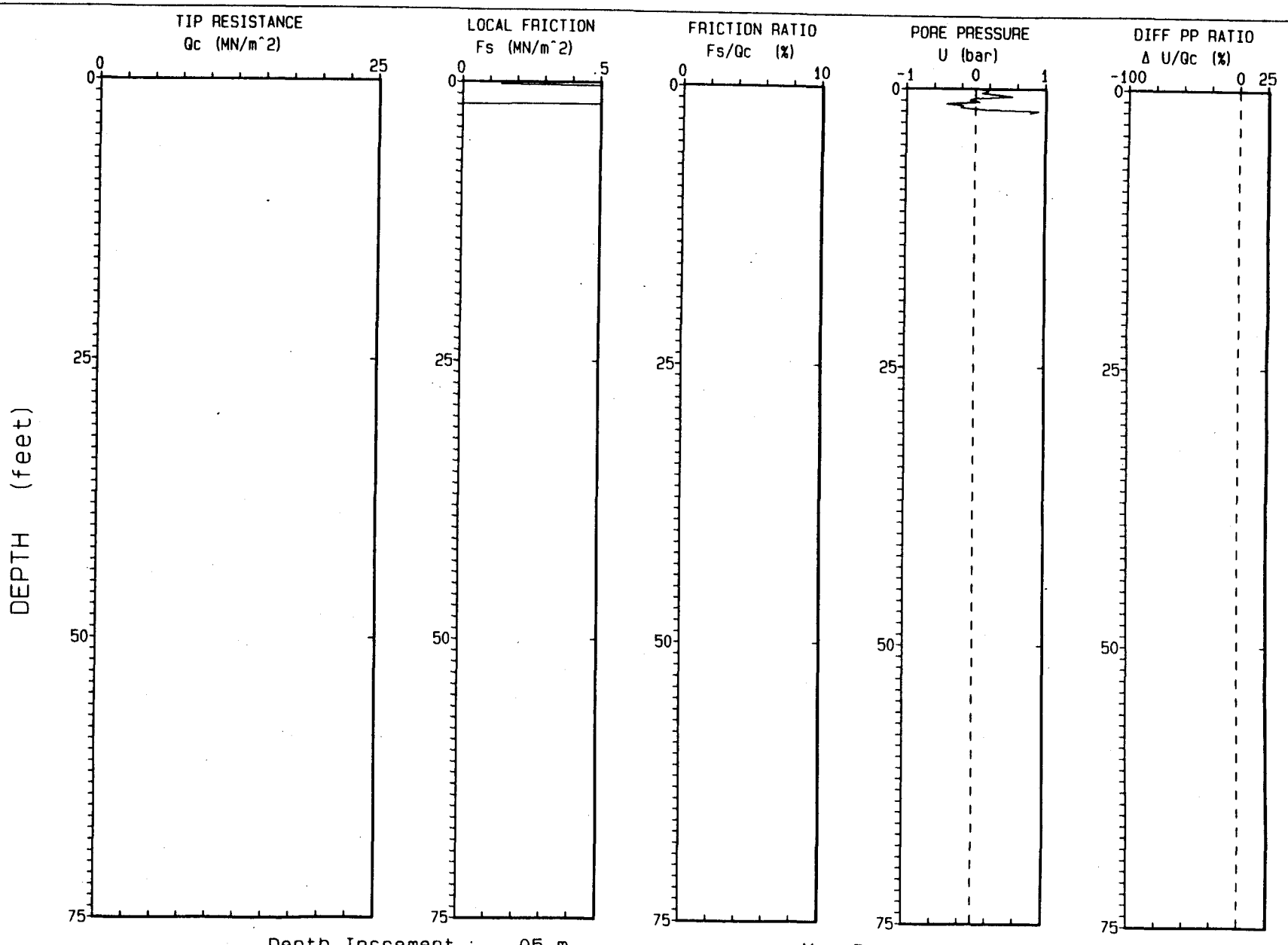
Max Depth : 40.03 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 17 DEC 92
ELEVATION : 5986.4 MSL

CPT NO. : 02693A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

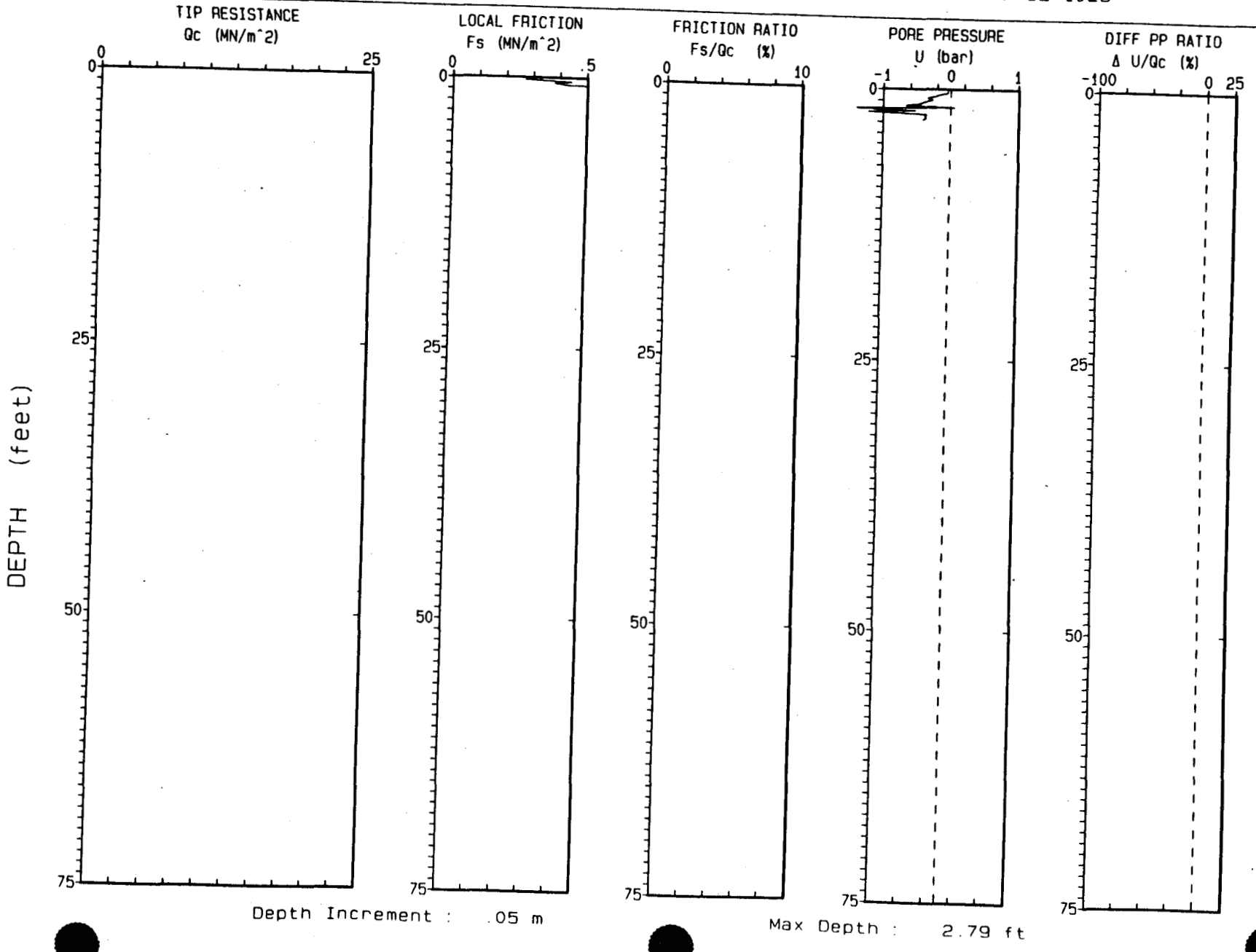
Max Depth : 2.13 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 17 DEC 92
ELEVATION : 5986.4 MSL

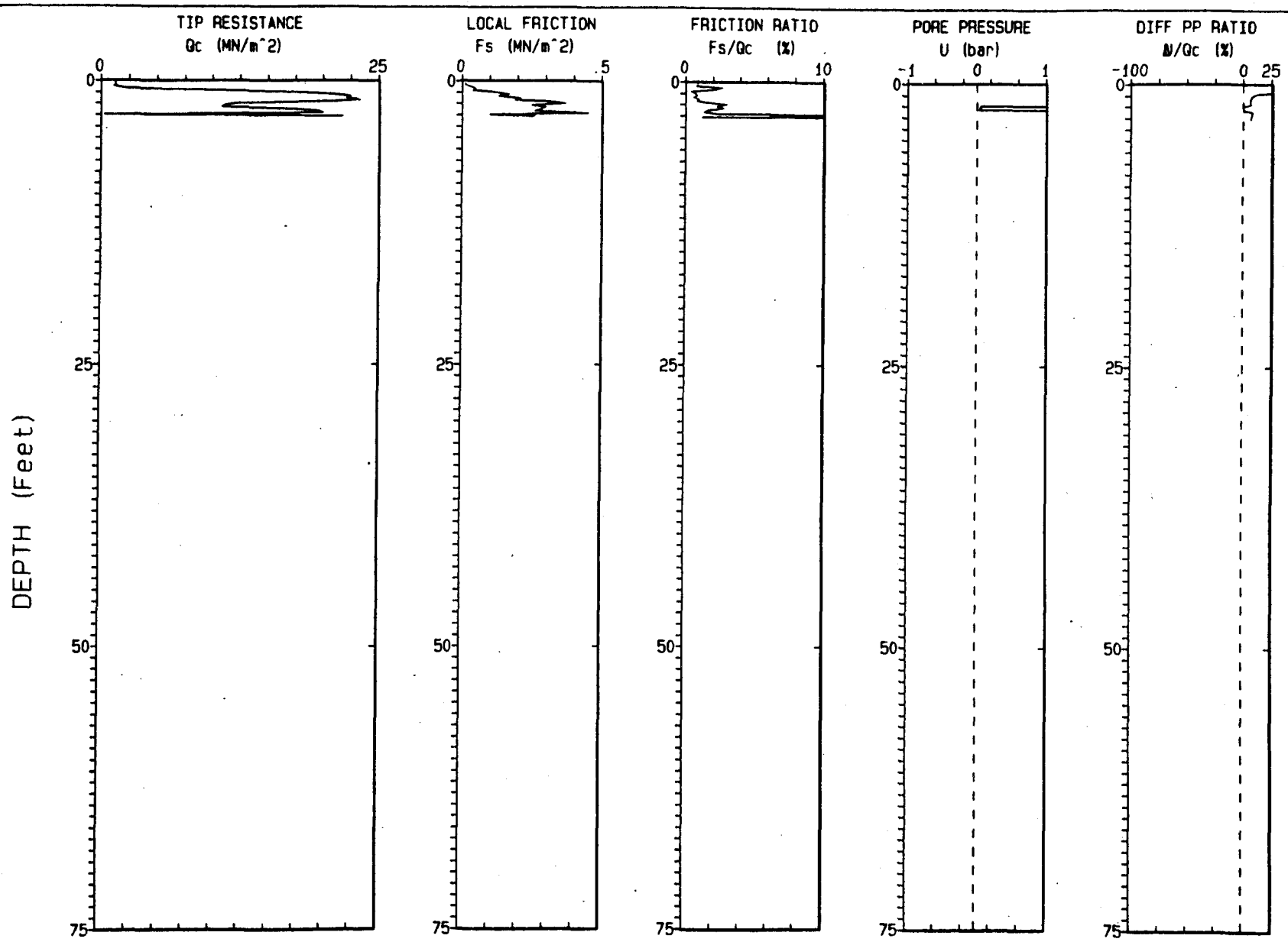
CPT NO. : 026938
TERRA JOB NO. : 92-1023



ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW DATE : 17 DEC 92 SOUNDING NO. : 02693C Pg 1 / 1

LOCATION : OU7 LANDFILL ELEVATION : 5986.4 MSL TERRA JOB NO. : 92-1023



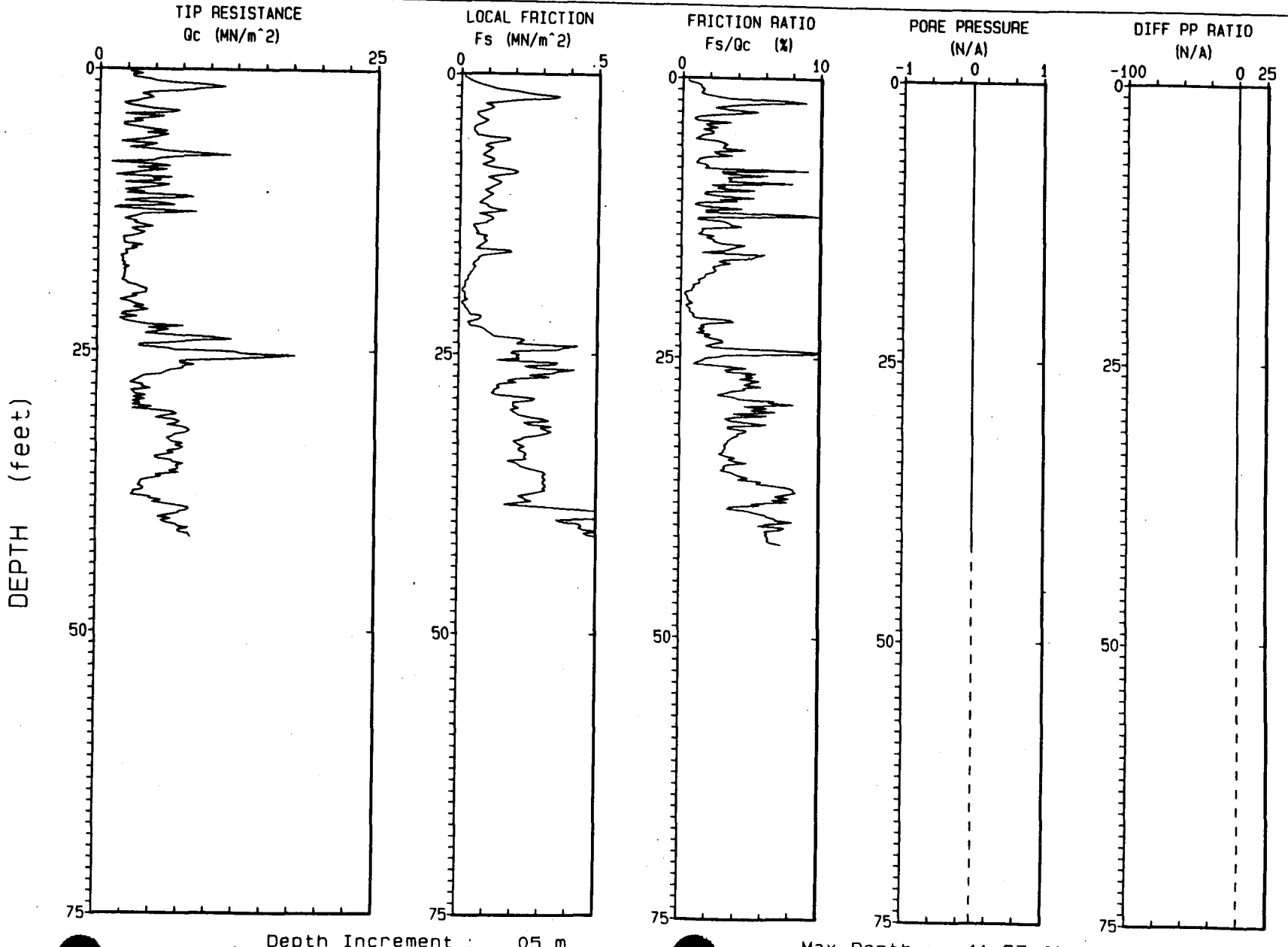
Depth Increment : .05 m Max Depth : 3.12 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 DEC 92
ELEVATION : 5986.4 MSL

CPT NO. : 02693D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

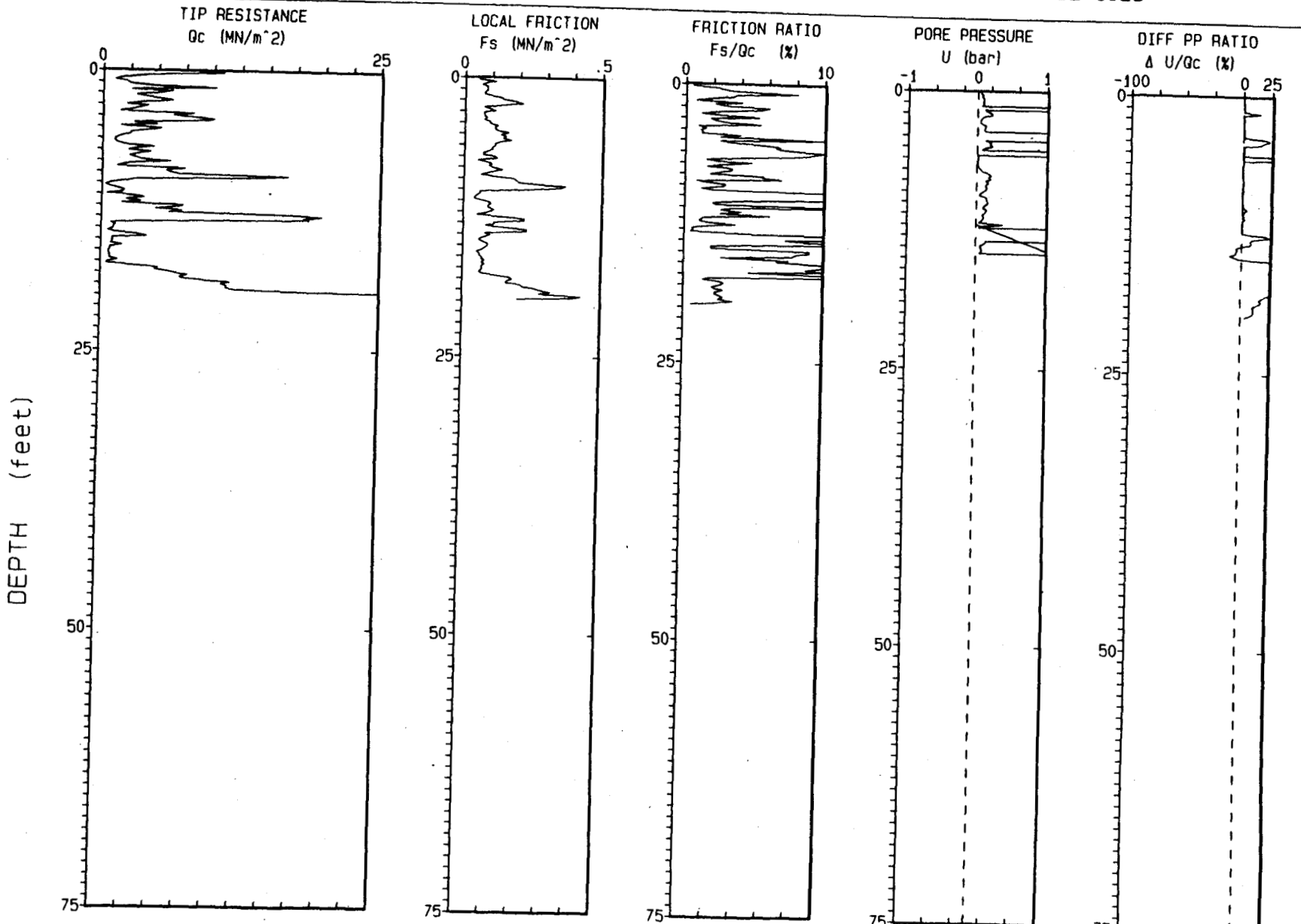
Max Depth : 41.67 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 17 DEC 92
ELEVATION : UNKNOWN

CPT NO. : 02793A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

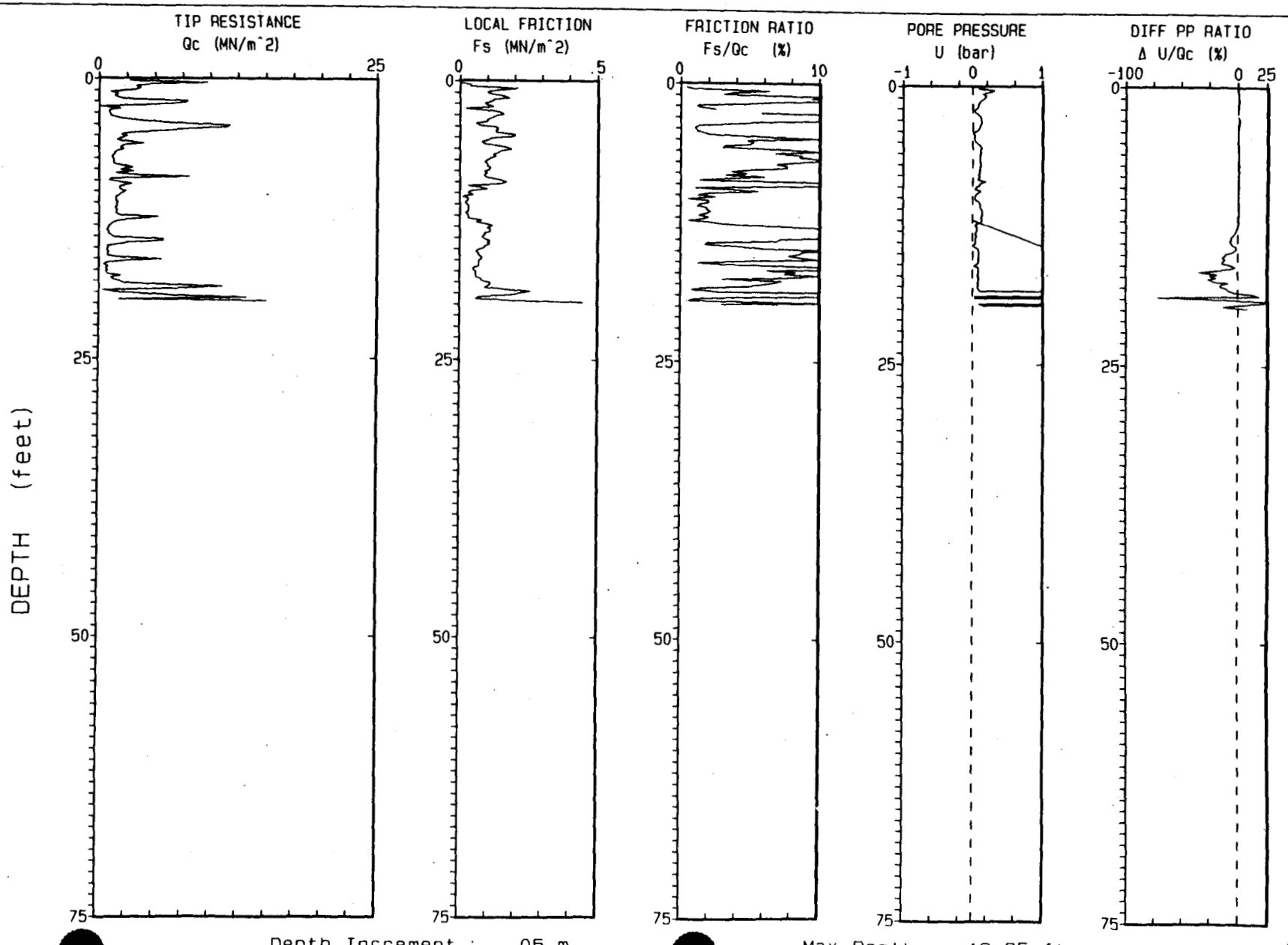
Max Depth : 19.85 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 17 DEC 92
ELEVATION : 5984.7 MSL

CPT NO. : 027938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

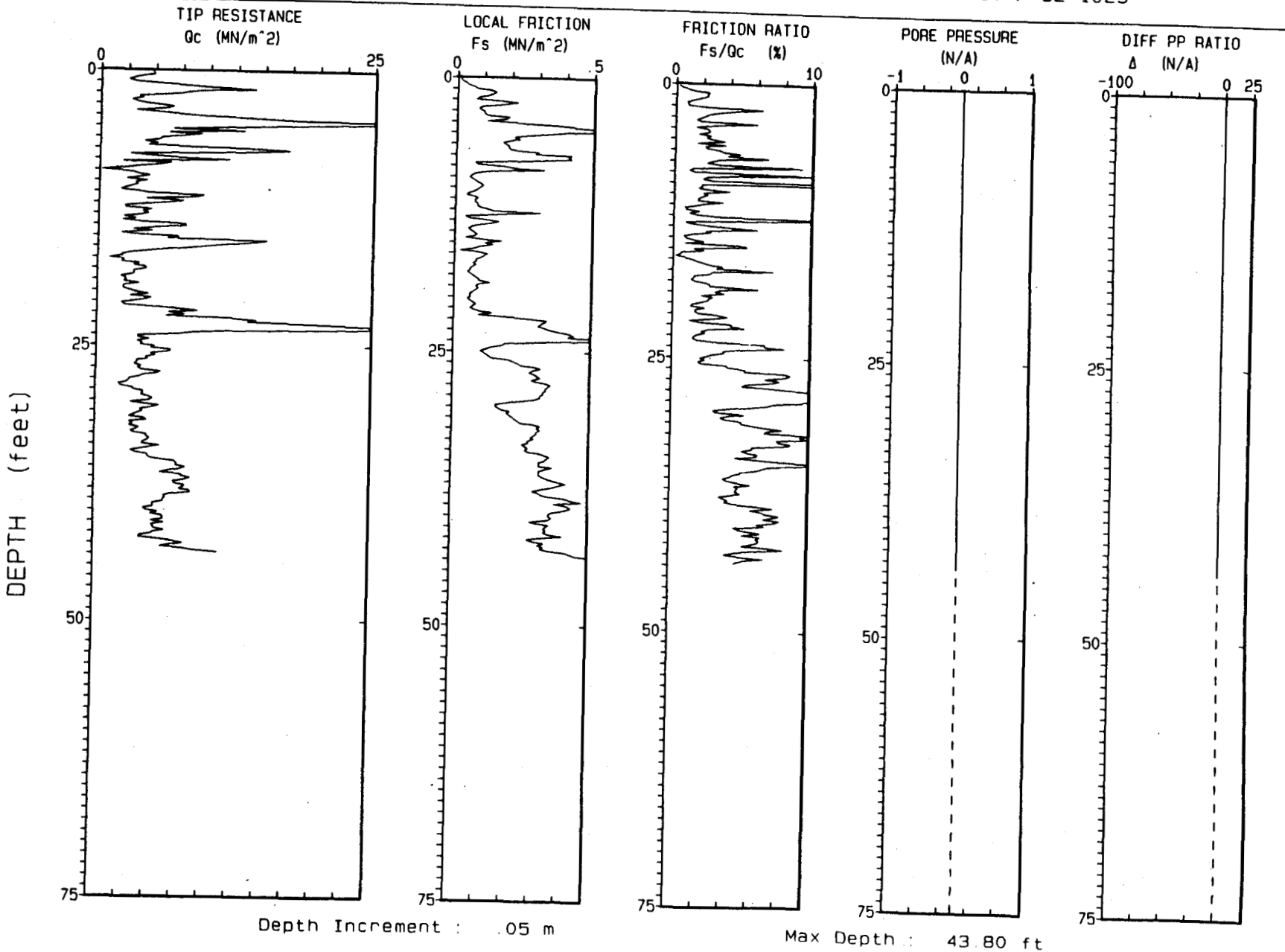
Max Depth : 19.85 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 17 DEC 92
ELEVATION : 5984.7 MSL

CPT NO. : 02793C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

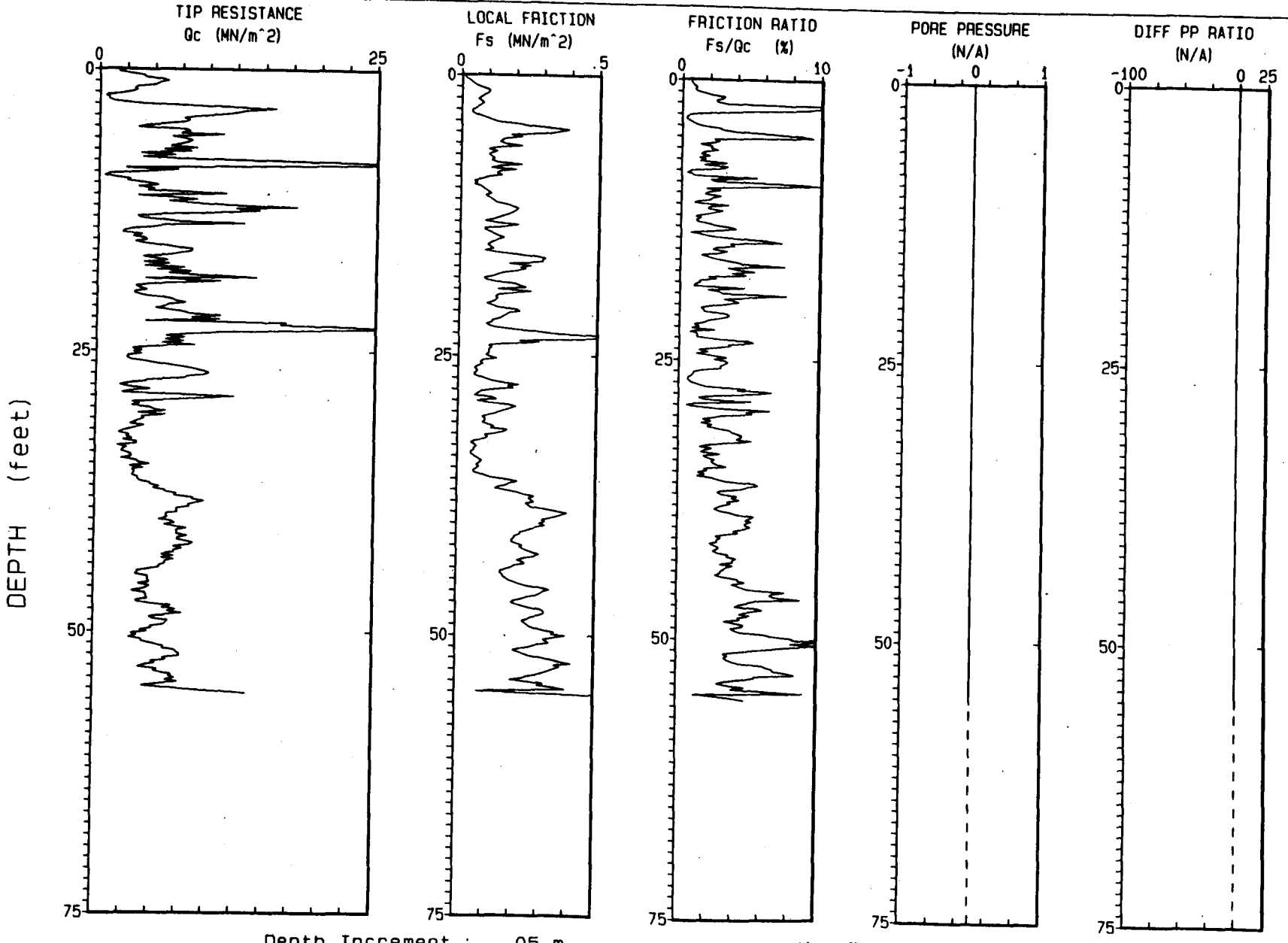
Max Depth : 43.80 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 16 DEC 92
ELEVATION : 5994.9 MSL

CPT NO. : 02893A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

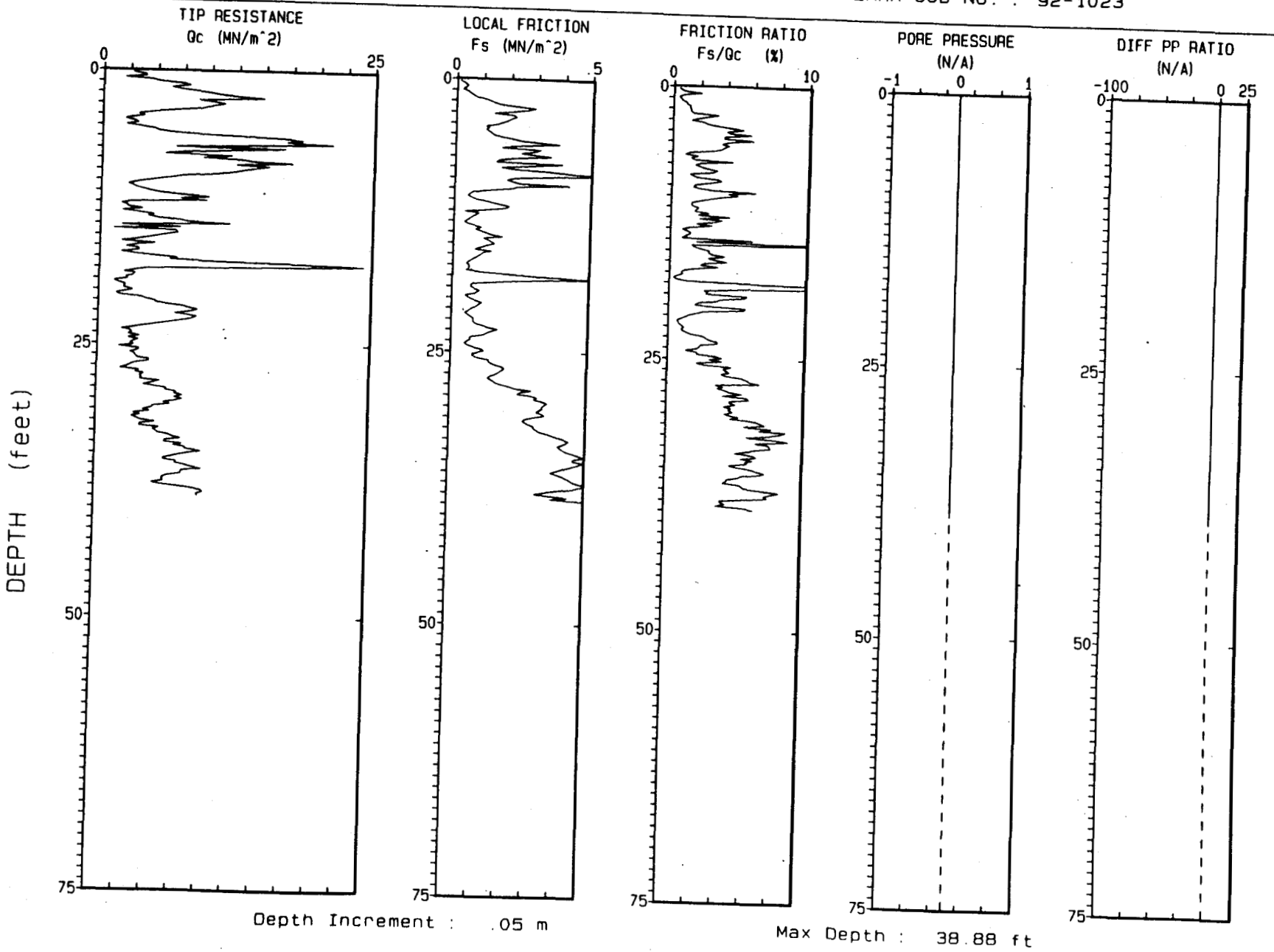
Max Depth : 55.45 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 14 DEC 92
ELEVATION : 5985.0 MSL

CPT NO. : 02993A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

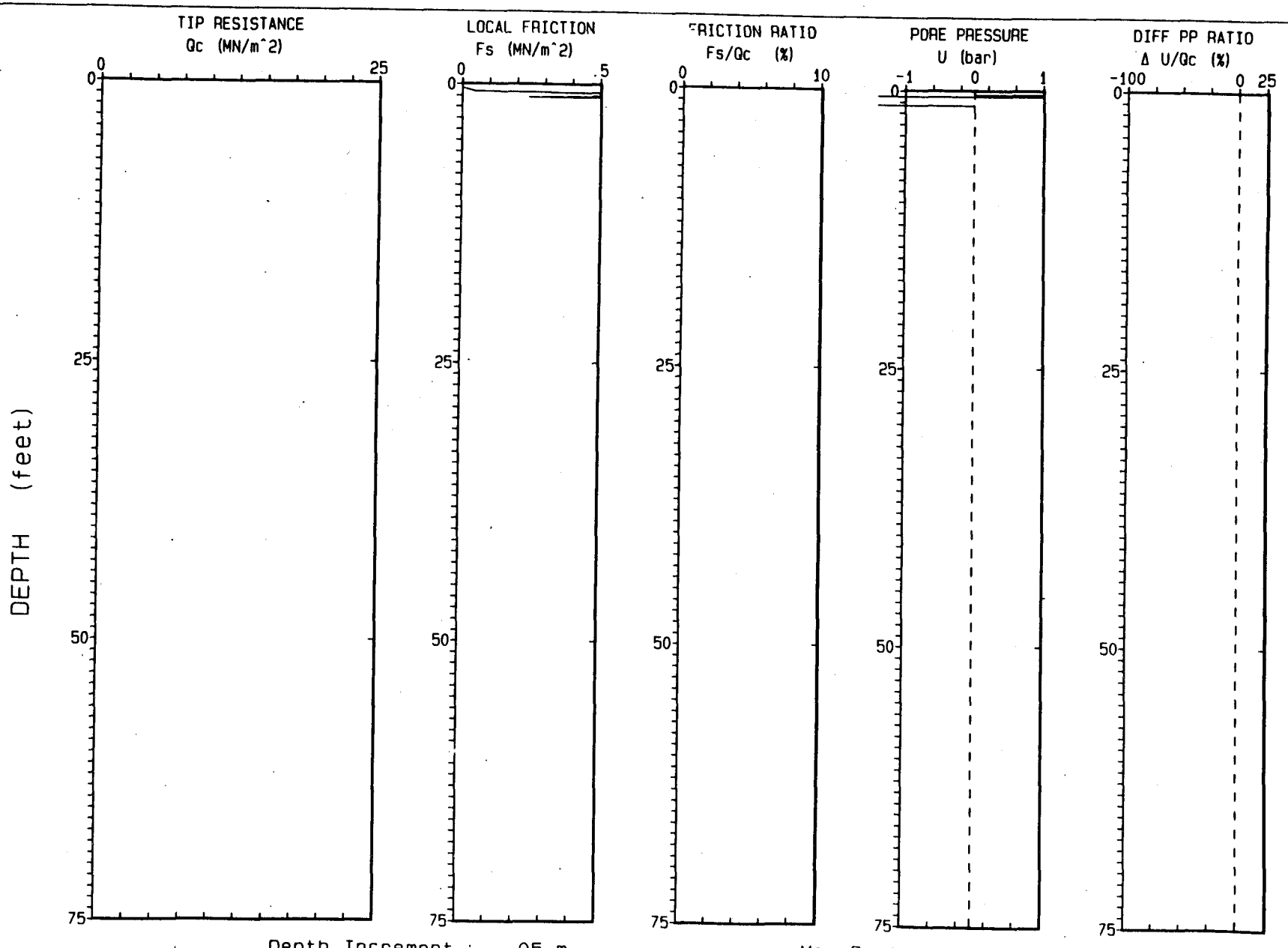
Max Depth : 38.88 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 DEC 92
ELEVATION : 5985.1 MSL

CPT NO. : 03093A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

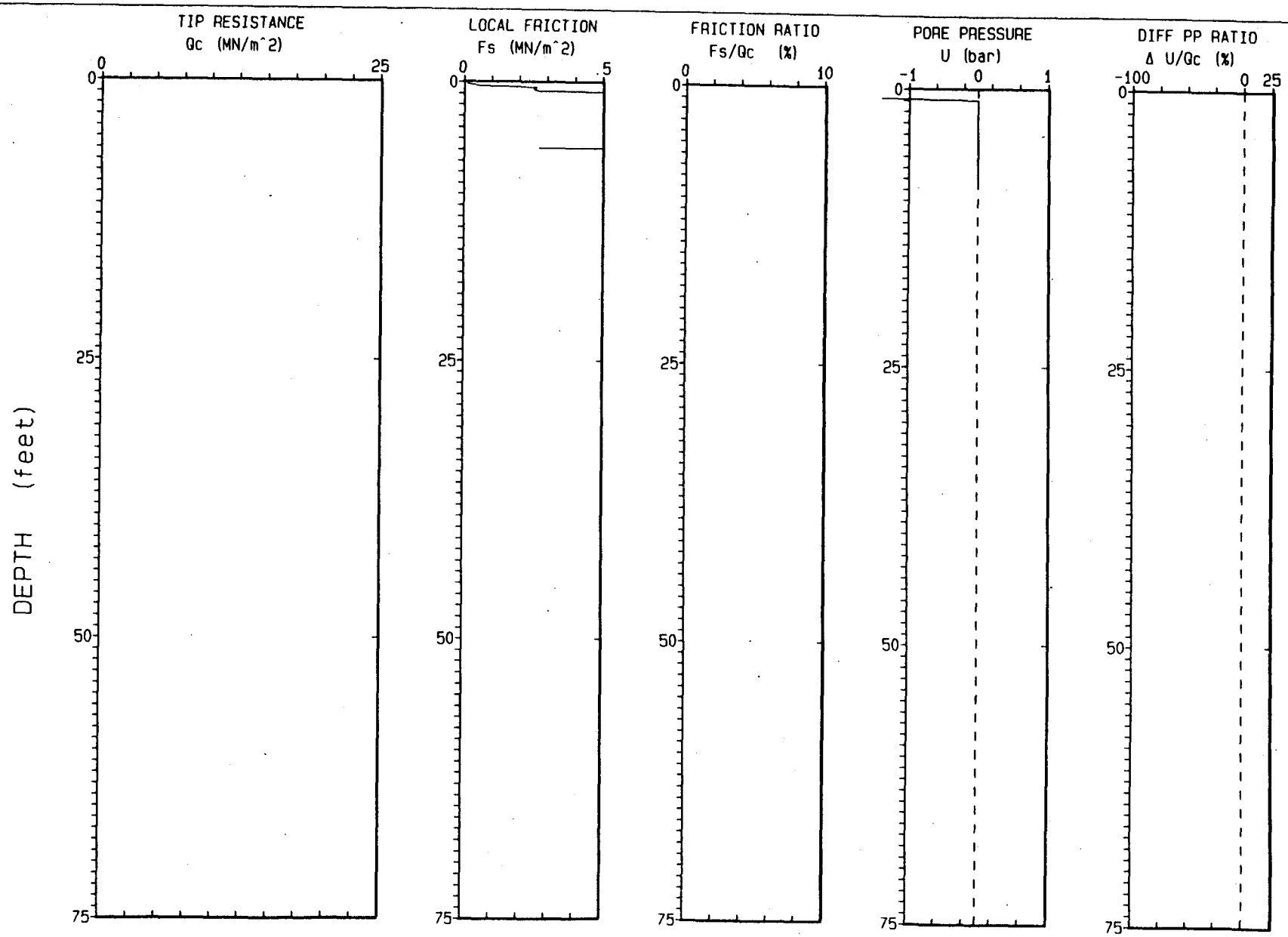
Max Depth : 2.46 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 DEC 92
ELEVATION : 5985.1 MSL

CPT NO. : 03093B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

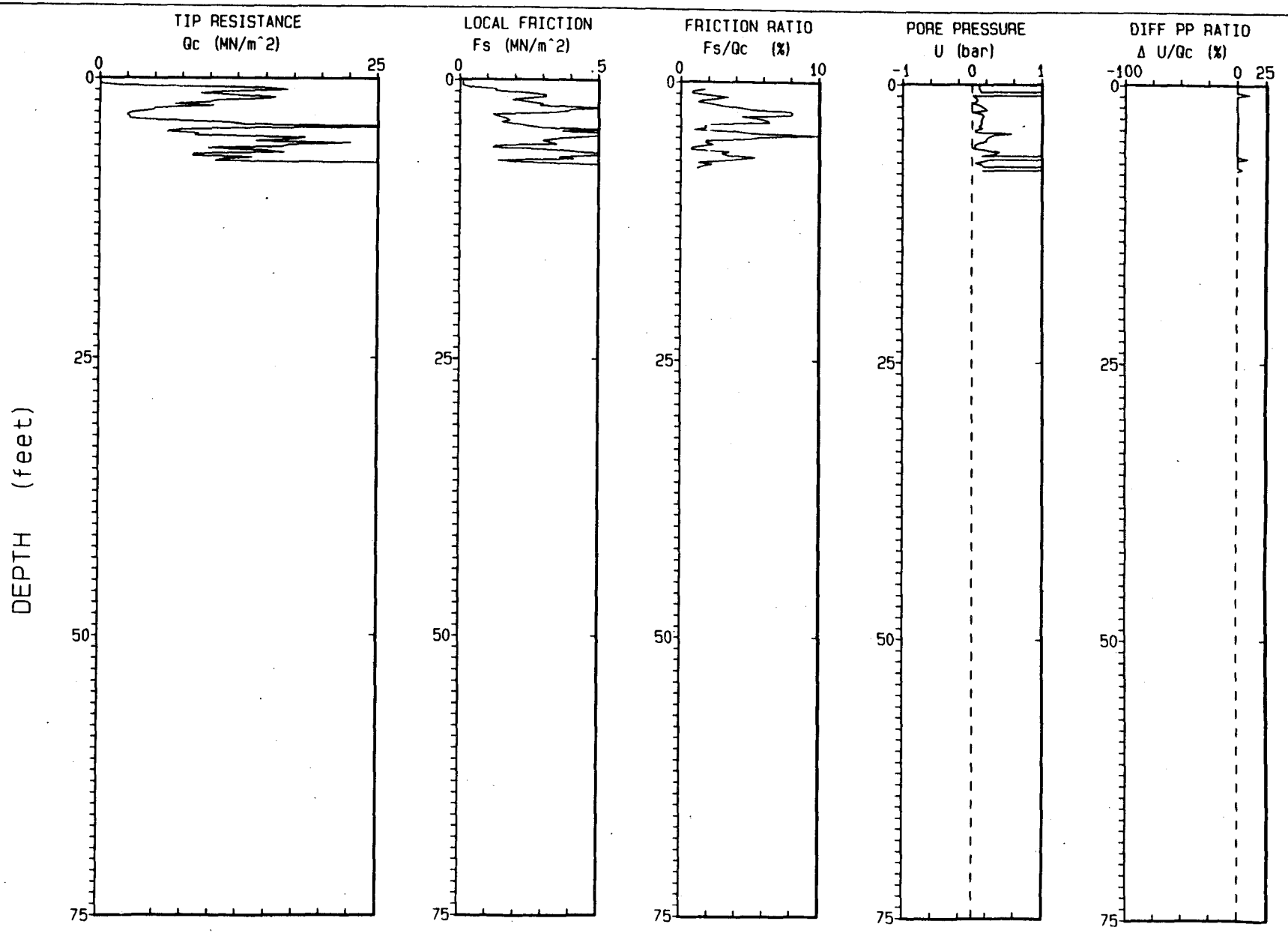
Max Depth : 8.86 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 DEC 92
ELEVATION : 5985.1 MSL

CPT NO. : 03093C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

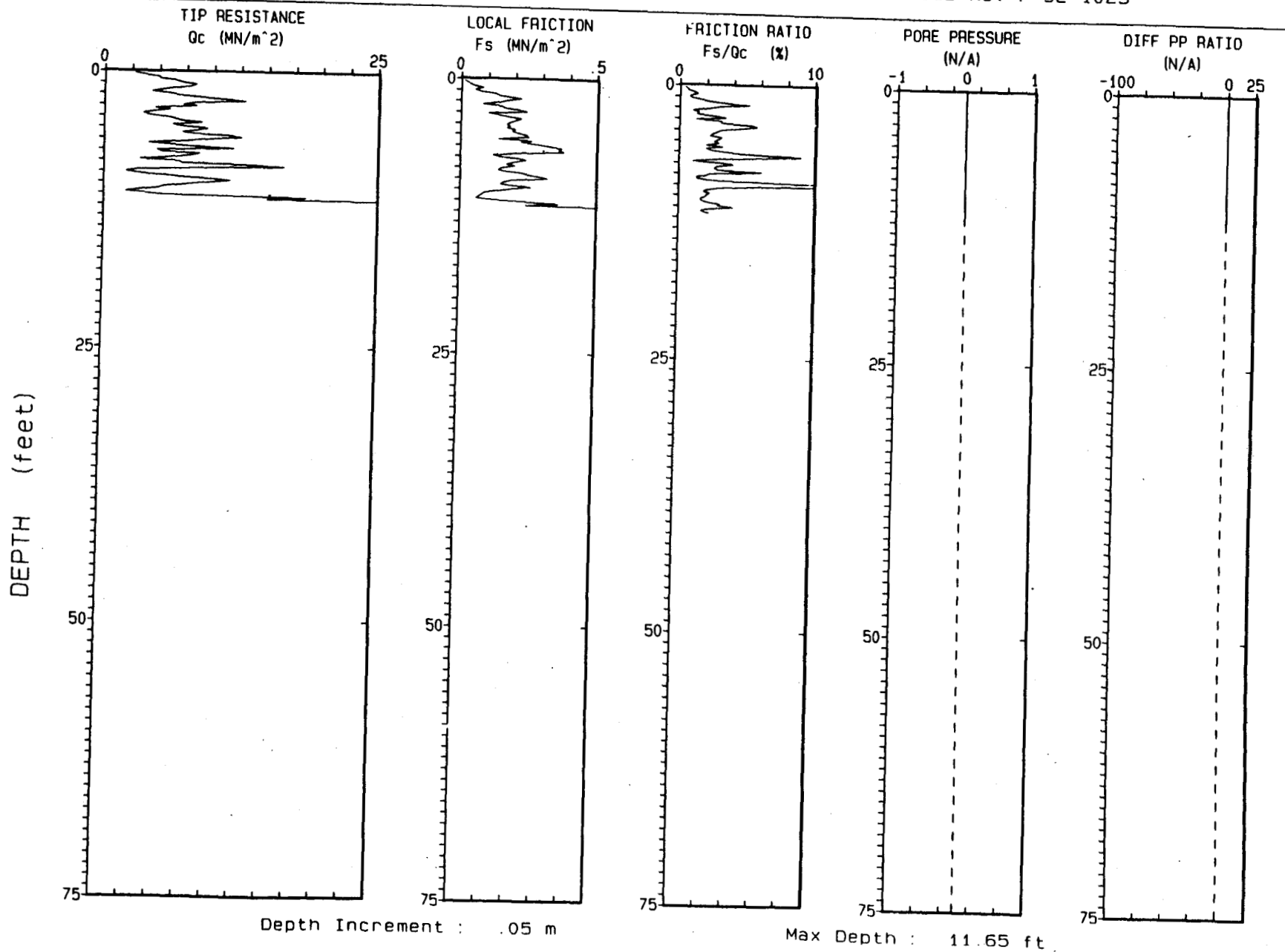
Max Depth : 7.71 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 DEC 92
ELEVATION : 5985.1 MSL

CPT NO. : 03093D
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

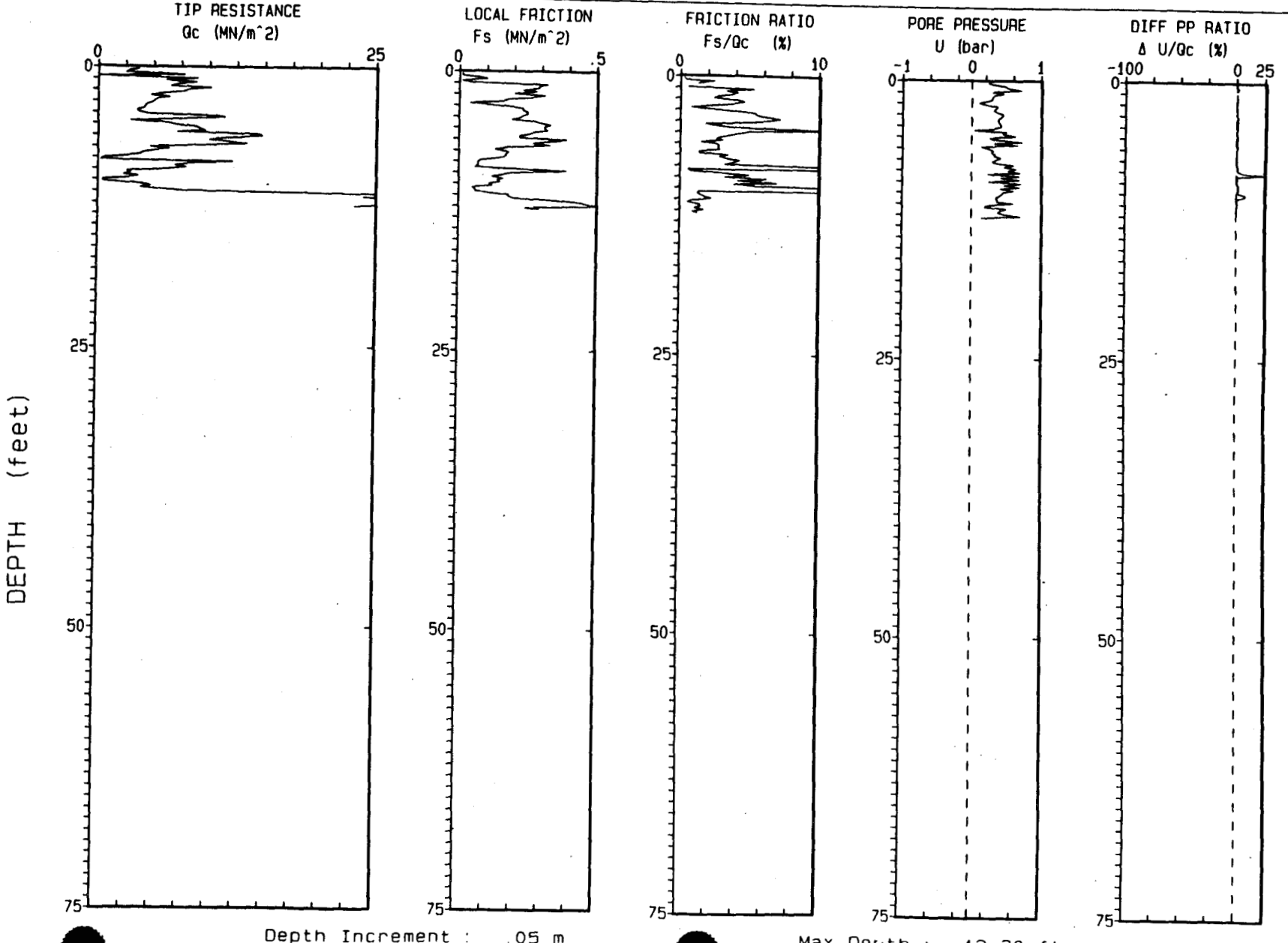
Max Depth : 11.65 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 15 DEC 92
ELEVATION : 5985.1 MSL

CPT NO. : 03093E Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

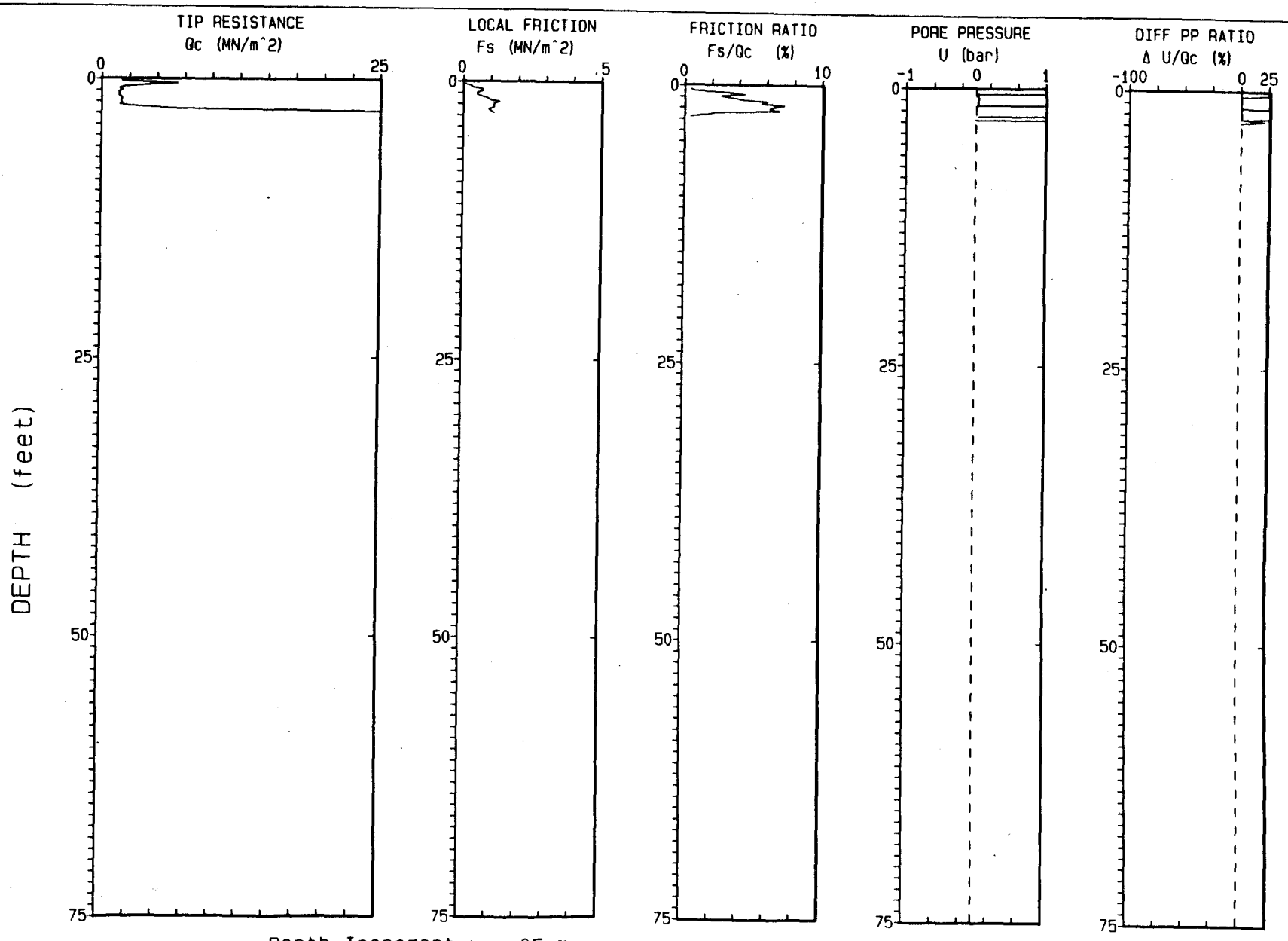
Max Depth : 12.30 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 DEC 92
ELEVATION : 5983.8 MSL

CPT NO. : 03193A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

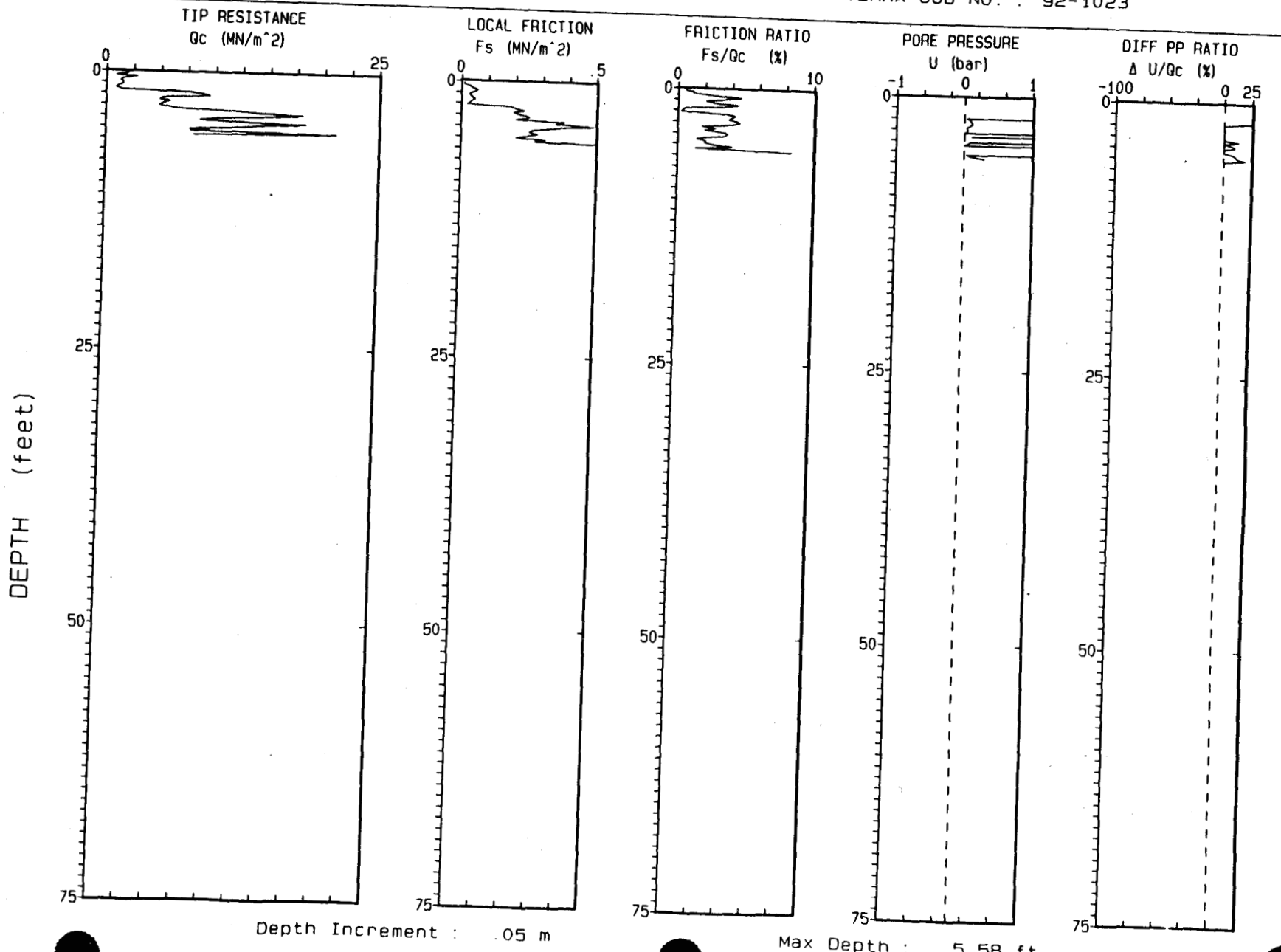
Max Depth : 2.79 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 DEC 92
ELEVATION : 5983.8 MSL

CPT NO. : 03193B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

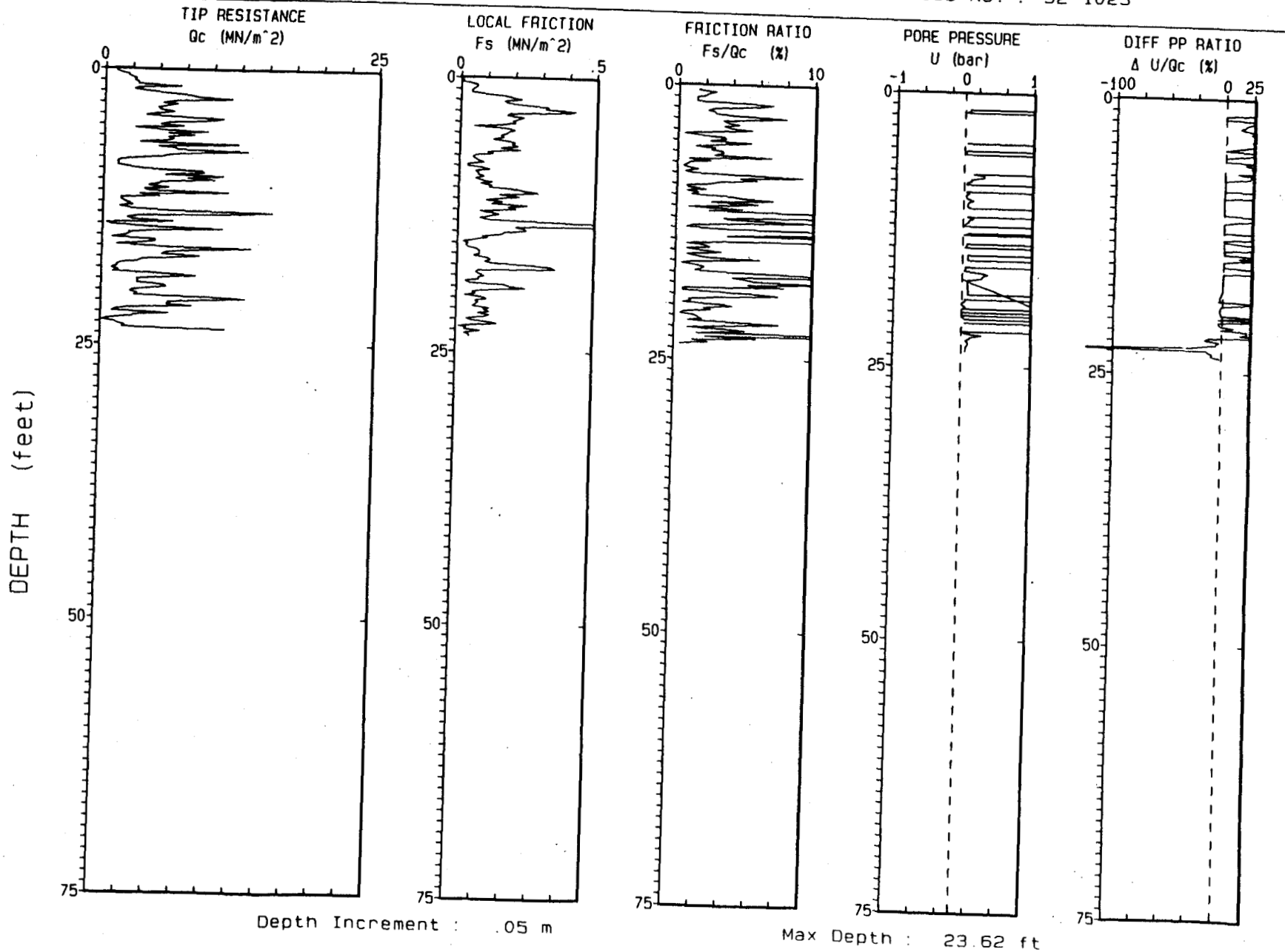
Max Depth : 5.58 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 DEC 92
ELEVATION : 5983.8 MSL

CPT NO. : 03193C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

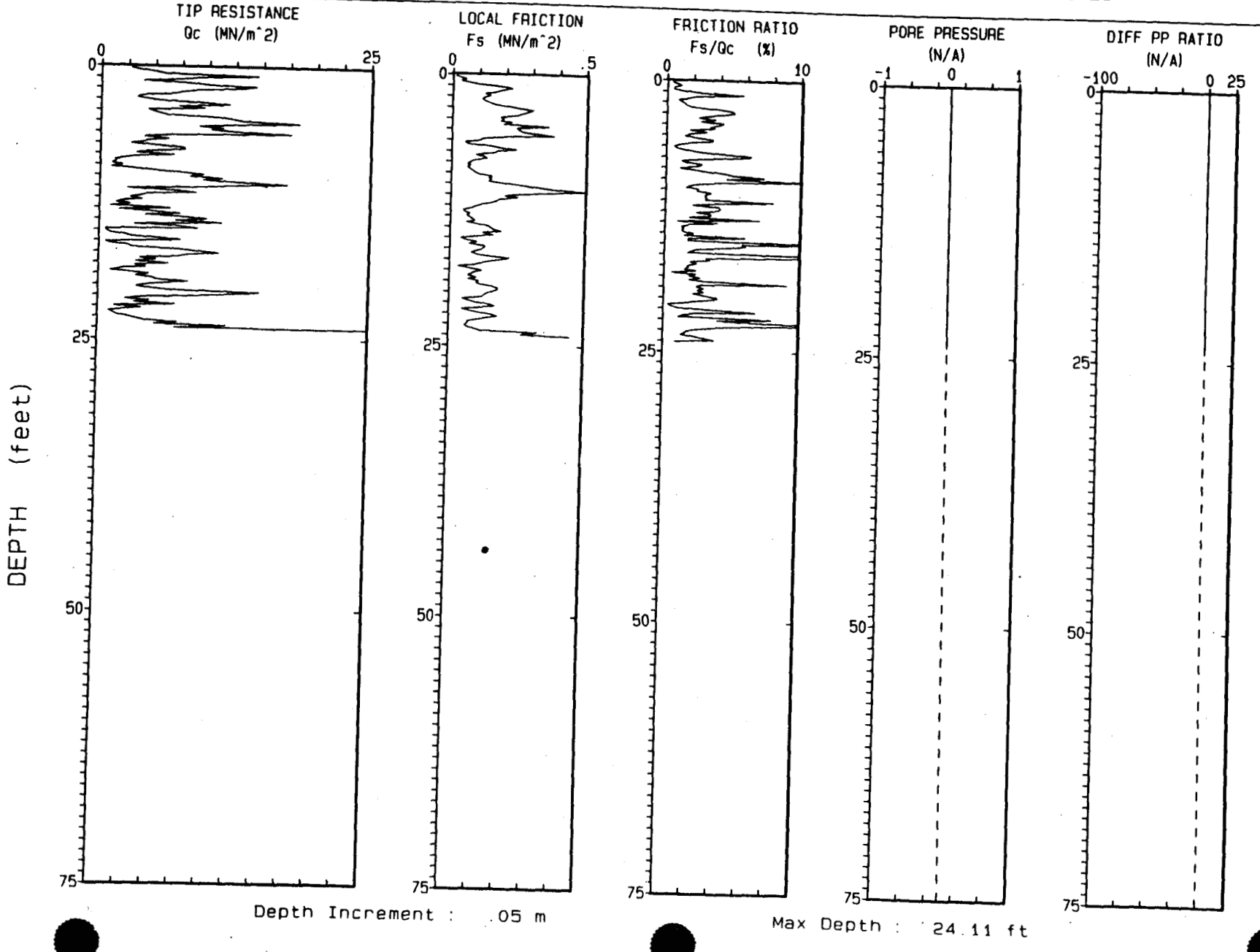
Max Depth : 23.62 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 18 DEC 92
ELEVATION : 5983.8 MSL

CPT NO. : 03193D
TERRA JOB NO. : 92-1023

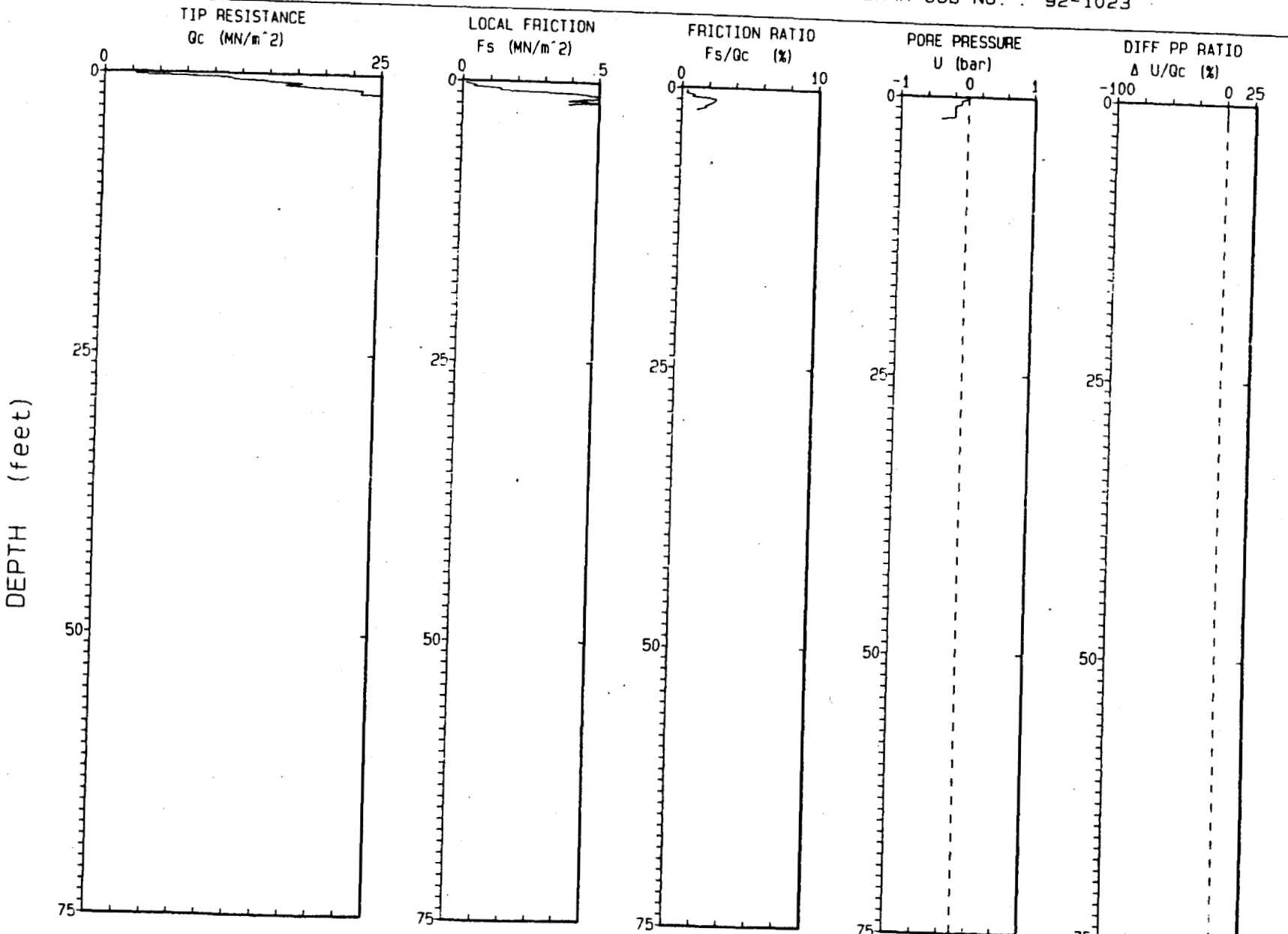


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 21 DEC 92
ELEVATION : 5984.0 MSL

CPT NO. : 03293A Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

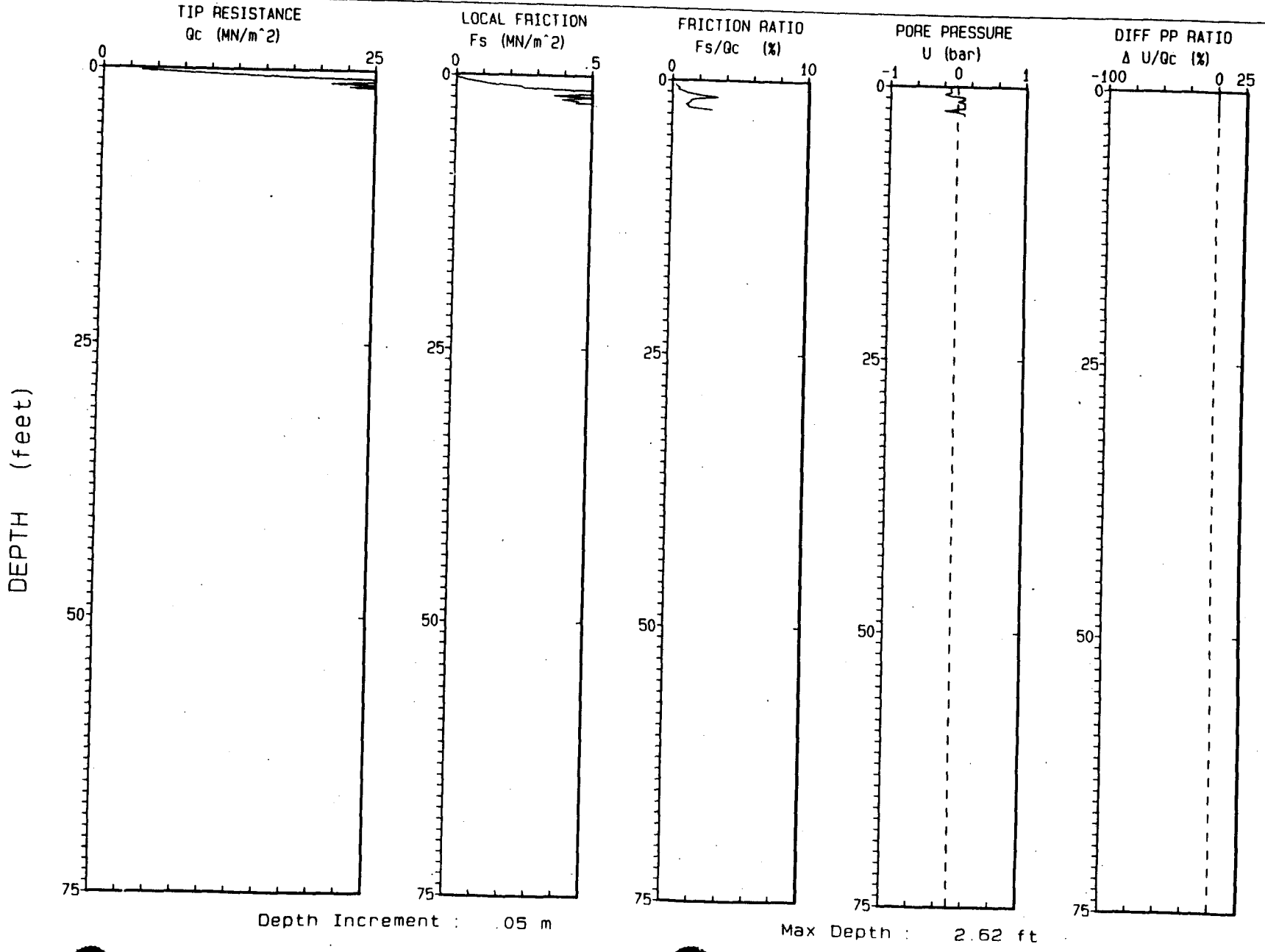
Max Depth : 1.97 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 21 DEC 92
ELEVATION : 5984.0 MSL

CPT NO. : 032938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

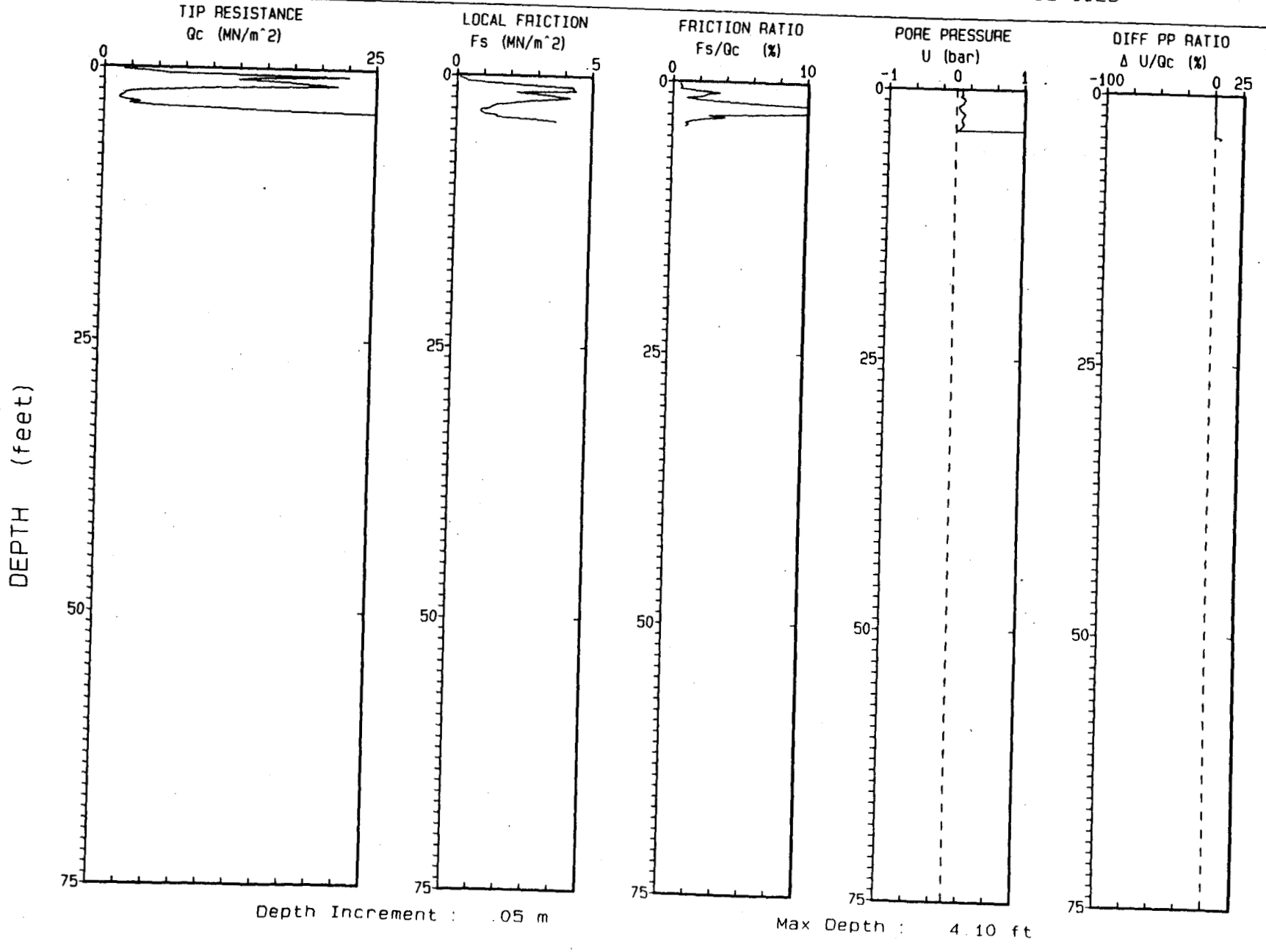
Max Depth : 2.62 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 21 DEC 92
ELEVATION : 5984.0 MSL

CPT NO. : 03293C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

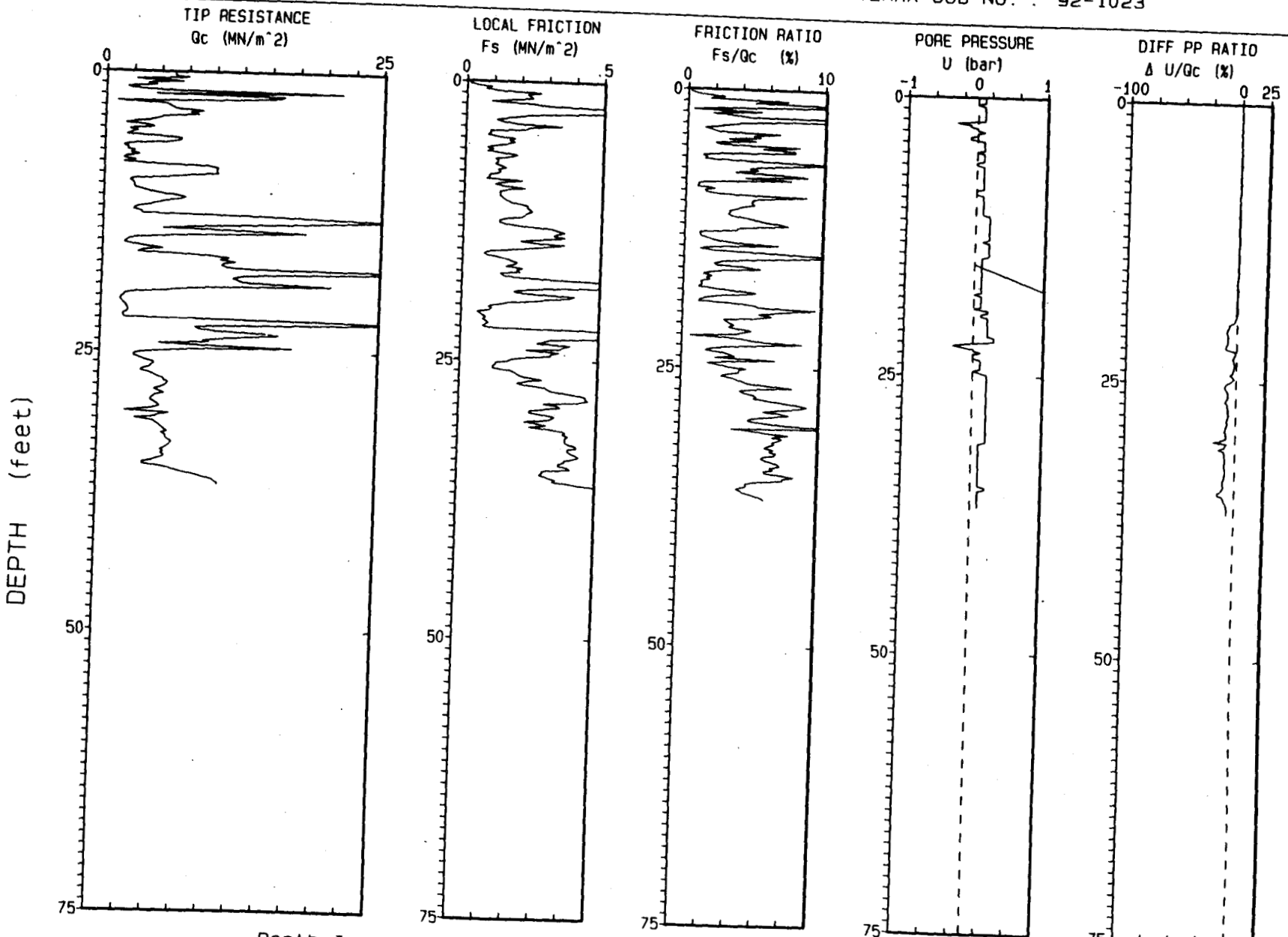
Max Depth : 4.10 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 21 DEC 92
ELEVATION : 5984.0 MSL

CPT NO. : 03293D Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

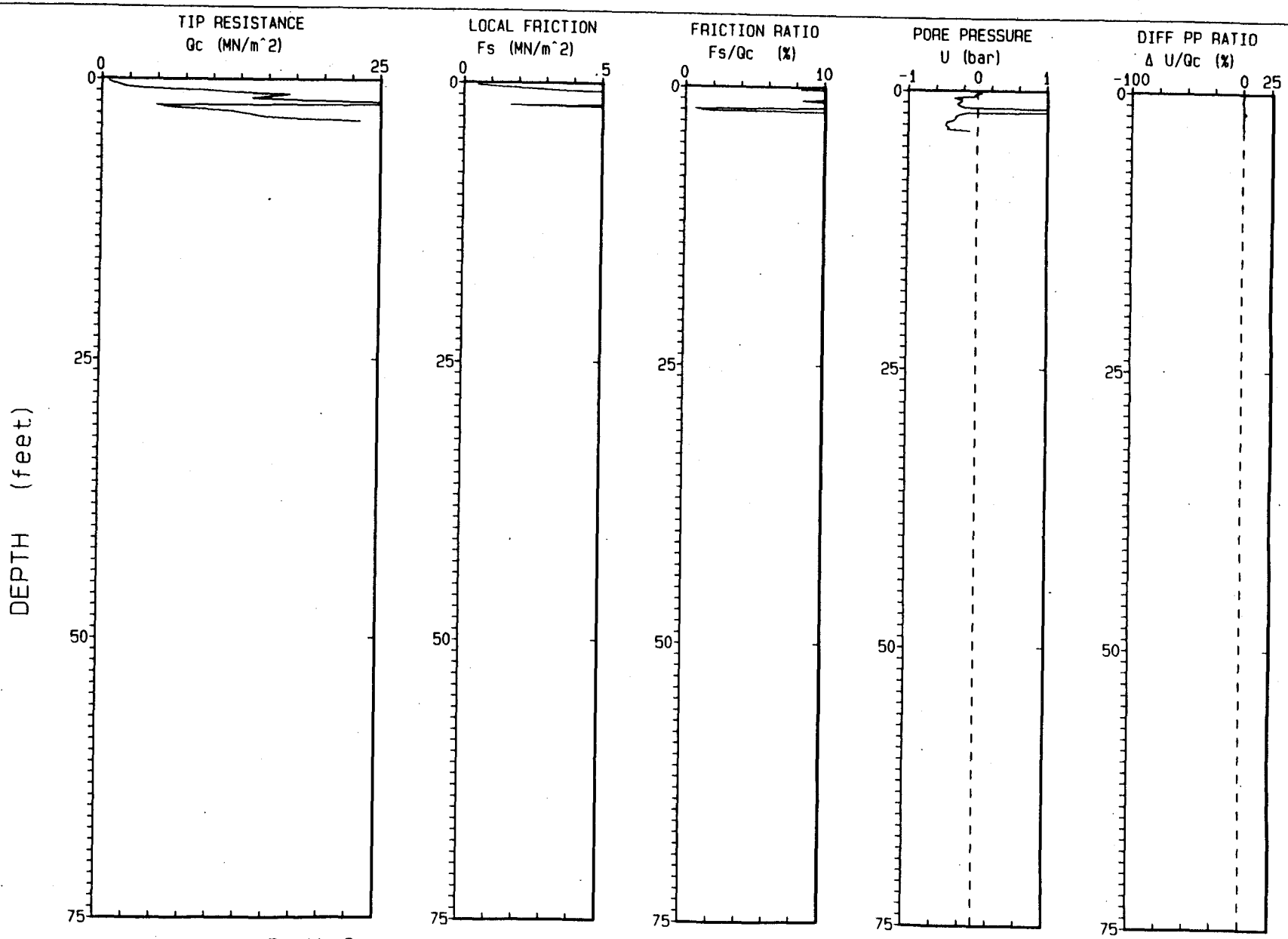
Max Depth : 36.91 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.4 MSL

CPT NO. : 03393A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

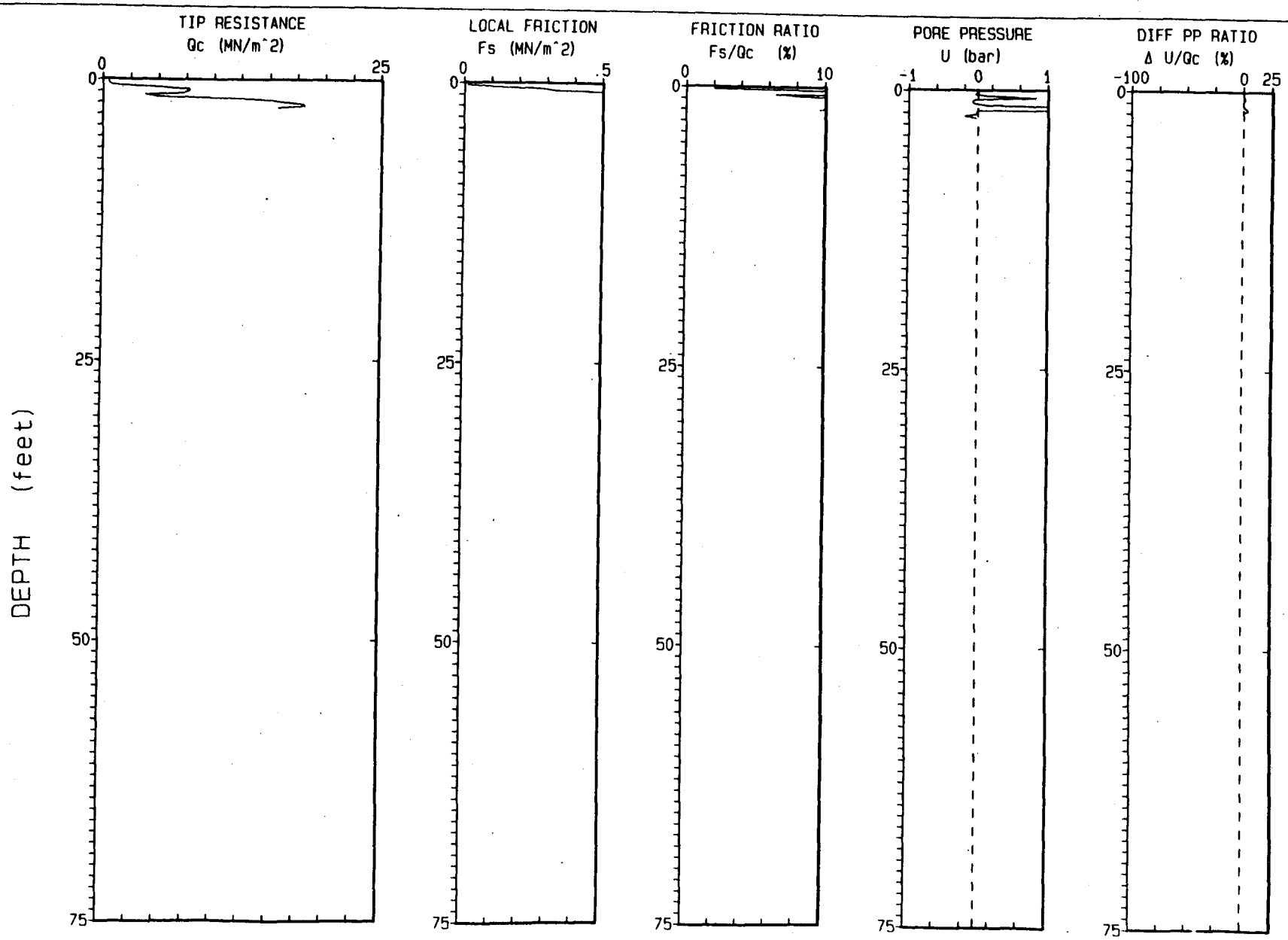
Max Depth : 3.61 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.4 MSL

CPT NO. : 03393B
TERRA JOB NO. : 92-1023

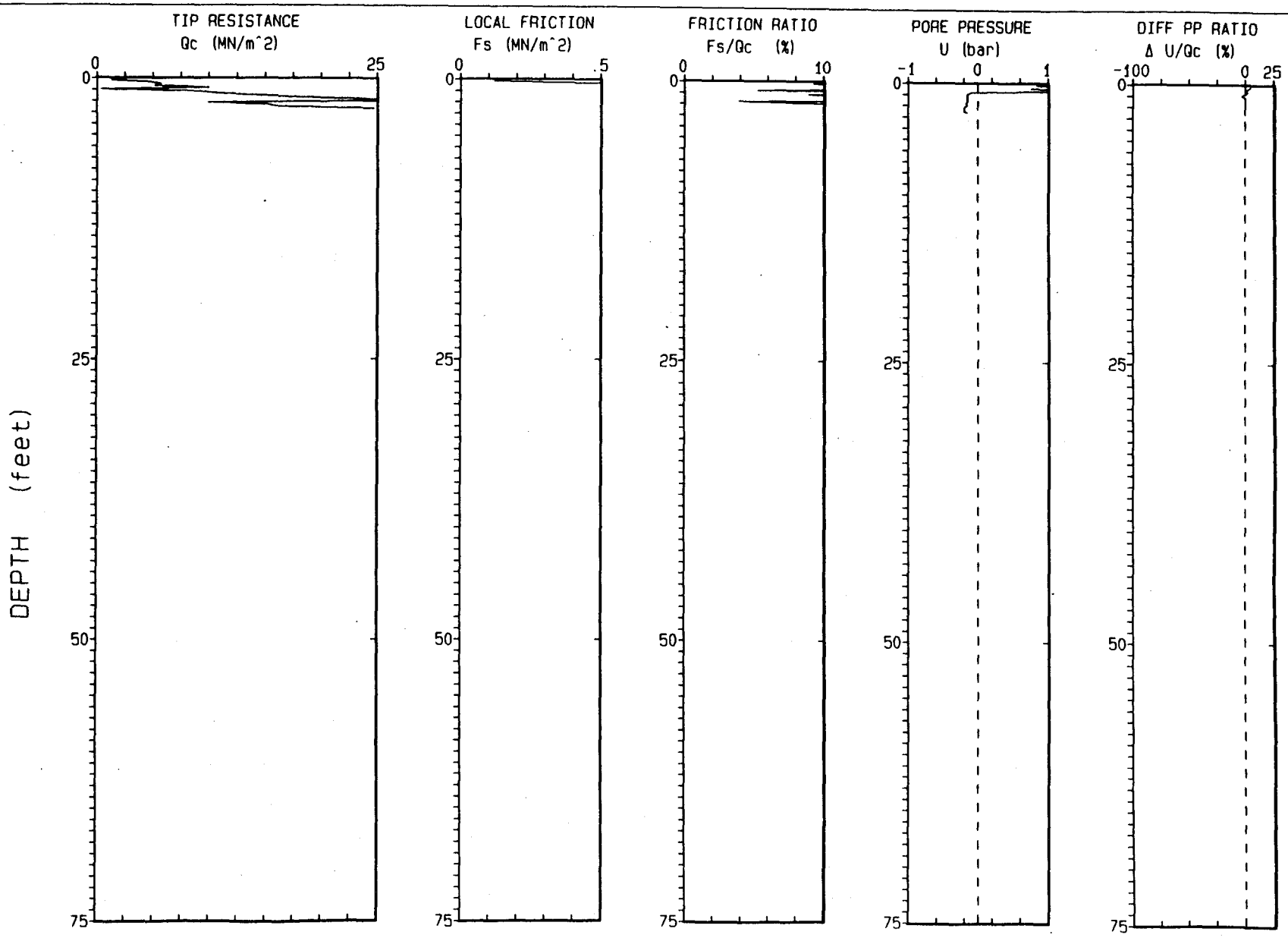


Depth Increment : .05 m

Max Depth : 2.46 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
DATE : 11 DEC 92
CPT NO. : 03393C
Pg 1 / 1
LOCATION : OU7 LANDFILL
ELEVATION : 5989.4 MSL
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

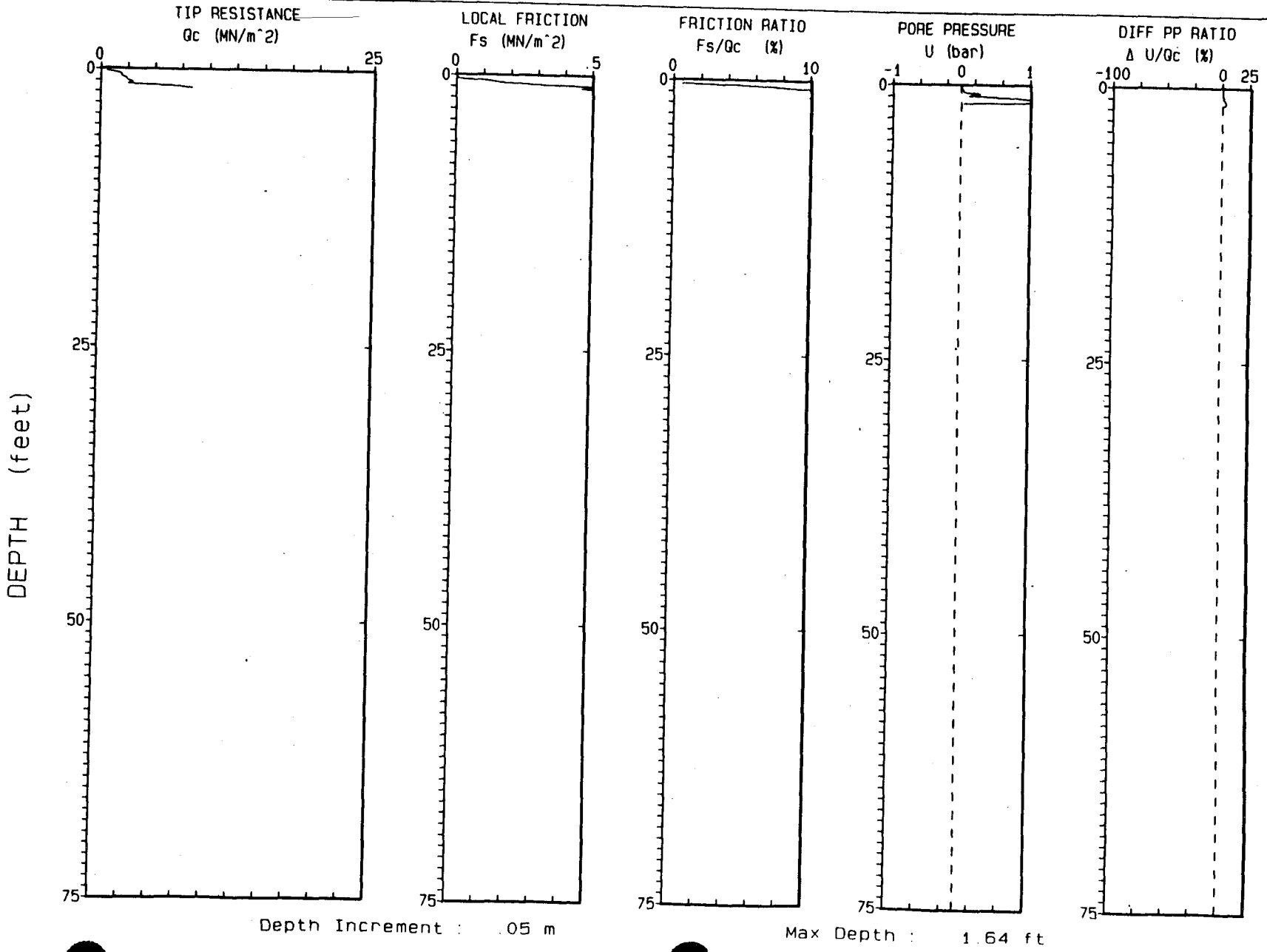
Max Depth : 2.62 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.4 MSL

CPT NO. : 03393D
TERRA JOB NO. : 92-1023

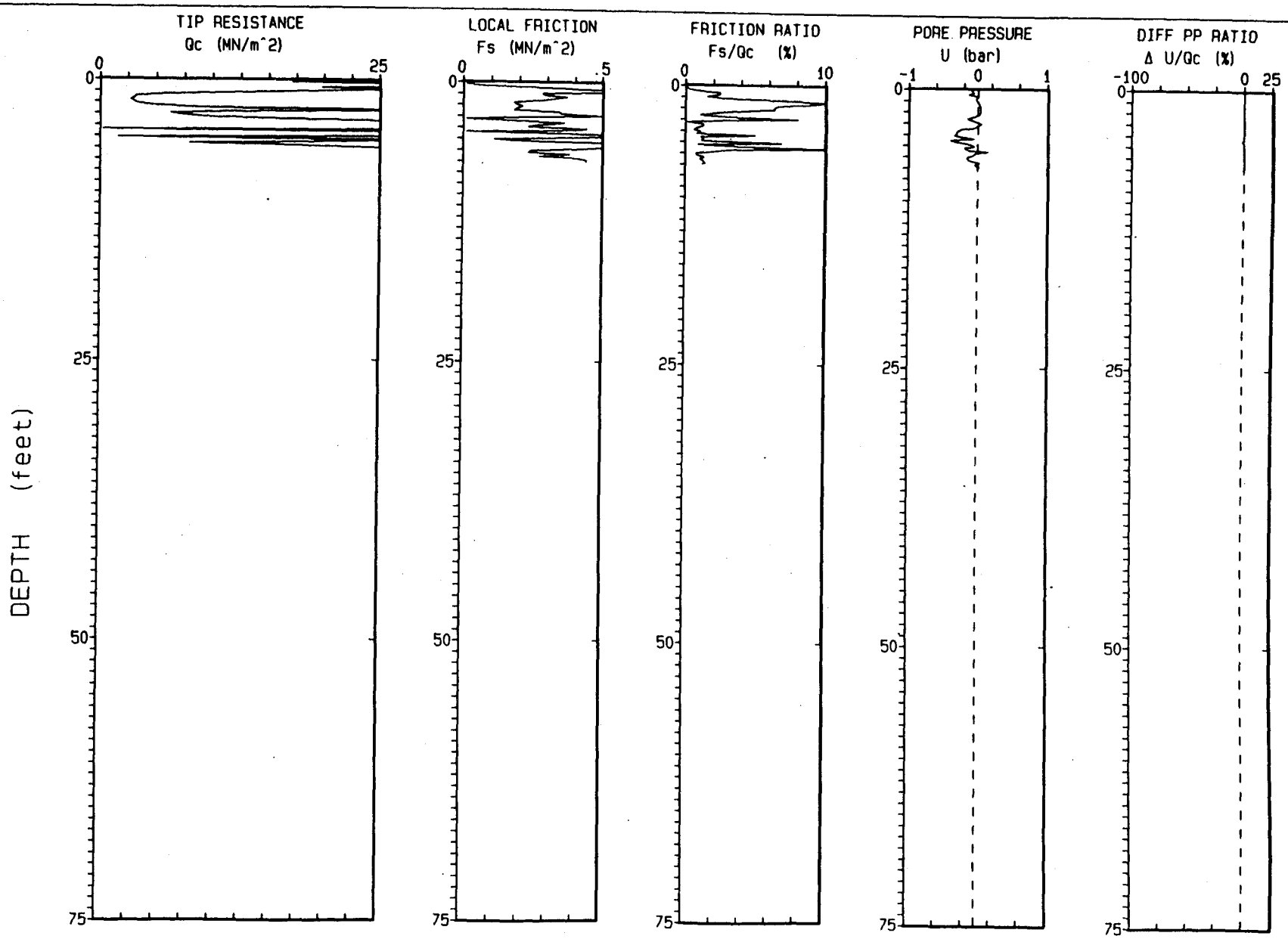


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5989.4 MSL

CPT NO. : 03393E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

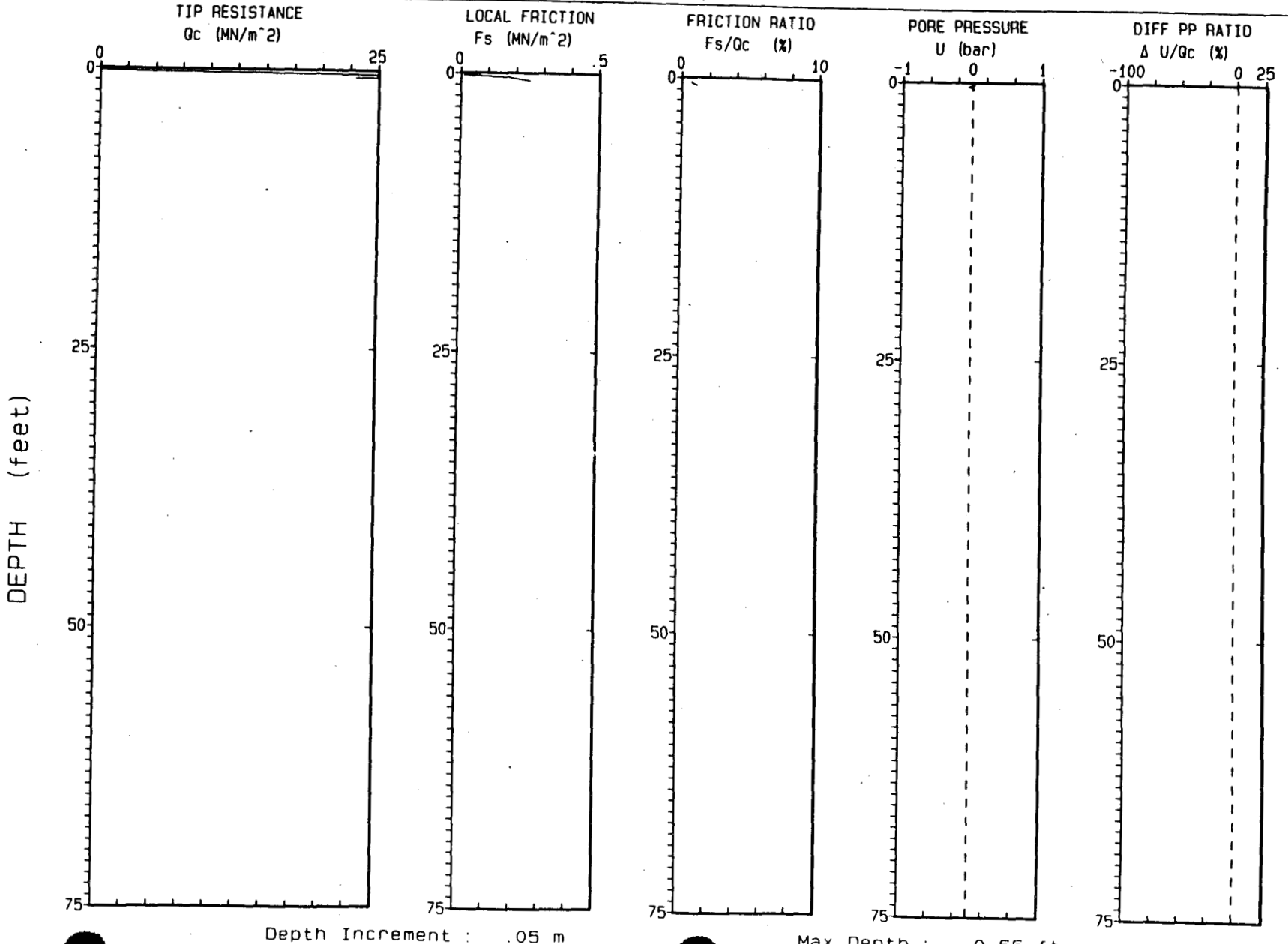
Max Depth : 7.05 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 07 JAN 93
ELEVATION : 5989.4 MSL

CPT NO. : 03393F
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

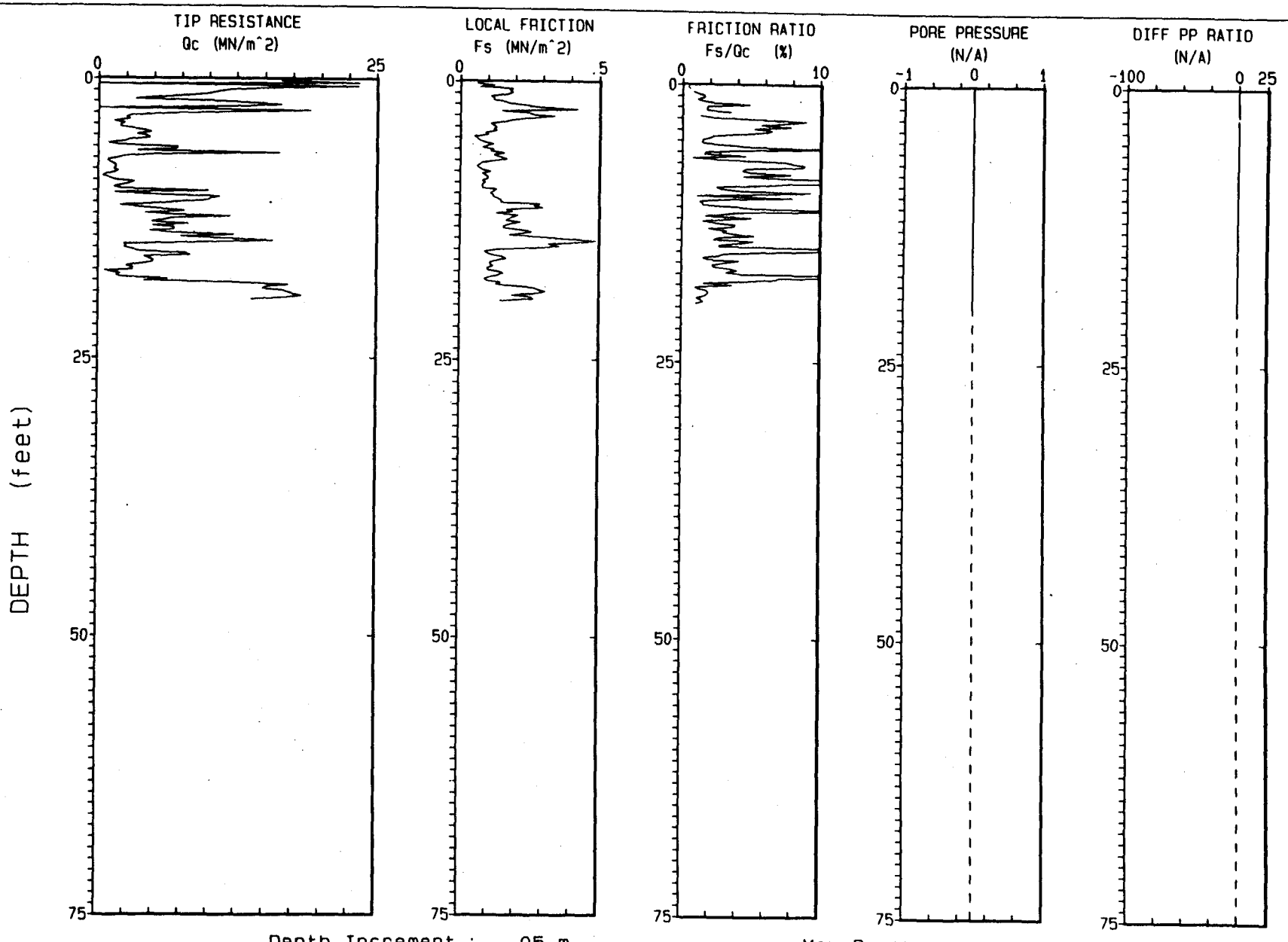
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5989.3 MSL

CPT NO. : 03493A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

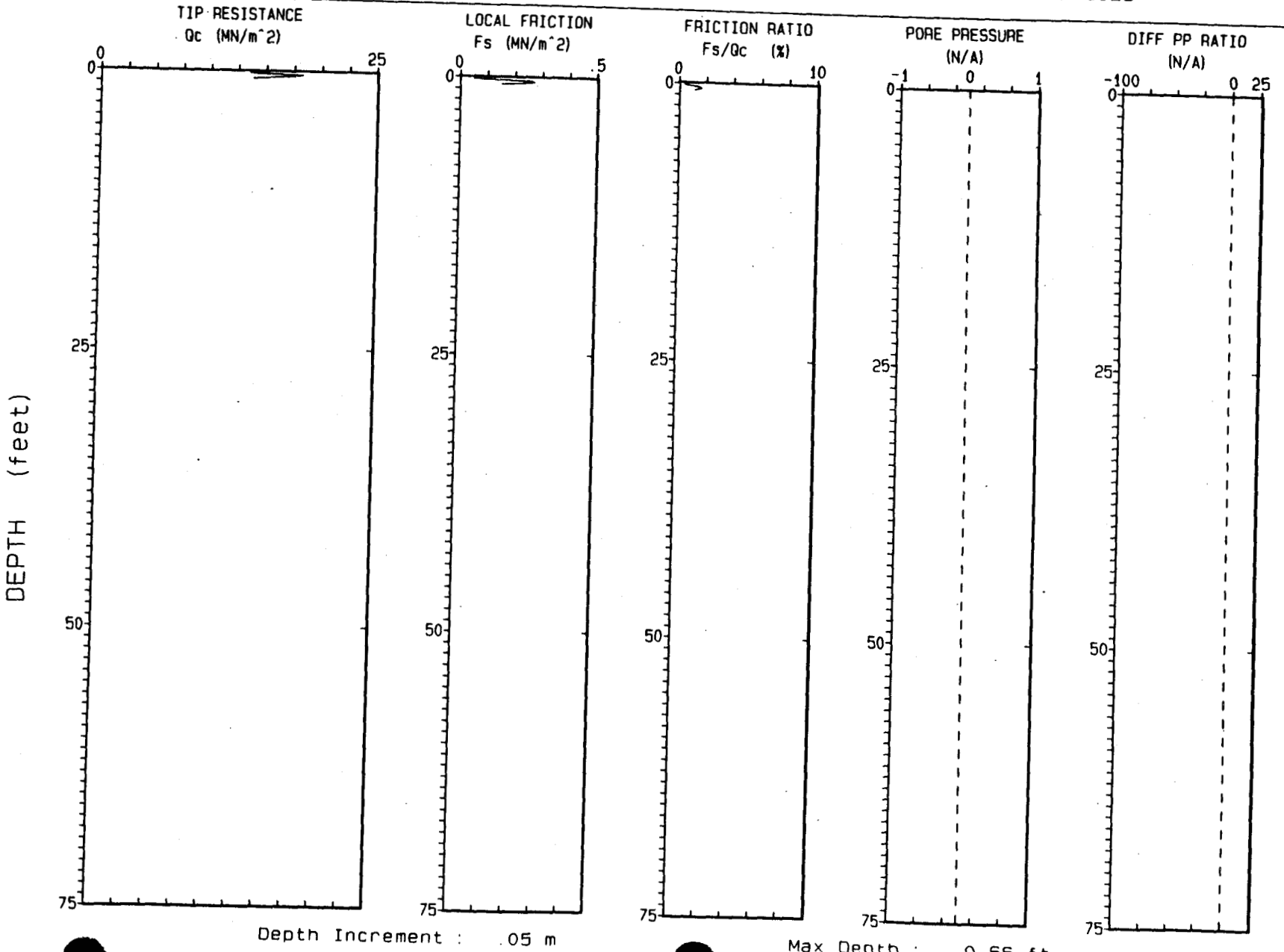
Max Depth : 19.69 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5989.3 MSL

CPT NO. : 034938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

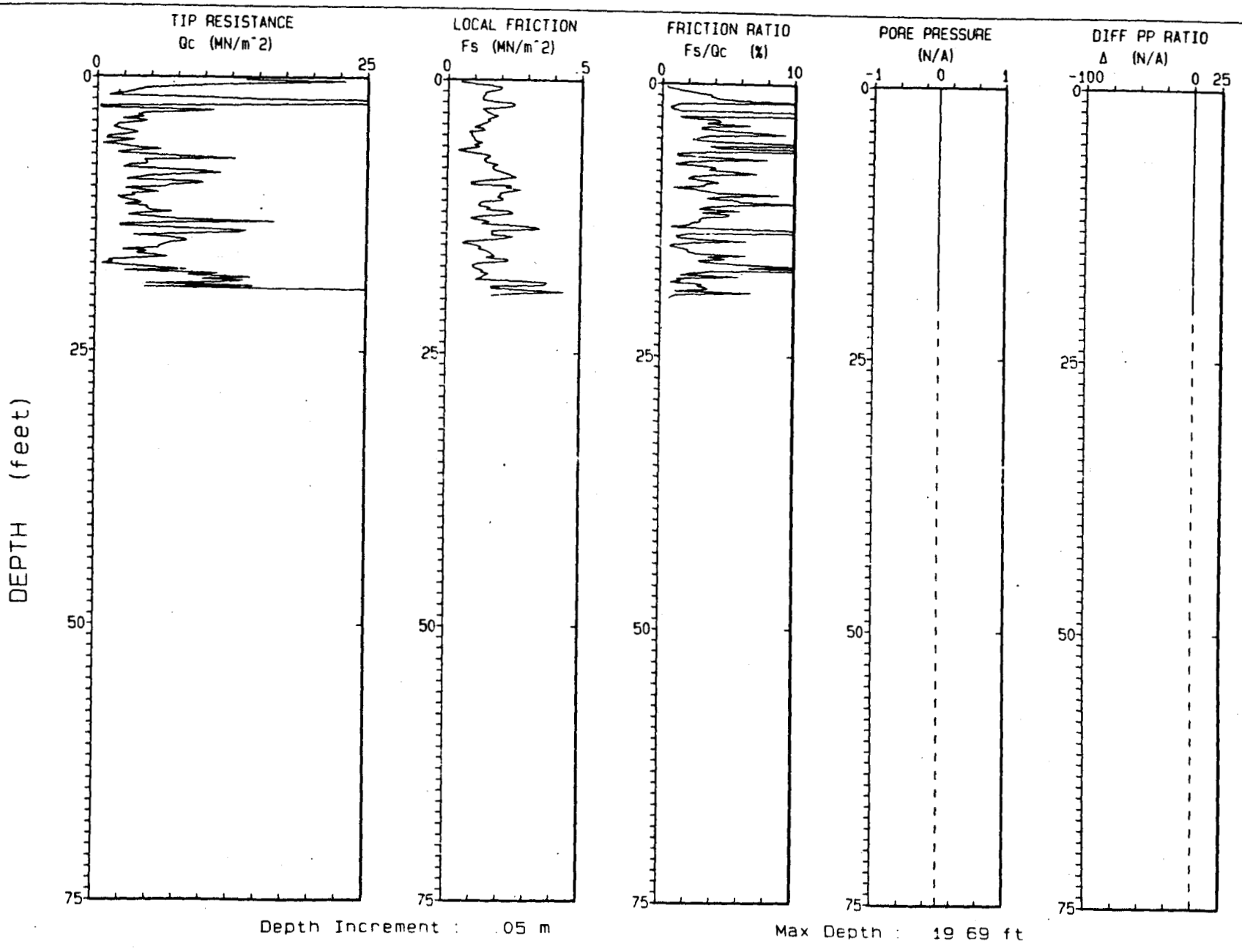
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5989.3 MSL

CPT NO. : 03493C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

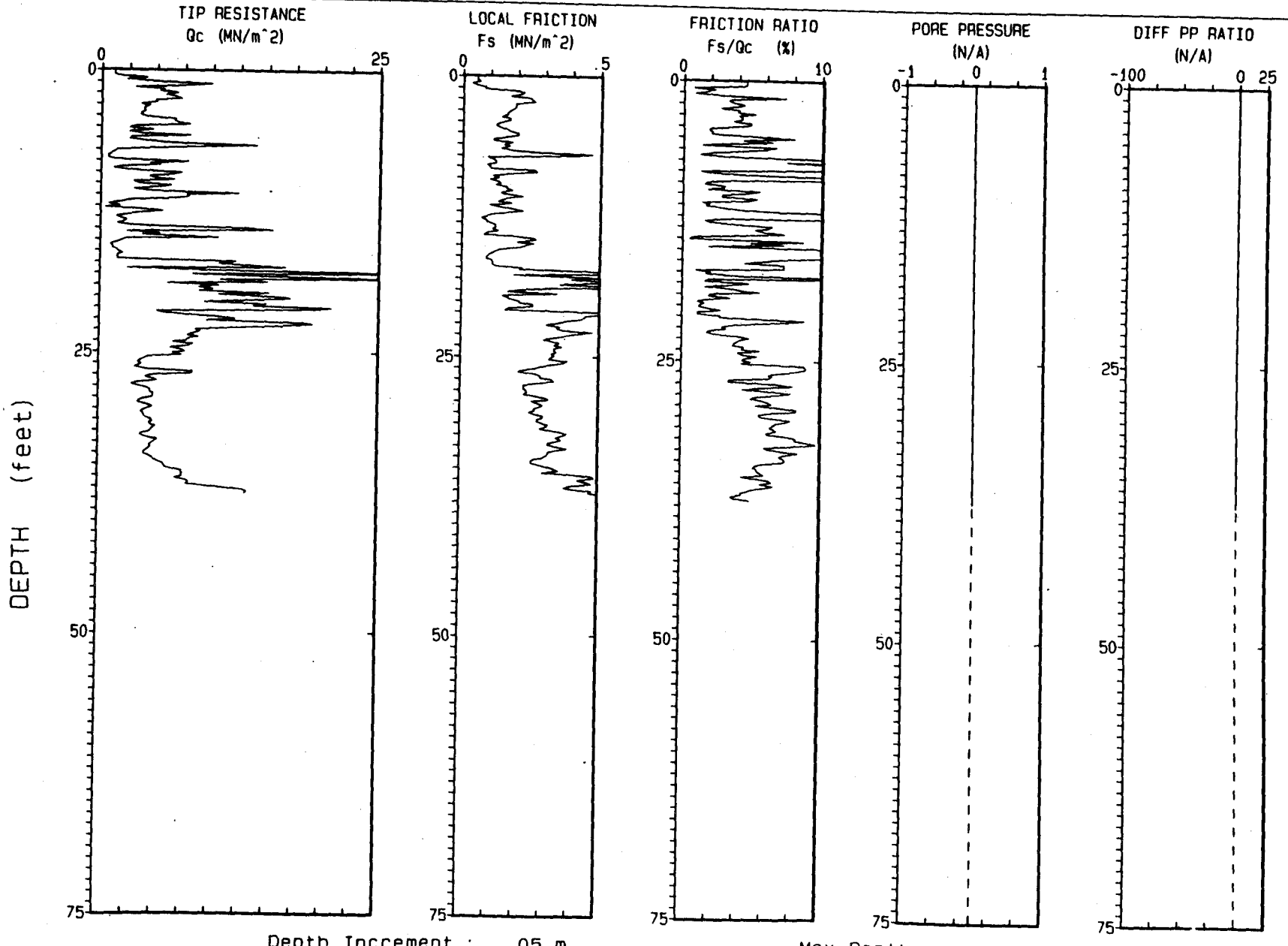
Max Depth : 19.69 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5989.3 MSL

CPT NO. : 034930 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

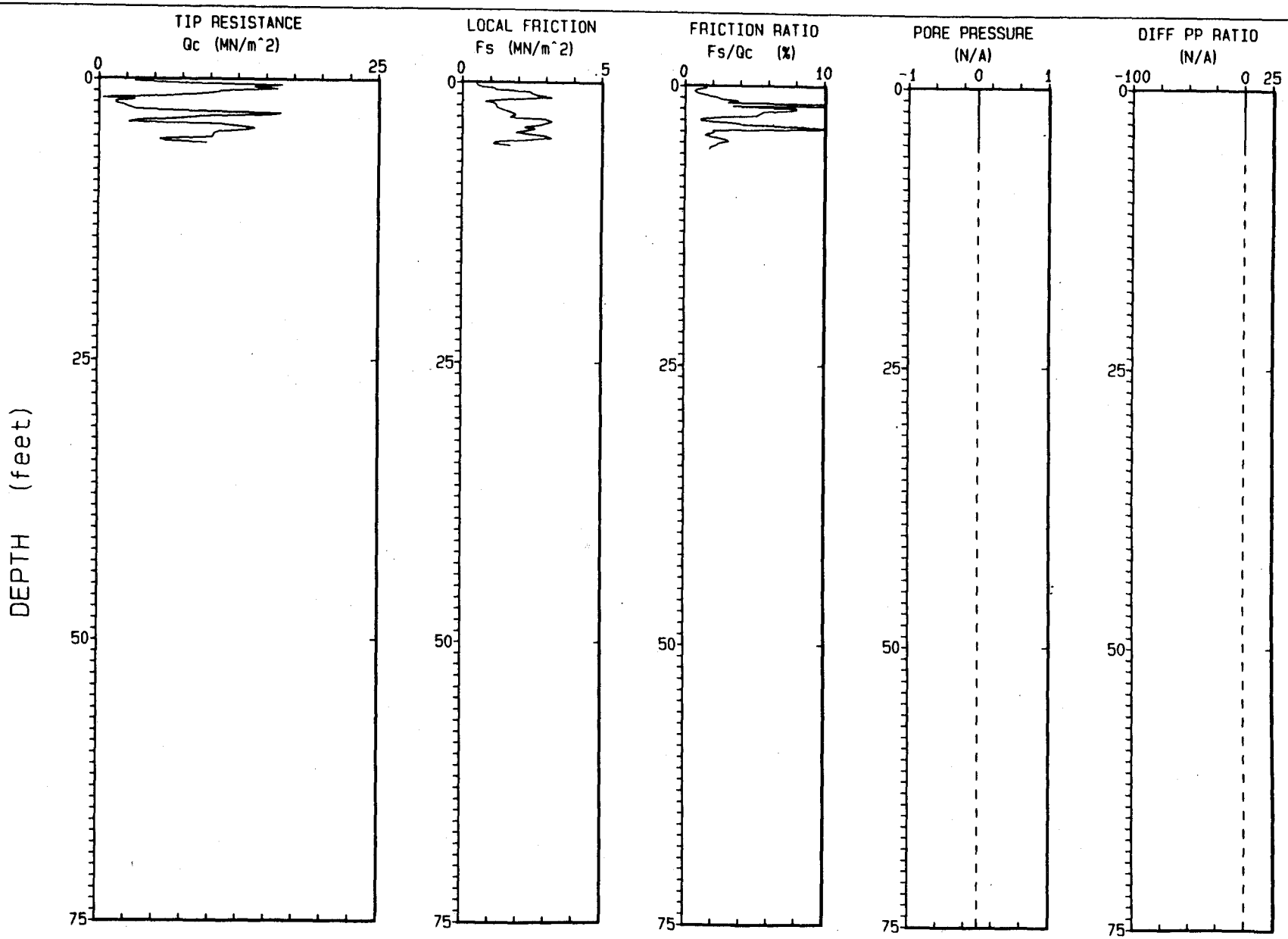
Max Depth : 37.57 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 04 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

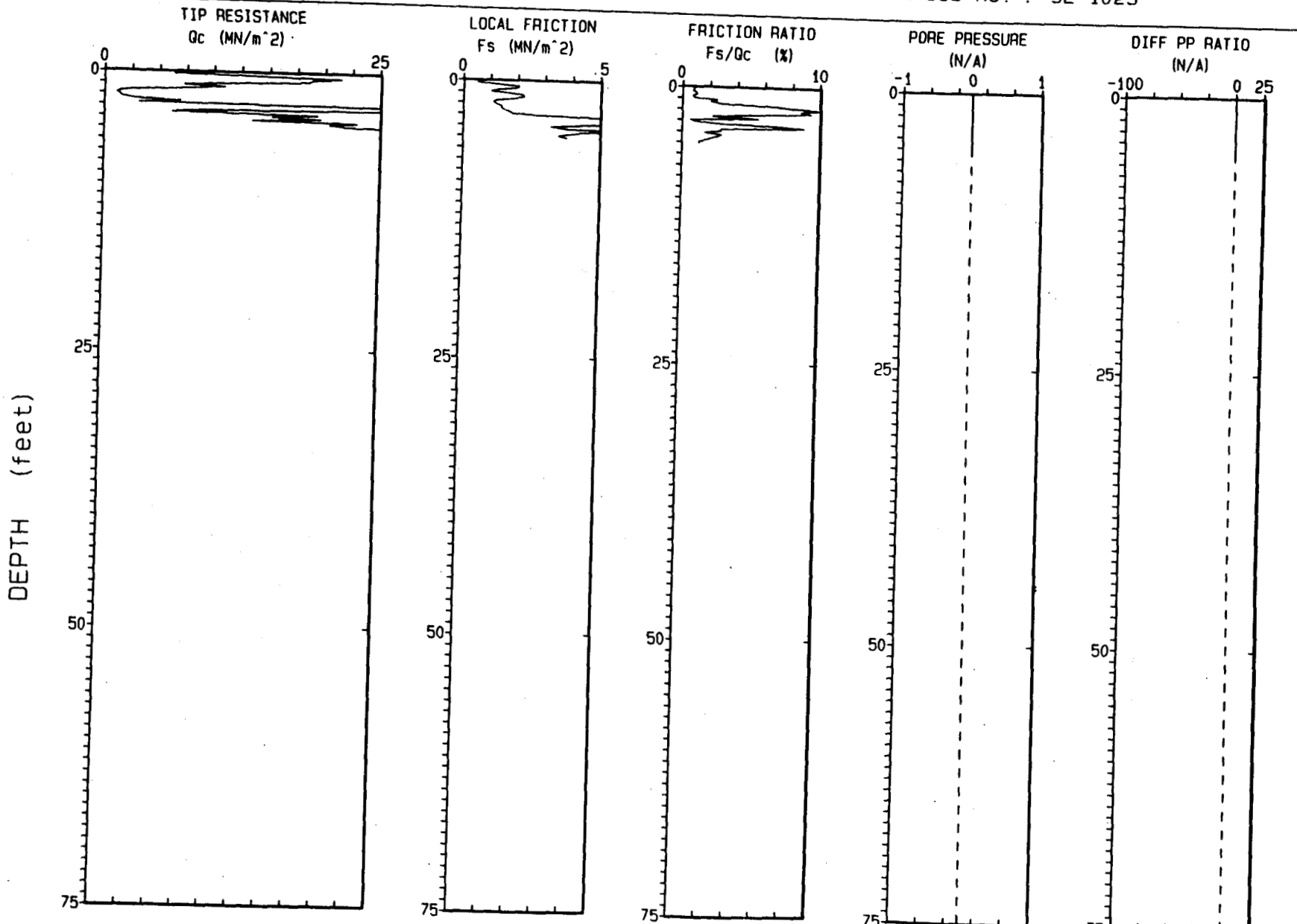
Max Depth : 5.58 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 04 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 035938 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

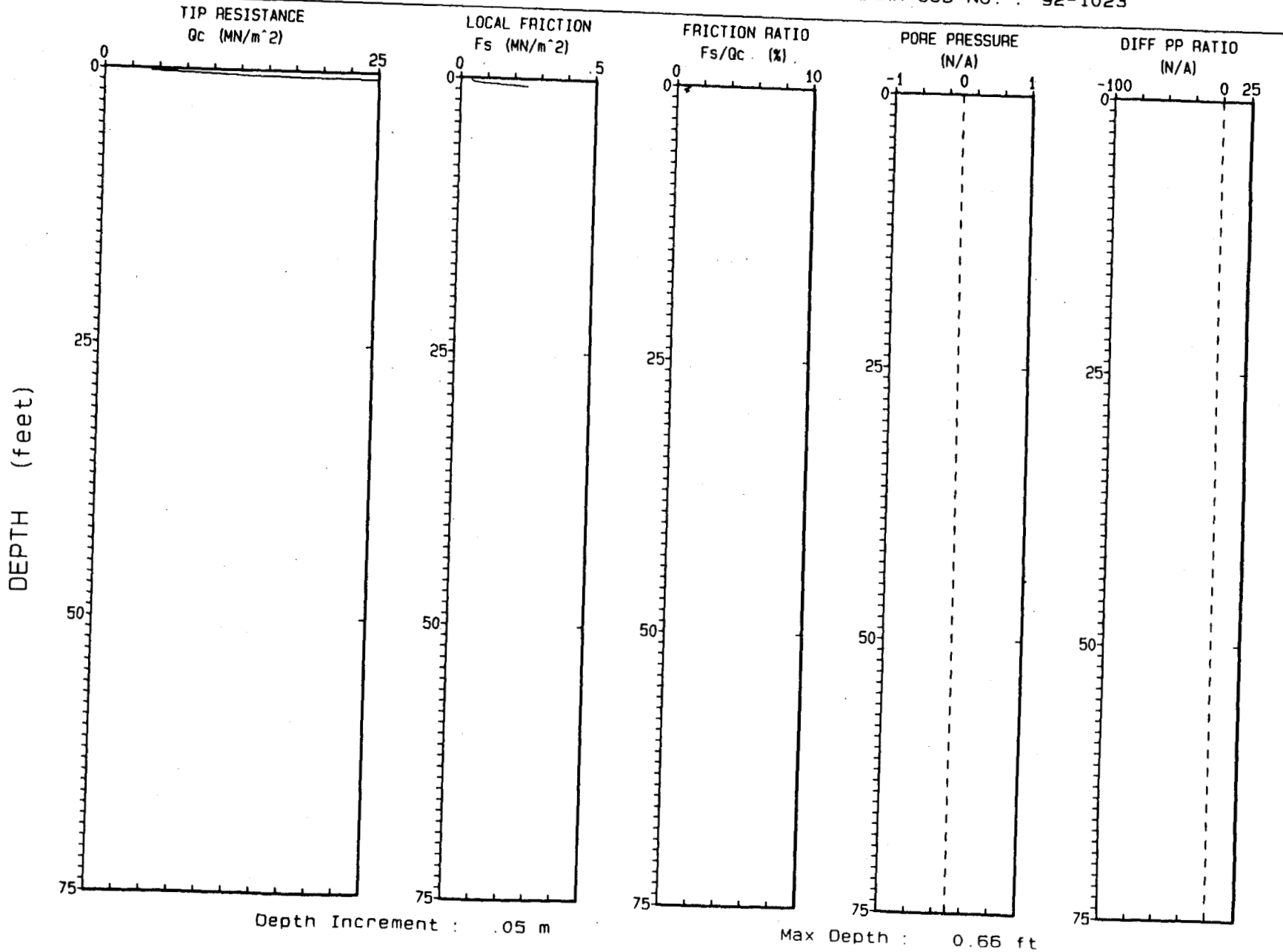
Max Depth : 5.09 ft.

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 04 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593C
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

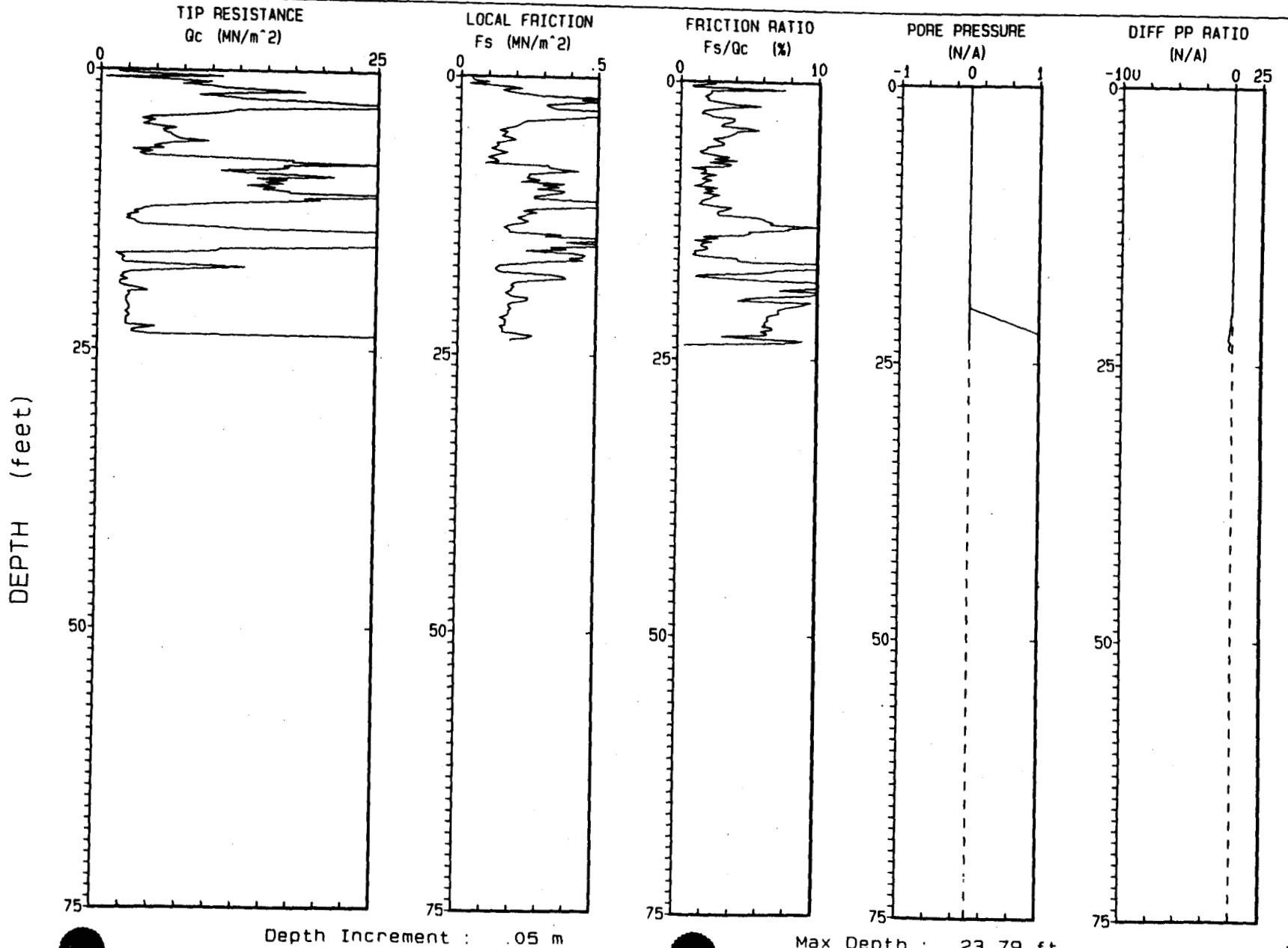
Max Depth : 0.66 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 04 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 035930 Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

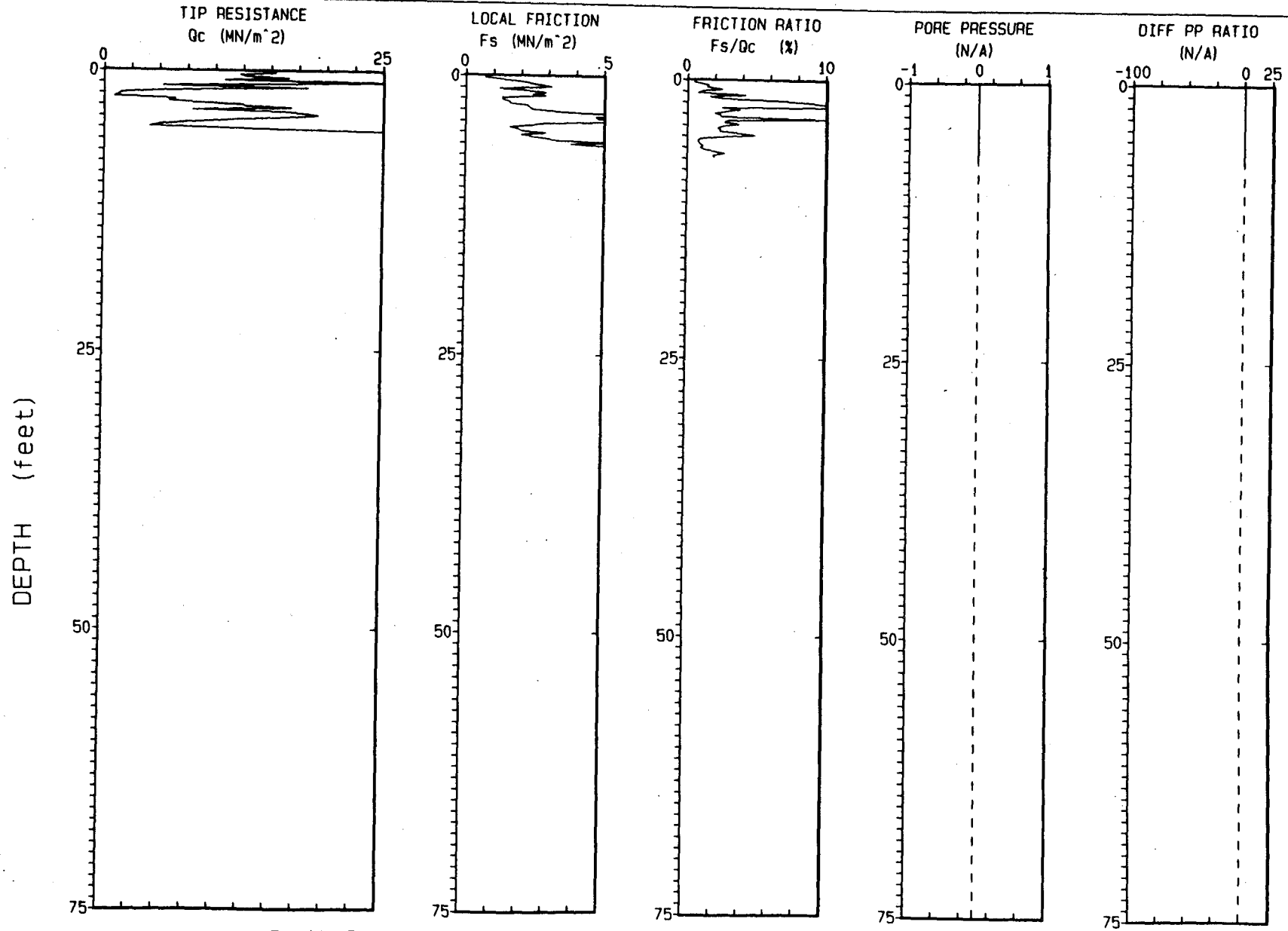
Max Depth : 23.79 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593E
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

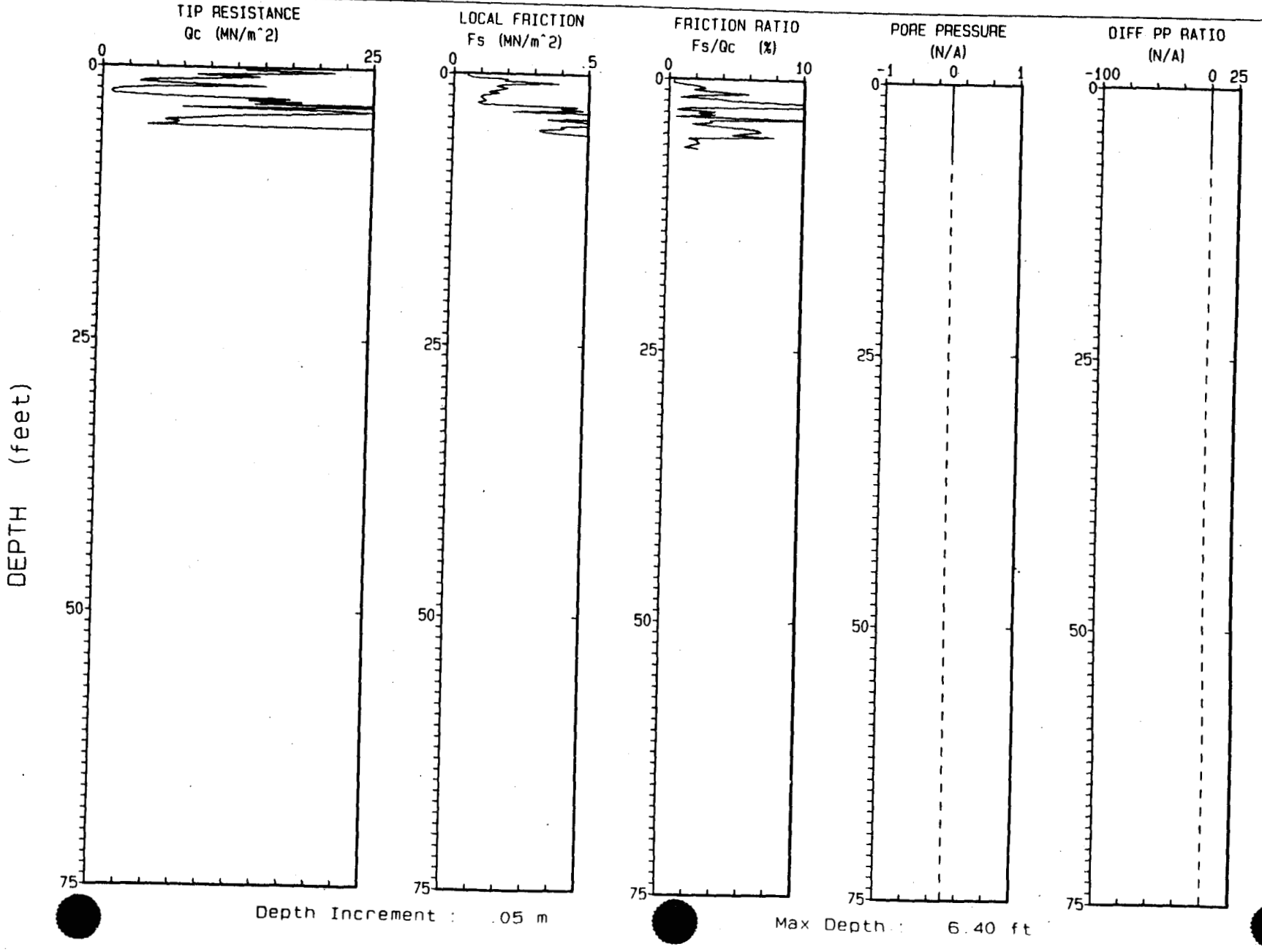
Max Depth : 6.89 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 05 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593F
TERRA JOB NO. : 92-1023

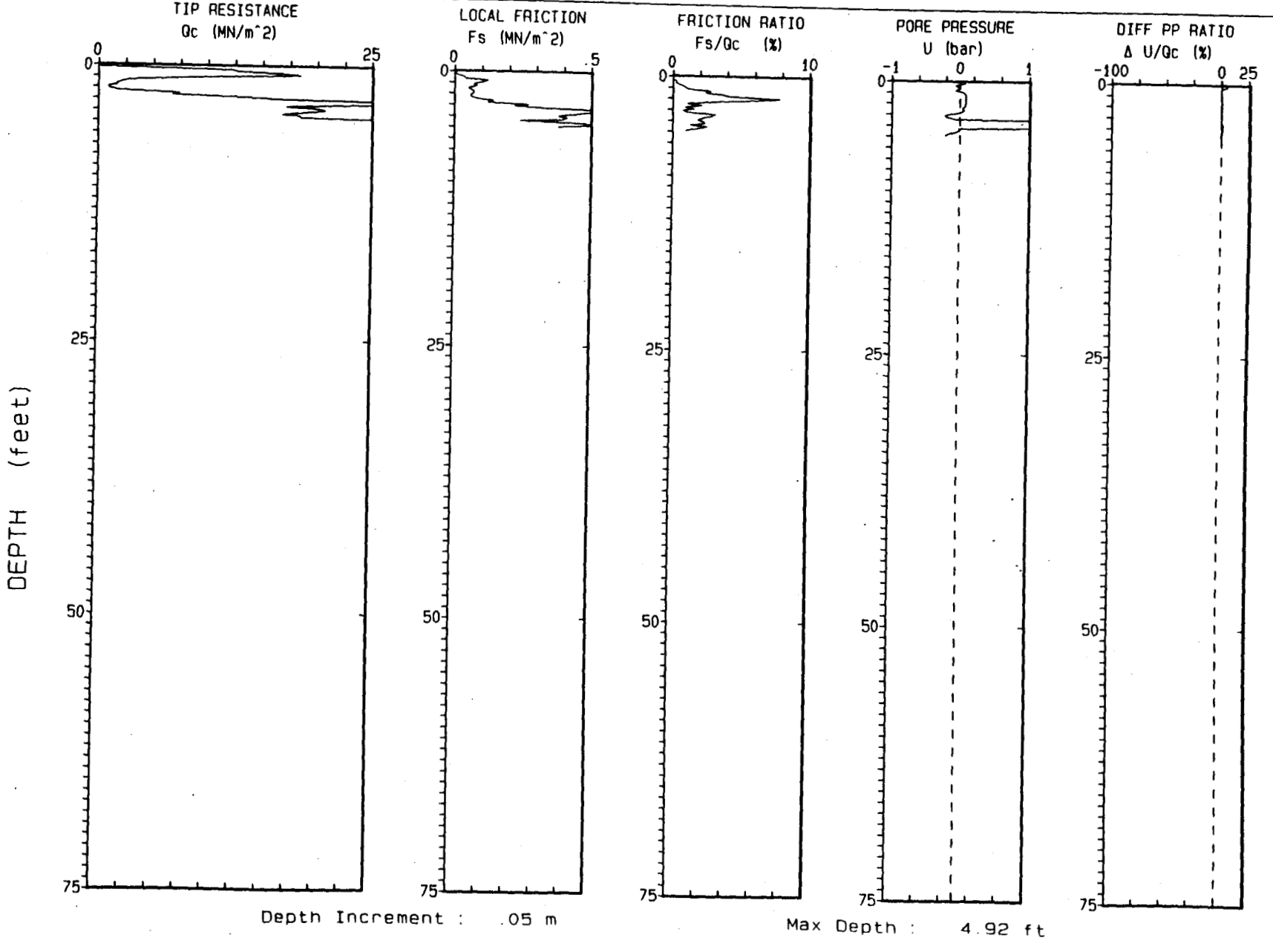


ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593G
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

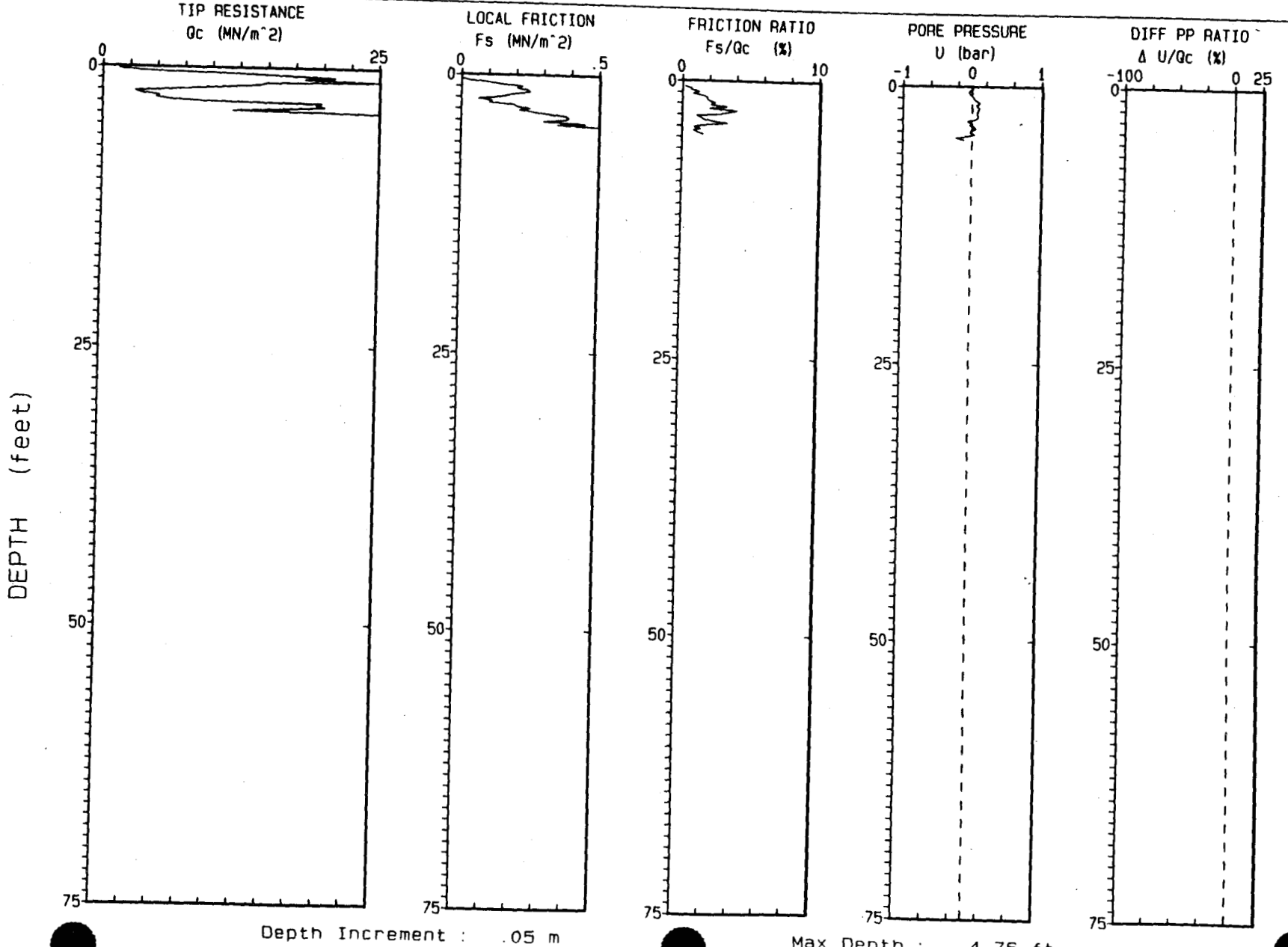
Max Depth : 4.92 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5991.0 MSL

CPT NO. : 03593H
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

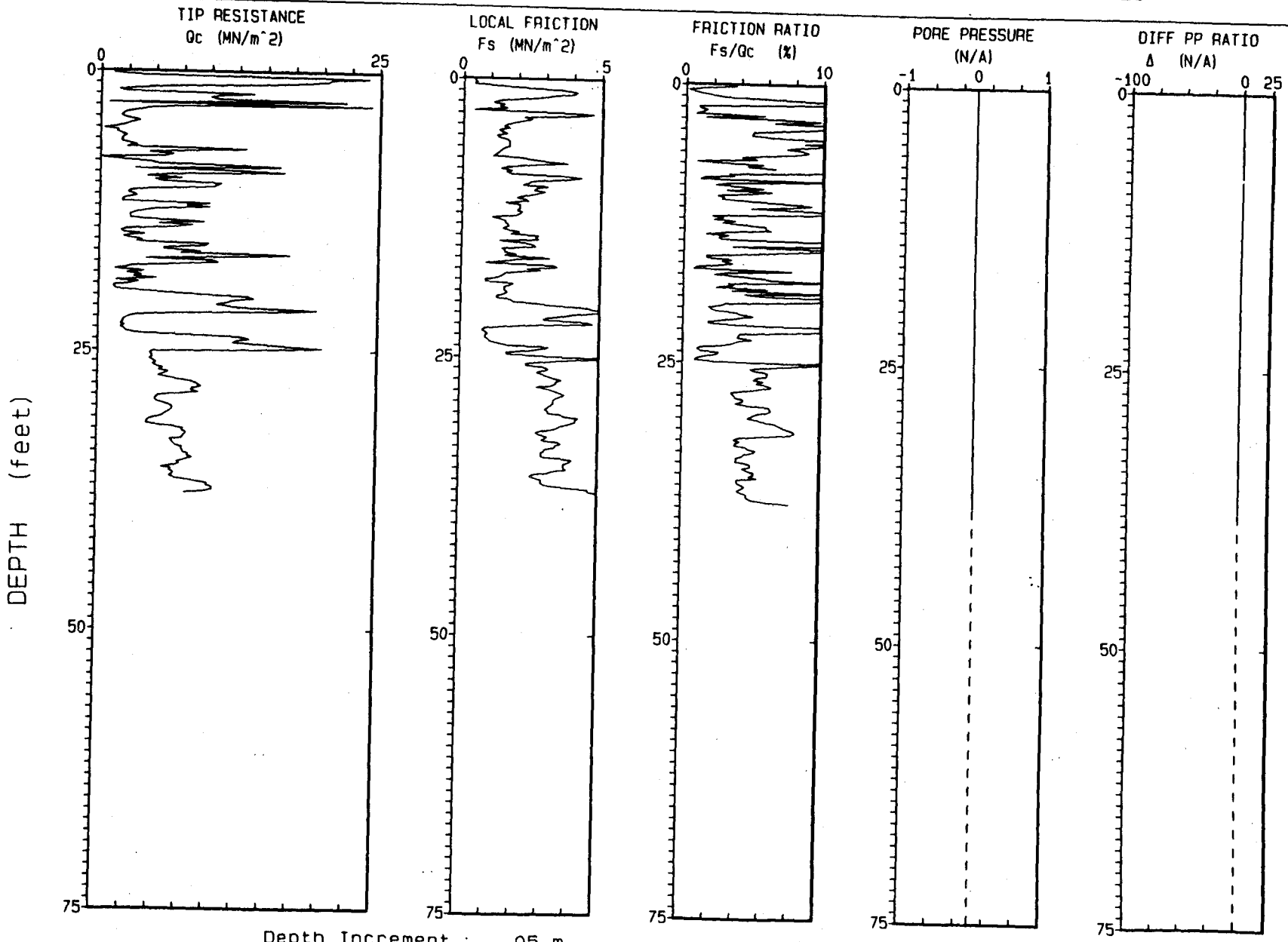
Max Depth : 4.76 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5989.1 MSL

CPT NO. : 03693A Pg 1 / 1
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

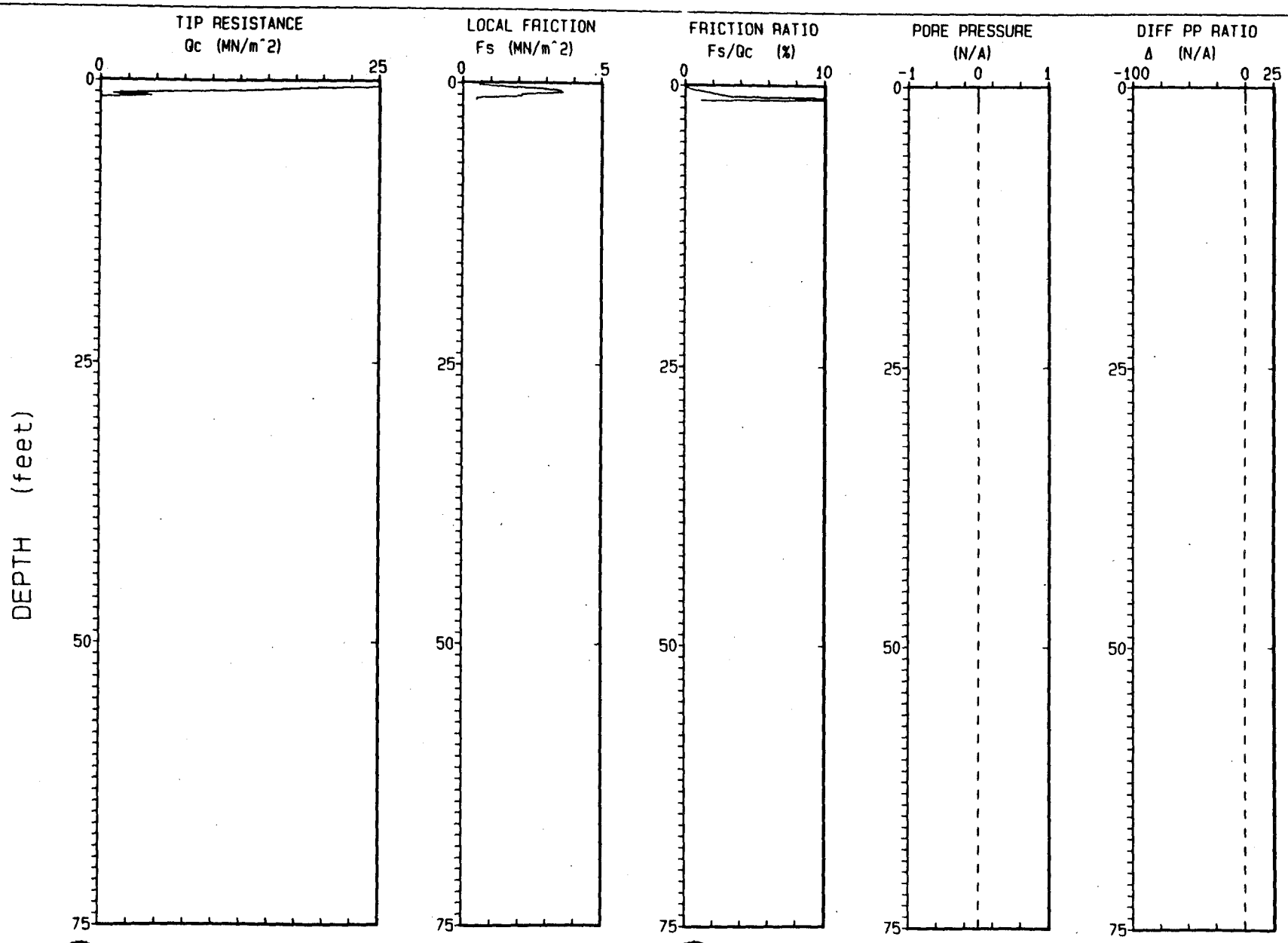
Max Depth : 37.73 ft.

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5987.1 MSL

CPT NO. : 03793A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

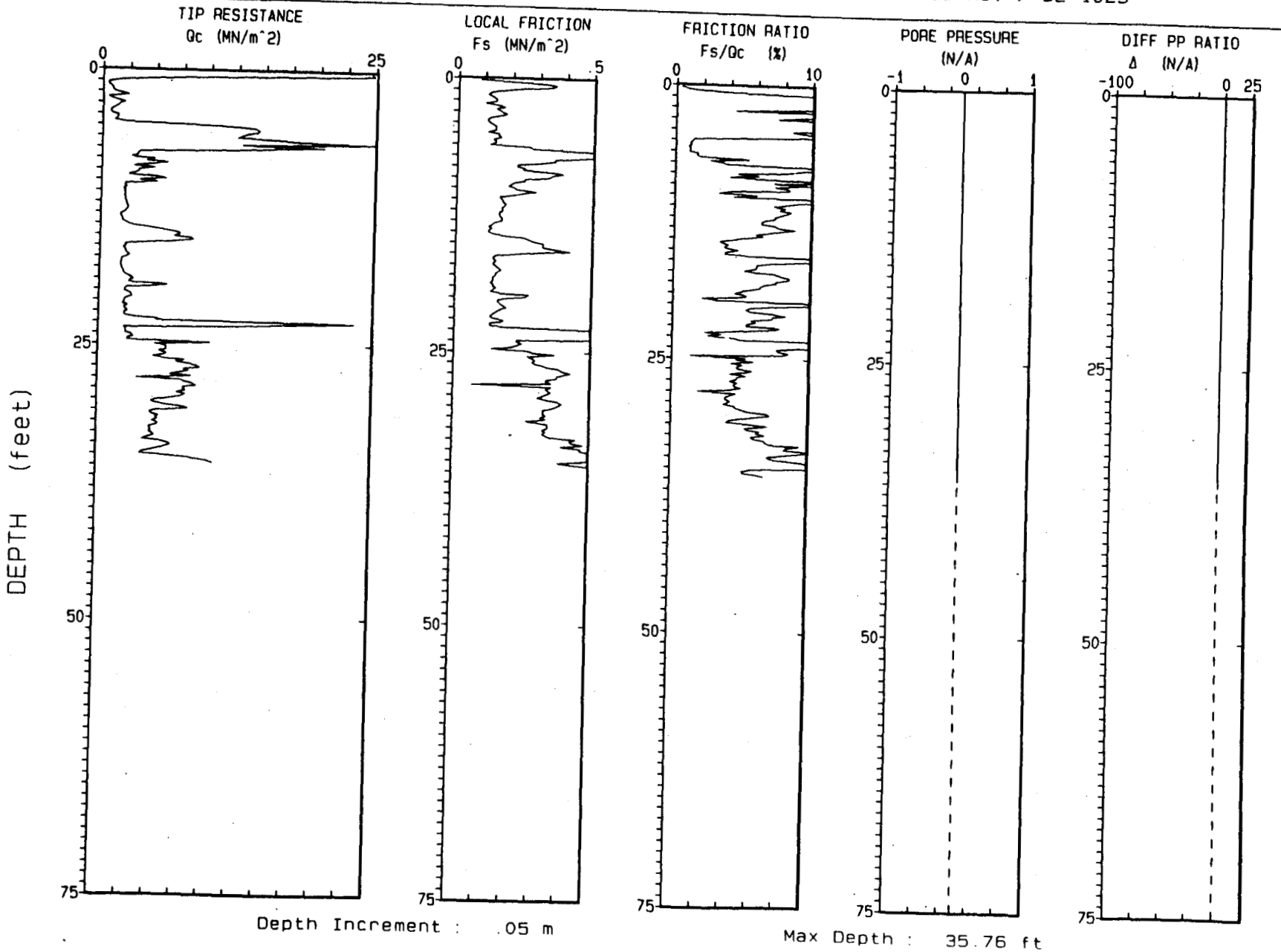
Max Depth : 1.48 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 06 JAN 93
ELEVATION : 5987.1 MSL

CPT NO. : 037938
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

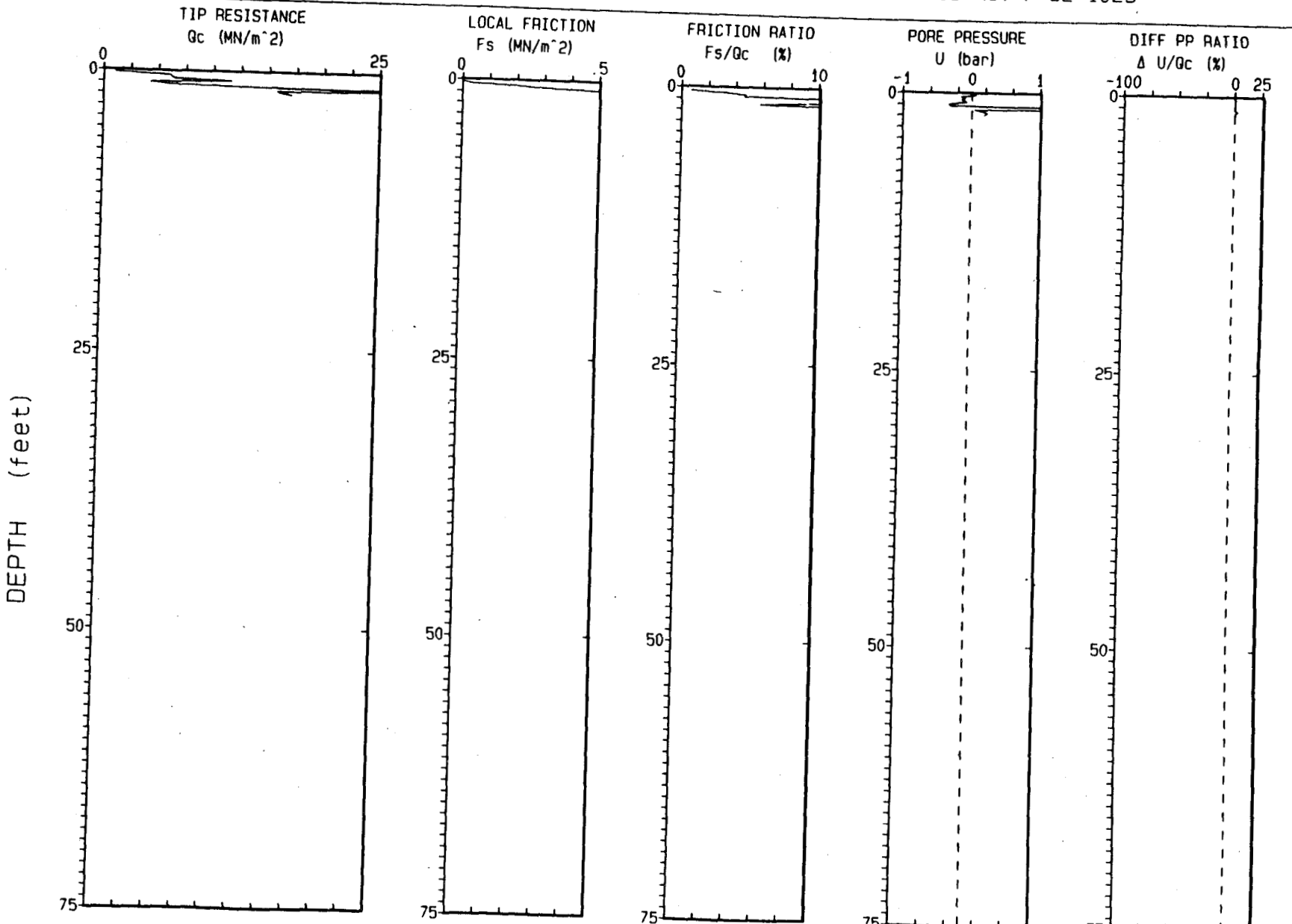
Max Depth : 35.76 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.2 MSL

CPT NO. : 03893A
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

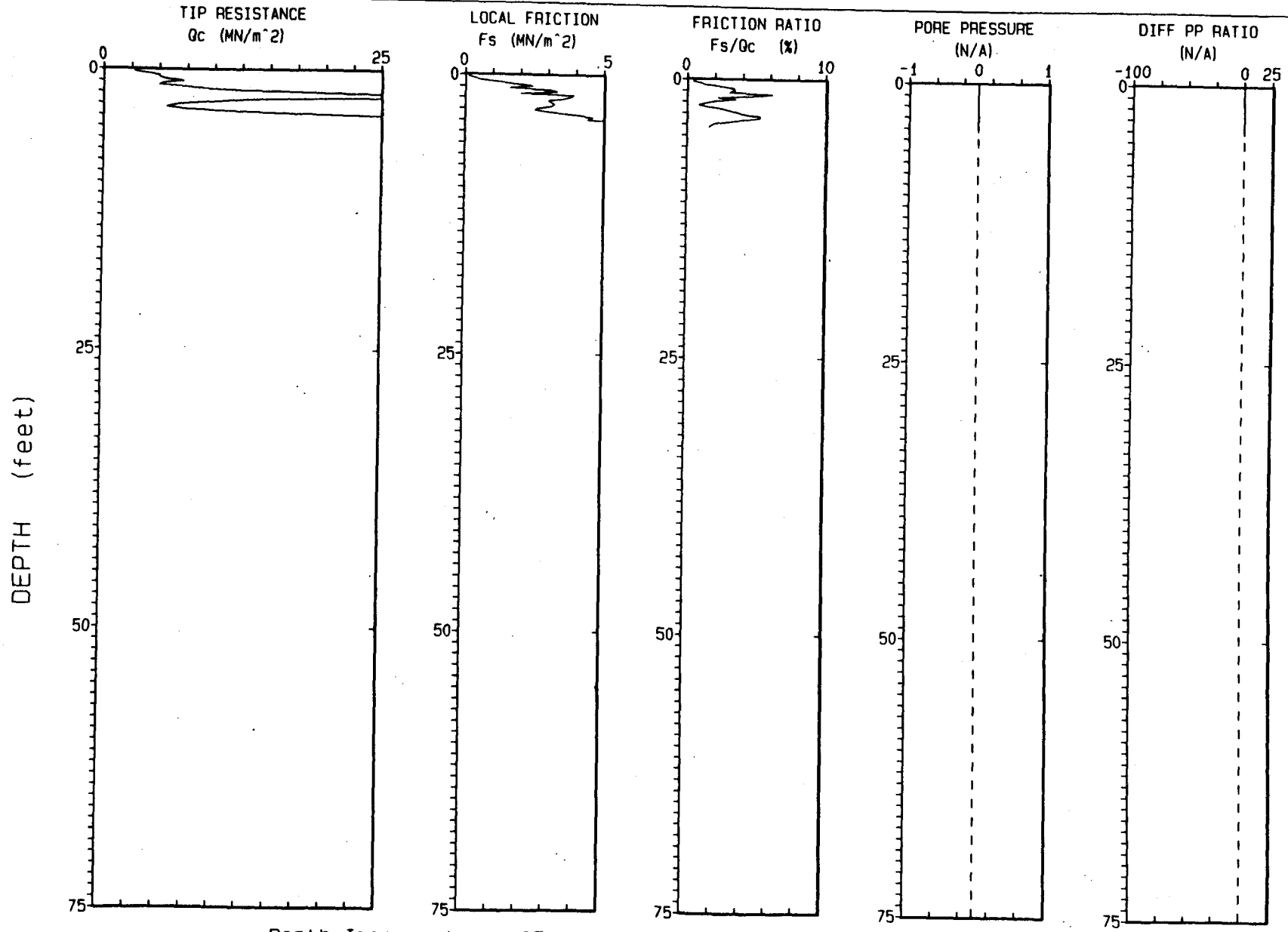
Max Depth : 1.97 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.2 MSL

CPT NO. : 03893B
TERRA JOB NO. : 92-1023



Depth Increment : .05 m

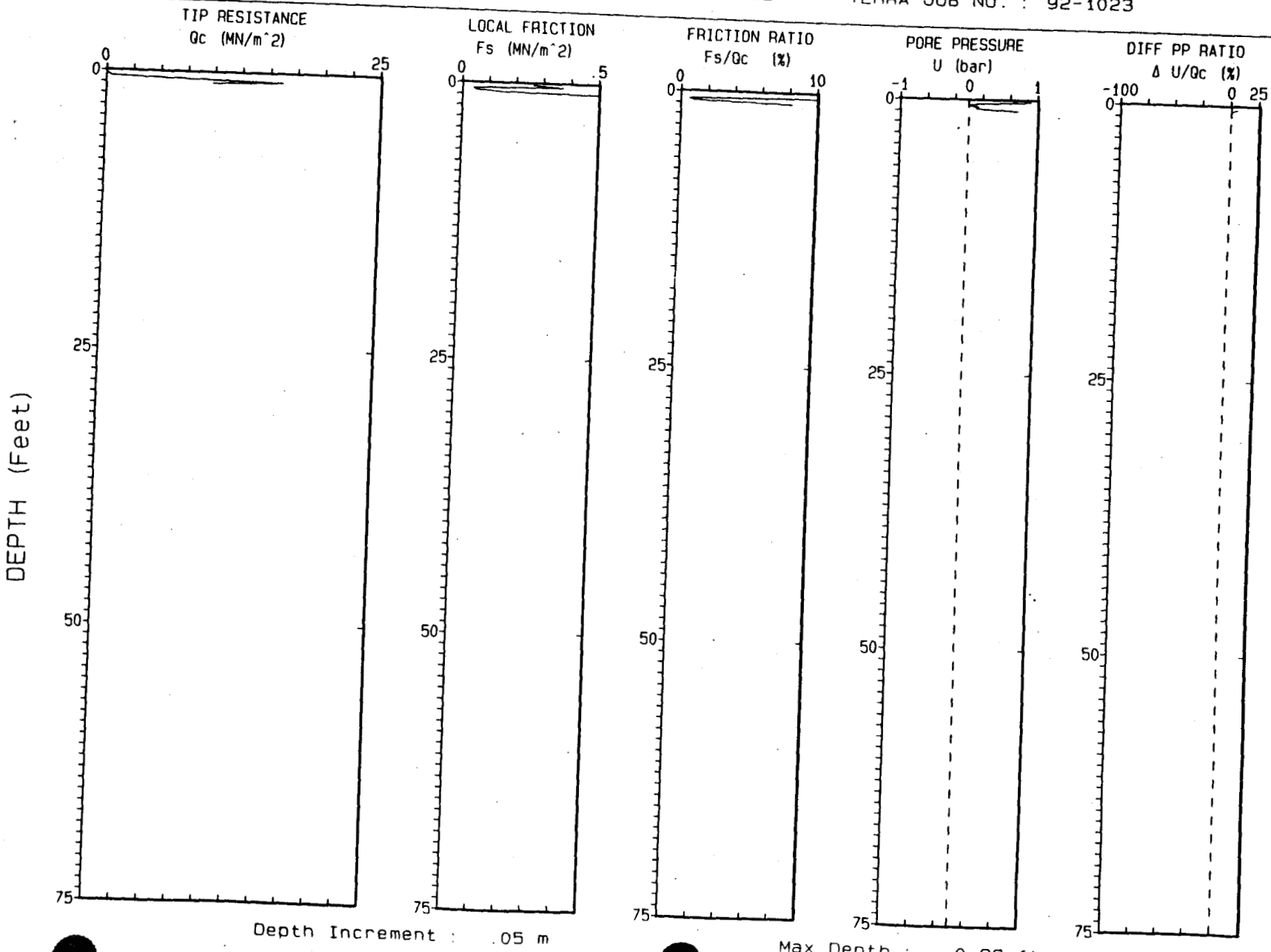
Max Depth : 4.27 ft

ROCKY FLATS PLANT

CONTRACTOR : TERRA TECH - SW
LOCATION : OU7 LANDFILL

DATE : 11 DEC 92
ELEVATION : 5989.2 MSL

SOUNDING NO. : 03893C
TERRA JOB NO. : 92-1023



ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00193A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 10 DEC 92
Elevation : 5997.4 MSL
Approx GWT : UNKNOWN

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	23.78	0.09	0.35	0.02	gravelly sand to sand	>90	UNDFD	40	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00193C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 10 DEC 92
Elevation : 5997.4 MSL
Approx GWT : UNKNOWN

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	4.18	0.03	0.70	0.02	silty sand to sandy silt	>90	>48	14	UNDEFINED
0.50	1.64	24.46	0.15	0.60	0.07	sand	>90	>48	49	UNDEFINED
0.75	2.46	25.38	0.08	0.32	0.11	gravelly sand to sand	>90	>48	42	UNDEFINED
1.00	3.28	23.44	0.21	0.86	0.15	sand	>90	>48	47	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 001930
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 10 DEC 92
Elevation : 5997.4 MSL
Approx GWT : UNKNOWN

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	6.58	0.21	3.07	0.02	sandy silt to clayey silt	UNDFND	UNDFD	26	2.86
0.50	1.64	28.86	0.45	1.54	0.07	sand to silty sand	>90	>48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00293A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 11 DEC 92
Elevation : 5993.1 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	14.08	1.36	9.48	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.50	1.64	4.88	0.75	15.00	0.07	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.75	2.46	5.96	1.04	17.12	0.11	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.00	3.28	6.44	2.48	37.75	0.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.25	4.10	2.58	2.79	106.25	0.20	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.50	4.92	3.24	1.78	53.84	0.24	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.75	5.74	3.48	0.47	13.14	0.29	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.00	6.56	2.06	0.22	10.29	0.33	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.25	7.38	1.22	0.05	3.70	0.38	silty clay to clay	UNDFND	UNDFD	8	.51
2.50	8.20	2.88	0.13	4.36	0.42	silty clay to clay	UNDFND	UNDFD	19	1.23
2.75	9.02	8.30	0.28	3.26	0.46	sandy silt to clayey silt	UNDFND	UNDFD	33	3.59
3.00	9.84	28.80	2.11	7.20	0.51	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00293B
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 11 DEC 92
Elevation : 5993.1 MSL
Approx GWT : 18 Feet

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	3.46	0.52	14.75	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.50	1.64	4.82	0.74	15.14	0.07	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.75	2.46	5.80	1.02	17.19	0.11	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00293C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 11 DEC 92
Elevation : 5993.1 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	6.02	1.08	17.54	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.50	1.64	7.10	2.10	29.08	0.07	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.75	2.46	4.52	0.97	21.14	0.11	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.00	3.28	3.80	1.43	37.03	0.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.25	4.10	1.56	0.73	46.16	0.20	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.50	4.92	1.44	0.84	57.23	0.24	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.75	5.74	3.68	0.67	17.97	0.29	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.00	6.56	1.42	0.64	44.08	0.33	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.25	7.38	1.14	0.44	38.04	0.38	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.50	8.20	1.44	0.54	37.07	0.42	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.75	9.02	3.86	0.22	5.64	0.46	clay	UNDFND	UNDFD	39	1.65
3.00	9.84	3.62	0.23	6.18	0.51	clay	UNDFND	UNDFD	36	1.55

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

actor : TERRA TECH - SW
Location : 002930
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 15 JAN 93
Elevation : 5993.1 MSL
Approx GWT : 20 Feet

DEPTH meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	9.32	0.14	1.49	0.02	sand to silty sand	>90	>48	23	UNDEFINED
0.50	1.64	12.66	0.19	1.49	0.07	sand to silty sand	>90	>48	32	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00293E
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 15 JAN 93
Elevation : 5993.1 MSL
Approx GWT : 20 Feet

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	12.46	0.13	1.06	0.02	sand to silty sand	>90	>48	31	UNDEFINED
0.50	1.64	26.12	0.45	1.70	0.07	sand to silty sand	>90	>48	>50	UNDEFINED
0.75	2.46	21.09	0.78	3.64	0.11	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
1.00	3.28	8.74	0.13	1.44	0.15	sand to silty sand	>90	>48	22	UNDEFINED
1.25	4.10	6.27	0.02	0.37	0.20	sand to silty sand	70-80	46-48	16	UNDEFINED
1.50	4.92	3.79	0.02	0.42	0.24	sand to silty sand	60-70	42-44	9	UNDEFINED
1.75	5.74	3.41	0.04	1.08	0.29	silty sand to sandy silt	50-60	40-42	11	UNDEFINED
2.00	6.56	4.27	0.05	1.13	0.33	silty sand to sandy silt	50-60	42-44	14	UNDEFINED
2.25	7.38	3.67	0.01	0.16	0.38	sand to silty sand	50-60	40-42	9	UNDEFINED
2.50	8.20	3.19	0.01	0.15	0.42	silty sand to sandy silt	40-50	40-42	11	UNDEFINED
2.75	9.02	3.40	0.01	0.15	0.46	sand to silty sand	40-50	38-40	9	UNDEFINED
3.00	9.84	4.85	0.00	0.08	0.51	sand to silty sand	50-60	40-42	12	UNDEFINED
3.25	10.66	18.13	0.11	0.61	0.55	sand	>90	46-48	36	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00393A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 07 JAN 93
Elevation : 5992.5 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	22.42	0.19	0.84	0.02	sand	>90	UNDFD	45	UNDEFINED
0.50	1.64	9.26	0.29	3.05	0.07	sandy silt to clayey silt	UNDFND	UNDFD	37	4.02
0.75	2.46	7.30	0.18	2.47	0.11	sandy silt to clayey silt	UNDFND	UNDFD	29	3.17
1.00	3.28	4.86	0.13	2.62	0.15	sandy silt to clayey silt	UNDFND	UNDFD	19	2.10
1.25	4.10	4.28	0.09	2.02	0.20	sandy silt to clayey silt	UNDFND	UNDFD	17	1.85
1.50	4.92	5.72	0.09	1.61	0.24	silty sand to sandy silt	70-80	44-46	19	UNDEFINED
1.75	5.74	8.82	0.14	1.56	0.29	silty sand to sandy silt	80-90	44-46	29	UNDEFINED
2.00	6.56	11.74	0.18	1.47	0.33	sand to silty sand	80-90	46-48	29	UNDEFINED
2.25	7.38	4.56	0.21	4.43	0.38	silty clay to clay	UNDFND	UNDFD	30	1.96
2.50	8.20	4.14	0.12	2.80	0.42	sandy silt to clayey silt	UNDFND	UNDFD	17	1.78
2.75	9.02	5.00	0.14	2.79	0.46	sandy silt to clayey silt	UNDFND	UNDFD	20	2.15
3.00	9.84	8.94	0.19	2.11	0.51	silty sand to sandy silt	70-80	42-44	30	UNDEFINED
3.25	10.66	8.80	0.14	1.54	0.55	silty sand to sandy silt	70-80	42-44	29	UNDEFINED
3.50	11.48	6.68	0.17	2.47	0.60	sandy silt to clayey silt	UNDFND	UNDFD	27	2.88
3.75	12.30	7.82	0.18	2.26	0.64	silty sand to sandy silt	60-70	42-44	26	UNDEFINED
4.00	13.12	4.02	0.16	3.86	0.69	clayey silt to silty clay	UNDFND	UNDFD	20	1.72
4.25	13.94	3.78	0.11	2.75	0.73	sandy silt to clayey silt	UNDFND	UNDFD	15	1.61
4.50	14.76	5.42	0.15	2.79	0.77	sandy silt to clayey silt	UNDFND	UNDFD	22	2.32
[illegible]	15.58	5.60	0.21	3.75	0.82	clayey silt to silty clay	UNDFND	UNDFD	28	2.40
5.00	16.40	11.44	0.14	1.22	0.86	sand to silty sand	70-80	42-44	29	UNDEFINED
5.25	17.22	19.00	0.36	1.88	0.91	sand to silty sand	80-90	44-46	48	UNDEFINED
5.50	18.04	25.02	0.46	1.80	0.95	sand to silty sand	>90	44-46	>50	UNDEFINED
5.75	18.86	14.14	0.45	3.15	1.00	sandy silt to clayey silt	UNDFND	UNDFD	>50	6.11
6.00	19.69	12.04	0.41	3.32	1.04	sandy silt to clayey silt	UNDFND	UNDFD	48	5.19
6.25	20.51	15.18	0.42	2.71	1.08	silty sand to sandy silt	70-80	42-44	>50	UNDEFINED
6.50	21.33	3.20	0.26	8.09	1.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.75	22.15	3.26	0.20	5.96	1.12	clay	UNDFND	UNDFD	33	1.36
7.00	22.97	2.92	0.19	6.25	1.14	clay	UNDFND	UNDFD	29	1.21
7.25	23.79	3.74	0.23	6.14	1.16	clay	UNDFND	UNDFD	37	1.57
7.50	24.61	3.58	0.25	6.74	1.18	clay	UNDFND	UNDFD	36	1.50
7.75	25.43	4.16	0.25	5.94	1.19	clay	UNDFND	UNDFD	42	1.75
8.00	26.25	4.38	0.30	6.63	1.21	clay	UNDFND	UNDFD	44	1.84
8.25	27.07	5.02	0.29	5.71	1.23	clay	UNDFND	UNDFD	>50	2.12
8.50	27.89	6.70	0.33	4.86	1.25	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
8.75	28.71	6.60	0.32	4.70	1.27	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
9.00	29.53	6.82	0.33	4.72	1.29	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
9.25	30.35	6.82	0.27	3.91	1.31	clayey silt to silty clay	UNDFND	UNDFD	34	2.89
9.50	31.17	7.44	0.26	3.38	1.33	sandy silt to clayey silt	UNDFND	UNDFD	30	3.16

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 00393A Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	3.38	0.18	5.11	1.34	clay	UNDFND	UNDFD	34	1.39
10.00	32.81	3.60	0.17	4.52	1.36	silty clay to clay	UNDFND	UNDFD	24	1.49
10.25	33.63	3.30	0.18	5.41	1.38	clay	UNDFND	UNDFD	33	1.36
10.50	34.45	3.06	0.16	5.26	1.40	clay	UNDFND	UNDFD	31	1.25
10.75	35.27	2.84	0.22	7.46	1.42	clay	UNDFND	UNDFD	28	1.15
11.00	36.09	2.88	0.17	5.93	1.44	clay	UNDFND	UNDFD	29	1.17
11.25	36.91	3.02	0.21	6.76	1.46	clay	UNDFND	UNDFD	30	1.23
11.50	37.73	3.44	0.21	5.99	1.47	clay	UNDFND	UNDFD	34	1.41
11.75	38.55	4.20	0.23	5.47	1.49	clay	UNDFND	UNDFD	42	1.74
12.00	39.37	4.48	0.26	5.74	1.51	clay	UNDFND	UNDFD	45	1.86
12.25	40.19	5.10	0.26	4.96	1.53	silty clay to clay	UNDFND	UNDFD	34	2.12
12.50	41.01	4.98	0.23	4.57	1.55	silty clay to clay	UNDFND	UNDFD	33	2.07
12.75	41.83	5.44	0.26	4.73	1.57	silty clay to clay	UNDFND	UNDFD	36	2.27
13.00	42.65	5.84	0.26	4.30	1.59	clayey silt to silty clay	UNDFND	UNDFD	29	2.44
13.25	43.47	7.38	0.29	3.83	1.61	clayey silt to silty clay	UNDFND	UNDFD	37	3.11
13.50	44.29	7.52	0.33	4.25	1.62	clayey silt to silty clay	UNDFND	UNDFD	38	3.17
13.75	45.11	7.74	0.31	3.98	1.64	clayey silt to silty clay	UNDFND	UNDFD	39	3.26

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00493A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 06 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	15.78	0.09	0.53	0.02	sand	>90	>48	32	UNDEFINED
0.50	1.64	14.26	0.35	2.42	0.07	silty sand to sandy silt	>90	>48	48	UNDEFINED
0.75	2.46	9.78	0.34	3.37	0.11	sandy silt to clayey silt	UNDFND	UNDFD	39	4.25
1.00	3.28	15.84	0.41	2.51	0.15	silty sand to sandy silt	>90	>48	>50	UNDEFINED
1.25	4.10	5.56	0.27	4.69	0.20	silty clay to clay	UNDFND	UNDFD	37	2.41
1.50	4.92	3.46	0.16	4.59	0.24	silty clay to clay	UNDFND	UNDFD	23	1.49
1.75	5.74	10.14	0.21	2.05	0.29	silty sand to sandy silt	80-90	46-48	34	UNDEFINED
2.00	6.56	9.86	0.26	2.61	0.33	silty sand to sandy silt	80-90	44-46	33	UNDEFINED
2.25	7.38	4.30	0.13	3.06	0.38	sandy silt to clayey silt	UNDFND	UNDFD	17	1.85
2.50	8.20	1.16	0.09	7.61	0.42	clay	UNDFND	UNDFD	12	.48
2.75	9.02	10.48	0.07	0.67	0.46	sand	80-90	44-46	21	UNDEFINED
3.00	9.84	19.44	0.35	1.75	0.51	sand to silty sand	>90	46-48	49	UNDEFINED
3.25	10.66	26.10	0.40	1.51	0.55	sand to silty sand	>90	46-48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 004938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 06 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	10.98	0.06	0.50	0.02	sand	>90	>48	22	UNDEFINED
0.50	1.64	5.50	0.14	2.53	0.07	sandy silt to clayey silt	UNDFND	UNDFD	22	2.39
0.75	2.46	4.68	0.09	1.89	0.11	silty sand to sandy silt	70-80	46-48	16	UNDEFINED
1.00	3.28	6.64	0.15	2.25	0.15	silty sand to sandy silt	80-90	46-48	22	UNDEFINED
1.25	4.10	5.86	0.36	5.96	0.20	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
1.50	4.92	2.96	0.20	6.50	0.24	clay	UNDFND	UNDFD	30	1.27
1.75	5.74	20.42	0.20	0.98	0.29	sand	>90	>48	41	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00493C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 06 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	11.96	0.06	0.49	0.02	sand	>90	>48	24	UNDEFINED
0.50	1.64	10.54	0.09	0.86	0.07	sand to silty sand	>90	>48	26	UNDEFINED
0.75	2.46	5.42	0.11	1.96	0.11	silty sand to sandy silt	80-90	46-48	18	UNDEFINED
1.00	3.28	8.06	0.23	2.80	0.15	sandy silt to clayey silt	UNDFND	UNDFD	32	3.50
1.25	4.10	32.76	0.38	1.13	0.20	sand	>90	>48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 004930
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 07 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00493E
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 07 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	0.00	0.01	0.00	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.50	1.64	6.12	0.02	0.32	0.07	sand to silty sand	>90	>48	15	UNDEFINED
0.75	2.46	13.34	0.19	1.38	0.11	sand to silty sand	>90	>48	33	UNDEFINED
1.00	3.28	13.56	0.15	1.09	0.15	sand to silty sand	>90	>48	34	UNDEFINED
1.25	4.10	10.82	0.26	2.39	0.20	silty sand to sandy silt	>90	>48	36	UNDEFINED
1.50	4.92	28.10	0.31	1.07	0.24	sand	>90	>48	>50	UNDEFINED
1.75	5.74	27.14	0.33	1.20	0.29	sand	>90	>48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00493F
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 07 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	41.36	0.29	0.68	0.02	gravelly sand to sand	>90	UNDFD	>50	UNDEFINED
0.50	1.64	23.66	0.21	0.87	0.07	sand	>90	>48	47	UNDEFINED
0.75	2.46	13.70	0.21	1.52	0.11	sand to silty sand	>90	>48	34	UNDEFINED
1.00	3.28	8.40	0.24	2.78	0.15	sandy silt to clayey silt	UNDFND	UNDFD	34	3.64
1.25	4.10	3.58	0.14	3.78	0.20	clayey silt to silty clay	UNDFND	UNDFD	18	1.54
1.50	4.92	4.48	0.14	3.15	0.24	sandy silt to clayey silt	UNDFND	UNDFD	18	1.93
1.75	5.74	7.86	0.25	3.15	0.29	sandy silt to clayey silt	UNDFND	UNDFD	31	3.40
2.00	6.56	9.08	0.23	2.53	0.33	silty sand to sandy silt	80-90	44-46	30	UNDEFINED
2.25	7.38	6.64	0.17	2.48	0.38	sandy silt to clayey silt	UNDFND	UNDFD	27	2.87
2.50	8.20	6.26	0.16	2.54	0.42	sandy silt to clayey silt	UNDFND	UNDFD	25	2.70
2.75	9.02	15.64	0.27	1.71	0.46	sand to silty sand	>90	46-48	39	UNDEFINED
3.00	9.84	25.64	0.67	2.55	0.51	silty sand to sandy silt	>90	46-48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00493G
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 07 JAN 93
Elevation : 5990.6 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	8.26	0.12	1.45	0.02	silty sand to sandy silt	>90	>48	28	UNDEFINED
0.50	1.64	3.20	0.15	4.54	0.07	silty clay to clay	UNDFND	UNDFD	21	1.38
0.75	2.46	4.58	0.11	2.40	0.11	sandy silt to clayey silt	UNDFND	UNDFD	18	1.98
1.00	3.28	2.20	0.11	4.91	0.15	clay	UNDFND	UNDFD	22	.95
1.25	4.10	2.70	0.06	2.18	0.20	sandy silt to clayey silt	UNDFND	UNDFD	11	1.16
1.50	4.92	1.30	0.07	5.59	0.24	clay	UNDFND	UNDFD	13	.55
1.75	5.74	7.66	0.06	0.79	0.29	sand to silty sand	70-80	44-46	19	UNDEFINED
2.00	6.56	7.48	0.31	4.07	0.33	clayey silt to silty clay	UNDFND	UNDFD	37	3.24
2.25	7.38	3.28	0.06	1.68	0.38	sandy silt to clayey silt	UNDFND	UNDFD	13	1.41
2.50	8.20	6.48	0.05	0.82	0.42	sand to silty sand	60-70	42-44	16	UNDEFINED
2.75	9.02	30.80	0.24	0.76	0.46	sand	>90	>48	>50	UNDEFINED
3.00	9.84	34.44	0.46	1.32	0.51	sand	>90	>48	>50	UNDEFINED
3.25	10.66	9.22	0.34	3.62	0.55	sandy silt to clayey silt	UNDFND	UNDFD	37	3.98
3.50	11.48	13.82	0.35	2.48	0.60	silty sand to sandy silt	80-90	44-46	46	UNDEFINED
3.75	12.30	9.96	0.29	2.84	0.64	sandy silt to clayey silt	UNDFND	UNDFD	40	4.30
4.00	13.12	14.92	0.30	2.00	0.69	silty sand to sandy silt	80-90	44-46	50	UNDEFINED
4.25	13.94	24.44	0.48	1.93	0.73	sand to silty sand	>90	46-48	>50	UNDEFINED
[illegible]	14.76	33.80	0.59	1.71	0.77	sand to silty sand	>90	46-48	>50	UNDEFINED
[illegible]	15.58	33.16	0.66	1.94	0.82	sand to silty sand	>90	46-48	>50	UNDEFINED
5.00	16.40	33.26	0.60	1.76	0.86	sand to silty sand	>90	46-48	>50	UNDEFINED
5.25	17.22	13.44	0.56	4.12	0.91	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
5.50	18.04	8.80	0.44	4.95	0.95	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
5.75	18.86	19.72	0.89	4.43	0.98	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
6.00	19.69	7.06	0.54	7.53	1.00	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
6.25	20.51	6.30	0.33	5.11	1.02	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
6.50	21.33	12.24	0.55	4.38	1.04	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
6.75	22.15	20.76	0.59	2.80	1.06	silty sand to sandy silt	80-90	44-46	>50	UNDEFINED
7.00	22.97	4.54	0.42	9.12	1.08	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.25	23.79	4.94	0.32	6.44	1.09	clay	UNDFND	UNDFD	49	2.09
7.50	24.61	5.10	0.26	4.93	1.11	silty clay to clay	UNDFND	UNDFD	34	2.16
7.75	25.43	5.76	0.34	5.79	1.13	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
8.00	26.25	5.78	0.34	5.84	1.15	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
8.25	27.07	6.10	0.37	5.98	1.17	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
8.50	27.89	4.20	0.31	7.24	1.19	clay	UNDFND	UNDFD	42	1.76
8.75	28.71	4.56	0.30	6.50	1.21	clay	UNDFND	UNDFD	46	1.92
9.00	29.53	3.94	0.29	7.22	1.23	clay	UNDFND	UNDFD	39	1.64
9.25	30.35	4.86	0.29	5.90	1.24	clay	UNDFND	UNDFD	49	2.04
9.50	31.17	4.28	0.32	7.34	1.26	clay	UNDFND	UNDFD	43	1.79

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 00493G Page No. 2

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	4.62	0.26	5.44	1.28	clay	UNDFND	UNDFD	46	1.93
10.00	32.81	3.72	0.19	5.06	1.30	clay	UNDFND	UNDFD	37	1.54
10.25	33.63	3.98	0.21	5.08	1.32	clay	UNDFND	UNDFD	40	1.65
10.50	34.45	2.84	0.21	7.19	1.34	clay	UNDFND	UNDFD	28	1.15
10.75	35.27	3.24	0.17	5.15	1.36	clay	UNDFND	UNDFD	32	1.33
11.00	36.09	4.02	0.19	4.59	1.37	silty clay to clay	UNDFND	UNDFD	27	1.66
11.25	36.91	3.06	0.20	6.41	1.39	clay	UNDFND	UNDFD	31	1.24
11.50	37.73	4.26	0.24	5.62	1.41	clay	UNDFND	UNDFD	43	1.76
11.75	38.55	4.98	0.42	8.27	1.43	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.00	39.37	6.00	0.45	7.29	1.45	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
12.25	40.19	9.44	0.39	4.10	1.47	clayey silt to silty clay	UNDFND	UNDFD	47	4.01
12.50	41.01	10.66	0.55	5.06	1.49	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
12.75	41.83	9.84	0.51	5.05	1.51	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
13.00	42.65	10.54	0.47	4.34	1.52	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00593A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 05 JAN 93
Elevation : 5990.3 MSL
Approx GWT : 20 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	18.18	0.16	0.87	0.02	sand	>90	>48	36	UNDEFINED
0.50	1.64	4.78	0.26	5.30	0.07	clay	UNDFND	UNDFD	48	2.07
0.75	2.46	2.54	0.15	5.79	0.11	clay	UNDFND	UNDFD	25	1.10
1.00	3.28	3.34	0.19	5.58	0.15	clay	UNDFND	UNDFD	33	1.44
1.25	4.10	5.62	0.21	3.60	0.20	clayey silt to silty clay	UNDFND	UNDFD	28	2.43
1.50	4.92	6.22	0.23	3.63	0.24	clayey silt to silty clay	UNDFND	UNDFD	31	2.69
1.75	5.74	9.20	0.24	2.60	0.29	silty sand to sandy silt	80-90	46-48	31	UNDEFINED
2.00	6.56	11.62	0.17	1.44	0.33	sand to silty sand	80-90	46-48	29	UNDEFINED
2.25	7.38	11.10	0.22	1.91	0.38	silty sand to sandy silt	80-90	44-46	37	UNDEFINED
2.50	8.20	4.54	0.32	6.96	0.42	clay	UNDFND	UNDFD	45	1.95
2.75	9.02	2.12	0.12	5.55	0.46	clay	UNDFND	UNDFD	21	.90
3.00	9.84	3.82	0.11	2.83	0.51	sandy silt to clayey silt	UNDFND	UNDFD	15	1.64
3.25	10.66	3.28	0.09	2.63	0.55	sandy silt to clayey silt	UNDFND	UNDFD	13	1.40
3.50	11.48	13.86	0.44	3.13	0.60	sandy silt to clayey silt	UNDFND	UNDFD	>50	6.00
3.75	12.30	2.50	0.31	12.32	0.64	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.00	13.12	14.96	0.34	2.26	0.69	silty sand to sandy silt	80-90	44-46	50	UNDEFINED
4.25	13.94	18.34	0.45	2.41	0.73	silty sand to sandy silt	80-90	44-46	>50	UNDEFINED
[illegible]	14.76	16.36	0.42	2.51	0.77	silty sand to sandy silt	80-90	44-46	>50	UNDEFINED
[illegible]	15.58	13.02	0.46	3.45	0.82	sandy silt to clayey silt	UNDFND	UNDFD	>50	5.63
5.00	16.40	5.28	0.34	6.36	0.86	clay	UNDFND	UNDFD	>50	2.26
5.25	17.22	1.48	0.17	11.14	0.91	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.50	18.04	2.38	0.16	6.76	0.95	clay	UNDFND	UNDFD	24	.99
5.75	18.86	2.22	0.19	8.31	1.00	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.00	19.69	3.24	0.25	7.69	1.04	clay	UNDFND	UNDFD	32	1.36
6.25	20.51	5.40	0.23	4.18	1.08	clayey silt to silty clay	UNDFND	UNDFD	27	2.30
6.50	21.33	3.14	0.32	10.06	1.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.75	22.15	2.06	0.17	8.10	1.12	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.00	22.97	2.28	0.16	6.89	1.14	clay	UNDFND	UNDFD	23	.94
7.25	23.79	4.14	0.23	5.45	1.16	clay	UNDFND	UNDFD	41	1.74
7.50	24.61	3.48	0.25	7.10	1.18	clay	UNDFND	UNDFD	35	1.45
7.75	25.43	4.48	0.30	6.61	1.19	clay	UNDFND	UNDFD	45	1.89
8.00	26.25	4.34	0.31	6.92	1.21	clay	UNDFND	UNDFD	43	1.83
8.25	27.07	4.04	0.27	6.56	1.23	clay	UNDFND	UNDFD	40	1.69
8.50	27.89	3.62	0.25	6.88	1.25	clay	UNDFND	UNDFD	36	1.51
8.75	28.71	4.42	0.28	6.22	1.27	clay	UNDFND	UNDFD	44	1.85
9.00	29.53	7.14	0.32	4.45	1.29	clayey silt to silty clay	UNDFND	UNDFD	36	3.04
9.25	30.35	8.08	0.38	4.61	1.31	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
9.50	31.17	9.50	0.43	4.46	1.33	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 00593A Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	7.84	0.39	4.83	1.34	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
10.00	32.81	5.04	0.36	6.93	1.36	clay	UNDFND	UNDFD	>50	2.11
10.25	33.63	5.46	0.34	6.15	1.38	clay	UNDFND	UNDFD	>50	2.30
10.50	34.45	4.46	0.31	6.91	1.40	clay	UNDFND	UNDFD	45	1.86
10.75	35.27	6.62	0.32	4.74	1.42	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
11.00	36.09	5.56	0.31	5.40	1.44	clay	UNDFND	UNDFD	>50	2.33
11.25	36.91	2.94	0.27	9.08	1.46	undefined	UNDFND	UNDFD	UDF	UNDEFINED
11.50	37.73	3.98	0.31	7.59	1.47	clay	UNDFND	UNDFD	40	1.64
11.75	38.55	3.58	0.34	9.26	1.49	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.00	39.37	3.58	0.31	8.39	1.51	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.25	40.19	2.86	0.23	8.03	1.53	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.50	41.01	5.00	0.37	7.22	1.55	clay	UNDFND	UNDFD	50	2.08
12.75	41.83	4.44	0.43	9.59	1.57	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.00	42.65	4.70	0.42	8.81	1.59	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.25	43.47	5.14	0.53	10.16	1.61	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.50	44.29	5.12	0.49	9.35	1.62	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.75	45.11	5.74	0.50	8.55	1.64	undefined	UNDFND	UNDFD	UDF	UNDEFINED
14.00	45.93	6.58	0.47	7.01	1.66	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
14.25	46.75	8.52	0.58	6.68	1.68	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00693A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 18 JAN 93
Elevation : UNKNOWN
Approx GWT : 19.5 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	12.36	0.01	0.11	0.02	sand	>90	>48	25	UNDEFINED
0.50	1.64	4.58	0.11	2.31	0.07	sandy silt to clayey silt	UNDFND	UNDFD	18	1.98
0.75	2.46	1.30	0.08	5.89	0.11	clay	UNDFND	UNDFD	13	.56
1.00	3.28	1.74	0.08	4.29	0.15	clay	UNDFND	UNDFD	17	.75
1.25	4.10	7.84	0.07	0.88	0.20	sand to silty sand	80-90	46-48	20	UNDEFINED
1.50	4.92	5.38	0.10	1.82	0.24	silty sand to sandy silt	70-80	44-46	18	UNDEFINED
1.75	5.74	6.90	0.16	2.28	0.29	silty sand to sandy silt	70-80	44-46	23	UNDEFINED
2.00	6.56	1.96	0.15	7.31	0.33	clay	UNDFND	UNDFD	20	.83
2.25	7.38	3.30	0.08	2.32	0.38	sandy silt to clayey silt	UNDFND	UNDFD	13	1.41
2.50	8.20	5.74	0.06	1.06	0.42	silty sand to sandy silt	60-70	42-44	19	UNDEFINED
2.75	9.02	4.38	0.08	1.79	0.46	silty sand to sandy silt	50-60	40-42	15	UNDEFINED
3.00	9.84	4.58	0.04	0.86	0.51	silty sand to sandy silt	50-60	40-42	15	UNDEFINED
3.25	10.66	3.52	0.01	0.17	0.55	sand to silty sand	40-50	38-40	9	UNDEFINED
3.50	11.48	5.30	0.04	0.70	0.60	sand to silty sand	50-60	40-42	13	UNDEFINED
3.75	12.30	7.78	0.10	1.29	0.64	sand to silty sand	60-70	42-44	19	UNDEFINED
4.00	13.12	6.62	0.06	0.83	0.69	sand to silty sand	60-70	40-42	17	UNDEFINED
4.25	13.94	3.70	0.13	3.39	0.73	clayey silt to silty clay	UNDFND	UNDFD	19	1.57
4.50	14.76	2.68	0.10	3.66	0.77	clayey silt to silty clay	UNDFND	UNDFD	13	1.13
[illegible]75	15.58	6.74	0.10	1.40	0.82	silty sand to sandy silt	50-60	40-42	22	UNDEFINED
[illegible]00	16.40	[illegible].60	0.17	3.67	0.86	clayey silt to silty clay	UNDFND	UNDFD	23	1.96
5.25	17.22	6.28	0.18	2.78	0.91	sandy silt to clayey silt	UNDFND	UNDFD	25	2.69
5.50	18.04	5.48	0.18	3.19	0.95	sandy silt to clayey silt	UNDFND	UNDFD	22	2.34
5.75	18.86	1.84	0.16	8.53	1.00	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.00	19.69	2.42	0.15	6.16	1.04	clay	UNDFND	UNDFD	24	1.00
6.25	20.51	2.16	0.16	7.27	1.07	clay	UNDFND	UNDFD	22	.89
6.50	21.33	1.86	0.14	7.17	1.09	clay	UNDFND	UNDFD	19	.76
6.75	22.15	2.08	0.14	6.51	1.10	clay	UNDFND	UNDFD	21	.85
7.00	22.97	1.90	0.13	6.92	1.12	clay	UNDFND	UNDFD	19	.77
7.25	23.79	2.16	0.14	6.27	1.14	clay	UNDFND	UNDFD	22	.88
7.50	24.61	2.08	0.14	6.70	1.16	clay	UNDFND	UNDFD	21	.85

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 006938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 18 JAN 93
Elevation : UNKNOWN
Approx GWT : 19.5 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	7.54	0.05	0.60	0.02	sand to silty sand	>90	>48	19	UNDEFINED
0.50	1.64	17.50	0.12	0.66	0.07	sand	>90	>48	35	UNDEFINED
0.75	2.46	2.74	0.14	5.01	0.11	clay	UNDFND	UNDFD	27	1.18
1.00	3.28	2.62	0.12	4.42	0.15	silty clay to clay	UNDFND	UNDFD	17	1.13
1.25	4.10	5.70	0.12	2.10	0.20	silty sand to sandy silt	70-80	44-46	19	UNDEFINED
1.50	4.92	3.58	0.13	3.56	0.24	clayey silt to silty clay	UNDFND	UNDFD	18	1.54
1.75	5.74	7.36	0.16	2.08	0.29	silty sand to sandy silt	70-80	44-46	25	UNDEFINED
2.00	6.56	5.86	0.16	2.75	0.33	sandy silt to clayey silt	UNDFND	UNDFD	23	2.53
2.25	7.38	5.24	0.15	2.81	0.38	sandy silt to clayey silt	UNDFND	UNDFD	21	2.26
2.50	8.20	21.82	0.08	0.36	0.42	gravelly sand to sand	>90	>48	36	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00693C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 08 APR 93
Elevation : 5989.9 MSL
Approx GWT : 19.5 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	1.70	0.05	3.00	0.02	clayey silt to silty clay	UNDFND	UNDFD	9	.73
0.50	1.64	4.30	0.13	2.88	0.07	sandy silt to clayey silt	UNDFND	UNDFD	17	1.86
0.75	2.46	2.04	0.09	4.14	0.11	silty clay to clay	UNDFND	UNDFD	14	.88
1.00	3.28	2.04	0.10	4.62	0.15	clay	UNDFND	UNDFD	20	.88
1.25	4.10	3.26	0.14	4.21	0.20	silty clay to clay	UNDFND	UNDFD	22	1.40
1.50	4.92	3.52	0.16	4.40	0.24	silty clay to clay	UNDFND	UNDFD	23	1.52
1.75	5.74	4.46	0.13	2.77	0.29	sandy silt to clayey silt	UNDFND	UNDFD	18	1.92
2.00	6.56	10.66	0.32	2.96	0.33	sandy silt to clayey silt	UNDFND	UNDFD	43	4.62
2.25	7.38	4.06	0.22	5.22	0.38	clay	UNDFND	UNDFD	41	1.75
2.50	8.20	1.68	0.12	7.13	0.42	clay	UNDFND	UNDFD	17	.71
2.75	9.02	1.68	0.10	5.96	0.46	clay	UNDFND	UNDFD	17	.71
3.00	9.84	2.94	0.12	3.94	0.51	clayey silt to silty clay	UNDFND	UNDFD	15	1.25
3.25	10.66	0.80	0.08	9.32	0.55	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.50	11.48	1.76	0.07	4.13	0.60	silty clay to clay	UNDFND	UNDFD	12	.74
3.75	12.30	2.22	0.05	2.39	0.64	sandy silt to clayey silt	UNDFND	UNDFD	9	.93
4.00	13.12	2.26	0.07	2.87	0.69	clayey silt to silty clay	UNDFND	UNDFD	11	.95
4.25	13.94	2.60	0.07	2.72	0.73	clayey silt to silty clay	UNDFND	UNDFD	13	1.10
4.50	14.76	8.50	0.08	0.97	0.77	sand to silty sand	60-70	40-42	21	UNDEFINED
4.75	15.58	5.86	0.16	2.68	0.82	sandy silt to clayey silt	UNDFND	UNDFD	23	2.51
5.00	16.40	2.28	0.11	4.73	0.86	clay	UNDFND	UNDFD	23	.95
5.25	17.22	2.42	0.12	4.70	0.91	clay	UNDFND	UNDFD	24	1.01
5.50	18.04	3.72	0.09	2.48	0.95	sandy silt to clayey silt	UNDFND	UNDFD	15	1.57
5.75	18.86	1.22	0.09	7.24	1.00	clay	UNDFND	UNDFD	12	.48
6.00	19.69	1.82	0.08	4.31	1.04	clay	UNDFND	UNDFD	18	.74
6.25	20.51	2.00	0.16	7.75	1.07	clay	UNDFND	UNDFD	20	.82
6.50	21.33	2.92	0.18	5.91	1.09	clay	UNDFND	UNDFD	29	1.22
6.75	22.15	4.46	0.16	3.43	1.10	clayey silt to silty clay	UNDFND	UNDFD	22	1.89
7.00	22.97	2.04	0.25	11.93	1.12	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.25	23.79	1.92	0.18	9.20	1.14	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.50	24.61	2.12	0.14	6.48	1.16	clay	UNDFND	UNDFD	21	.86
7.75	25.43	3.70	0.18	4.77	1.18	silty clay to clay	UNDFND	UNDFD	25	1.55
8.00	26.25	5.92	0.26	4.31	1.20	clayey silt to silty clay	UNDFND	UNDFD	30	2.51
8.25	27.07	4.18	0.24	5.59	1.22	clay	UNDFND	UNDFD	42	1.75
8.50	27.89	4.30	0.21	4.75	1.24	silty clay to clay	UNDFND	UNDFD	29	1.80
8.75	28.71	4.44	0.23	5.04	1.25	silty clay to clay	UNDFND	UNDFD	30	1.86
9.00	29.53	6.68	0.31	4.52	1.27	clayey silt to silty clay	UNDFND	UNDFD	33	2.84
9.25	30.35	4.10	0.31	7.47	1.29	clay	UNDFND	UNDFD	41	1.71
9.50	31.17	4.14	0.26	6.26	1.31	clay	UNDFND	UNDFD	41	1.73

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 00693C Page No. 2

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	4.54	0.27	5.75	1.33	clay	UNDFND	UNDFD	45	1.90
10.00	32.81	4.46	0.30	6.60	1.35	clay	UNDFND	UNDFD	45	1.86
10.25	33.63	4.80	0.24	4.91	1.37	silty clay to clay	UNDFND	UNDFD	32	2.01
10.50	34.45	5.60	0.29	5.01	1.38	silty clay to clay	UNDFND	UNDFD	37	2.35
10.75	35.27	5.68	0.33	5.77	1.40	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
11.00	36.09	6.14	0.34	5.40	1.42	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
11.25	36.91	6.22	0.31	4.83	1.44	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
11.50	37.73	4.94	0.31	6.16	1.46	clay	UNDFND	UNDFD	49	2.06
11.75	38.55	4.82	0.27	5.41	1.48	clay	UNDFND	UNDFD	48	2.01
12.00	39.37	4.98	0.40	7.84	1.50	clay	UNDFND	UNDFD	50	2.07
12.25	40.19	3.58	0.28	7.56	1.52	clay	UNDFND	UNDFD	36	1.46
12.50	41.01	4.46	0.29	6.29	1.53	clay	UNDFND	UNDFD	45	1.84
12.75	41.83	5.10	0.38	7.23	1.55	clay	UNDFND	UNDFD	>50	2.12
13.00	42.65	7.60	0.55	7.13	1.57	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00793A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 JAN 93
Elevation : 5985.7 MSL
Approx GWT : 13 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	5.50	0.01	0.14	0.02	sand to silty sand	>90	>48	14	UNDEFINED
0.50	1.64	8.66	0.08	0.88	0.07	sand to silty sand	>90	>48	22	UNDEFINED
0.75	2.46	4.78	0.15	3.08	0.11	sandy silt to clayey silt	UNDFND	UNDFD	19	2.07
1.00	3.28	1.32	0.06	4.31	0.15	clay	UNDFND	UNDFD	13	.56
1.25	4.10	4.84	0.05	0.97	0.20	silty sand to sandy silt	70-80	44-46	16	UNDEFINED
1.50	4.92	11.40	0.21	1.82	0.24	silty sand to sandy silt	>90	46-48	38	UNDEFINED
1.75	5.74	8.34	0.21	2.52	0.29	silty sand to sandy silt	80-90	44-46	28	UNDEFINED
2.00	6.56	5.76	0.07	1.26	0.33	silty sand to sandy silt	60-70	42-44	19	UNDEFINED
2.25	7.38	4.68	0.06	1.26	0.38	silty sand to sandy silt	60-70	42-44	16	UNDEFINED
2.50	8.20	4.40	0.08	1.69	0.42	silty sand to sandy silt	50-60	40-42	15	UNDEFINED
2.75	9.02	1.54	0.05	3.06	0.46	clayey silt to silty clay	UNDFND	UNDFD	8	.65
3.00	9.84	2.56	0.02	0.61	0.51	silty sand to sandy silt	<40	36-38	9	UNDEFINED
3.25	10.66	1.70	0.02	1.15	0.55	sandy silt to clayey silt	UNDFND	UNDFD	7	.71
3.50	11.48	2.76	0.03	1.14	0.60	silty sand to sandy silt	<40	36-38	9	UNDEFINED
3.75	12.30	2.96	0.03	0.86	0.64	silty sand to sandy silt	<40	36-38	10	UNDEFINED
4.00	13.12	8.80	0.03	0.29	0.69	sand	60-70	42-44	18	UNDEFINED
4.25	13.94	2.00	0.08	3.92	0.71	silty clay to clay	UNDFND	UNDFD	13	.83
4.50	14.76	1.18	0.07	6.15	0.73	clay	UNDFND	UNDFD	12	.48
4.75	15.58	6.96	0.09	1.33	0.75	silty sand to sandy silt	60-70	40-42	23	UNDEFINED
5.00	16.40	0.78	0.09	11.07	0.77	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.25	17.22	1.80	0.09	4.69	0.79	clay	UNDFND	UNDFD	18	.74
5.50	18.04	2.62	0.07	2.47	0.81	sandy silt to clayey silt	UNDFND	UNDFD	10	1.10
5.75	18.86	4.86	0.06	1.21	0.83	silty sand to sandy silt	40-50	38-40	16	UNDEFINED
6.00	19.69	1.98	0.10	4.96	0.84	clay	UNDFND	UNDFD	20	.81
6.25	20.51	1.22	0.06	4.83	0.86	clay	UNDFND	UNDFD	12	.48
6.50	21.33	2.16	0.05	2.36	0.88	sandy silt to clayey silt	UNDFND	UNDFD	9	.89
6.75	22.15	3.36	0.07	1.93	0.90	sandy silt to clayey silt	UNDFND	UNDFD	13	1.41
7.00	22.97	12.58	0.16	1.22	0.92	sand to silty sand	70-80	42-44	31	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 007938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 JAN 93
Elevation : 5985.7 MSL
Approx GWT : 13 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	12.18	0.04	0.31	0.02	sand	>90	>48	24	UNDEFINED
0.50	1.64	6.54	0.23	3.51	0.07	sandy silt to clayey silt	UNDFND	UNDFD	26	2.84
0.75	2.46	2.04	0.14	6.54	0.11	clay	UNDFND	UNDFD	20	.88
1.00	3.28	1.46	0.08	5.38	0.15	clay	UNDFND	UNDFD	15	.62
1.25	4.10	2.14	0.07	3.39	0.20	clayey silt to silty clay	UNDFND	UNDFD	11	.92
1.50	4.92	5.00	0.10	1.92	0.24	silty sand to sandy silt	60-70	44-46	17	UNDEFINED
1.75	5.74	6.14	0.18	2.84	0.29	sandy silt to clayey silt	UNDFND	UNDFD	25	2.65
2.00	6.56	2.94	0.09	3.07	0.33	clayey silt to silty clay	UNDFND	UNDFD	15	1.26
2.25	7.38	5.20	0.03	0.64	0.38	sand to silty sand	60-70	42-44	13	UNDEFINED
2.50	8.20	2.38	0.03	1.15	0.42	sandy silt to clayey silt	UNDFND	UNDFD	10	1.01
2.75	9.02	2.28	0.04	1.72	0.46	sandy silt to clayey silt	UNDFND	UNDFD	9	.97
3.00	9.84	1.66	0.04	2.36	0.51	clayey silt to silty clay	UNDFND	UNDFD	8	.70
3.25	10.66	1.66	0.04	2.36	0.55	clayey silt to silty clay	UNDFND	UNDFD	8	.69
3.50	11.48	1.68	0.04	2.57	0.60	clayey silt to silty clay	UNDFND	UNDFD	8	.70
3.75	12.30	3.82	0.10	2.67	0.64	sandy silt to clayey silt	UNDFND	UNDFD	15	1.63
4.00	13.12	3.12	0.04	1.19	0.69	silty sand to sandy silt	<40	36-38	10	UNDEFINED
4.25	13.94	5.16	0.10	1.83	0.71	silty sand to sandy silt	50-60	38-40	17	UNDEFINED
4.50	14.76	1.30	0.04	2.87	0.73	clayey silt to silty clay	UNDFND	UNDFD	7	.53
4.75	15.58	1.82	0.04	2.37	0.75	clayey silt to silty clay	UNDFND	UNDFD	9	.75
5.00	16.40	2.40	0.04	1.55	0.77	sandy silt to clayey silt	UNDFND	UNDFD	10	1.00
5.25	17.22	1.58	0.05	2.86	0.79	clayey silt to silty clay	UNDFND	UNDFD	8	.64
5.50	18.04	2.02	0.05	2.62	0.81	clayey silt to silty clay	UNDFND	UNDFD	10	.83
5.75	18.86	1.30	0.05	3.77	0.83	silty clay to clay	UNDFND	UNDFD	9	.52
6.00	19.69	1.70	0.05	2.89	0.84	clayey silt to silty clay	UNDFND	UNDFD	9	.69
6.25	20.51	1.50	0.05	3.27	0.86	silty clay to clay	UNDFND	UNDFD	10	.60
6.50	21.33	2.20	0.06	2.68	0.88	clayey silt to silty clay	UNDFND	UNDFD	11	.91
6.75	22.15	3.92	0.08	1.90	0.90	sandy silt to clayey silt	UNDFND	UNDFD	16	1.65
7.00	22.97	3.42	0.08	2.30	0.92	sandy silt to clayey silt	UNDFND	UNDFD	14	1.43
7.25	23.79	4.42	0.10	2.22	0.94	sandy silt to clayey silt	UNDFND	UNDFD	18	1.87
7.50	24.61	6.84	0.12	1.78	0.96	silty sand to sandy silt	50-60	38-40	23	UNDEFINED
7.75	25.43	3.26	0.12	3.55	0.98	clayey silt to silty clay	UNDFND	UNDFD	16	1.36
8.00	26.25	3.26	0.10	2.95	0.99	clayey silt to silty clay	UNDFND	UNDFD	16	1.36
8.25	27.07	4.16	0.11	2.59	1.01	sandy silt to clayey silt	UNDFND	UNDFD	17	1.74
8.50	27.89	6.00	0.12	1.96	1.03	silty sand to sandy silt	50-60	38-40	20	UNDEFINED
8.75	28.71	5.66	0.20	3.50	1.05	clayey silt to silty clay	UNDFND	UNDFD	28	2.39
9.00	29.53	7.32	0.13	1.74	1.07	silty sand to sandy silt	50-60	38-40	24	UNDEFINED
9.25	30.35	6.48	0.15	2.33	1.09	sandy silt to clayey silt	UNDFND	UNDFD	26	2.75
9.50	31.17	6.66	0.14	2.00	1.11	silty sand to sandy silt	50-60	38-40	22	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

tractor : TERRA TECH - SW Location : 007938 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	5.74	0.19	3.21	1.12	sandy silt to clayey silt	UNDFND	UNDFD	23	2.42
10.00	32.81	6.92	0.13	1.79	1.14	silty sand to sandy silt	50-60	38-40	23	UNDEFINED
10.25	33.63	4.14	0.12	2.75	1.16	sandy silt to clayey silt	UNDFND	UNDFD	17	1.72
10.50	34.45	5.60	0.15	2.59	1.18	sandy silt to clayey silt	UNDFND	UNDFD	22	2.35
10.75	35.27	6.14	0.12	1.98	1.20	silty sand to sandy silt	50-60	36-38	20	UNDEFINED
11.00	36.09	5.36	0.14	2.64	1.22	sandy silt to clayey silt	UNDFND	UNDFD	21	2.25
11.25	36.91	5.68	0.15	2.56	1.24	sandy silt to clayey silt	UNDFND	UNDFD	23	2.38
11.50	37.73	3.54	0.09	2.49	1.26	sandy silt to clayey silt	UNDFND	UNDFD	14	1.45
11.75	38.55	3.88	0.12	3.03	1.27	sandy silt to clayey silt	UNDFND	UNDFD	16	1.60
12.00	39.37	4.38	0.14	3.09	1.29	sandy silt to clayey silt	UNDFND	UNDFD	18	1.81
12.25	40.19	4.56	0.11	2.37	1.31	sandy silt to clayey silt	UNDFND	UNDFD	18	1.89
12.50	41.01	4.26	0.10	2.30	1.33	sandy silt to clayey silt	UNDFND	UNDFD	17	1.76
12.75	41.83	4.40	0.10	2.14	1.35	sandy silt to clayey silt	UNDFND	UNDFD	18	1.82
13.00	42.65	4.18	0.11	2.49	1.37	sandy silt to clayey silt	UNDFND	UNDFD	17	1.72
13.25	43.47	4.06	0.10	2.42	1.39	sandy silt to clayey silt	UNDFND	UNDFD	16	1.66
13.50	44.29	4.48	0.10	2.15	1.40	sandy silt to clayey silt	UNDFND	UNDFD	18	1.85
13.75	45.11	4.84	0.09	1.91	1.42	silty sand to sandy silt	40-50	34-36	16	UNDEFINED
14.00	45.93	4.92	0.08	1.52	1.44	silty sand to sandy silt	40-50	34-36	16	UNDEFINED
14.25	46.75	4.58	0.09	1.89	1.46	silty sand to sandy silt	40-50	34-36	15	UNDEFINED
14.50	47.57	4.88	0.08	1.61	1.48	silty sand to sandy silt	40-50	34-36	16	UNDEFINED
.75	48.39	5.36	0.08	1.50	1.50	silty sand to sandy silt	40-50	36-38	18	UNDEFINED
15.00	49.21	6.32	0.10	1.58	1.52	silty sand to sandy silt	40-50	36-38	21	UNDEFINED
15.25	50.03	6.12	0.11	1.83	1.54	silty sand to sandy silt	40-50	36-38	20	UNDEFINED
15.50	50.85	5.22	0.13	2.52	1.55	sandy silt to clayey silt	UNDFND	UNDFD	21	2.15
15.75	51.67	4.54	0.18	3.93	1.57	clayey silt to silty clay	UNDFND	UNDFD	23	1.85
16.00	52.49	4.36	0.19	4.23	1.59	clayey silt to silty clay	UNDFND	UNDFD	22	1.77
16.25	53.31	3.18	0.12	3.76	1.61	clayey silt to silty clay	UNDFND	UNDFD	16	1.26
16.50	54.13	3.14	0.07	2.19	1.63	sandy silt to clayey silt	UNDFND	UNDFD	13	1.24
16.75	54.95	4.50	0.03	0.74	1.65	silty sand to sandy silt	<40	34-36	15	UNDEFINED
17.00	55.77	5.48	0.06	1.15	1.67	silty sand to sandy silt	40-50	34-36	18	UNDEFINED
17.25	56.59	3.70	0.10	2.65	1.69	sandy silt to clayey silt	UNDFND	UNDFD	15	1.48
17.50	57.41	3.80	0.11	2.84	1.70	sandy silt to clayey silt	UNDFND	UNDFD	15	1.52
17.75	58.23	2.90	0.10	3.52	1.72	clayey silt to silty clay	UNDFND	UNDFD	15	1.13
18.00	59.06	2.20	0.12	5.17	1.74	clay	UNDFND	UNDFD	22	.82
18.25	59.88	2.18	0.09	4.05	1.76	silty clay to clay	UNDFND	UNDFD	15	.81
18.50	60.70	3.72	0.07	1.74	1.78	sandy silt to clayey silt	UNDFND	UNDFD	15	1.48
18.75	61.52	3.70	0.08	2.23	1.80	sandy silt to clayey silt	UNDFND	UNDFD	15	1.47
19.00	62.34	4.38	0.11	2.51	1.82	sandy silt to clayey silt	UNDFND	UNDFD	18	1.76
19.25	63.16	3.60	0.15	3.98	1.83	clayey silt to silty clay	UNDFND	UNDFD	18	1.42
19.50	63.98	5.46	0.14	2.52	1.85	sandy silt to clayey silt	UNDFND	UNDFD	22	2.23
19.75	64.80	4.28	0.12	2.80	1.87	sandy silt to clayey silt	UNDFND	UNDFD	17	1.71
20.00	65.62	3.70	0.14	3.61	1.89	clayey silt to silty clay	UNDFND	UNDFD	19	1.46

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 007938 Page No. 3

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
20.25	66.44	3.06	0.12	3.91	1.91	clayey silt to silty clay	UNDFND	UNDFD	15	1.18
20.50	67.26	3.18	0.12	3.70	1.93	clayey silt to silty clay	UNDFND	UNDFD	16	1.23
20.75	68.08	2.58	0.12	4.49	1.95	silty clay to clay	UNDFND	UNDFD	17	.97
21.00	68.90	2.14	0.10	4.49	1.97	clay	UNDFND	UNDFD	21	.77
21.25	69.72	3.32	0.11	3.19	1.98	clayey silt to silty clay	UNDFND	UNDFD	17	1.28
21.50	70.54	2.90	0.11	3.79	2.00	clayey silt to silty clay	UNDFND	UNDFD	15	1.10
21.75	71.36	2.24	0.10	4.47	2.02	silty clay to clay	UNDFND	UNDFD	15	.81
22.00	72.18	2.26	0.10	4.34	2.04	silty clay to clay	UNDFND	UNDFD	15	.82
22.25	73.00	2.70	0.10	3.63	2.06	clayey silt to silty clay	UNDFND	UNDFD	14	1.01
22.50	73.82	2.12	0.10	4.44	2.08	clay	UNDFND	UNDFD	21	.75
22.75	74.64	2.28	0.10	4.22	2.10	silty clay to clay	UNDFND	UNDFD	15	.82
23.00	75.46	2.62	0.07	2.55	2.11	sandy silt to clayey silt	UNDFND	UNDFD	10	.97
23.25	76.28	2.54	0.03	1.31	2.13	sandy silt to clayey silt	UNDFND	UNDFD	10	.93
23.50	77.10	4.20	0.01	0.33	2.15	sand to silty sand	<40	30-32	11	UNDEFINED
23.75	77.92	1.82	0.01	0.75	2.17	sandy silt to clayey silt	UNDFND	UNDFD	7	.61
24.00	78.74	3.24	0.03	0.91	2.19	silty sand to sandy silt	<40	30-32	11	UNDEFINED
24.25	79.56	3.76	0.04	1.10	2.21	silty sand to sandy silt	<40	30-32	13	UNDEFINED
24.50	80.38	1.98	0.01	0.40	2.23	silty sand to sandy silt	<40	<30	7	UNDEFINED
24.75	81.20	4.10	0.01	0.29	2.25	sand to silty sand	<40	30-32	10	UNDEFINED
25.00	82.02	5.56	0.06	0.99	2.26	silty sand to sandy silt	<40	32-34	19	UNDEFINED
25.25	82.84	4.84	0.02	0.32	2.28	sand to silty sand	<40	32-34	12	UNDEFINED
25.50	83.66	1.44	0.03	1.77	2.30	sandy silt to clayey silt	UNDFND	UNDFD	6	.43
25.75	84.48	3.02	0.04	1.30	2.32	silty sand to sandy silt	<40	<30	10	UNDEFINED
26.00	85.30	13.84	0.04	0.31	2.34	sand	60-70	38-40	28	UNDEFINED
26.25	86.12	16.80	0.07	0.40	2.36	sand	70-80	38-40	34	UNDEFINED
26.50	86.94	6.44	0.04	0.64	2.38	sand to silty sand	40-50	34-36	16	UNDEFINED
26.75	87.76	1.68	0.03	1.52	2.39	sandy silt to clayey silt	UNDFND	UNDFD	7	.53
27.00	88.58	1.86	0.02	1.16	2.41	sandy silt to clayey silt	UNDFND	UNDFD	7	.61
27.25	89.40	5.72	0.02	0.34	2.43	sand to silty sand	<40	32-34	14	UNDEFINED
27.50	90.22	9.08	0.04	0.45	2.45	sand	50-60	36-38	18	UNDEFINED
27.75	91.04	10.02	0.12	1.21	2.47	sand to silty sand	50-60	36-38	25	UNDEFINED
28.00	91.86	3.10	0.06	1.96	2.49	sandy silt to clayey silt	UNDFND	UNDFD	12	1.14

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00893A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 JAN 93
Elevation : 5985.6 MSL
Approx GWT : 15 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 008938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 JAN 93
Elevation : 5985.6 MSL
Approx GWT : 15 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00893C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 JAN 93
Elevation : 5985.6 MSL
Approx GWT : 15 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	16.16	0.02	0.12	0.02	sand	>90	>48	32	UNDEFINED
0.50	1.64	8.28	0.17	1.97	0.07	silty sand to sandy silt	>90	>48	28	UNDEFINED
0.75	2.46	8.92	0.25	2.79	0.11	sandy silt to clayey silt	UNDFND	UNDFD	36	3.87
1.00	3.28	5.80	0.21	3.55	0.15	clayey silt to silty clay	UNDFND	UNDFD	29	2.51
1.25	4.10	5.26	0.14	2.69	0.20	sandy silt to clayey silt	UNDFND	UNDFD	21	2.28
1.50	4.92	1.90	0.14	7.13	0.24	clay	UNDFND	UNDFD	19	.81
1.75	5.74	4.14	0.12	2.94	0.29	sandy silt to clayey silt	UNDFND	UNDFD	17	1.78
2.00	6.56	3.38	0.13	3.83	0.33	clayey silt to silty clay	UNDFND	UNDFD	17	1.45
2.25	7.38	11.10	0.24	2.12	0.38	silty sand to sandy silt	80-90	44-46	37	UNDEFINED
2.50	8.20	6.16	0.41	6.53	0.42	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
2.75	9.02	5.78	0.13	2.21	0.46	sandy silt to clayey silt	UNDFND	UNDFD	23	2.49
3.00	9.84	3.30	0.07	1.96	0.51	sandy silt to clayey silt	UNDFND	UNDFD	13	1.41
3.25	10.66	3.24	0.07	2.18	0.55	sandy silt to clayey silt	UNDFND	UNDFD	13	1.38
3.50	11.48	5.38	0.09	1.68	0.60	silty sand to sandy silt	50-60	40-42	18	UNDEFINED
3.75	12.30	5.18	0.06	1.21	0.64	silty sand to sandy silt	50-60	40-42	17	UNDEFINED
4.00	13.12	7.16	0.12	1.59	0.69	silty sand to sandy silt	60-70	40-42	24	UNDEFINED
4.25	13.94	4.46	0.09	1.98	0.73	sandy silt to clayey silt	UNDFND	UNDFD	18	1.90
4.50	14.76	3.96	0.10	2.53	0.77	sandy silt to clayey silt	UNDFND	UNDFD	16	1.69
4.75	15.58	2.06	0.11	5.33	0.81	clay	UNDFND	UNDFD	21	.86
5.00	16.40	4.86	0.06	1.21	0.83	silty sand to sandy silt	40-50	38-40	16	UNDEFINED
5.25	17.22	6.00	0.07	1.21	0.85	silty sand to sandy silt	50-60	38-40	20	UNDEFINED
5.50	18.04	1.40	0.07	4.91	0.87	clay	UNDFND	UNDFD	14	.56
5.75	18.86	2.30	0.05	1.96	0.89	sandy silt to clayey silt	UNDFND	UNDFD	9	.95
6.00	19.69	3.74	0.03	0.79	0.91	silty sand to sandy silt	40-50	36-38	12	UNDEFINED
6.25	20.51	1.48	0.02	1.19	0.93	sandy silt to clayey silt	UNDFND	UNDFD	6	.59
6.50	21.33	0.68	0.04	5.48	0.94	clay	UNDFND	UNDFD	7	.24
6.75	22.15	2.18	0.03	1.53	0.96	sandy silt to clayey silt	UNDFND	UNDFD	9	.89
7.00	22.97	2.72	0.05	1.73	0.98	sandy silt to clayey silt	UNDFND	UNDFD	11	1.13
7.25	23.79	5.62	0.10	1.71	1.00	silty sand to sandy silt	50-60	38-40	19	UNDEFINED
7.50	24.61	3.78	0.09	2.23	1.02	sandy silt to clayey silt	UNDFND	UNDFD	15	1.59
7.75	25.43	3.66	0.09	2.36	1.04	sandy silt to clayey silt	UNDFND	UNDFD	15	1.53
8.00	26.25	14.20	0.20	1.35	1.06	sand to silty sand	70-80	42-44	36	UNDEFINED
8.25	27.07	3.04	0.04	1.23	1.08	silty sand to sandy silt	<40	34-36	10	UNDEFINED
8.50	27.89	4.14	0.04	0.95	1.09	silty sand to sandy silt	40-50	36-38	14	UNDEFINED
8.75	28.71	6.26	0.02	0.31	1.11	sand to silty sand	50-60	38-40	16	UNDEFINED
9.00	29.53	1.18	0.06	4.66	1.13	clay	UNDFND	UNDFD	12	.44
9.25	30.35	1.70	0.07	3.92	1.15	silty clay to clay	UNDFND	UNDFD	11	.67
9.50	31.17	1.28	0.06	4.75	1.17	clay	UNDFND	UNDFD	13	.48

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 00893C Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	2.66	0.06	2.29	1.19	sandy silt to clayey silt	UNDFND	UNDFD	11	1.08
10.00	32.81	3.76	0.07	1.72	1.21	sandy silt to clayey silt	UNDFND	UNDFD	15	1.56
10.25	33.63	5.06	0.09	1.71	1.22	silty sand to sandy silt	40-50	36-38	17	UNDEFINED
10.50	34.45	4.88	0.10	1.93	1.24	silty sand to sandy silt	40-50	36-38	16	UNDEFINED
10.75	35.27	3.70	0.09	2.39	1.26	sandy silt to clayey silt	UNDFND	UNDFD	15	1.53
11.00	36.09	1.66	0.07	4.14	1.28	silty clay to clay	UNDFND	UNDFD	11	.64
11.25	36.91	3.34	0.09	2.64	1.30	sandy silt to clayey silt	UNDFND	UNDFD	13	1.37
11.50	37.73	4.26	0.11	2.49	1.32	sandy silt to clayey silt	UNDFND	UNDFD	17	1.76
11.75	38.55	3.74	0.14	3.57	1.34	clayey silt to silty clay	UNDFND	UNDFD	19	1.54
12.00	39.37	4.40	0.13	2.99	1.36	sandy silt to clayey silt	UNDFND	UNDFD	18	1.82
12.25	40.19	5.44	0.18	3.28	1.37	sandy silt to clayey silt	UNDFND	UNDFD	22	2.27
12.50	41.01	5.52	0.23	4.09	1.39	clayey silt to silty clay	UNDFND	UNDFD	28	2.31
12.75	41.83	8.46	0.25	2.95	1.41	sandy silt to clayey silt	UNDFND	UNDFD	34	3.58
13.00	42.65	8.10	0.18	2.13	1.43	silty sand to sandy silt	50-60	38-40	27	UNDEFINED
13.25	43.47	6.32	0.19	2.92	1.45	sandy silt to clayey silt	UNDFND	UNDFD	25	2.65
13.50	44.29	4.84	0.21	4.26	1.47	clayey silt to silty clay	UNDFND	UNDFD	24	2.00
13.75	45.11	6.20	0.25	3.92	1.49	clayey silt to silty clay	UNDFND	UNDFD	31	2.59
14.00	45.93	6.10	0.23	3.67	1.50	clayey silt to silty clay	UNDFND	UNDFD	31	2.55
14.25	46.75	5.02	0.24	4.69	1.52	silty clay to clay	UNDFND	UNDFD	33	2.07
14.50	47.57	3.66	0.23	6.27	1.54	clay	UNDFND	UNDFD	37	1.48
14.75	48.39	4.06	0.23	5.51	1.56	clay	UNDFND	UNDFD	41	1.65
15.00	49.21	4.00	0.23	5.59	1.58	clay	UNDFND	UNDFD	40	1.63
15.25	50.03	3.20	0.20	6.13	1.60	clay	UNDFND	UNDFD	32	1.28
15.50	50.85	3.22	0.20	5.97	1.62	clay	UNDFND	UNDFD	32	1.28
15.75	51.67	4.16	0.20	4.67	1.64	silty clay to clay	UNDFND	UNDFD	28	1.69
16.00	52.49	3.96	0.20	4.86	1.65	silty clay to clay	UNDFND	UNDFD	26	1.60
16.25	53.31	3.82	0.19	4.98	1.67	clay	UNDFND	UNDFD	38	1.54
16.50	54.13	3.26	0.20	6.02	1.69	clay	UNDFND	UNDFD	33	1.29
16.75	54.95	3.80	0.21	5.32	1.71	clay	UNDFND	UNDFD	38	1.53
17.00	55.77	4.06	0.21	4.98	1.73	silty clay to clay	UNDFND	UNDFD	27	1.64
17.25	56.59	4.48	0.21	4.56	1.75	silty clay to clay	UNDFND	UNDFD	30	1.82
17.50	57.41	4.12	0.24	5.62	1.77	clay	UNDFND	UNDFD	41	1.66
17.75	58.23	3.08	0.20	6.50	1.78	clay	UNDFND	UNDFD	31	1.20
18.00	59.06	2.92	0.19	6.38	1.80	clay	UNDFND	UNDFD	29	1.13
18.25	59.88	2.38	0.17	7.09	1.82	clay	UNDFND	UNDFD	24	.90
18.50	60.70	2.04	0.16	7.79	1.84	clay	UNDFND	UNDFD	20	.75
18.75	61.52	2.14	0.17	7.61	1.86	clay	UNDFND	UNDFD	21	.79
19.00	62.34	3.12	0.16	4.91	1.88	clay	UNDFND	UNDFD	31	1.21
19.25	63.16	4.64	0.21	4.36	1.90	silty clay to clay	UNDFND	UNDFD	31	1.87
19.50	63.98	5.18	0.20	3.79	1.92	clayey silt to silty clay	UNDFND	UNDFD	26	2.11
19.75	64.80	5.38	0.23	4.16	1.93	clayey silt to silty clay	UNDFND	UNDFD	27	2.19
20.00	65.62	6.22	0.23	3.69	1.95	clayey silt to silty clay	UNDFND	UNDFD	31	2.55

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

tractor : TERRA TECH - SW Location : 00893C Page No. 3

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
20.25	66.44	5.58	0.23	4.08	1.97	clayey silt to silty clay	UNDFND	UNDFD	28	2.27
20.50	67.26	6.36	0.26	3.95	1.99	clayey silt to silty clay	UNDFND	UNDFD	32	2.61
20.75	68.08	5.62	0.25	4.29	2.01	clayey silt to silty clay	UNDFND	UNDFD	28	2.29
21.00	68.90	10.18	0.23	2.24	2.03	silty sand to sandy silt	50-60	36-38	34	UNDEFINED
21.25	69.72	13.38	0.32	2.32	2.05	silty sand to sandy silt	60-70	38-40	45	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 00993A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 16 DEC 92
Elevation : 5986.6 MSL
Approx GWT : 15 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	4.38	0.03	0.72	0.02	silty sand to sandy silt	>90	>48	15	UNDEFINED
0.50	1.64	5.14	0.11	2.18	0.07	sandy silt to clayey silt	UNDFND	UNDFD	21	2.23
0.75	2.46	5.24	0.08	1.50	0.11	silty sand to sandy silt	80-90	46-48	17	UNDEFINED
1.00	3.28	3.26	0.03	0.90	0.15	silty sand to sandy silt	60-70	44-46	11	UNDEFINED
1.25	4.10	4.34	0.05	1.04	0.20	silty sand to sandy silt	60-70	44-46	14	UNDEFINED
1.50	4.92	3.40	0.03	0.87	0.24	silty sand to sandy silt	50-60	42-44	11	UNDEFINED
1.75	5.74	3.34	0.06	1.65	0.29	sandy silt to clayey silt	UNDFND	UNDFD	13	1.44
2.00	6.56	2.74	0.05	1.65	0.33	sandy silt to clayey silt	UNDFND	UNDFD	11	1.17
2.25	7.38	4.40	0.10	2.23	0.38	sandy silt to clayey silt	UNDFND	UNDFD	18	1.89
2.50	8.20	8.78	0.11	1.21	0.42	sand to silty sand	70-80	44-46	22	UNDEFINED
2.75	9.02	20.88	0.29	1.35	0.46	sand to silty sand	>90	46-48	>50	UNDEFINED
3.00	9.84	9.46	0.36	3.78	0.51	sandy silt to clayey silt	UNDFND	UNDFD	38	4.09
3.25	10.66	6.86	0.27	3.92	0.55	clayey silt to silty clay	UNDFND	UNDFD	34	2.96
3.50	11.48	8.28	0.29	3.48	0.60	sandy silt to clayey silt	UNDFND	UNDFD	33	3.57
3.75	12.30	4.62	0.13	2.68	0.64	sandy silt to clayey silt	UNDFND	UNDFD	18	1.98
4.00	13.12	2.52	0.07	2.65	0.69	clayey silt to silty clay	UNDFND	UNDFD	13	1.06
4.25	13.94	1.36	0.06	4.33	0.73	clay	UNDFND	UNDFD	14	.56
4.50	14.76	1.90	0.06	2.89	0.77	clayey silt to silty clay	UNDFND	UNDFD	10	.79
4.75	15.58	2.62	0.04	1.50	0.81	sandy silt to clayey silt	UNDFND	UNDFD	10	1.10
5.00	16.40	2.40	0.05	0.48	0.83	sand	60-70	40-42	19	UNDEFINED
5.25	17.22	9.38	0.11	1.17	0.85	sand to silty sand	60-70	40-42	23	UNDEFINED
5.50	18.04	2.62	0.08	3.15	0.87	clayey silt to silty clay	UNDFND	UNDFD	13	1.10
5.75	18.86	10.50	0.06	0.56	0.89	sand	70-80	40-42	21	UNDEFINED
6.00	19.69	5.10	0.22	4.27	0.91	clayey silt to silty clay	UNDFND	UNDFD	26	2.17
6.25	20.51	6.10	0.06	0.93	0.93	sand to silty sand	50-60	38-40	15	UNDEFINED
6.50	21.33	3.60	0.09	2.45	0.94	sandy silt to clayey silt	UNDFND	UNDFD	14	1.51
6.75	22.15	3.32	0.06	1.83	0.96	sandy silt to clayey silt	UNDFND	UNDFD	13	1.39
7.00	22.97	5.42	0.11	2.03	0.98	silty sand to sandy silt	50-60	38-40	18	UNDEFINED
7.25	23.79	11.02	0.27	2.39	1.00	silty sand to sandy silt	70-80	40-42	37	UNDEFINED
7.50	24.61	7.64	0.10	1.28	1.02	sand to silty sand	50-60	30-40	19	UNDEFINED
7.75	25.43	3.26	0.20	5.90	1.04	clay	UNDFND	UNDFD	33	1.36
8.00	26.25	6.86	0.27	3.80	1.06	clayey silt to silty clay	UNDFND	UNDFD	34	2.92
8.25	27.07	5.16	0.10	1.98	1.08	silty sand to sandy silt	40-50	36-38	17	UNDEFINED
8.50	27.89	1.80	0.16	8.72	1.09	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.75	28.71	6.06	0.15	2.49	1.11	sandy silt to clayey silt	UNDFND	UNDFD	24	2.57
9.00	29.53	13.12	0.11	0.84	1.13	sand	70-80	40-42	26	UNDEFINED
9.25	30.35	4.88	0.50	9.97	1.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.50	31.17	3.06	0.28	8.98	1.17	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

ractor : TERRA TECH - SW Location : 00993A Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	8.74	0.47	5.23	1.19	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
10.00	32.81	2.92	0.26	8.74	1.21	undefined	UNDFND	UNDFD	UDF	UNDEFINED
10.25	33.63	2.94	0.15	5.01	1.22	clay	UNDFND	UNDFD	29	1.20
10.50	34.45	2.20	0.14	6.42	1.24	clay	UNDFND	UNDFD	22	.88
10.75	35.27	3.94	0.13	3.19	1.26	clayey silt to silty clay	UNDFND	UNDFD	20	1.63
11.00	36.09	6.56	0.14	2.15	1.28	silty sand to sandy silt	50-60	36-38	22	UNDEFINED
11.25	36.91	3.08	0.19	5.99	1.30	clay	UNDFND	UNDFD	31	1.25
11.50	37.73	2.74	0.14	5.16	1.32	clay	UNDFND	UNDFD	27	1.10
11.75	38.55	3.48	0.15	4.34	1.34	silty clay to clay	UNDFND	UNDFD	23	1.42
12.00	39.37	4.38	0.20	4.48	1.36	silty clay to clay	UNDFND	UNDFD	29	1.81
12.25	40.19	3.96	0.27	6.64	1.37	clay	UNDFND	UNDFD	40	1.63
12.50	41.01	3.46	0.27	7.66	1.39	clay	UNDFND	UNDFD	35	1.41
12.75	41.83	3.40	0.30	8.66	1.41	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.00	42.65	4.42	0.37	8.26	1.43	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.25	43.47	3.66	0.25	6.81	1.45	clay	UNDFND	UNDFD	37	1.49
13.50	44.29	3.88	0.30	7.64	1.47	clay	UNDFND	UNDFD	39	1.58
13.75	45.11	3.84	0.34	8.79	1.49	undefined	UNDFND	UNDFD	UDF	UNDEFINED
14.00	45.93	4.12	0.27	6.38	1.50	clay	UNDFND	UNDFD	41	1.69
14.25	46.75	7.58	0.48	6.24	1.52	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
14.50	47.57	6.88	0.44	6.30	1.54	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01093A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 21 DEC 92
Elevation : 5988.9 MSL
Approx GWT : 18 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	8.56	0.10	1.19	0.02	sand to silty sand	>90	>48	21	UNDEFINED
0.50	1.64	4.74	0.18	3.64	0.07	clayey silt to silty clay	UNDFND	UNDFD	24	2.05
0.75	2.46	5.04	0.09	1.67	0.11	silty sand to sandy silt	70-80	46-48	17	UNDEFINED
1.00	3.28	6.32	0.15	2.27	0.15	silty sand to sandy silt	80-90	46-48	21	UNDEFINED
1.25	4.10	5.66	0.09	1.59	0.20	silty sand to sandy silt	70-80	44-46	19	UNDEFINED
1.50	4.92	3.80	0.10	2.53	0.24	sandy silt to clayey silt	UNDFND	UNDFD	15	1.64
1.75	5.74	10.02	0.09	0.90	0.29	sand to silty sand	80-90	46-48	25	UNDEFINED
2.00	6.56	12.38	0.40	3.17	0.33	sandy silt to clayey silt	UNDFND	UNDFD	50	5.37
2.25	7.38	8.10	0.33	4.05	0.38	clayey silt to silty clay	UNDFND	UNDFD	41	3.50
2.50	8.20	3.04	0.20	6.52	0.42	clay	UNDFND	UNDFD	30	1.30
2.75	9.02	3.44	0.11	3.02	0.46	clayey silt to silty clay	UNDFND	UNDFD	17	1.47
3.00	9.84	5.06	0.19	3.68	0.51	clayey silt to silty clay	UNDFND	UNDFD	25	2.18
3.25	10.66	0.98	0.12	11.81	0.55	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.50	11.48	2.66	0.08	3.10	0.60	clayey silt to silty clay	UNDFND	UNDFD	13	1.13
3.75	12.30	4.38	0.22	4.88	0.64	silty clay to clay	UNDFND	UNDFD	29	1.87
4.00	13.12	8.52	0.29	3.29	0.69	sandy silt to clayey silt	UNDFND	UNDFD	34	3.67
4.25	13.94	5.92	0.38	6.36	0.73	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
4.50	14.76	2.22	0.20	8.84	0.77	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.75	15.58	3.38	0.15	4.24	0.81	silty clay to clay	UNDFND	UNDFD	23	1.43
5.00	16.40	4.14	0.23	5.40	0.83	clay	UNDFND	UNDFD	41	1.76
5.25	17.22	2.88	0.08	2.86	0.85	clayey silt to silty clay	UNDFND	UNDFD	14	1.21
5.50	18.04	1.88	0.12	6.16	0.87	clay	UNDFND	UNDFD	19	.77
5.75	18.86	3.72	0.10	2.58	0.89	sandy silt to clayey silt	UNDFND	UNDFD	15	1.57
6.00	19.69	2.88	0.08	2.59	0.91	sandy silt to clayey silt	UNDFND	UNDFD	12	1.20
6.25	20.51	5.28	0.08	1.41	0.93	silty sand to sandy silt	50-60	38-40	18	UNDEFINED
6.50	21.33	4.18	0.12	2.86	0.94	sandy silt to clayey silt	UNDFND	UNDFD	17	1.77
6.75	22.15	1.10	0.04	3.57	0.96	silty clay to clay	UNDFND	UNDFD	7	.42
7.00	22.97	2.76	0.10	3.41	0.98	clayey silt to silty clay	UNDFND	UNDFD	14	1.15
7.25	23.79	2.68	0.11	3.95	1.00	silty clay to clay	UNDFND	UNDFD	18	1.11
7.50	24.61	4.84	0.21	4.34	1.02	clayey silt to silty clay	UNDFND	UNDFD	24	2.05
7.75	25.43	2.26	0.13	5.82	1.04	clay	UNDFND	UNDFD	23	.92
8.00	26.25	2.06	0.15	7.05	1.06	clay	UNDFND	UNDFD	21	.83
8.25	27.07	2.96	0.12	3.91	1.08	clayey silt to silty clay	UNDFND	UNDFD	15	1.22
8.50	27.89	1.56	0.13	7.92	1.09	clay	UNDFND	UNDFD	16	.61
8.75	28.71	3.54	0.16	4.32	1.11	silty clay to clay	UNDFND	UNDFD	24	1.47
9.00	29.53	6.36	0.17	2.65	1.13	sandy silt to clayey silt	UNDFND	UNDFD	25	2.70
9.25	30.35	2.98	0.16	5.27	1.15	clay	UNDFND	UNDFD	30	1.22
9.50	31.17	7.32	0.18	2.41	1.17	sandy silt to clayey silt	UNDFND	UNDFD	29	3.11

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

tractor : TERRA TECH - SW Location : 01093A Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg.)	SPT (N)	Su (tsf)
9.75	31.99	5.92	0.09	1.43	1.19	silty sand to sandy silt	50-60	36-38	20	UNDEFINED
10.00	32.81	6.56	0.12	1.73	1.21	silty sand to sandy silt	50-60	38-40	22	UNDEFINED
10.25	33.63	4.14	0.14	3.37	1.22	clayey silt to silty clay	UNDFND	UNDFD	21	1.72
10.50	34.45	9.70	0.28	2.79	1.24	sandy silt to clayey silt	UNDFND	UNDFD	39	4.14
10.75	35.27	8.60	0.24	2.72	1.26	sandy silt to clayey silt	UNDFND	UNDFD	34	3.66
11.00	36.09	3.60	0.24	6.54	1.28	clay	UNDFND	UNDFD	36	1.48
11.25	36.91	6.94	0.31	4.33	1.30	clayey silt to silty clay	UNDFND	UNDFD	35	2.93
11.50	37.73	1.22	0.10	8.20	1.32	undefined	UNDFND	UNDFD	UDF	UNDEFINED
11.75	38.55	1.42	0.08	5.80	1.34	clay	UNDFND	UNDFD	14	.53
12.00	39.37	1.64	0.09	5.62	1.36	clay	UNDFND	UNDFD	16	.62
12.25	40.19	1.54	0.14	8.79	1.37	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.50	41.01	1.54	0.13	8.03	1.39	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.75	41.83	2.16	0.14	6.54	1.41	clay	UNDFND	UNDFD	22	.84
13.00	42.65	1.78	0.16	8.82	1.43	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.25	43.47	2.60	0.18	6.72	1.45	clay	UNDFND	UNDFD	26	1.03
13.50	44.29	2.96	0.19	6.43	1.47	clay	UNDFND	UNDFD	30	1.18
13.75	45.11	6.64	0.26	3.90	1.49	clayey silt to silty clay	UNDFND	UNDFD	33	2.78
14.00	45.93	5.80	0.38	6.43	1.50	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
14.25	46.75	5.14	0.36	6.87	1.52	clay	UNDFND	UNDFD	>50	2.13
14.50	47.57	6.26	0.40	6.30	1.54	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
14.75	48.39	7.54	0.55	7.16	1.56	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
15.00	49.21	6.40	0.51	7.82	1.58	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
15.25	50.03	5.36	0.45	8.16	1.60	undefined	UNDFND	UNDFD	UDF	UNDEFINED
15.50	50.85	5.08	0.41	7.88	1.62	clay	UNDFND	UNDFD	>50	2.09
15.75	51.67	5.16	0.36	6.77	1.64	clay	UNDFND	UNDFD	>50	2.12

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01193A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 22 DEC 92
Elevation : 5981.9 MSL
Approx GWT : 12 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	5.74	0.10	1.78	0.02	silty sand to sandy silt	>90	>48	19	UNDEFINED
0.50	1.64	8.18	0.20	2.42	0.07	silty sand to sandy silt	>90	>48	27	UNDEFINED
0.75	2.46	5.40	0.27	4.98	0.11	silty clay to clay	UNDFND	UNDFD	36	2.34
1.00	3.28	11.12	0.30	2.61	0.15	silty sand to sandy silt	>90	>48	37	UNDEFINED
1.25	4.10	11.48	0.29	2.46	0.20	silty sand to sandy silt	>90	>48	38	UNDEFINED
1.50	4.92	12.26	0.17	1.34	0.24	sand to silty sand	>90	46-48	31	UNDEFINED
1.75	5.74	7.82	0.11	1.43	0.29	silty sand to sandy silt	70-80	44-46	26	UNDEFINED
2.00	6.56	9.56	0.16	1.62	0.33	silty sand to sandy silt	80-90	44-46	32	UNDEFINED
2.25	7.38	13.12	0.31	2.33	0.38	silty sand to sandy silt	80-90	46-48	44	UNDEFINED
2.50	8.20	3.80	0.20	5.27	0.42	clay	UNDFND	UNDFD	38	1.63
2.75	9.02	1.30	0.09	6.79	0.46	clay	UNDFND	UNDFD	13	.54
3.00	9.84	4.24	0.20	4.72	0.51	silty clay to clay	UNDFND	UNDFD	28	1.82
3.25	10.66	0.96	0.10	10.42	0.55	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.50	11.48	1.98	0.04	2.18	0.60	sandy silt to clayey silt	UNDFND	UNDFD	8	.83
3.75	12.30	5.04	0.10	1.91	0.64	silty sand to sandy silt	50-60	40-42	17	UNDEFINED
4.00	13.12	3.86	0.17	4.32	0.66	silty clay to clay	UNDFND	UNDFD	26	1.65
4.25	13.94	3.24	0.10	2.97	0.68	clayey silt to silty clay	UNDFND	UNDFD	16	1.37
4.50	14.76	2.86	0.06	2.13	0.70	sandy silt to clayey silt	UNDFND	UNDFD	11	1.21
4.75	15.58	2.26	0.05	2.17	0.72	sandy silt to clayey silt	UNDFND	UNDFD	9	.94

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 011938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 22 DEC 92
Elevation : 5981.9 MSL
Approx GWT : 12 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	12.34	0.19	1.51	0.02	sand to silty sand	>90	>48	31	UNDEFINED
0.50	1.64	2.40	0.25	10.30	0.07	undefined	UNDFND	UNDFD	UDF	UNDEFINED
0.75	2.46	2.12	0.06	2.59	0.11	clayey silt to silty clay	UNDFND	UNDFD	11	.91
1.00	3.28	9.30	0.25	2.62	0.15	silty sand to sandy silt	>90	>48	31	UNDEFINED
1.25	4.10	9.54	0.33	3.44	0.20	sandy silt to clayey silt	UNDFND	UNDFD	38	4.14
1.50	4.92	12.00	0.24	1.98	0.24	silty sand to sandy silt	>90	46-48	40	UNDEFINED
1.75	5.74	14.82	0.24	1.62	0.29	sand to silty sand	>90	>48	37	UNDEFINED
2.00	6.56	4.36	0.14	3.24	0.33	clayey silt to silty clay	UNDFND	UNDFD	22	1.88
2.25	7.38	6.12	0.15	2.34	0.38	sandy silt to clayey silt	UNDFND	UNDFD	24	2.64
2.50	8.20	14.62	0.58	3.89	0.42	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
2.75	9.02	7.84	0.28	3.55	0.46	sandy silt to clayey silt	UNDFND	UNDFD	31	3.39
3.00	9.84	1.98	0.09	4.66	0.51	clay	UNDFND	UNDFD	20	.84
3.25	10.66	1.24	0.10	7.91	0.55	clay	UNDFND	UNDFD	12	.51
3.50	11.48	2.80	0.18	6.24	0.60	clay	UNDFND	UNDFD	28	1.19
3.75	12.30	0.78	0.07	8.55	0.64	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.00	13.12	0.56	0.11	18.57	0.66	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.25	13.94	2.44	0.07	2.90	0.68	clayey silt to silty clay	UNDFND	UNDFD	12	1.03
4.50	14.76	1.02	0.08	7.31	0.70	clay	UNDFND	UNDFD	10	.41
4.75	15.58	2.84	0.09	3.18	0.72	clayey silt to silty clay	UNDFND	UNDFD	14	1.20
5.00	16.40	3.06	0.10	3.21	0.74	clayey silt to silty clay	UNDFND	UNDFD	15	1.29
5.25	17.22	5.20	0.18	3.36	0.76	sandy silt to clayey silt	UNDFND	UNDFD	21	2.22
5.50	18.04	3.06	0.16	5.26	0.78	clay	UNDFND	UNDFD	31	1.29
5.75	18.86	1.04	0.10	9.62	0.80	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.00	19.69	0.38	0.07	19.11	0.81	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.25	20.51	1.00	0.08	8.24	0.83	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.50	21.33	0.80	0.10	12.51	0.85	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.75	22.15	1.32	0.08	6.10	0.87	clay	UNDFND	UNDFD	13	.52
7.00	22.97	2.26	0.07	3.21	0.89	clayey silt to silty clay	UNDFND	UNDFD	11	.93
7.25	23.79	5.60	0.15	2.59	0.91	sandy silt to clayey silt	UNDFND	UNDFD	22	2.38
7.50	24.61	2.18	0.14	6.12	0.93	clay	UNDFND	UNDFD	22	.89
7.75	25.43	1.64	0.11	6.82	0.94	clay	UNDFND	UNDFD	16	.65
8.00	26.25	5.58	0.14	2.46	0.96	sandy silt to clayey silt	UNDFND	UNDFD	22	2.36
8.25	27.07	1.10	0.17	15.52	0.98	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.50	27.89	1.56	0.10	6.54	1.00	clay	UNDFND	UNDFD	16	.61
8.75	28.71	1.60	0.10	6.13	1.02	clay	UNDFND	UNDFD	16	.63
9.00	29.53	0.48	0.06	12.67	1.04	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.25	30.35	10.50	0.06	0.54	1.06	sand	60-70	40-42	21	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01193C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 22 DEC 92
Elevation : 5981.9 MSL
Approx GWT : 12 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	8.42	0.13	1.51	0.02	silty sand to sandy silt	>90	>48	28	UNDEFINED
0.50	1.64	3.92	0.20	5.11	0.07	clay	UNDFND	UNDFD	39	1.70
0.75	2.46	9.20	0.22	2.37	0.11	silty sand to sandy silt	>90	>48	31	UNDEFINED
1.00	3.28	10.40	0.18	1.74	0.15	silty sand to sandy silt	>90	>48	35	UNDEFINED
1.25	4.10	5.08	0.24	4.60	0.20	silty clay to clay	UNDFND	UNDFD	34	2.20
1.50	4.92	1.32	0.09	6.39	0.24	clay	UNDFND	UNDFD	13	.56
1.75	5.74	2.20	0.05	2.05	0.29	sandy silt to clayey silt	UNDFND	UNDFD	9	.94
2.00	6.56	7.00	0.12	1.63	0.33	silty sand to sandy silt	70-80	44-46	23	UNDEFINED
2.25	7.38	8.06	0.28	3.43	0.38	sandy silt to clayey silt	UNDFND	UNDFD	32	3.49
2.50	8.20	2.82	0.19	6.54	0.42	clay	UNDFND	UNDFD	28	1.20
2.75	9.02	2.48	0.24	9.42	0.46	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.00	9.84	2.60	0.20	7.40	0.51	clay	UNDFND	UNDFD	26	1.10
3.25	10.66	2.80	0.16	5.47	0.55	clay	UNDFND	UNDFD	28	1.19
3.50	11.48	5.88	0.11	1.87	0.60	silty sand to sandy silt	60-70	40-42	20	UNDEFINED
3.75	12.30	5.66	0.19	3.26	0.64	sandy silt to clayey silt	UNDFND	UNDFD	23	2.43
4.00	13.12	5.76	0.16	2.76	0.66	sandy silt to clayey silt	UNDFND	UNDFD	23	2.47
4.25	13.94	1.94	0.15	7.59	0.68	clay	UNDFND	UNDFD	19	.81
4.50	14.76	2.80	0.12	4.28	0.70	silty clay to clay	UNDFND	UNDFD	19	1.18
4.75	15.58	5.24	0.12	2.25	0.72	sandy silt to clayey silt	UNDFND	UNDFD	21	2.24
5.00	16.40	11.80	0.18	1.51	0.74	sand to silty sand	70-80	42-44	30	UNDEFINED
5.25	17.22	4.26	0.21	4.88	0.76	silty clay to clay	UNDFND	UNDFD	28	1.81
5.50	18.04	15.40	0.05	0.29	0.78	sand	80-90	44-46	31	UNDEFINED
5.75	18.86	17.26	0.08	0.48	0.80	sand	80-90	44-46	35	UNDEFINED
6.00	19.69	1.38	0.12	8.39	0.81	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.25	20.51	3.66	0.07	1.88	0.83	sandy silt to clayey silt	UNDFND	UNDFD	15	1.54
6.50	21.33	2.66	0.11	4.20	0.85	silty clay to clay	UNDFND	UNDFD	18	1.11
6.75	22.15	9.04	0.13	1.43	0.87	sand to silty sand	60-70	40-42	23	UNDEFINED
7.00	22.97	5.70	0.28	4.79	0.89	silty clay to clay	UNDFND	UNDFD	38	2.42
7.25	23.79	1.32	0.13	9.66	0.91	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.50	24.61	1.06	0.12	10.92	0.93	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.75	25.43	1.42	0.12	8.43	0.94	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.00	26.25	0.68	0.11	15.58	0.96	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.25	27.07	0.96	0.09	9.20	0.98	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.50	27.89	3.10	0.12	3.73	1.00	clayey silt to silty clay	UNDFND	UNDFD	16	1.28
8.75	28.71	1.38	0.06	4.41	1.02	clay	UNDFND	UNDFD	14	.53
9.00	29.53	1.72	0.10	5.70	1.04	clay	UNDFND	UNDFD	17	.68
9.25	30.35	2.76	0.12	4.27	1.06	silty clay to clay	UNDFND	UNDFD	18	1.13
9.50	31.17	4.48	0.22	4.82	1.08	silty clay to clay	UNDFND	UNDFD	30	1.87

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

tractor : TERRA TECH - SW Location: 01193C Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	4.20	0.16	3.74	1.09	clayey silt to silty clay	UNDFND	UNDFD	21	1.75
10.00	32.81	6.72	0.16	2.39	1.11	sandy silt to clayey silt	UNDFND	UNDFD	27	2.85
10.25	33.63	3.14	0.16	4.87	1.13	clay	UNDFND	UNDFD	31	1.29
10.50	34.45	0.78	0.08	9.56	1.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
10.75	35.27	1.06	0.06	5.92	1.17	clay	UNDFND	UNDFD	11	.38
11.00	36.09	3.38	0.09	2.55	1.19	sandy silt to clayey silt	UNDFND	UNDFD	14	1.39
11.25	36.91	2.12	0.06	2.78	1.21	clayey silt to silty clay	UNDFND	UNDFD	11	.84
11.50	37.73	3.34	0.09	2.53	1.22	sandy silt to clayey silt	UNDFND	UNDFD	13	1.36
11.75	38.55	6.82	0.14	1.96	1.24	silty sand to sandy silt	50-60	38-40	23	UNDEFINED
12.00	39.37	4.76	0.27	5.57	1.26	clay	UNDFND	UNDFD	48	1.98
12.25	40.19	5.80	0.28	4.74	1.28	silty clay to clay	UNDFND	UNDFD	39	2.43
12.50	41.01	1.88	0.18	9.60	1.30	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.75	41.83	0.84	0.09	10.75	1.32	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.00	42.65	0.70	0.06	8.97	1.34	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.25	43.47	0.90	0.07	7.63	1.36	clay	UNDFND	UNDFD	9	.29
13.50	44.29	1.90	0.13	6.82	1.37	clay	UNDFND	UNDFD	19	.72
13.75	45.11	2.72	0.21	7.58	1.39	clay	UNDFND	UNDFD	27	1.08
14.00	45.93	2.66	0.22	8.26	1.41	undefined	UNDFND	UNDFD	UDF	UNDEFINED
14.25	46.75	2.80	0.23	8.13	1.43	undefined	UNDFND	UNDFD	UDF	UNDEFINED
[illegible].50	47.57	2.34	0.20	8.22	1.45	undefined	UNDFND	UNDFD	UDF	UNDEFINED
[illegible].75	48.39	3.18	0.22	6.85	1.47	clay	UNDFND	UNDFD	32	1.27
15.00	49.21	2.72	0.26	9.23	1.49	undefined	UNDFND	UNDFD	UDF	UNDEFINED
15.25	50.03	2.82	0.20	6.82	1.50	clay	UNDFND	UNDFD	28	1.11
15.50	50.85	3.18	0.29	8.89	1.52	undefined	UNDFND	UNDFD	UDF	UNDEFINED
15.75	51.67	3.92	0.33	8.21	1.54	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.00	52.49	2.72	0.27	9.88	1.56	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.25	53.31	3.44	0.27	7.59	1.58	clay	UNDFND	UNDFD	34	1.37
16.50	54.13	2.62	0.25	9.51	1.60	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.75	54.95	3.36	0.25	7.30	1.62	clay	UNDFND	UNDFD	34	1.33
17.00	55.77	6.56	0.41	6.16	1.64	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
17.25	56.59	3.64	0.29	7.71	1.65	clay	UNDFND	UNDFD	36	1.45
17.50	57.41	6.60	0.47	6.93	1.67	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01293A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5981.5 MSL
Approx GWT : 14 Feet

DEPTH meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	14.04	0.13	0.88	0.02	sand	>90	>48	28	UNDEFINED
0.50	1.64	4.86	0.23	4.60	0.07	silty clay to clay	UNDFND	UNDFD	32	2.11
0.75	2.46	1.76	0.09	5.13	0.11	clay	UNDFND	UNDFD	18	.76
1.00	3.28	1.98	0.08	3.87	0.15	silty clay to clay	UNDFND	UNDFD	13	.85
1.25	4.10	2.54	0.08	3.09	0.20	clayey silt to silty clay	UNDFND	UNDFD	13	1.09
1.50	4.92	4.80	0.06	1.27	0.24	silty sand to sandy silt	60-70	44-46	16	UNDEFINED
1.75	5.74	6.46	0.13	1.91	0.29	silty sand to sandy silt	70-80	44-46	22	UNDEFINED
2.00	6.56	6.72	0.16	2.28	0.33	silty sand to sandy silt	70-80	44-46	22	UNDEFINED
2.25	7.38	5.44	0.10	1.73	0.38	silty sand to sandy silt	60-70	42-44	18	UNDEFINED
2.50	8.20	3.78	0.17	4.31	0.42	silty clay to clay	UNDFND	UNDFD	25	1.62
2.75	9.02	2.60	0.13	5.06	0.46	clay	UNDFND	UNDFD	26	1.11
3.00	9.84	2.10	0.19	8.97	0.51	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.25	10.66	9.00	0.14	1.55	0.55	silty sand to sandy silt	70-80	42-44	30	UNDEFINED
3.50	11.48	16.52	0.32	1.91	0.60	sand to silty sand	80-90	44-46	41	UNDEFINED
3.75	12.30	8.32	0.16	1.91	0.64	silty sand to sandy silt	60-70	42-44	28	UNDEFINED
4.00	13.12	8.44	0.10	1.16	0.69	sand to silty sand	60-70	42-44	21	UNDEFINED
4.25	13.94	7.04	0.24	3.32	0.73	sandy silt to clayey silt	UNDFND	UNDFD	28	3.03
4.50	14.76	7.22	0.17	2.26	0.76	silty sand to sandy silt	60-70	40-42	24	UNDEFINED
4.75	15.58	4.22	0.17	3.91	0.78	clayey silt to silty clay	UNDFND	UNDFD	21	1.80
5.00	16.40	2.06	0.08	3.72	0.80	silty clay to clay	UNDFND	UNDFD	14	.86
5.25	17.22	10.28	0.27	2.60	0.82	silty sand to sandy silt	70-80	42-44	34	UNDEFINED
5.50	18.04	0.70	0.07	9.81	0.84	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.75	18.86	1.92	0.06	3.07	0.86	clayey silt to silty clay	UNDFND	UNDFD	10	.79
6.00	19.69	3.34	0.09	2.70	0.88	sandy silt to clayey silt	UNDFND	UNDFD	13	1.40
6.25	20.51	1.86	0.08	4.22	0.89	silty clay to clay	UNDFND	UNDFD	12	.76
6.50	21.33	5.86	0.12	2.04	0.91	silty sand to sandy silt	50-60	38-40	20	UNDEFINED
6.75	22.15	3.12	0.14	4.28	0.93	silty clay to clay	UNDFND	UNDFD	21	1.30
7.00	22.97	3.70	0.06	1.48	0.95	silty sand to sandy silt	40-50	36-38	12	UNDEFINED
7.25	23.79	3.06	0.10	3.08	0.97	clayey silt to silty clay	UNDFND	UNDFD	15	1.27
7.50	24.61	2.60	0.14	5.21	0.99	clay	UNDFND	UNDFD	26	1.07
7.75	25.43	0.90	0.08	8.72	1.01	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.00	26.25	1.66	0.09	5.20	1.03	clay	UNDFND	UNDFD	17	.66
8.25	27.07	6.48	0.13	1.97	1.04	silty sand to sandy silt	50-60	38-40	22	UNDEFINED
8.50	27.89	3.40	0.10	2.83	1.06	sandy silt to clayey silt	UNDFND	UNDFD	14	1.41
8.75	28.71	2.40	0.10	4.17	1.08	silty clay to clay	UNDFND	UNDFD	16	.98
9.00	29.53	10.68	0.30	2.76	1.10	sandy silt to clayey silt	UNDFND	UNDFD	43	4.58
9.25	30.35	4.56	0.33	7.01	1.12	clay	UNDFND	UNDFD	46	1.91
9.50	31.17	7.68	0.27	3.45	1.14	sandy silt to clayey silt	UNDFND	UNDFD	31	3.27

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW Location : 01293A Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	7.84	0.42	5.23	1.16	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
10.00	32.81	7.98	0.24	2.95	1.18	sandy silt to clayey silt	UNDFND	UNDFD	32	3.39
10.25	33.63	3.64	0.19	5.07	1.19	clay	UNDFND	UNDFD	36	1.50
10.50	34.45	2.10	0.10	4.67	1.21	clay	UNDFND	UNDFD	21	.83
10.75	35.27	1.92	0.08	3.99	1.23	silty clay to clay	UNDFND	UNDFD	13	.75
11.00	36.09	1.40	0.10	6.73	1.25	clay	UNDFND	UNDFD	14	.52
11.25	36.91	3.44	0.09	2.68	1.27	sandy silt to clayey silt	UNDFND	UNDFD	14	1.41
11.50	37.73	1.42	0.11	7.88	1.29	clay	UNDFND	UNDFD	14	.53
11.75	38.55	1.50	0.12	8.11	1.31	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.00	39.37	1.56	0.11	6.92	1.32	clay	UNDFND	UNDFD	16	.59
12.25	40.19	1.82	0.13	6.90	1.34	clay	UNDFND	UNDFD	18	.70
12.50	41.01	1.98	0.14	7.14	1.36	clay	UNDFND	UNDFD	20	.77
12.75	41.83	3.76	0.21	5.58	1.38	clay	UNDFND	UNDFD	38	1.54
13.00	42.65	4.68	0.37	7.80	1.40	clay	UNDFND	UNDFD	47	1.94
13.25	43.47	4.42	0.35	7.72	1.42	clay	UNDFND	UNDFD	44	1.82
13.50	44.29	3.56	0.28	7.77	1.44	clay	UNDFND	UNDFD	36	1.45
13.75	45.11	3.54	0.28	7.76	1.46	clay	UNDFND	UNDFD	35	1.43
14.00	45.93	5.04	0.35	6.74	1.47	clay	UNDFND	UNDFD	>50	2.09
14.25	46.75	4.88	0.35	7.12	1.49	clay	UNDFND	UNDFD	49	2.01
[illegible]	47.57	4.66	0.34	7.12	1.51	clay	UNDFND	UNDFD	47	1.92
[illegible]	48.39	4.34	0.33	7.37	1.53	clay	UNDFND	UNDFD	43	1.78
15.00	49.21	4.38	0.32	7.12	1.55	clay	UNDFND	UNDFD	44	1.79
15.25	50.03	8.54	0.39	4.53	1.57	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	6.10	0.05	0.74	0.02	sand to silty sand	>90	>48	15	UNDEFINED
0.50	1.64	8.40	0.28	3.29	0.07	sandy silt to clayey silt	UNDFND	UNDFD	34	3.65
0.75	2.46	8.44	0.24	2.84	0.11	sandy silt to clayey silt	UNDFND	UNDFD	34	3.66
1.00	3.28	16.38	0.28	1.67	0.15	sand to silty sand	>90	>48	41	UNDEFINED
1.25	4.10	14.22	0.24	1.67	0.20	sand to silty sand	>90	>48	36	UNDEFINED
1.50	4.92	11.82	0.17	1.39	0.24	sand to silty sand	>90	46-48	30	UNDEFINED
1.75	5.74	5.64	0.14	2.51	0.29	sandy silt to clayey silt	UNDFND	UNDFD	23	2.44
2.00	6.56	6.12	0.10	1.67	0.33	silty sand to sandy silt	60-70	42-44	20	UNDEFINED
2.25	7.38	8.40	0.11	1.31	0.38	sand to silty sand	70-80	44-46	21	UNDEFINED
2.50	8.20	5.00	0.22	4.32	0.42	clayey silt to silty clay	UNDFND	UNDFD	25	2.15
2.75	9.02	2.06	0.16	7.81	0.46	clay	UNDFND	UNDFD	21	.87
3.00	9.84	5.72	0.17	2.95	0.51	sandy silt to clayey silt	UNDFND	UNDFD	23	2.46
3.25	10.66	5.46	0.14	2.48	0.55	sandy silt to clayey silt	UNDFND	UNDFD	22	2.35
3.50	11.48	3.30	0.15	4.46	0.60	silty clay to clay	UNDFND	UNDFD	22	1.41
3.75	12.30	2.66	0.09	3.47	0.64	clayey silt to silty clay	UNDFND	UNDFD	13	1.13
4.00	13.12	1.60	0.12	7.60	0.69	clay	UNDFND	UNDFD	16	.66
4.25	13.94	3.30	0.11	3.27	0.73	clayey silt to silty clay	UNDFND	UNDFD	17	1.40
4.50	14.76	2.26	0.12	5.12	0.77	clay	UNDFND	UNDFD	23	.95
4.75	15.58	4.14	0.11	2.56	0.82	sandy silt to clayey silt	UNDFND	UNDFD	17	1.76

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 013938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	10.76	0.19	1.70	0.02	silty sand to sandy silt	>90	>48	36	UNDEFINED
0.50	1.64	24.36	0.38	1.54	0.07	sand to silty sand	>90	>48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	11.74	0.15	1.22	0.02	sand to silty sand	>90	>48	29	UNDEFINED
0.50	1.64	15.62	0.41	2.55	0.07	silty sand to sandy silt	>90	>48	>50	UNDEFINED
0.75	2.46	12.06	0.31	2.49	0.11	silty sand to sandy silt	>90	>48	40	UNDEFINED
1.00	3.28	8.54	0.19	2.23	0.15	silty sand to sandy silt	>90	>48	28	UNDEFINED
1.25	4.10	9.78	0.10	1.04	0.20	sand to silty sand	>90	46-48	24	UNDEFINED
1.50	4.92	6.76	0.09	1.36	0.24	silty sand to sandy silt	70-80	44-46	23	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393D
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	5.78	0.10	1.73	0.02	silty sand to sandy silt	>90	>48	19	UNDEFINED
0.50	1.64	16.82	0.39	2.27	0.07	silty sand to sandy silt	>90	>48	>50	UNDEFINED
0.75	2.46	18.08	0.73	3.98	0.11	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
1.00	3.28	5.24	0.48	8.99	0.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.25	4.10	4.20	0.16	3.83	0.20	clayey silt to silty clay	UNDFND	UNDFD	21	1.81
1.50	4.92	6.46	0.23	3.46	0.24	sandy silt to clayey silt	UNDFND	UNDFD	26	2.80
1.75	5.74	6.04	0.18	2.96	0.29	sandy silt to clayey silt	UNDFND	UNDFD	24	2.61
2.00	6.56	8.80	0.15	1.67	0.33	silty sand to sandy silt	80-90	44-46	29	UNDEFINED
2.25	7.38	6.16	0.18	2.93	0.38	sandy silt to clayey silt	UNDFND	UNDFD	25	2.66
2.50	8.20	4.98	0.18	3.51	0.42	clayey silt to silty clay	UNDFND	UNDFD	25	2.14
2.75	9.02	8.74	0.11	1.21	0.46	sand to silty sand	70-80	42-44	22	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393E
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	13.94	0.24	1.70	0.02	sand to silty sand	>90	>48	35	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393F
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 28 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01393G
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 23 DEC 92
Elevation : 5976.8 MSL
Approx GWT : 8.54 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	2.86	0.08	2.88	0.02	clayey silt to silty clay	UNDFND	UNDFD	14	1.24
0.50	1.64	5.64	0.23	3.97	0.07	clayey silt to silty clay	UNDFND	UNDFD	28	2.45
0.75	2.46	3.64	0.20	5.34	0.11	clay	UNDFND	UNDFD	36	1.57
1.00	3.28	15.76	0.49	3.05	0.15	silty sand to sandy silt	>90	>48	>50	UNDEFINED
1.25	4.10	19.64	0.27	1.35	0.20	sand to silty sand	>90	>48	49	UNDEFINED
1.50	4.92	12.38	0.18	1.41	0.24	sand to silty sand	>90	46-48	31	UNDEFINED
1.75	5.74	7.74	0.15	1.95	0.29	silty sand to sandy silt	70-80	44-46	26	UNDEFINED
2.00	6.56	3.84	0.12	3.02	0.33	sandy silt to clayey silt	UNDFND	UNDFD	15	1.65
2.25	7.38	4.30	0.13	2.97	0.38	sandy silt to clayey silt	UNDFND	UNDFD	17	1.85
2.50	8.20	2.90	0.17	5.89	0.42	clay	UNDFND	UNDFD	29	1.24
2.75	9.02	1.94	0.10	4.96	0.46	clay	UNDFND	UNDFD	19	.82
3.00	9.84	2.94	0.13	4.20	0.51	silty clay to clay	UNDFND	UNDFD	20	1.25
3.25	10.66	2.70	0.12	4.51	0.55	silty clay to clay	UNDFND	UNDFD	18	1.15
3.50	11.48	2.58	0.11	4.34	0.60	silty clay to clay	UNDFND	UNDFD	17	1.09
3.75	12.30	1.90	0.13	6.61	0.64	clay	UNDFND	UNDFD	19	.79
4.00	13.12	0.82	0.10	11.49	0.69	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.25	13.94	2.58	0.12	4.56	0.73	silty clay to clay	UNDFND	UNDFD	17	1.09
4.50	14.76	6.04	0.17	2.79	0.77	sandy silt to clayey silt	UNDFND	UNDFD	24	2.59
4.75	15.58	1.84	0.12	6.61	0.82	clay	UNDFND	UNDFD	18	.76
5.00	16.40	3.66	0.14	3.75	0.86	clayey silt to silty clay	UNDFND	UNDFD	18	1.55
5.25	17.22	2.42	0.14	5.68	0.91	clay	UNDFND	UNDFD	24	1.01
5.50	18.04	2.48	0.11	4.43	0.95	silty clay to clay	UNDFND	UNDFD	17	1.03
5.75	18.86	4.84	0.17	3.49	1.00	clayey silt to silty clay	UNDFND	UNDFD	24	2.06
6.00	19.69	6.88	0.18	2.54	1.04	sandy silt to clayey silt	UNDFND	UNDFD	28	2.94
6.25	20.51	4.94	0.18	3.50	1.08	clayey silt to silty clay	UNDFND	UNDFD	25	2.10
6.50	21.33	2.26	0.13	5.56	1.13	clay	UNDFND	UNDFD	23	.93
6.75	22.15	5.92	0.25	4.11	1.17	clayey silt to silty clay	UNDFND	UNDFD	30	2.52
7.00	22.97	8.24	0.26	3.05	1.22	sandy silt to clayey silt	UNDFND	UNDFD	33	3.53
7.25	23.79	9.16	0.26	2.76	1.26	sandy silt to clayey silt	UNDFND	UNDFD	37	3.93
7.50	24.61	3.00	0.21	7.00	1.31	clay	UNDFND	UNDFD	30	1.25
7.75	25.43	3.34	0.17	5.11	1.35	clay	UNDFND	UNDFD	33	1.39
8.00	26.25	3.26	0.23	6.86	1.39	clay	UNDFND	UNDFD	33	1.36
8.25	27.07	5.16	0.19	3.69	1.44	clayey silt to silty clay	UNDFND	UNDFD	26	2.18
8.50	27.89	3.90	0.12	2.92	1.48	sandy silt to clayey silt	UNDFND	UNDFD	16	1.63
8.75	28.71	6.58	0.47	6.95	1.52	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
9.00	29.53	4.82	0.32	6.60	1.54	clay	UNDFND	UNDFD	48	2.03
9.25	30.35	10.36	0.25	2.33	1.56	silty sand to sandy silt	60-70	38-40	35	UNDEFINED
9.50	31.17	3.88	0.20	5.01	1.58	clay	UNDFND	UNDFD	39	1.61

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

ractor : TERRA TECH - SW Location : 01393G Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	3.44	0.23	6.67	1.59	clay	UNDFND	UNDFD	34	1.42
10.00	32.81	9.68	0.66	6.71	1.61	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
10.25	33.63	2.18	0.28	12.42	1.63	undefined	UNDFND	UNDFD	UDF	UNDEFINED
10.50	34.45	0.52	0.20	38.49	1.65	undefined	UNDFND	UNDFD	UDF	UNDEFINED
10.75	35.27	5.30	0.20	3.78	1.67	clayey silt to silty clay	UNDFND	UNDFD	27	2.22
11.00	36.09	13.96	0.86	6.07	1.69	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
11.25	36.91	1.36	0.38	27.70	1.71	undefined	UNDFND	UNDFD	UDF	UNDEFINED
11.50	37.73	1.52	0.24	15.23	1.72	undefined	UNDFND	UNDFD	UDF	UNDEFINED
11.75	38.55	0.06	0.20	333.59	1.74	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.00	39.37	3.90	0.22	5.53	1.76	clay	UNDFND	UNDFD	39	1.60
12.25	40.19	1.60	0.35	21.34	1.78	undefined	UNDFND	UNDFD	UDF	UNDEFINED
12.50	41.01	10.16	0.37	3.57	1.80	sandy silt to clayey silt	UNDFND	UNDFD	41	4.32
12.75	41.83	6.36	0.86	13.30	1.82	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.00	42.65	2.06	0.16	7.53	1.84	clay	UNDFND	UNDFD	21	.80
13.25	43.47	1.08	0.13	11.45	1.86	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.50	44.29	0.84	0.15	17.75	1.87	undefined	UNDFND	UNDFD	UDF	UNDEFINED
13.75	45.11	1.22	0.14	11.10	1.89	undefined	UNDFND	UNDFD	UDF	UNDEFINED
14.00	45.93	1.54	0.16	10.45	1.91	undefined	UNDFND	UNDFD	UDF	UNDEFINED
14.25	46.75	1.22	0.16	13.03	1.93	undefined	UNDFND	UNDFD	UDF	UNDEFINED
50	47.57	6.40	0.25	3.83	1.95	clayey silt to silty clay	UNDFND	UNDFD	32	2.67
75	48.39	2.92	0.19	6.38	1.97	clay	UNDFND	UNDFD	29	1.16
15.00	49.21	8.34	0.18	2.14	1.99	silty sand to sandy silt	50-60	36-38	28	UNDEFINED
15.25	50.03	3.74	0.23	5.98	2.00	clay	UNDFND	UNDFD	37	1.51
15.50	50.85	1.48	0.21	13.79	2.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
15.75	51.67	1.54	0.23	14.78	2.04	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.00	52.49	1.92	0.26	13.49	2.06	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.25	53.31	1.50	0.25	16.22	2.08	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.50	54.13	1.60	0.23	14.23	2.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
16.75	54.95	1.94	0.22	11.23	2.12	undefined	UNDFND	UNDFD	UDF	UNDEFINED
17.00	55.77	3.44	0.33	9.41	2.14	undefined	UNDFND	UNDFD	UDF	UNDEFINED
17.25	56.59	3.92	0.46	11.56	2.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
17.50	57.41	3.38	0.37	10.80	2.17	undefined	UNDFND	UNDFD	UDF	UNDEFINED
17.75	58.23	4.22	0.43	9.90	2.19	undefined	UNDFND	UNDFD	UDF	UNDEFINED
18.00	59.06	4.10	0.47	11.15	2.21	undefined	UNDFND	UNDFD	UDF	UNDEFINED
18.25	59.88	4.26	0.44	10.18	2.23	undefined	UNDFND	UNDFD	UDF	UNDEFINED
18.50	60.70	5.62	0.52	9.15	2.25	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

*** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01493A
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 08 JAN 93
Elevation : 5974.6 MSL
Approx GWT : 35 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 014938
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 08 JAN 93
Elevation : 5974.6 MSL
Approx GWT : 35 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)
0.25	0.82	19.74	0.17	0.84	0.02	sand	>90	>48	39	UNDEFINED
0.50	1.64	13.88	0.60	4.24	0.07	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
0.75	2.46	3.20	0.15	4.60	0.11	silty clay to clay	UNDFND	UNDFD	21	1.38
1.00	3.28	4.76	0.03	0.66	0.15	sand to silty sand	70-80	44-46	12	UNDEFINED
1.25	4.10	4.26	0.03	0.60	0.20	sand to silty sand	60-70	44-46	11	UNDEFINED
1.50	4.92	6.88	0.04	0.51	0.24	sand to silty sand	70-80	44-46	17	UNDEFINED
1.75	5.74	3.34	0.01	0.24	0.29	silty sand to sandy silt	50-60	40-42	11	UNDEFINED
2.00	6.56	2.08	0.01	0.47	0.33	silty sand to sandy silt	<40	38-40	7	UNDEFINED
2.25	7.38	6.52	0.01	0.15	0.38	sand to silty sand	60-70	42-44	16	UNDEFINED
2.50	8.20	4.42	0.02	0.49	0.42	sand to silty sand	50-60	40-42	11	UNDEFINED
2.75	9.02	5.14	0.01	0.19	0.46	sand to silty sand	50-60	40-42	13	UNDEFINED
3.00	9.84	4.76	0.02	0.49	0.51	sand to silty sand	50-60	40-42	12	UNDEFINED
3.25	10.66	5.26	0.04	0.71	0.55	sand to silty sand	50-60	40-42	13	UNDEFINED
3.50	11.48	5.00	0.02	0.43	0.60	sand to silty sand	50-60	40-42	13	UNDEFINED
3.75	12.30	3.84	0.01	0.36	0.64	sand to silty sand	40-50	38-40	10	UNDEFINED
4.00	13.12	12.70	0.07	0.56	0.69	sand	80-90	42-44	25	UNDEFINED
4.25	13.94	7.12	0.05	0.66	0.73	sand to silty sand	60-70	40-42	18	UNDEFINED
4.50	14.76	2.98	0.04	1.19	0.77	silty sand to sandy silt	<40	36-38	10	UNDEFINED
4.75	15.58	5.78	0.01	0.17	0.82	sand to silty sand	50-60	38-40	14	UNDEFINED
5.00	16.40	2.00	0.01	0.49	0.86	silty sand to sandy silt	<40	32-34	7	UNDEFINED
5.25	17.22	4.88	0.04	0.72	0.91	sand to silty sand	40-50	38-40	12	UNDEFINED
5.50	18.04	7.82	0.04	0.53	0.95	sand to silty sand	60-70	40-42	20	UNDEFINED
5.75	18.86	11.96	0.07	0.54	1.00	sand	70-80	40-42	24	UNDEFINED
6.00	19.69	3.50	0.01	0.28	1.04	sand to silty sand	<40	34-36	9	UNDEFINED
6.25	20.51	6.08	0.11	1.74	1.08	silty sand to sandy silt	50-60	38-40	20	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

ROCKY FLATS PLANT - OU7 LANDFILL

Contractor : TERRA TECH - SW
Location : 01493C
Job No. : 92-1023
Tot. Unit Wt. (avg) : 108 pcf

Test Date : 08 JAN 93
Elevation : 5974.6 MSL
Approx GWT : 35 Feet

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (MN/m^2)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI (deg)	SPT (N)	Su (tsf)

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Appendix E

Borehole Logs

SOIL TYPES

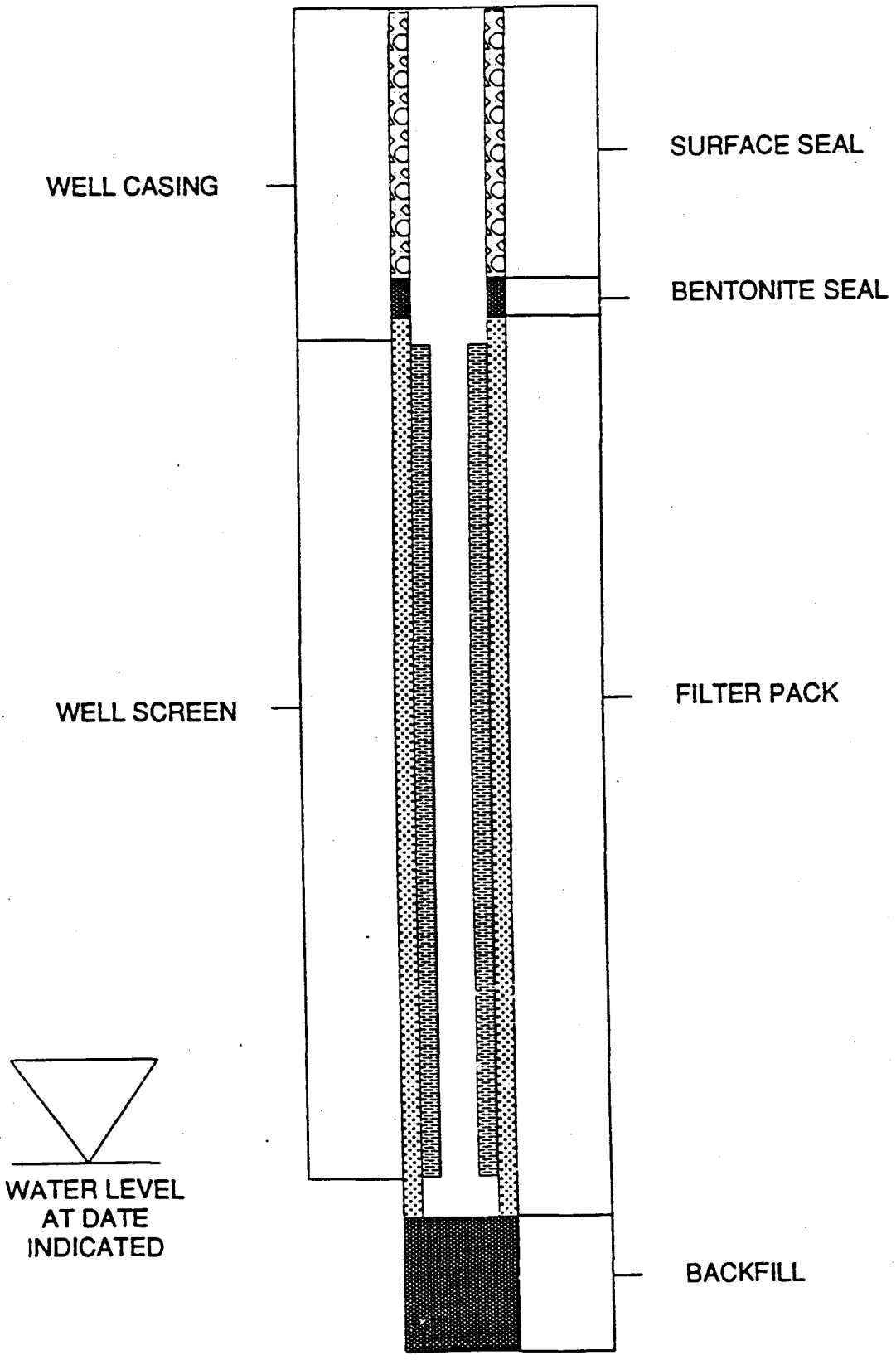
Major Divisions			Letter	Symbol	Description
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravels (<5% fines)	GW		Well graded gravels or gravel-sand mixtures, little or no fines. Uc >4 (lab only)
			GP		Poorly graded gravels or gravel sand mixtures, little or no fines.
	More than 50% of coarse fraction retained on no. 4 sieve	Gravel with Fines (>12% fines)	GM		Silty gravels, gravel-sand-silt mixtures.
			GC		Clayey gravels, gravel-sand-clay mixtures.
	Sand and Sandy Soils	Clean Sand (<5% fines)	SW		Well graded sands or gravelly sands, little or no fines. Uc >6 (lab only)
			SP		Poorly-graded sands or gravelly sands, little or no fines.
More than 50% of material is larger than no. 200 sieve size	More than 50% of coarse fraction passed no. 4 sieve	Sands with Fines (>12% fines)	SM		Silty sands, sand-silt mixtures.
			SC		Clayey sands, sand-clay mixtures.
Fine Grained Soils	Silts and Clays	Low Plasticity	ML		Inorganic silts, and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity.
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL		Organic silts and organic silty clays of low plasticity.
More than 50% of material is smaller than no. 200 sieve size		High Plasticity	MH		Inorganic silts, micaceous or diatomaceous fine sand or silty soils.
			CH		Inorganic clays of high plasticity, fat clays.
			OH		Organic clays of medium to high plasticity, organic silts.
Highly Organic Soils			PT		Peat, humus, swamp soils with high organic contents.

After Unified Soil Classification System

ROCK TYPES

Division	Lithology Symbol	Name
CLAYSTONE		Claystone
		Silty Claystone
		Sandy Claystone
SILTSTONE		Siltstone
		Clayey Siltstone
		Sandy Siltstone
SANDSTONE		Sandstone
		Silty Sandstone
		Clayey Sandstone
		Coal
		Ironstone
		Caliche

WELL OR PIEZOMETER CONSTRUCTION



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.

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
				1.5/1.5	5636	0			CL:	SANDY CLAY, dark yellowish brown (10 YR 4/2), mod. plast., some gravel, some roots.
					5635	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.
				1.5/1.5	5634	2			SC:	Same as above: mod. yellowish brown (10 YR 5/4), sand is FG-CG, slightly calc.
					5633	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.
				0.0/1					NO SAMPLE:	Removed Aug. 13, 1986 by Ward Hurst. Sample sent to Chen & Associates.
					5632	4	04/01/87		NO SAMPLE:	
				0.0/2.5	5631	5	02/23/87			
					5630	6				
				1.0/1.5	5629	7			CL:	CLAY, dark yellowish brown (10 YR 4/2), est. mod. plast., some sand MG-FG, v. slightly calc.
					5628	8			GC:	Clayey Gravel, dark yellowish brown (10 YR 4/2), sub-angular-sub-rounded, poorly graded, max size = 7 cm.
					5627	9				

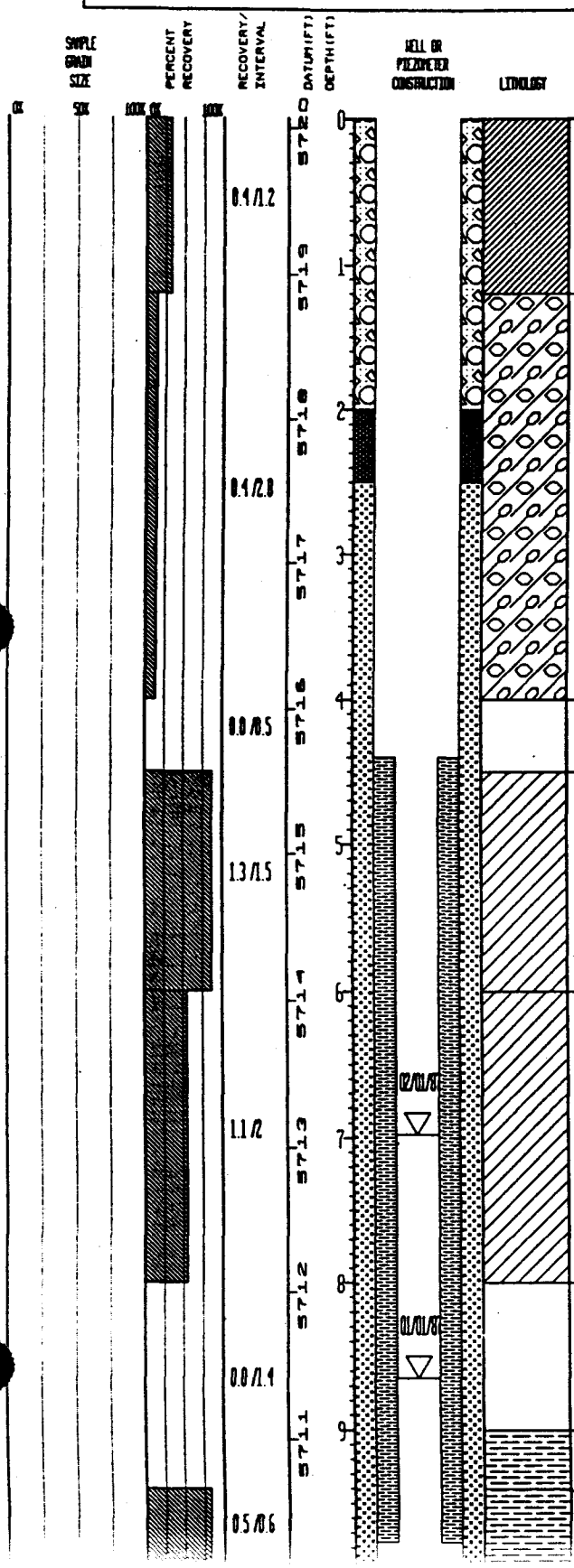
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 18	GROUND ELEVATION (FT): 5636.6	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753439	AREA: BUFFER EAST	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DAT	4-86
EAST: 2093878	LOCATOR NUMBER: U13	BOREHOLE DIAMETER (IN): 7 1/4	DATE DRILLED: 04/21/86	

REMARKS: Hollow Stem Auger.

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
					5626	10				
					5625	11				
				1.7/1.3	5624	12	04/21/86		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.
				0.0/1	5623	13			NO SAMPLE:	
				4.0/4	5622	14			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.
					5621	15				
					5620	16				
					5619	17				
					5618	18				
					5617	19				

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
NORTH: 753697	AREA: BUFFER EAST	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA
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'.

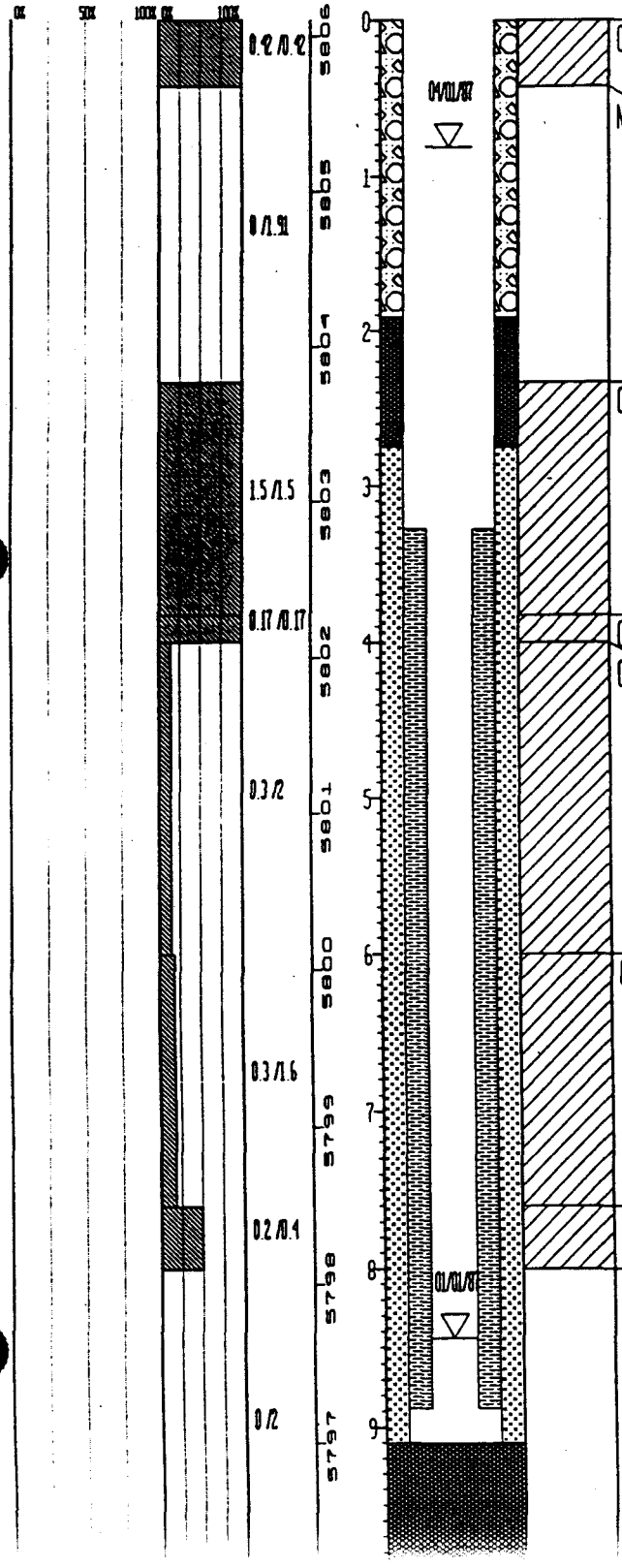
LOG OF BORING NUMBER: 5-86

CHEMICAL SAMPLE NO. OR 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
				0.0/1.1	5710	10			NO SAMPLE:	
				0.5/0.9	5709	11			CLAYSTONE:	Pale yellowish brown (10 YR 6/2) to dk. yellowish orange (10 YR 6/6). Some silt. Some iron oxide concretions.
				1.2/2	5708	12			CLAYSTONE:	Same as above.
					5707	13				
					5706	14	04/22/86			
					5705	15				
					5704	16				
					5703	17				
					5702	18				
					5701	19				

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'.

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



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'.

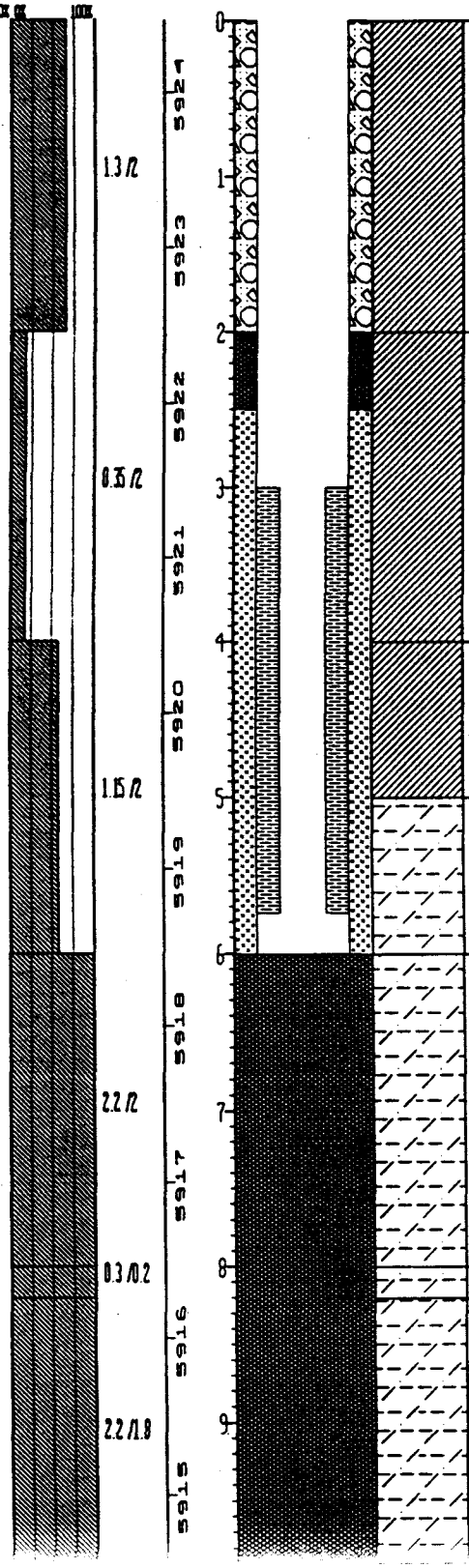
SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0% 50%	100% 0%	100%						
			0.6/1.25	5796	10			CH:	Clay, light brownish gray (5 YR 6/1), moderately high plasticity, cobble at 10.0 ft., decrease in silt fraction with depth and color change below 11.25 ft. to medium light gray (N6).
				5795	11			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).
			0.2/0.75					CLAYSTONE:	Same as above.
			0.35/0.35	5794	12			CLAYSTONE:	Same as above.
			1.65/1.65	5793	13			CLAYSTONE:	Same as above. Note: No water encountered while drilling
				5792	14				
				5791	15				
				5790	16				
				5789	17				
				5788	18				
				5787	19				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 10	GROUND ELEVATION (FT):	5924.46	PROJECT NUMBER:	667.11
NORTH: 752827	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA
EAST: 2083977	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7 1/4	DATE DRILLED:	09/23/86
REMARKS:					

LOG OF BORING NUMBER: 7-86

GRADATIONAL SAMPLE DE

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

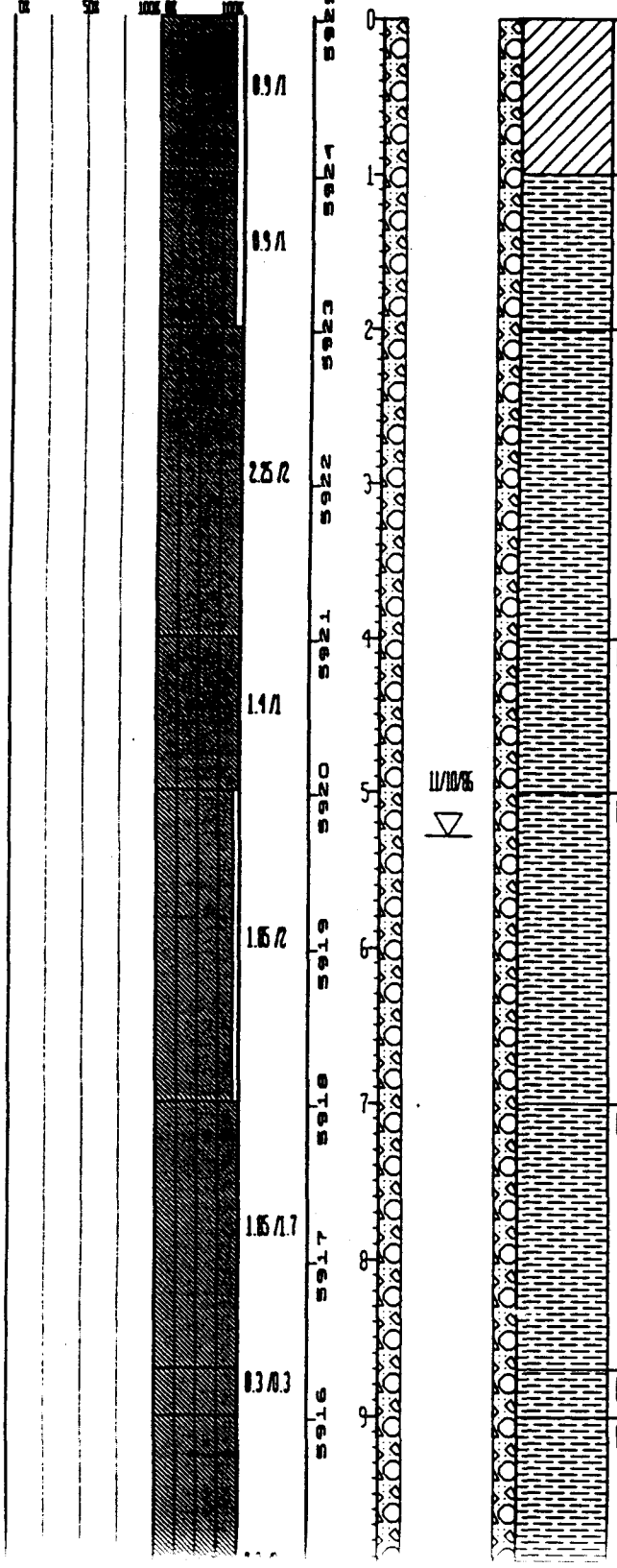


RECOVERY/INTERVAL	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
1.3/2	0	CH:	Silty Clay, Dk. yellowish brown (10 YR 4/2). Est. plast. mod. to high. Some grass and roots from surface. Some gravel (avg. size 2.5 cm). Trace sand, VFG to med. grained.
0.35/2	2	CH:	Same as above.
1.15/2	4	CH:	Silty Clay, Dk. yellowish orange (10 YR 6/6) to yellowish gray (5 Y 8/1). Plast. mod. to high.
	5	SILTY CLAYSTONE:	Top of Bedrock. Same as above
2.2/2	6	SILTY CLAYSTONE:	Same as above. More silt. Bottom of interval has black discoloration in matrix. Maybe organics (oil). (This box has a distinct odor, may be organics).
0.3/0.2	8	SILTY CLAYSTONE:	Same as above, some black carbonaceous material.
2.2/1.8		SILTY CLAYSTONE:	Same as above. NOTE: No water encountered while drilling.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 71.5		GROUND ELEVATION (FT):	5925.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752817	AREA: LANDFILL		CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DAT	8-86
EAST:	2084001	LOCATOR NUMBER: L12		BOREHOLE DIAMETER (IN):	7 1/4	DATE DRILLED:	10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause. Fractured bed rock from 20-30'.

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:	SANDY CLAY, moderate yellowish brown (10 YR 5/4), mod. plast., some gravel (max size = 3 cm), some roots in top of interval.
CLAYSTONE:	Top of Bedrock Yellowish gray (5 Y 8/1), non-apparent bedding, well weathered, mod-poorly friable, some iron staining as mottles, trace of calc. material at base of interval, trace of silt.
CLAYSTONE:	Same as above: some calc. material.
CLAYSTONE:	Same as above: trace of calc. material.
CLAYSTONE:	Same as above.
CLAYSTONE:	Same as above.
CLAYSTONE:	Same as above: floury texture, no calc. material, some silt.
CLAYSTONE:	Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 71.5	GROUND ELEVATION (FT): 5925.03	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752817	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DAT	8-86
EAST: 2094001	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7 1/4	DATE DRILLED: 10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.

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

2.3/2

1/0.8

1.55/1.2

1/1

1.1/1

1.03/1.03

0.17/0.17

2/2

0/1

5915 5914 5913 5912 5911 5910 5909 5908 5907 5906

10 11 12 13 14 15 16 17 18 19

11/12/86

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE:	Light olive gray (5 Y 6/1), apparent massive bedding, well weathered, mod-highly friable, some iron staining as mottles, some silt, trace of Mg staining.
CLAYSTONE:	Same as above: apparent horizontal bedding, trace of carb material, increased iron staining.
CLAYSTONE:	Same as above, increased silt fraction.
CLAYSTONE:	Carbonaceous, olive gray (5 Y 4/1), apparent horizontal laminar bedding, well weathered, mod. friable, some silt, some iron staining as mottles, trace of horizontal coal seams (1 mm thick).
CLAYSTONE:	Same as above.
SILTY CLAYSTONE:	Yellowish gray (5 Y 8/1), non-apparent bedding, well weathered, mod-high friability, trace of iron staining, trace of Mg staining.
SILTY CLAYSTONE:	Same as above, highly fractured at base of interval. Very base of interval is carbonaceous and olive black (5 Y 2/1).
NO SAMPLE:	

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 71.5	GROUND ELEVATION (FT):	5925.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752817	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DAT	8-86
EAST:	2084001	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7 1/4	DATE DRILLED:	10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'

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
0.3/1.5	20–21	SILTY CLAYSTONE	Light olive gray (5 Y 6/1), apparent massive bedding, highly weathered, mod-poorly friable, trace of carb. material, trace of iron staining as mottles.
2.3/5	21–26	SILTY CLAYSTONE	Same as above: some 90 degree and 75 degree fracturing showing slickensides, no iron staining.
3.5/5	26–29	SILTY CLAYSTONE	Same as above: no apparent fractures, trace of iron staining as mottles.

Depth scale: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

Datum scale: 5905, 5904, 5903, 5902, 5901, 5900, 5899, 5898, 5897, 5896

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 71.5	GROUND ELEVATION (FT):	5925.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752817	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DAT	8-86
EAST:	2094001	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7 1/4	DATE DRILLED:	10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.

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
				5895	30				
				5894	31				
			0.5 ft	5893	32				SILTY CLAYSTONE: Light olive gray (5 Y 6/1), non-apparent bedding, highly weathered, mod-poorly friable, some carb. material, trace of iron staining as mottles.
			2 ft	5892	33				SILTY CLAYSTONE: Carbonaceous, olive gray (5 Y 4/1), at top of interval, olive black (5 Y 2/1) at middle of interval, non-apparent bedding, highly weathered, mod. friable.
				5891	34				
			2 ft	5890	35				SILTY CLAYSTONE: Light olive gray (5 Y 6/1), non-apparent bedding, highly weathered, mod. friable, fractures at 85 degrees showing slickensides, some carb. material.
				5889	36				
				5888	37				SILTY CLAYSTONE: Same as above: bottom of interval is olive gray (5 Y 4/1).
				5887	38				
			1.1 ft	5886	39				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 71.5	GROUND ELEVATION (FT):	5925.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752817	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DAT	8-86
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REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.

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
				5885	40				
				5884	41				
			0.6/0.75	5883	42				SILTY CLAYSTONE: Olive gray (5 Y 4/1), non-apparent bedding, well weathered, mod-poorly friable, trace of carb. material.
				5882	43				SILTY CLAYSTONE: Same as above.
			4.2/4.2	5881	44				
				5880	45				
				5879	46				
				5878	47				SILTY CLAYSTONE: Same as above, top of interval is fractured 60 degrees-70 degrees; increased silt fraction.
				5877	48				
			5/5	5876	49	11/13/86			

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 71.5	GROUND ELEVATION (FT): 5925.03	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
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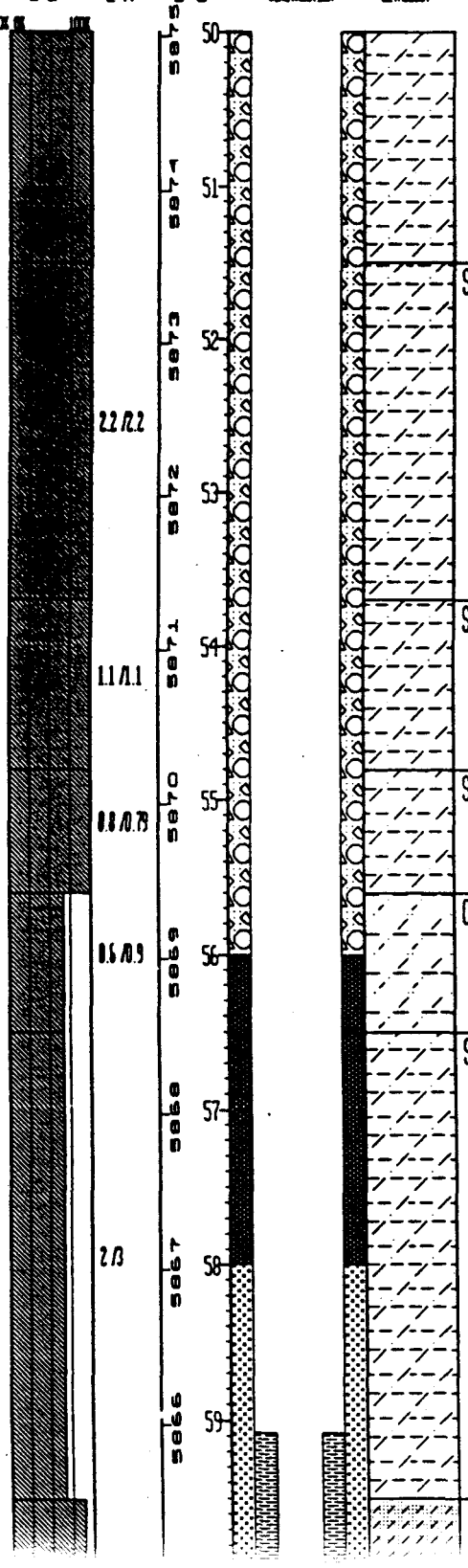
EAST: 2084001	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7 1/4	DATE DRILLED: 10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.

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 gray (5 Y 4/1), non-apparent bedding, highly weathered, mod-poorly friable, trace of carb., trace of iron staining, decreased silt fraction at base of interval.

SILTY CLAYSTONE: Same as above, light olive gray (5 Y 6/1).

SILTY CLAYSTONE: Same as above

CLAYEY SILTSTONE: Olive gray (5 Y 4/1), non-apparent bedding, highly weathered, mod-poorly friable.

SILTY CLAYSTONE: Olive gray (5 Y 4/1) at top of interval and light olive gray (5 Y 6/1) at bottom of interval, non-apparent bedding, highly weathered, mod. friable, some carb. material, trace of iron staining.

SANDY SILTSTONE: VFG, light olive gray (5 Y 6/1), slab shows massive bedding w/possible burrowing, highly weathered, poorly friable, trace of carb. material

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EAST:	2094001	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7 1/4	DATE DRILLED:	10/23/86	

REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.

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
			1.8/2	5861	60				trace of iron staining, some clay.
				5861	61				
			1.8/1.8	5862	62			SANDY SILTSTONE	VFG, light olive gray (5 Y 6/1), massive bedding, highly weathered, poorly friable, trace of carb. material, trace of iron staining as mottles, some sand.
				5862	63				
			1.7/2	5861	64			SILTSTONE	Light olive gray (5 Y 6/1), non-apparent bedding, highly weathered, poorly friable, some clay at bottom of interval.
				5860	65				
			0.7/1.2	5859	66			SILTY CLAYSTONE	Olive gray (5 Y 4/1), non-apparent bedding, highly weathered, mod. friable, some carb., trace of coal 1-2 mm.
				5858	67			SILTY CLAYSTONE	Same as above, light olive gray (5 Y 6/1).
				5857	68				
			3.1/5	5856	69				

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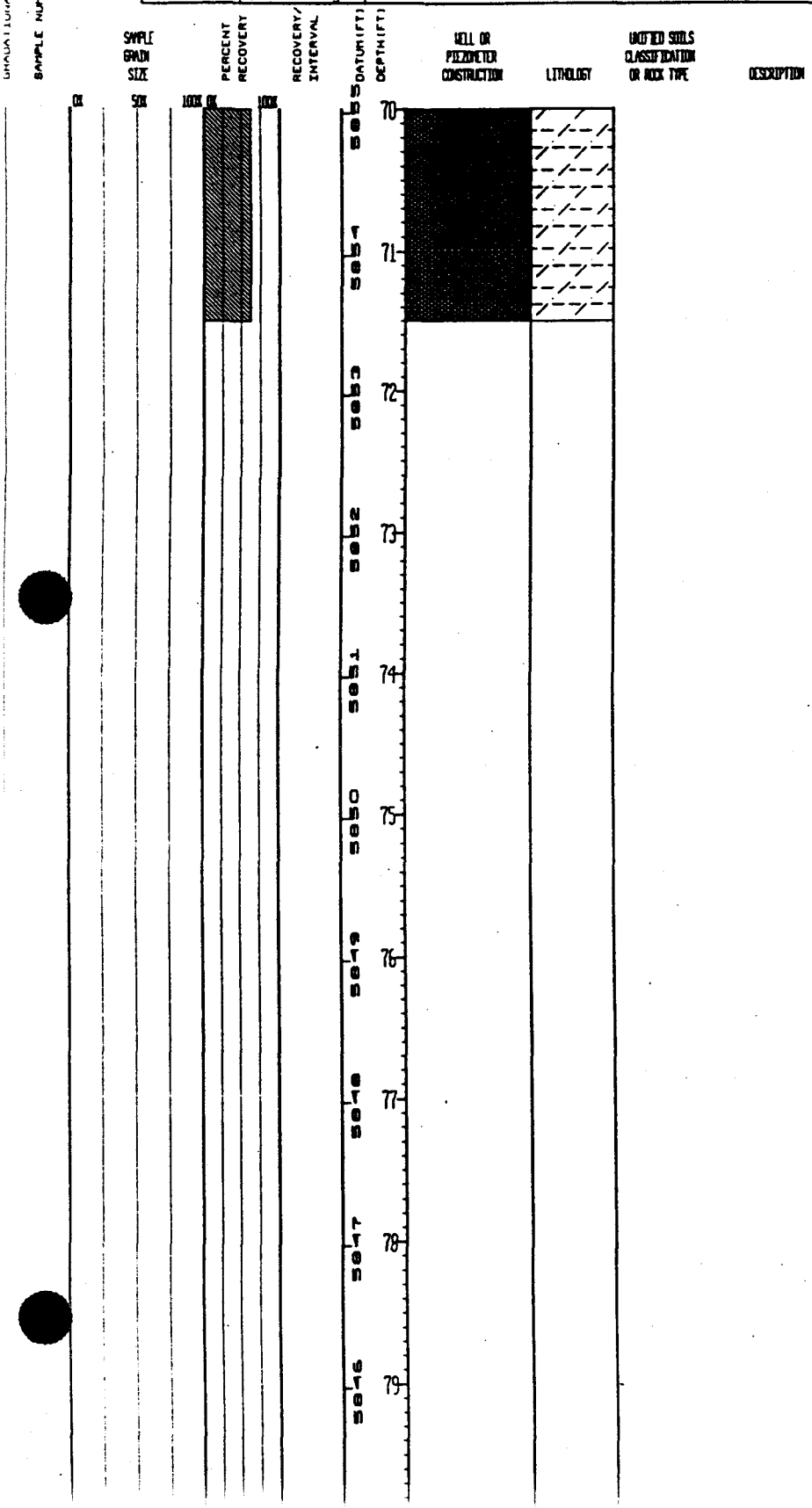
REMARKS: Hollow Stem Auger/NC Core. When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: fractured bed rock from 20-30'.



STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT):	5996.39	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752191	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA	9-86
EAST:	2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	4 3/4	DATE DRILLED:	10/02/86	

REMARKS: Casing Driver; Hollow Stem Auger; NC Core.

GRADATIONAL SAMPLE 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
				0.5/0.9	5996	0			GC:	GRAVEL, predom. med. lt. gray (N6). Angular to sub-angular. Well graded. Granules to 4.5 cm. Some dry silty clay matrix, trace sand VFG to coarse. Trace surface roots and grass.
				0/0.6	5995	1			NO SAMPLE:	
				0/3	5994 5993	2 3			NO SAMPLE:	
				0/1	5992 5991	4 5			NO SAMPLE:	
				0.1/0.5	5990	6			GW:	SAND AND GRAVEL, Gravel pred. med. gray (N5). Angular, mod. sorted granules to 3 cm. Sand grayish orange VFG to granules. Mod. well graded some silt & clay.
				0.3/1.5	5989	7			GW:	GRAVEL, Pred. med. dk gray (N4). Angular to sub-rounded. Well graded granules to 3.5 cm. Some silty clay matrix. Some sand, VFG to coarse.
				0/1	5988	8			NO SAMPLE:	
				0/0.83	5987	9			NO SAMPLE:	
									GC:	Sandy Clayey Gravel, Color & angularity as above. Poorly graded, to 2.5 cm. Matrix very pale orange to grayish orange (10YR 8/4 to 7/2). Sand VFG to coarse. Some silt.

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EAST: 2082472	LOCATION NUMBER: J12	BOREHOLE DIAMETER (IN): 4 3/4	DATE DRILLED: 10/02/86	

REMARKS: Casing Driver; Hollow Stem Auger; NC Core.

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
				0.6/1.67	5996	10				
				0.3/1.5	5995	11			GC:	Sandy Clayey Gravel, pred. med. gray (N5). Sub-angular to sub-rounded, mod. grading. Granules to 3.5 cm. Matrix grayish orange (10YR 7/4). Est. plasticity low.
					5994	12				
				0/1.5	5993	13			NO SAMPLE:	
				0/1	5992	14			NO SAMPLE:	
				0.6/0.5	5991	15			GC:	Same as above. Angular to sub-rounded. Well graded.
				0/2	5990	16			NO SAMPLE:	
				0.3/1	5989	17			CL:	SANDY SILTY CLAY, Dk. yellowish orange (10YR 6/6). Est. plast. low. Sand coarse to granules. Mod. graded, some gravel. Sub-rounded to 1.5 cm.
				0.5/0.7	5988	18			CL:	Same as above.
				0/0.79	5987	19			NO SAMPLE:	

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REMARKS: . Casing Driver: Hollow Stem Auger: NC Core

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					5976	20				NO SAMPLE
					5975	21				
				0/4	5974	22				
					5973	23				
					5972	24			CL	SILTY CLAY, Dk. yellowish orange (10YR 6/6). Est plast. low to mod., some sand VFG to coarse.
					5971	25				
				0.3/3.5	5970	26				
					5969	27				
										NO SAMPLE
				0/1.5	5968	28				
						29				NO SAMPLE
				0/0.9	5967					

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REMARKS: Casing Driver; Hollow Stem Auger; NC Core.

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				0.8/0.6	5966	30			GC:	Sandy Clayey Gravel, No predom. gravel color, angular to sub-rounded to 1.5 cm. Mod. well graded. Sand VFG to coarse.
									CLAYSTONE:	Top of Bedrock Grades to Claystone yellowish gray. Est. plast. mod. to high. Some silt, trace silt. Trace carb. material.
					5965	31			NO SAMPLE:	
					5964	32				
					5963	33				
				0/6.5	5962	34				
					5961	35				
					5960	36				
					5959	37			NO SAMPLE:	
					5958	38				
				0/5	5957	39				

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					5996	40				
					5995	41				
					5994	42			CLAYSTONE:	Between yellowish gray & light olive gray (5Y 8/1-6/1). Mod. to highly weathered. Mod. friable. Bedding not evident. Iron staining common in matrix. Black carbonaceous material & leaf prints visible.
				1.7/3	5993	43				
					5992	44				
					5991	45			CLAYSTONE:	Same as above significant iron staining in vertical fractures. Possible slickensides visible.
				1/2	5990	46				
					5989	47			NO SAMPLE:	
					5988	48				
				0/1	5987	49				

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						50				
					5996					
						51			CLAYSTONE:	Lt. olive gray (5Y 6/1). Mod. weathered. Mod. to slightly friable. Bedding not evident. Iron staining in fractures.
					5995					
						52				
					5994					
						53				
				0.6 /5.5	5993					
						54				
					5992					
						55				
					5991					
						56				
					5990					
						57			SILTY CLAYSTONE:	Lt. olive gray to olive gray (5Y 5/1) mod. weathered. Slightly friable. Massive bedding, heavy iron staining in vertical fractures. Some CaCO3 mineralization in fractures.
				1.8 /2	5989					
						58				
					5988					
						59			SILTY CLAYSTONE:	Same as above, iron staining not as heavy, not as many fractures.
				1.1 /2	5987					

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REMARKS: Casing Driver; Hollow Stem Auger; NC Core

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
				5936	60				
			0.5/0.5	5935					SILTY CLAYSTONE: Olive gray (5Y 4/1). Possible horizontal bedding. Mod. weathered. Slightly friable. Some carb. material.
			1.75/1	5934	61				SILTY CLAYSTONE: Same as above.
				5933	62				SILTY CLAYSTONE: Same as above.
			0.1/3.5	5932	63				
				5931	64				
			1.25/1.5	5930	65				SILTY CLAYSTONE: Same as above.
			1.2/2	5929	66				SILTY CLAYSTONE: Same as above. Some possible slickensides present in fracture.
				5928	67				
			0.1/0.59	5927	68				SILTY CLAYSTONE: Same as above. No slickensides. Less silty.
					69				CLAYSTONE: Olive gray (5Y 4/1). Mod. weathered. Slightly friable. Bedding not

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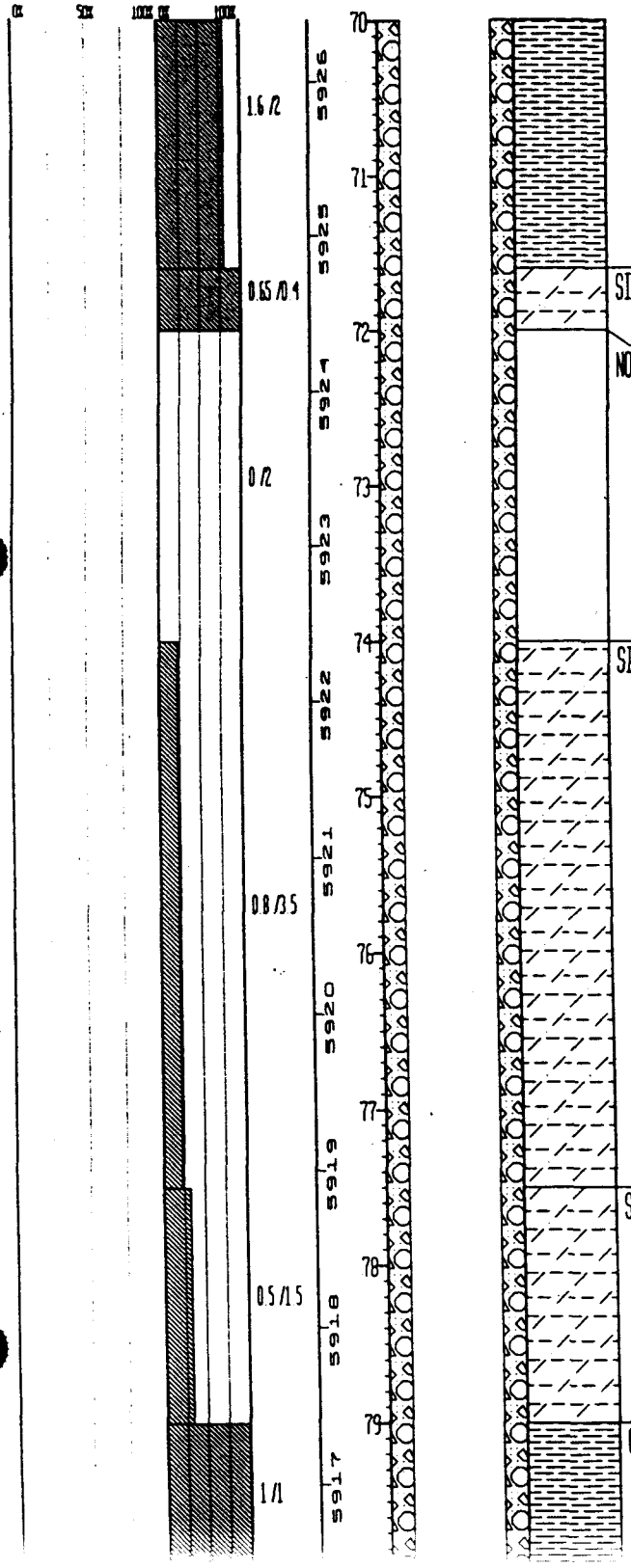

SILTY CLAYSTONE: Olive gray (5Y 4/1). Mod. weathering, slightly friable. Bedding not evident. Some carb. materials.

NO SAMPLE

SILTY CLAYSTONE: Same as above.

SILTY CLAYSTONE: Same as above. Some possible vertical slickensides.

CLAYSTONE: Lt. olive gray to olive gray (5Y 6/1 to 5Y 4/1). Massive bedding. Mod. weathered. Slightly friable. Possible slickensides.

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REMARKS: Casing Driver; Hollow Stem Auger; NC Core

SAMPLE GRAIN SIZE	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0.5/0.59	5916	80	CLAYSTONE	Brownish gray (5YR 4/1). Massive bedding. Mod. weathered. Slightly to mod. friable.
	0/1.7	5915	81	NO SAMPLE	
	1.1/1.2	5914	82	CLAYSTONE	Same as above. Slightly silty.
	0.6/0.5	5913	83	CLAYSTONE	Same as above. Trace carb. material.
	1.1/1	5912	84	CLAYSTONE	Same as above.
	1.7/2	5911	85	CLAYSTONE	Same as above. Slightly silty.
	1.5/2	5910	86		
		5909	87	SILTY CLAYSTONE	Same as above. Some carb. material. Possible horizontal bedding.
		5908	88		
		5907	89	SILTY CLAYSTONE	Brownish gray (5YR 4/1), mod. weathered, slightly friable, bedding possibly horizontal. Some carb. material (leaf prints).

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				1.0 ft	5996	90				
				1.7 ft	5995	91			SILTY CLAYSTONE	Brownish gray (5YR 4/1). Mod. weathered. Slightly friable. Bedding thin, wavy somewhat horizontal. Soft sed. deformation. Some carbonaceous material present in layers.
				0.7 ft	5994	92				
				1 ft	5993	93			CLAYSTONE	Lt. brownish gray (5YR 6/1). Mod. weathered. Slightly friable. Abundant carb. material in layers. Some silt. Matrix very slightly calcareous.
				1.05 ft	5992	94			CLAYSTONE	Same as above. Some iron staining. Not as carbonaceous toward bottom.
				0.9 ft	5991	95			CLAYSTONE	Brownish gray (5YR 4/1). Mod. weathered. Slightly friable. Bedding not evident. Trace carb. material. Some iron staining. Leaf print visible.
				0.65 ft	5990	96				
					5989	97				
					5988	98			CLAYSTONE	Same as above. More carb. material.
					5987	99			SILTY CLAYSTONE	Lt. Brownish gray (5YR 6/1). Mod. weathered. Slightly friable. Bedding not evident. Trace carb. material & iron staining.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT):	5996.39	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752191	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA	9-86
EAST:	2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	4 3/4	DATE DRILLED:	10/02/86	

REMARKS: Casing Driver; Hollow Stem Auger; NC Core

SAMPLE NUMBER	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	1.8/2	5996, 5995	100, 101	SILTY CLAYSTONE	Lt brownish gray (5YR 6/1) to brownish gray (5Y 4/1) Mod. weathered. Slightly friable Bedding not evident Trace carb material & iron staining
	1.25/2	5994, 5993	102, 103	SILTY CLAYSTONE	Brownish gray (5YR 4/1). Mod weathered Slightly friable. Bedding likely horizontal but not clearly evident. Some mod. yellowish brown coloring. Trace of carb material.
	0.5/0.5	5992	104	SILTSTONE	Interbedded Siltstones and Claystones. Color and weathering as above. Thin wavy beds (approximately 1/2 to 1 cm thick) Some mod. yellowish brown (10YR 5/4) layers also, trace of carb material
	1.15/1.3	5991	105	SILTY CLAYSTONE	Color & weathering as above Bedding not evident Mod yellowish brown areas still visible Trace carb material
	0/1.8	5990, 5989	106, 107	NO SAMPLE	
	0.6/0.59	5988	108	SILTY CLAYSTONE	Same as above.
	0.8/0.8	5988	108	SILTY CLAYSTONE	Brownish gray (5YR 4/1). Mod. weathered, mod. to slightly friable. Bedding appears horizontal from weathering. Some carb material looks like wood fragments some VFG sand in the carb areas.
		5987	109	SILTY CLAYSTONE	Same as above Slightly friable Some mod yellowish brown silty areas as in some above intervals

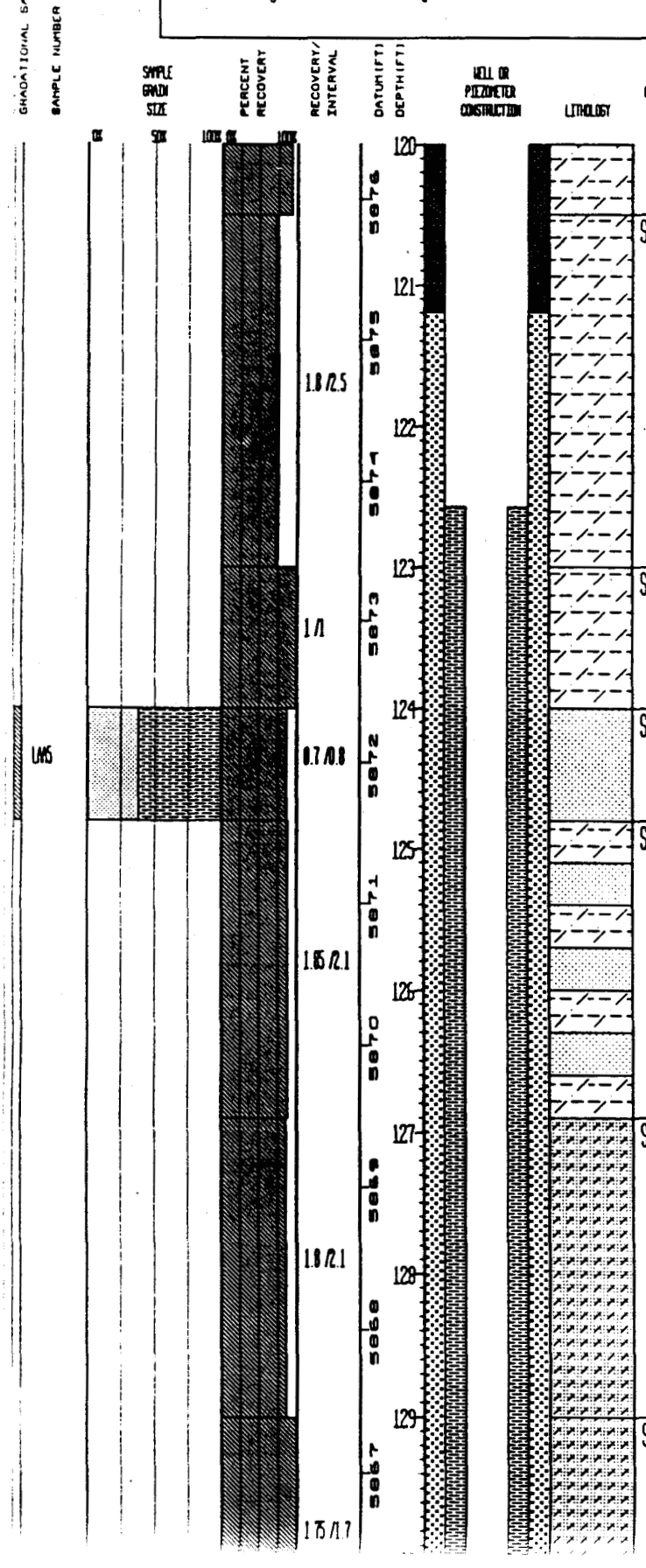
STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT):	5996.39	PROJECT NUMBER	667.11	LOG OF BORING NUMBER:
NORTH:	752191	AREA: LANDFILL	CASING DIAMETER (IN):	2.10	GEOLOGIST	LAA	9-86
EAST:	2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	4 3/4	DATE DRILLED	10/02/86	

REMARKS: Casing Driver, Hollow Stem Auger, NC Core

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
			0.9/3	5986	110				
				5985	111				
				5984	112				SILTY CLAYSTONE: Lt. brownish gray to brownish gray (5YR 6/1 to 4/1). Highly weathered. Mod to highly friable. Some VFG sand in matrix. Trace carb material
			0.55/2	5983	113				
			0.8/0.8	5982	114				SILTY CLAYSTONE: Lt. olive gray (5Y 6/1). Slightly to mod. weathered. Slightly friable. Bedding not evident. Looks like soft sed. deformation. Some carb material.
			1.8/1.89	5981	115				SILTY CLAYSTONE: As above. Some 50 degree fractures showing slickensides.
				5980	116				
			1.7/1.9	5979	117				SILTY CLAYSTONE: Same as above. Slightly weathered. Fractures also show slickensides
				5978	118				
			0.35/0.4						SILTY CLAYSTONE: Same as above.
			1.4/1.5	5977	119				SILTY CLAYSTONE: Lt. olive gray (5Y 6/1). Slightly to mod. weathered. Slightly friable. Bedding not evident.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT): 5996.39	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:	
NORTH: 752191	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: LAA	9-86	
EAST: 2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 4 3/4	DATE DRILLED: 10/02/86		

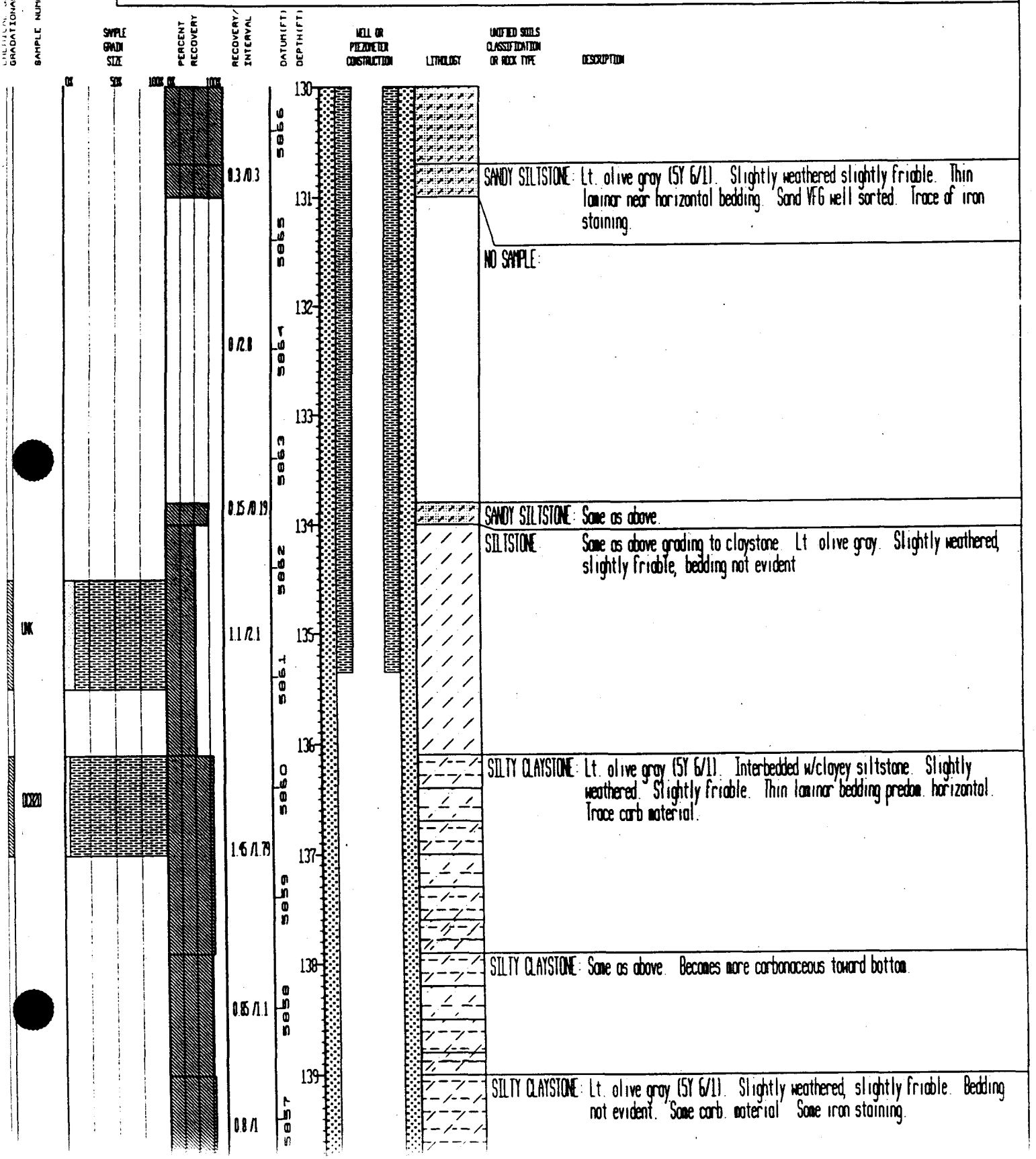
REMARKS: Casing Driver; Hollow Stem Auger; NC Core.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE:	Lt. olive gray, slightly to mod. weathered. Slightly friable from weathering, bedding appears horizontal. Can see faint cross-bedding in areas. Some VFG sand.
SILTY CLAYSTONE:	Same as above, grades to sandstone. Yellowish gray (5Y 8/1). Mod. weathered, slightly friable. Bedding appears horizontal, VFG sand. Poorly graded (well sorted). Trace silt & clay.
SANDSTONE:	Same as above. Sandstone, bedding slightly tilted.
SILTY CLAYSTONE:	Interbedded Silty Claystones and very fine grained sandstones as above. Bedding appears horizontal. Color, weathering and friability as above.
SANDY SILTSTONE:	Lt. olive gray (5Y 6/1). Mod. weathered, slightly friable. Bedding thin laminar, predominantly horizontal. Sand VFG well sorted. Trace carb material.
SANDY SILTSTONE:	Lt. olive gray (5Y 6/1). Slightly weathered. Slightly friable. Bedding thin laminar parallel then tilted after an unconformity. Sand VFG, well sorted.

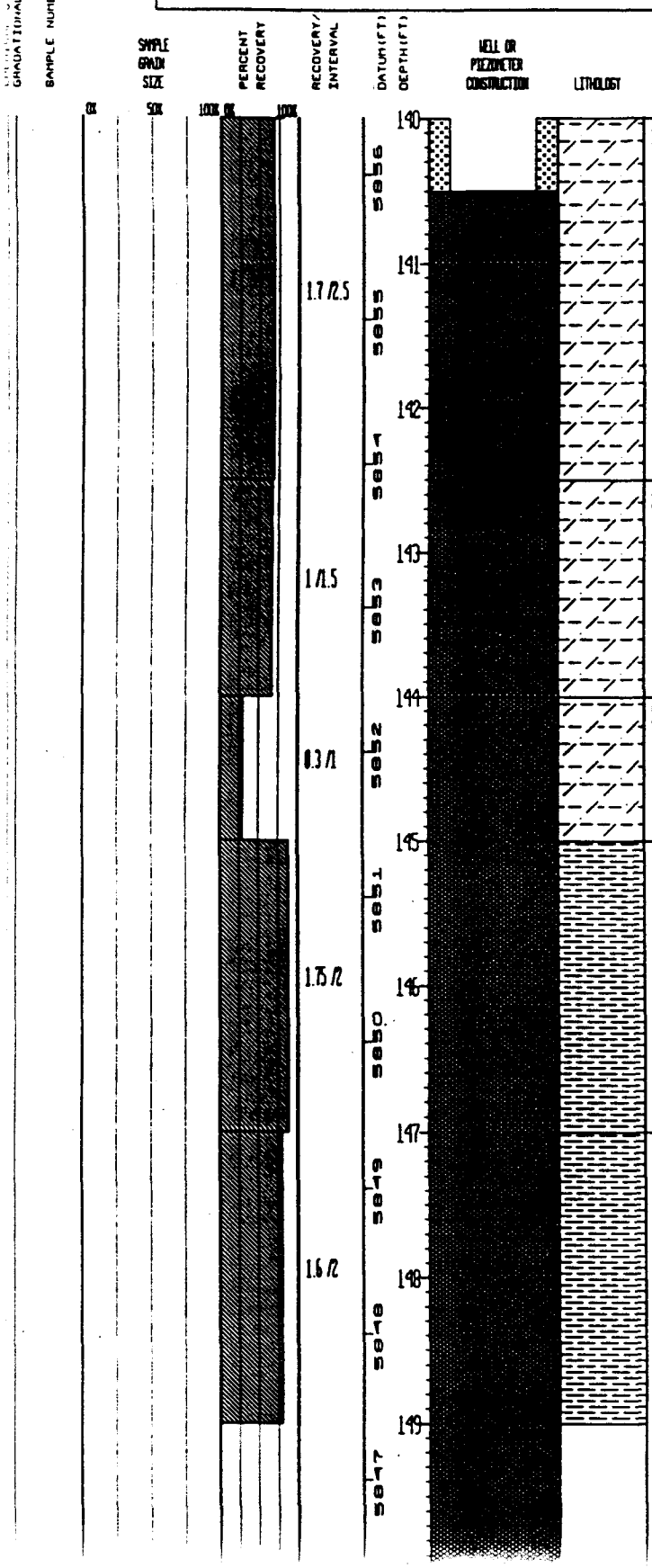
STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT):	5996.39	PROJECT NUMBER:	667 11	LOG OF BORING NUMBER:
NORTH:	752191	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA	9-86
EAST:	2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	4 3/4	DATE DRILLED:	10/02/86	

REMARKS: Casing Driver; Hollow Stem Auger; NC Core



STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 149	GROUND ELEVATION (FT):	5996.39	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752191	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA	9-86
EAST:	2082472	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	4 3/4	DATE DRILLED:	10/02/86	

REMARKS: Casing Driver; Hollow Stem Auger; NC Core.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE:	Lt. olive gray to olive gray (5Y 6/1 to 4/1). Mod. weathered. Slightly friable. Bedding not evident. Trace iron staining. Trace carb. material.
SILTY CLAYSTONE:	Same as above. Slightly less silty. Slightly to mod. friable.
SILTY CLAYSTONE:	Same as above. Slightly friable
CLAYSTONE:	Olive gray (5Y 4/1). Mod. weathered, slightly friable. Bedding not evident. Some silt. Some carb. material
CLAYSTONE:	Same as above.

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 53.5	GROUND ELEVATION (FT): 6049.74	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	750316	AREA: BUFFER WEST	CASING DIAMETER (IN): 2 1.0	GEOLOGIST: DAT	45-86
EAST:	2079469	LOCATOR NUMBER: 610	BOREHOLE DIAMETER (IN): 5 5/8	DATE DRILLED: 10/02/86	
REMARKS: Casing Driver					

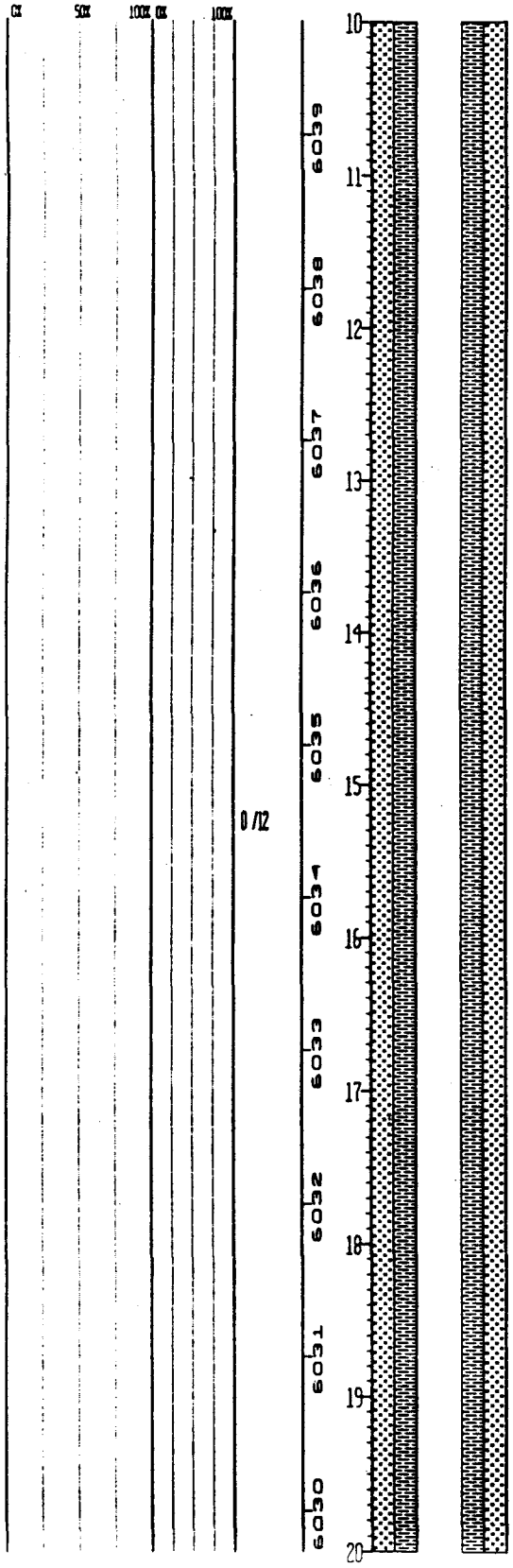
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER

SAMPLE GRADN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CH 50%	100% CH 100%	0.6/0.7	6049	0			SC	Clayey Gravelly Sand - dark yellowish brown (10 YR 4/2), sub-angular-angular, and is FG-CG, max. gravel size = 4cm, some roots, mod-poorly graded.
				1			NO SAMPLE	
		0.4/3.3	6048	2				
			6047	3				
			6046	4				
			6045	5				
		0.8/0.8					SC	Clayey Gravelly Sand - light brown (5 YR 5/6), sub-angular-angular, sand is FG-MG, max. gravel size = 5cm., some silt, mod.-poorly graded.
			6044	6			CH	Bottom 2 ft. of interval 5.0 - 7.0 : Sandy Clay, light brown (5 YR 5/6), mod.-high plasticity, some gravel, sand is VFG-MG.
		2.1/2.2	6043					
				7			SC	Clayey Gravelly Sand - light brown (5 YR 6/4), angular-sub-angular, mod grading, sand is FG-MG, max. gravel size = 3 cm., trace of mica.
		2.5/2.3	6042	8				
			6041	9				
			6040	10			NO SAMPLE	

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 53.5	GROUND ELEVATION (FT):	6049.74	PROJECT NUMBER:	667 11
NORTH: 750316	AREA: BUFFER WEST	CASING DIAMETER (IN):	2 I.D.	GEOLOGIST:	DAT
EAST: 2079469	LOCATOR NUMBER: 610	BOREHOLE DIAMETER (IN):	5 5/8	DATE DRILLED:	10/02/86
REMARKS: Casing Driver					

LOG OF BORING NUMBER: 45-86

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



STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 53.5	GROUND ELEVATION (FT): 6049.74	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 750316	AREA: BUFFER WEST	CASING DIAMETER (IN): 2 I.D.	GEOLOGIST: DAT	45-86
EAST: 2079469	LOCATOR NUMBER: 610	BOREHOLE DIAMETER (IN): 5 5/8	DATE DRILLED: 10/02/86	
REMARKS: Casing Driver				

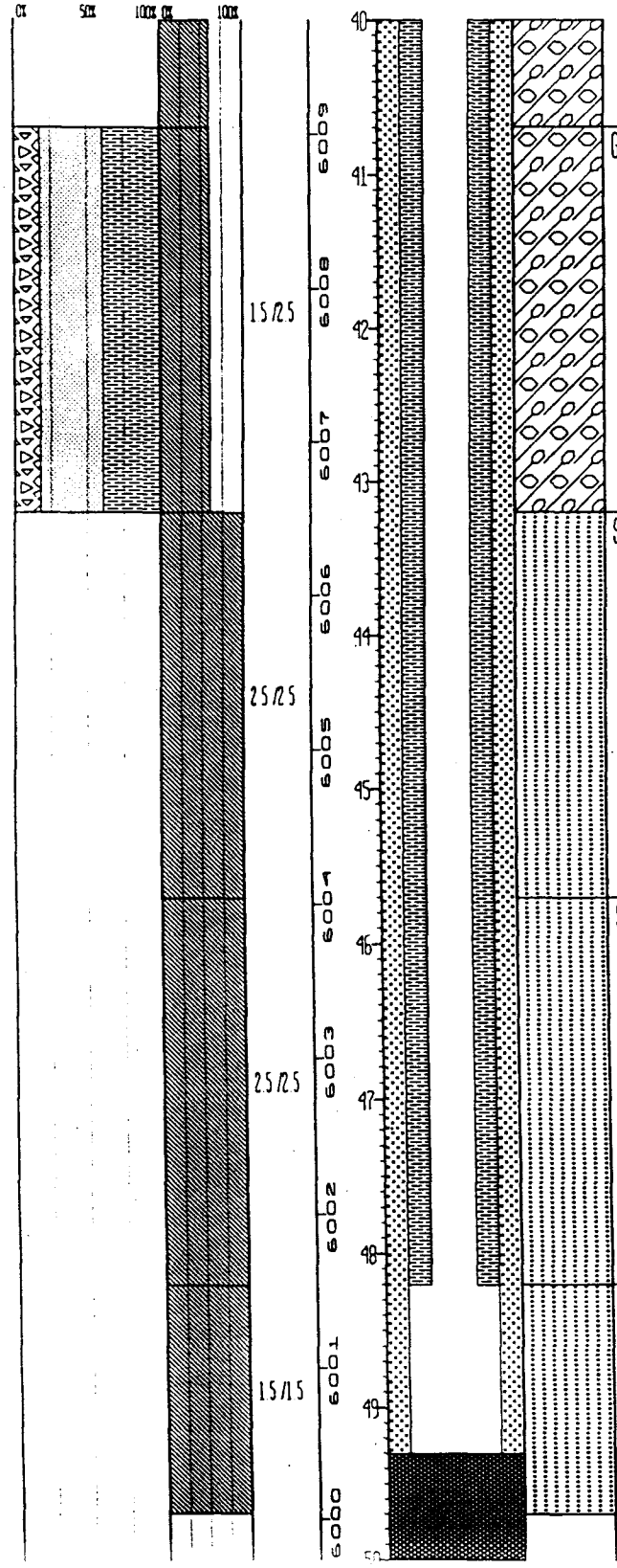
SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				6029	20–21				
			0.9/2.5	6028, 6027	21–23			SC	Clayey Gravelly Sand - light brown (5 YR 6/4), angular-sub-angular, mod graded, sand is FG-MG, max. gravel size = 3cm., trace of mica.
				6026	23–24				
			0/4.5	6025, 6024, 6023, 6022	24–28				NO SAMPLE
			2.3/1.9	6021, 6020	28–30			SC	Same as above: very pale orange (10 YR 8/2), mod.-poorly graded, sand is FG-CG.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 53.5	GROUND ELEVATION (FT) 6049.74	PROJECT NUMBER 667.11	LOG OF BORING NUMBER
NORTH	750316	AREA BUFFER WEST	CASING DIAMETER (IN) 2 I D	GEOLOGIST DAT	45-86
EAST	2079469	LOCATOR NUMBER 610	BOREHOLE DIAMETER (IN) 5 5/8	DATE DRILLED 10/02/86	
REMARKS Casing Driver					

GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRADN 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%							
				1/1	6019	30–31			SC	Clayey Gravelly Sand - very pale orange (10 YR 8/2), angular-sub-angular, sand is FG-MG, max. gravel size = 3cm., mod.-poorly graded, trace of iron staining.
				2.5/2	6018	31–32			SC	Same as above: bottom of interval - fraction of gravel is higher.
				0.1/0.7	6017	32–33			GM	SANDY GRAVEL, dark yellowish orange (10 YR 6/6), angular - sub-angular, mod.-well graded, max. size = 7cm. Sand is MG-CG, trace of clay.
				1.8/1.3	6016	33–34			GC	Clayey Sandy Gravel - light brown (5 YR 5/6), sub-angular to sub-rounded, mod-well graded, max size = 8cm.
				1.5/2.5	6015	34–35			GC	Same as above: angular to sub-angular.
					6014	35–36				
					6013	36–37				
					6012	37–38				
					6011	38–39				
					6010	39–40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 53 5	GROUND ELEVATION (FT)	6049 74	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH:	750316	AREA BUFFER WEST	CASING DIAMETER (IN)	2 1 0	GEOLOGIST	DAT	45-86
EAST:	2079469	LOCATOR NUMBER 610	BOREHOLE DIAMETER (IN)	5 5/8	DATE DRILLED	10/02/86	

REMARKS: Casing Driver

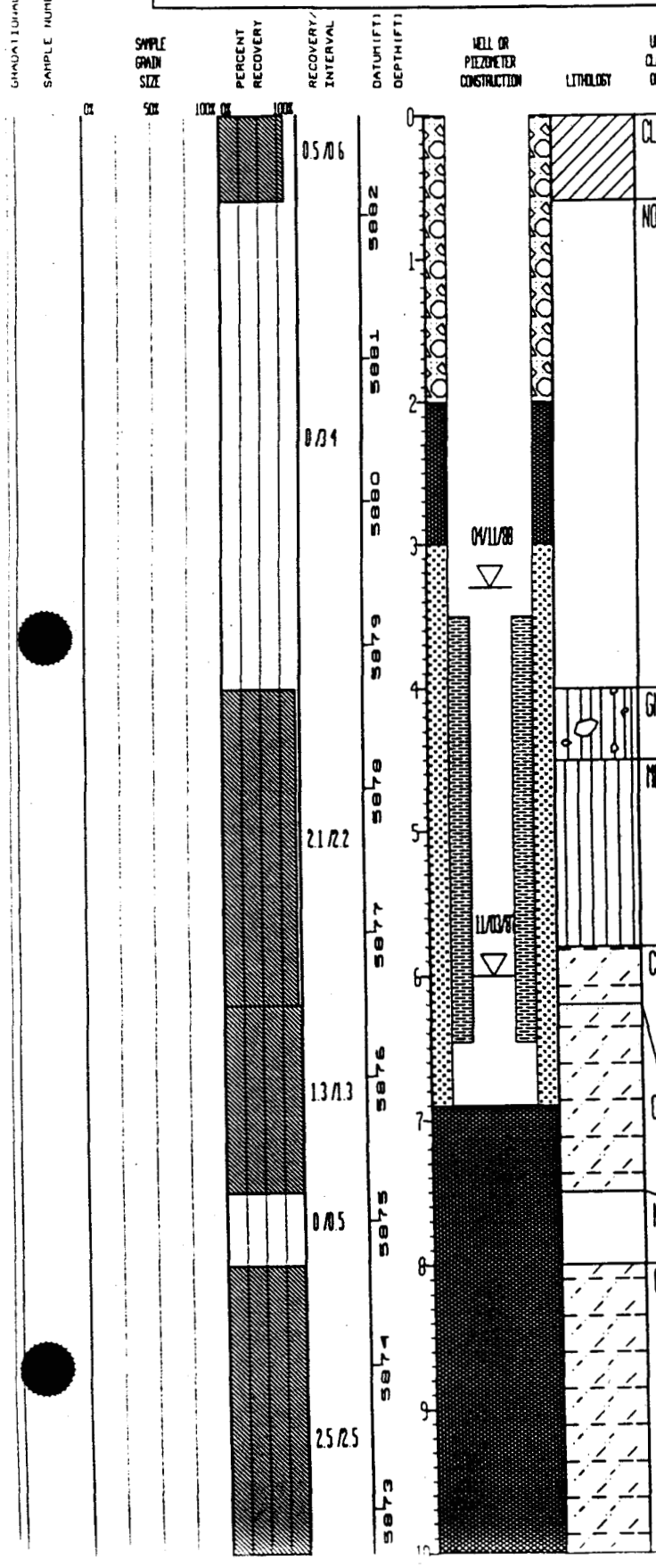


DAT11	GC	Clayey Sandy Gravel - light brown (5 Y 5/6), sub-angular - angular, mod graded, max size = 4cm
	SP	GRAVELLY SAND, dark yellowish orange (10 YR 6/6), sub-angular - sub-rounded, mod -poorly graded, max gravel size is 3cm., sand is MG-VCG, some clay
	SP	Same as above: trace of clay, bottom of interval contains some possible well weathered chert
	SP	Same as above dark yellowish orange (10 YR 6/6) and pinkish gray (5 YR 8/1), some clay
	NO SAMPLE	Top of Bedrock

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 53.5	GROUND ELEVATION (FT): 6049.74	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:	
NORTH: 750316	AREA: BUFFER WEST	CASING DIAMETER (IN): 2 I.D.	GEOLOGIST: DAT	45-86	
EAST: 2079469	LOCATOR NUMBER: 610	BOREHOLE DIAMETER (IN): 5 5/8	DATE DRILLED: 10/02/86		
REMARKS: Casing Driver					

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
			0/3	5999	50–51				
				5998	51–52				
			0.8/0.79	5997	52–53			CLAYSTONE:	Very pale orange (10 YR 8/2), non-apparent bedding, well weathered, moderately friable, some silt, some iron staining as mottles, trace of Mg staining.
				5996	53–54				
				5995	54–55				
				5994	55–56				
				5993	56–57				
				5992	57–58				
				5991	58–59				
				5990	59–60				

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						



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	SILTY CLAY - light brownish gray (5YR 6/1). Abundant roots and grass. Some iron staining throughout matrix.
NO SAMPLE	
GM	GRAVEL - medium gray (N5) angular to subangular well graded. Some clay and silt. Trace iron staining.
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.
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.
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.
NO SAMPLE	
CLAYEY SILTSTONE	Same as above, more carbonaceous material at bottom occurring in very thin hairlike layers.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 13	GROUND ELEVATION (FT):	5882.69	PROJECT NUMBER:	667.11
NORTH: 753142	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA
EAST: 2084823	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	06/08/87
REMARKS: Hollow Stem Auger					

LOG OF BORING NUMBER: **40-87**

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		
2/1.3	11	CLAYEY SILTSTONE	Same as above with color change to pale yellowish brown. Extremely weathered, extremely friable.
1.2/1.2	12	CLAYEY SILTSTONE	Same as above. NOTE: No water encountered during drilling.
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		

Well or piezometer construction: 5872, 5871, 5870, 5869, 5868, 5867, 5866, 5865, 5864, 5863

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LAA	41-87BR
EAST: 2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

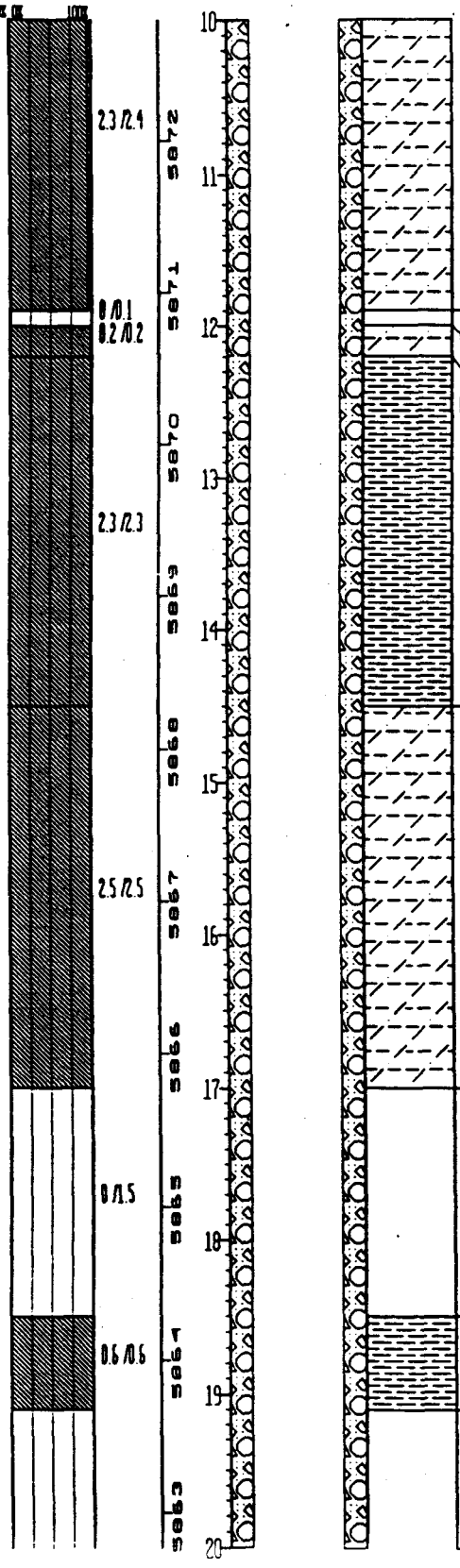
REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

SAMPLE NUMBER	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	0.9/1.3	5882	0–1	CL	SILTY CLAY - Grayish brown (5YR 3/2) medium plasticity, some sand and roots. Trace gravel
	0/0.7	5881	1–2	NO SAMPLE	
	2/2	5880	2–3	CL	Same as above with increasing gravel content toward bottom of interval, with color grading to olive gray (5Y 4/1) max. gravel size is 6 cm.
		5879	3–4	SILTY CLAYSTONE	Top of Bedrock Moderate yellowish brown (10YR 5/4) moderately high plasticity, trace of calcareous mineralization, sand, and carbonaceous material.
	3/3	5878, 5877, 5876	4–7	SILTY CLAYSTONE	Moderate yellowish brown (10YR 5/4), massive bedding highly weathered, moderately friable, trace of calcareous mineralization, roots and carbonaceous material, increased iron staining throughout matrix with depth.
	2.5/2.5	5875, 5874	7–9	SILTY CLAYSTONE	Same as above with silt and v. fine sand lenses, increase amount of iron staining, fractures evident with iron staining within, trace of siderite nodules.
		5873	9–10	SILTY CLAYSTONE	Light olive gray (5Y 6/1), massive bedding, highly weathered, moderately friable, some iron staining in fractures and matrix, trace of very fine

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT):	5882.78	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD/LAA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4	DATE DRILLED:	07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

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



sand and carbonaceous material, includes siltstone nodule, dark yellowish brown (10YR 5/4).

NO SAMPLE:

SILTY CLAYSTONE: Same as above, moderate yellowish brown (10YR 5/4).

CLAYSTONE: Light brownish gray (5YR 6/1), massive bedding, slightly weathered, moderately friable, trace of iron staining and vertical fractures.

SILTY CLAYSTONE: Light brownish gray (5YR 6/1), bedding not evident, highly weathered, highly friable, some iron staining.

NO SAMPLE:

CLAYSTONE: Light olive gray (5Y 4/1), mod.-high plasticity some silt, trace of iron staining.

NO SAMPLE:

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT):	5882.78	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD/LAA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4	DATE DRILLED:	07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

GRADATIONAL SAMPLE	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% 50% 100%	0% 100%	0/2.4	5862	20, 21				
				1/1	5861	22			CLAYSTONE:	Light olive gray (5Y 4/1), mod.-high plast., some silt, some iron staining.
				1.65/1.4	5860	23			CLAYSTONE:	Same as above; Trace white -opaque mineralization.
				0.6/0.6	5859	24			CLAYSTONE:	Same as above; No mineralization apparent.
				0/0.5	5858	25			NO SAMPLE:	
				0.75/0.65	5857	26			CLAYSTONE:	Same as above; iron staining in fractures and as mottle.
				1.5/1.5	5856	27			SILTY CLAYSTONE:	Carbonaceous, olive black (5Y 2/1), mod. plast., some iron staining in fractures and as mottles.
				0/1.35	5855	28			SILTY CLAYSTONE:	Carbonaceous, olive black (5Y 2/1), massive bedding, gradational contact, mod. friable, well weathered, some iron staining in fractures and as mottles, coal seams < 2 mm.
				0.7/0.7	5854	29			NO SAMPLE:	
				1/0.9	5853	30			SILTY CLAYSTONE:	Light olive gray (5Y 6/1), massive bedding, well weathered, mod. friable, some carb. material, trace of iron staining.
									SILTY CLAYSTONE:	Same as above; Trace carb. material, no iron staining, v. slightly calcareous.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LAA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

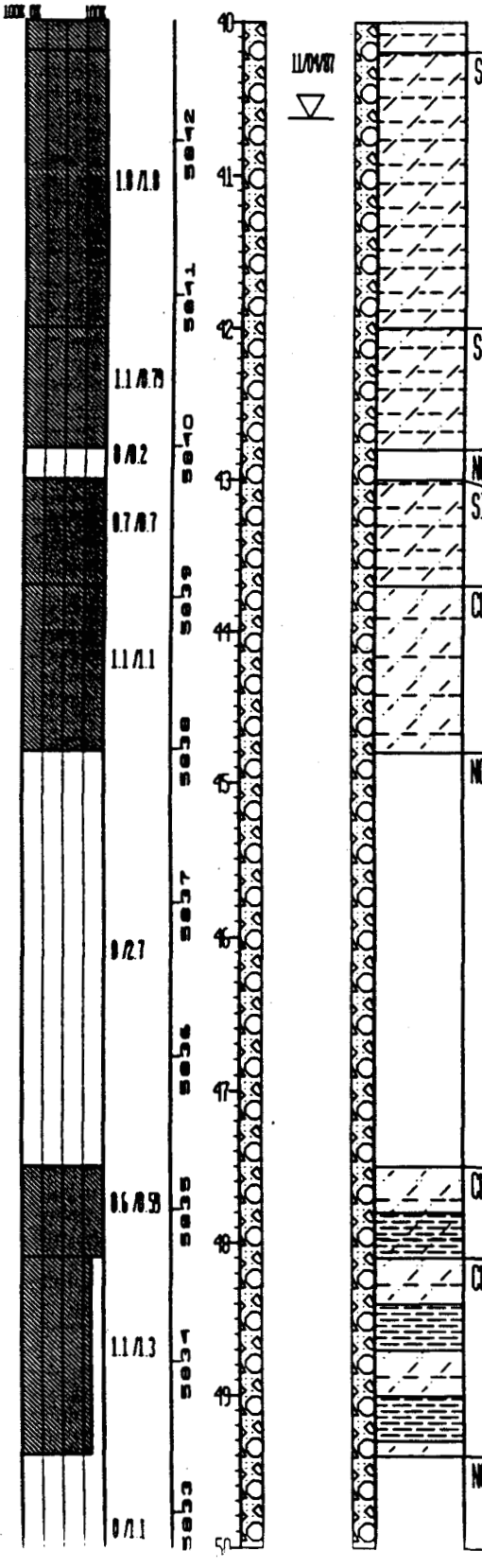
REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergeon.

SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (100% 0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			1.8/1.8	5852	30–31			SILTY CLAYSTONE	Olive gray (5Y 4/1) massive bedding, highly weathered, mod. friable, trace of carb. material, trace of iron staining as mottle in upper part of interval.
			1.75/2.6	5851, 5850, 5849	32–34			SILTY CLAYSTONE	Same as above; light olive gray (5Y 6/1), increasing amount of carb. especially at bottom of interval, trace of iron staining.
			0.5/0.5	5848	35			SILTY CLAYSTONE	Same as above, trace of carb.
			1.2/1.3	5847	36			SILTY CLAYSTONE	Same as above.
			1.85/2.2	5846, 5845	37–38	12/08/87		SILTY CLAYSTONE	Same as above; Bottom of interval, brownish gray (5Y 4/1), abundant carb. with < 1 mm. coal seams.
			1.7/1.7	5844, 5843	39–40			SILTY CLAYSTONE	Same as above; light olive gray (5Y 6/1), trace of carb. material, slightly calc.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT):	5882.78	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD/LAA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4	DATE DRILLED:	07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 Feet by J. Bergman.

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



SILTY CLAYSTONE: Light olive gray (5Y 6/1), massive bedding, well weathered, mod. friable, trace of carb. material.

SILTY CLAYSTONE: Same as above; Some carb. material, trace iron staining, < 1-2 mm. coal seams. Trace of iron staining, trace of white, non-calc. mineralization.

NO SAMPLE:

SILTY CLAYSTONE: Same as above; Trace carb. material, no coal seams.

CLAYEY SILTSTONE: Light olive gray (5Y 6/1), horizontal bedding with soft sed. deformation (from slab), mod.-poorly friable, mod. weathered, some carb. material, trace of coal seam < 1 mm.

NO SAMPLE:

CLAYEY SILTSTONE: Same as above with claystone interbeds.

CLAYEY SILTSTONE: Same as above.

NO SAMPLE:

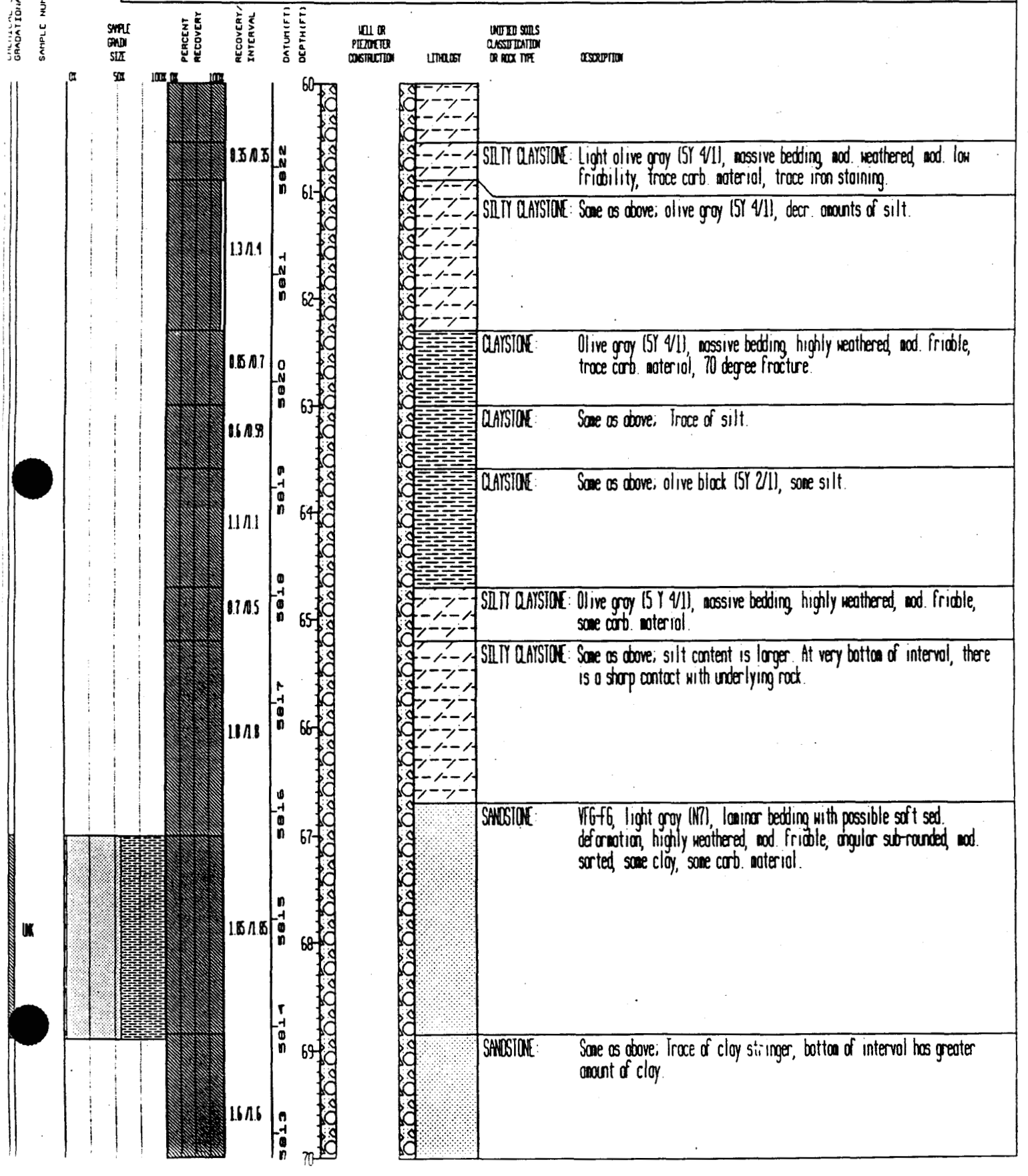
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LMA	41-87BR
EAST: 2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

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
						50				
				0.7 /0.7	5832	51			SILTY CLAYSTONE	Light olive gray (5Y 6/1) massive bedding, well weathered, mod. friable, some carb., trace of iron staining as mottles.
				1.8 /1.8	5831	52			CLAYSTONE	Light olive gray (5Y 6/1), massive bedding, well weathered, mod. friable, trace of carb. material, trace of iron staining as mottles.
					5830	53			CLAYSTONE	Same as above; No carb. material, no iron staining.
				1.7 /1.7	5829	54				
				1.65 /0.5	5828	55			CLAYSTONE	Same as above; trace carb. material trace iron staining as mottles and along fractures.
				0 /1.8	5827	56			NO SAMPLE	
					5826	57			CLAYSTONE	Same as above; bottom of interval is olive gray (5Y 4/1), some silt.
				1.7 /2	5825	58				
					5824	59			SILTY CLAYSTONE	Olive gray (5Y 4/1), to light olive gray (5Y 6/1) massive bedding, mod. weathered, mod. friable, some carb. material, trace iron staining, trace white mineralization.
				1.55 /1.55	5823	60				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LAA	41-87BR
EAST:	2084921	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.



STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LMA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

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
	CY 50%	100% 0% 100%			70				
			0.55/0.55	5812					SILTY CLAYSTONE: Light olive gray (5Y 6/1), highly weathered, mod. - poorly friable, some carb. material, some iron staining as mottles.
					71				SILTY CLAYSTONE: Same as above, olive gray (5Y 4/1), trace of iron staining, as mottles in top of interval.
				5811	72				
			2.3/4	5810	73				
				5809	74				
				5808	75				
			0.5/0.5						SILTY CLAYSTONE: Same as above; Curving fracture at 65-80 degrees, mod. friable.
				5807	76				SILTY CLAYSTONE: Same as above; fracture at 50 degrees, middle of interval: light olive gray (5Y 6/1), becoming siltier. Bottom of interval: olive gray (5Y 4/1), less silty.
			1.8/1.8	5806	77				
				5805	78				SILTY CLAYSTONE: Same as above; Bottom of interval: light olive gray (5Y 6/1), becoming siltier.
			1.1/1.7	5804	79				
			0.6/0.59						SILTY CLAYSTONE: Same as above.
				5803	80				SANDY SILTSTONE: VFG - FG, light olive gray (5Y 6/1), horizontal laminar, gradational contact highly weathered, mod. - low friability, some clay in matrix and

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT): 5882.78	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753118	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/LAA	41-87BR
EAST: 2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 4	DATE DRILLED: 07/29/87	

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

CHEMICAL SAMPLE
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
		1.6/1.6	5802	80–81				as lenses, trace of carb. material, slab bed shows soft sed deformation.
		0.8/0.8	5801	81–82				SANDY SILTSTONE: Same as above.
		0.85/0.84	5800	82–83				SILTY SANDSTONE: VFG-FG, yellowish-gray (5Y 8/1), laminar bedding with possible soft sed. deformation, highly weathered, mod. - low friability, sub-angular - sub-rounded, mod. sorted, some clay as lenses. Trace carb. material.
		1.1/1.65	5799	83–84				SILTY SANDSTONE: Same as above.
DN12		1.8/1.5	5798	84–85	09/28/87			SILTY SANDSTONE: Same as above; FG - MG.
		1.9/1.9	5797	85–86				SILTY SANDSTONE: Same as above; VFG - FG.
		1.7/1.7	5796	86–87				SILTY SANDSTONE: Same as above, increased lenses of silt and clay.
		0.1/0.1	5795	87–88				SILTY SANDSTONE: Same as above.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT):	5882.78	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD/LAA	41-87BR
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4	DATE DRILLED:	07/29/87	

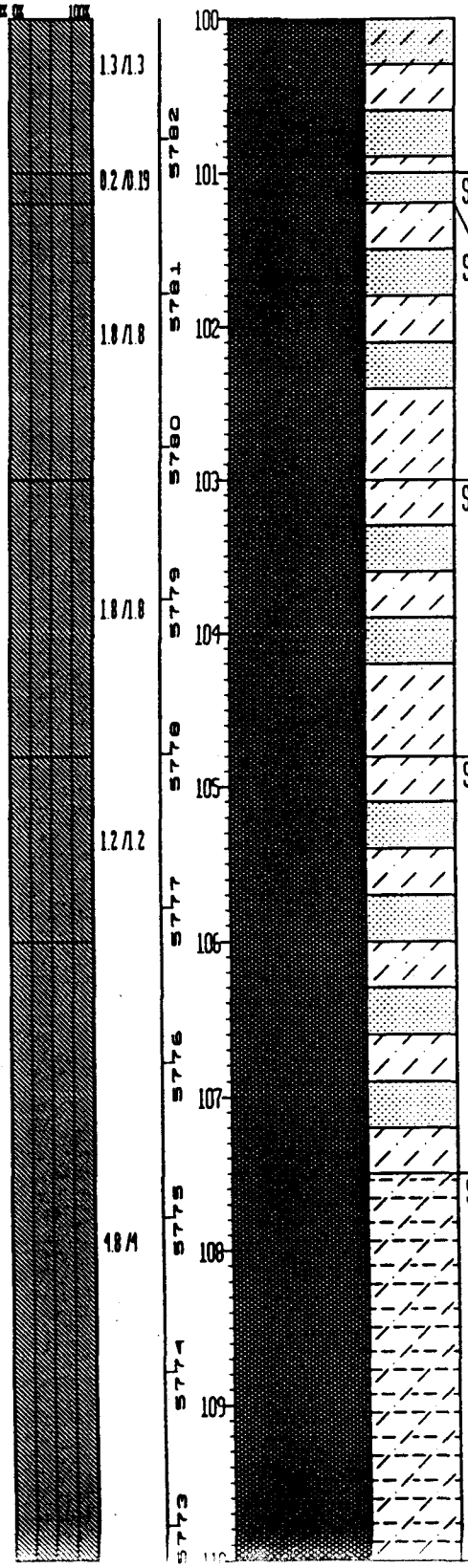
REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergeon.

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 SOIL	100% CR	100%		90				SILTY SANDSTONE: VFG - FG, yellowish-gray (5Y 8/1), laminar bedding with possible soft sed. deformation, highly weathered, mod. - low friability, sub-angular to sub-rounded, mod. sorted, trace of carb. material, lenses of MG sand, some clay.
				1.15/1.15	5792	91				
	6X208			1.7/1.7	5791	92				SILTY SANDSTONE: Same as above; bottom of interval becomes FG-MG, less silt, incr. amount of carb. material, iron staining.
				0.6/0.75	5790	93				SILTY SANDSTONE: Same as above.
				0.7/0.84	5789	94				CLAYEY SILTSTONE: Light olive gray, laminar bedding, highly weathered, mod. to low friability, some carb. material, trace of iron staining, trace of grayish yellow green (5GY 7/2) clay.
				1.75/1.75	5788	95				CLAYEY SILTSTONE: Same as above; bedding non-apparent.
					5787	96				
				1.8/1.8	5786	97				SILTY SANDSTONE: Yellowish gray (5Y 8/1), thin, horizontal, laminar bedding with possible soft sed. deformation, mod. - highly weathered, mod. - low friability, sub-angular - sub-rounded, mod. sorting, some clay, some carb. material.
					5785	98				SILTSTONE: Light olive gray (5Y 8/1), mod. - highly weathered, mod. - low friability, trace carb. material, trace iron staining.
				1.7/1.7	5784	99				SANDSTONE: VFG - FG, yellowish gray (5Y 8/1), thinly laminated interbedded with carb. material, mod. - highly weathered, mod. - low friability, mod. sorting, some silt. Slab shows bedding and interfingering with light olive gray (5Y 6/1) siltstone.
					5783	100				SILTSTONE: Olive gray (5Y 4/1), mod. - highly weathered, mod. - low friability, VFG -

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 110	GROUND ELEVATION (FT):	5882.78	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:	
NORTH:	753118	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD/LAA	41-87BR	
EAST:	2084821	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4	DATE DRILLED:	07/29/87		

REMARKS: Hollow Stem Auger/NC Core. Surface casing set June 9, 1987 to 17.0 feet by J. Bergman.

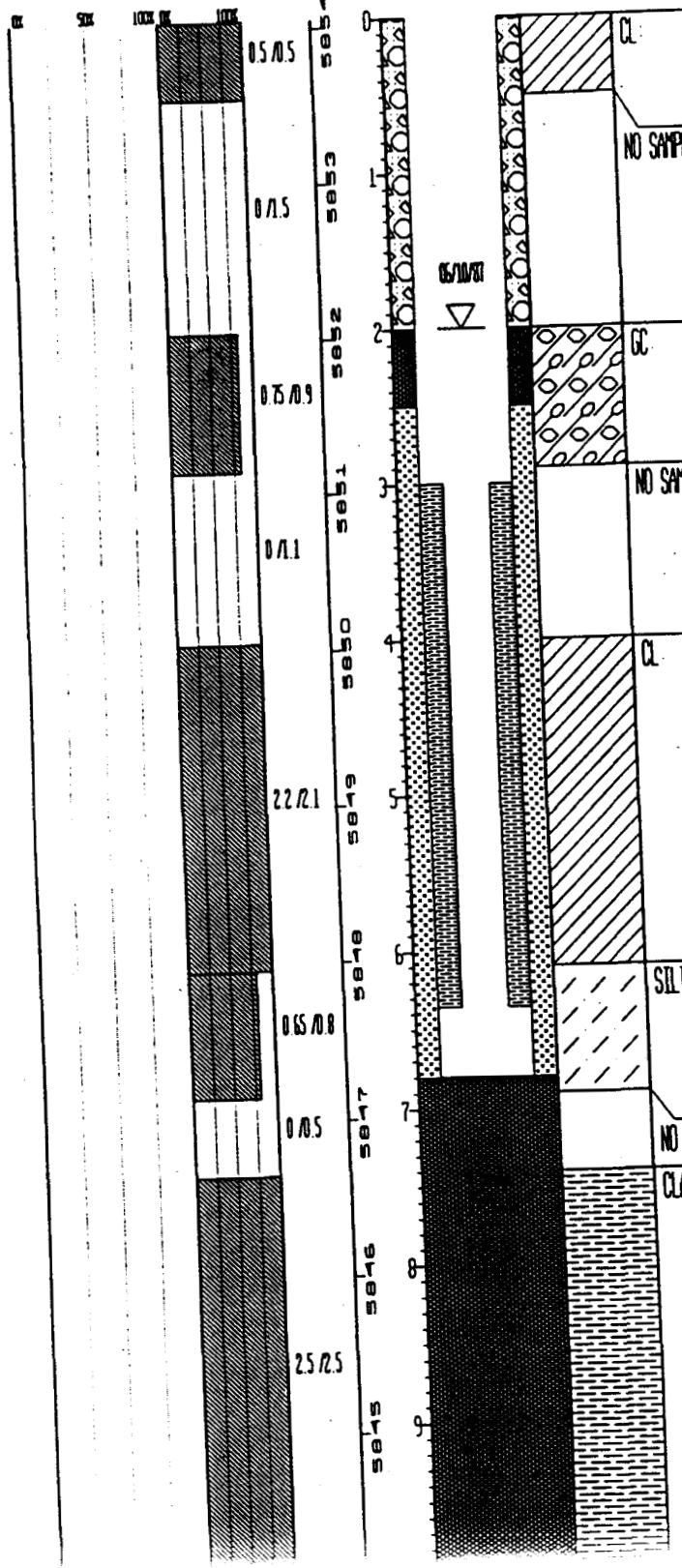
GRADATIONAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
1.3/1.3		FG interbedded sandstone, trace of clay.
0.2/0.19	SANDSTONE:	VFG - FG, yellowish-gray (5Y 8/1) bedding non-apparent, mod. - highly weathered, mod. - low friability, mod. sorting, some silt.
1.8/1.8	SILTSTONE:	Light olive gray (5Y 6/1) mod. - highly weathered, mod. - low friability, interbedded with VFG - FG sandstone (approx. 1-5 mm.) yellowish gray (5Y 8/1), trace carb. material, trace iron staining as mottles.
1.8/1.8	SILTSTONE:	Same as above.
1.2/1.2	SILTSTONE:	Same as above.
4.8/4	SILTY CLAYSTONE:	Olive gray (5Y 4/1), massive bedding, highly - mod. weathered, mod. -low friability, trace carb. material, multiple fractures at approx. 50 degrees in 1 direction, 20 degrees in other direction. Bottom 1.5 ft - same as above; no distinct fractures. NOTE: No water encountered during drilling.

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	

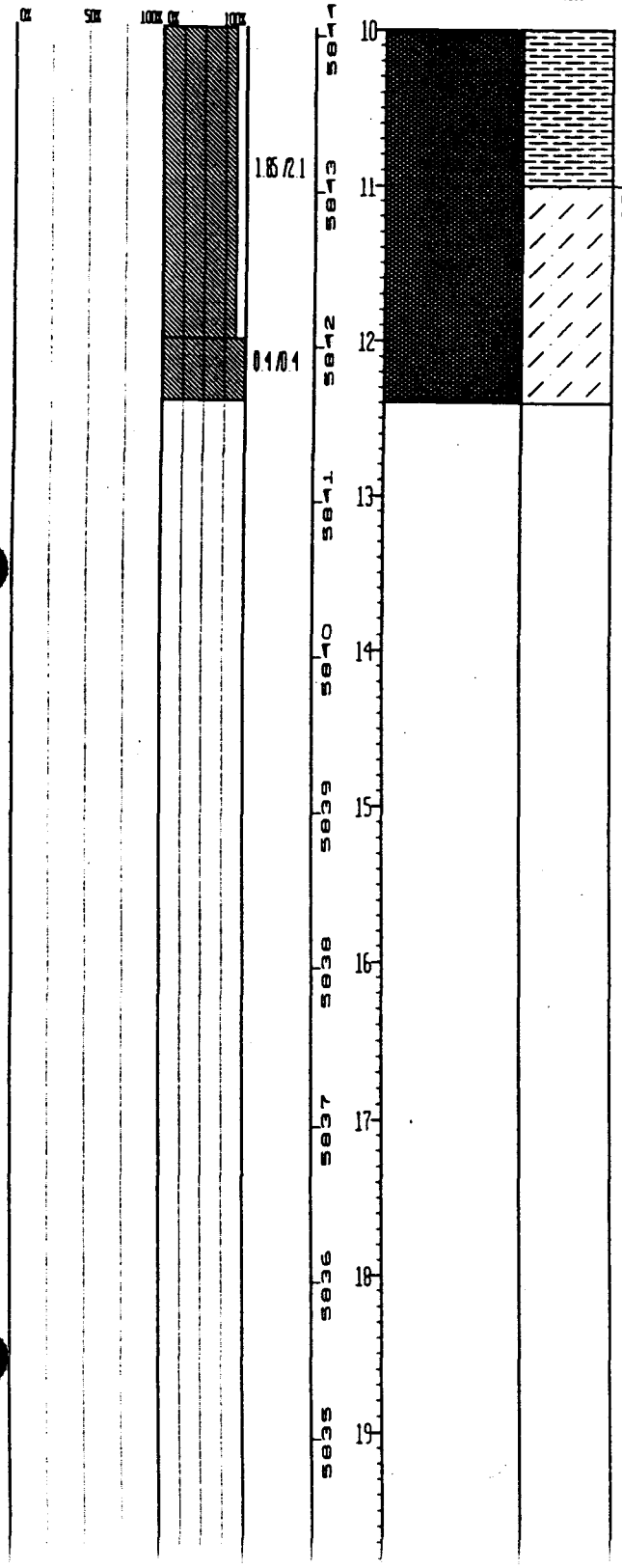
REMARKS: Hollow Stem Auger



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.							

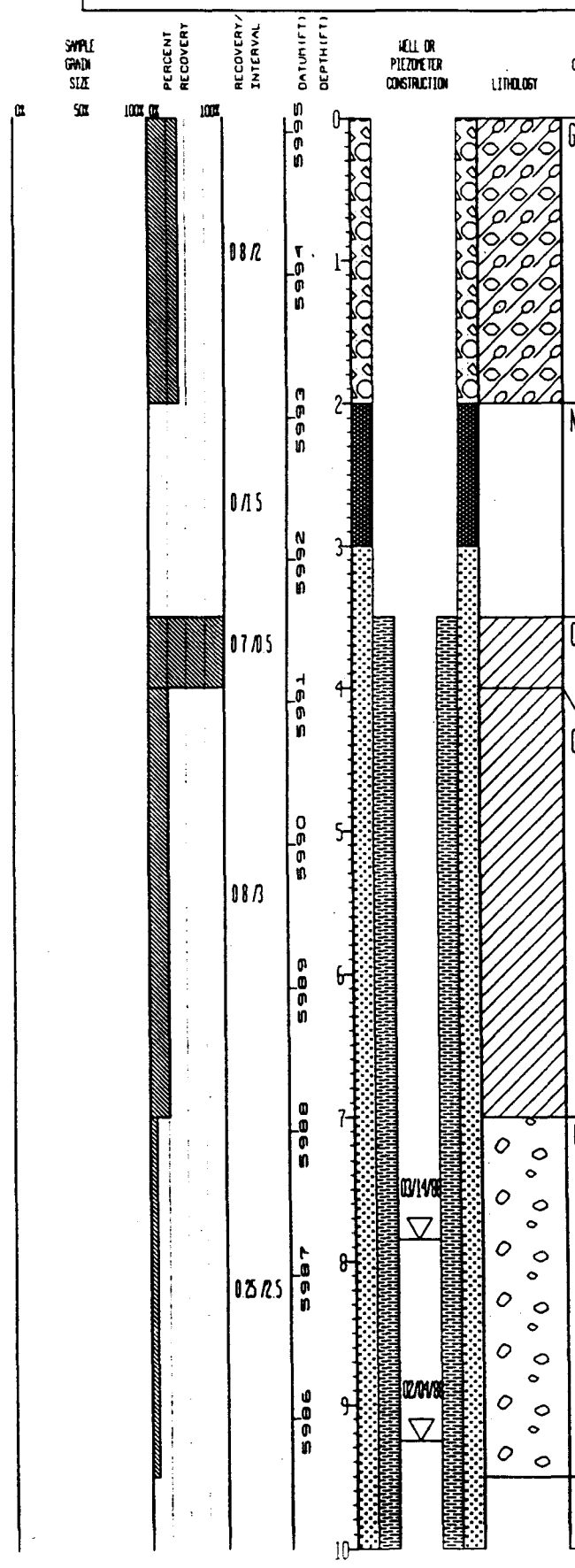
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE:	As above with a gradational change to siltstone with depth.
SILTSTONE:	Iron oxide staining occurs on fractures. Fractures are curvilinear.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32	GROUND ELEVATION (FT)	5995.1	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	752234	AREA LANDFILL	CASING DIAMETER (IN)	2 10	GEOLOGIST	LAA	58-87
EAST	2082531	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	11/17/87	

REMARKS Hollow Stem Auger



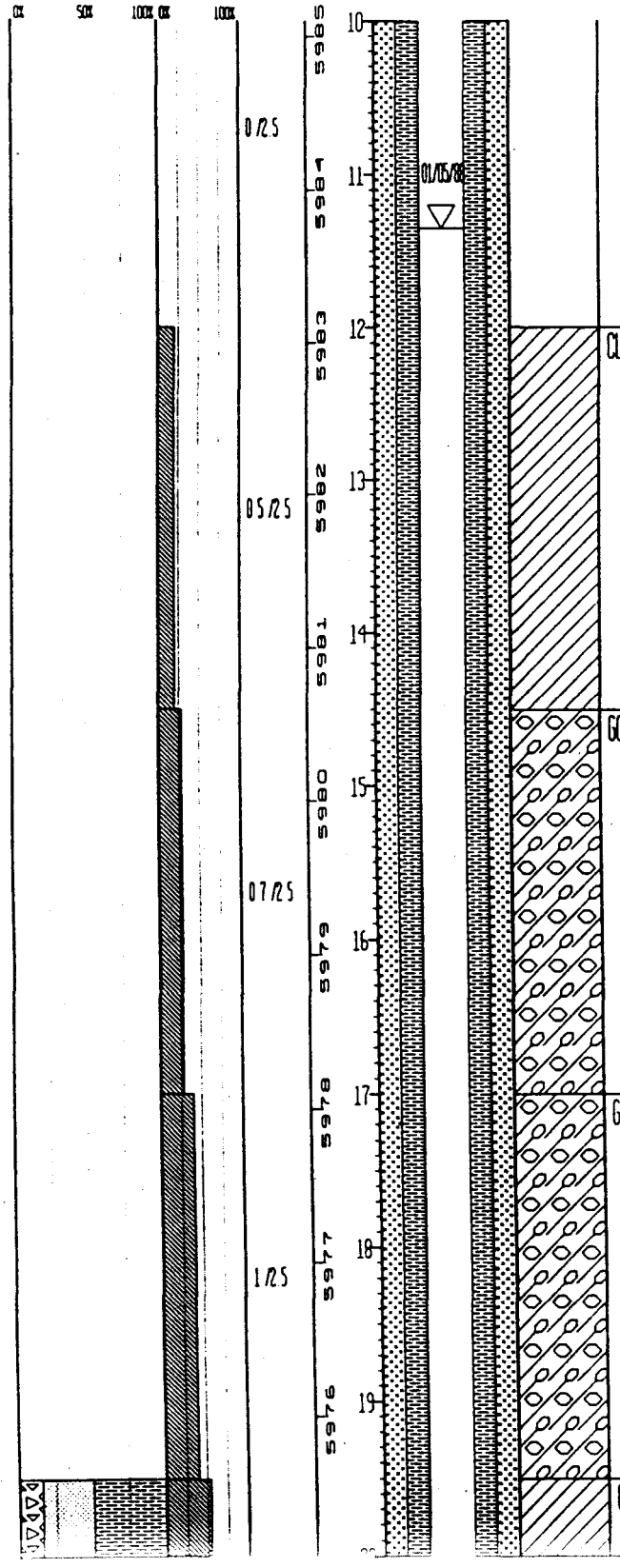
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GC	Clayey Gravel - Gravel predominantly very pale orange (10YR 8/2) Angular to sub-rounded mod grading Max size 6 5 cm Matrix sandy clay Est plast low, fine to coarse sand At very top of interval - Surficial roots and grass in approx 2 in of dk yellowish brown silty clay
NO SAMPLE	
CL	GRAVELLY SILTY CLAY - Grayish orange (10YR 7/4) Low to med plasticity Gravel ranges from granule size to 2 5 cm Angular to sub-rounded mod to well sorted Not consolidated
CL	Same as above Max size of gravel 6 cm
GP	One lg. piece of gravel med. gray (N5) Sub-angular - 7cm
NO SAMPLE	

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32	GROUND ELEVATION (FT)	5995 1	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH:	752234	AREA LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	LAA	58-87
EAST:	2082531	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	11/17/87	

REMARKS: Hollow Stem Auger

CHEMICAL ANALYSIS BY
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



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	GRAVELLY SILTY CLAY - Grayish orange (10YR 7/4). Plast. low to mod. Gravel granules to 2 cm. Angular to sub-angular. Some sand, fine VCG
GC	Clayey Gravel - Gravel predominantly med. dk. gray (N3). Angular to sub-angular. Granule size to 5 5 cm. Mod. to well sorted. Clay matrix grayish orange (10YR 7/4). Sandy fine to VCG sand
GC	Clayey Gravel - Same as above
CL	GRAVELLY CLAY - Lt. brown (5YR 6/4). Est. plast. low to moderate. Gravel angular to 3 5 cm. poorly graded. Clay is sandy VFG to coarse

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32	GROUND ELEVATION (FT) 5995.1	PROJECT NUMBER 667 11	LOG OF BORING NUMBER
NORTH	752234	AREA LANDFILL	CASING DIAMETER (IN) 2 10	GEOLOGIST LAA	58-87
EAST	2082531	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7 5	DATE DRILLED 11/17/87	

REMARKS: Hollow Stem Auger

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
	0027			1.35/2.5	5975	20				
					5974	21				
									CL	Grades to silty clay, lt brown to very pale orange (5YR 5/6 to 10YR 8/2) Est plast low to mod Sand VFG to coarse Some sm gravel Some pockets of clean silt
					5973	22			SILTY CLAYSTONE	Top of Bedrock Yellowish gray (5Y 8/1) Est plast moderate to high Trace carb material
				0.5/2.5	5972	23				
					5971	24				
									NO SAMPLE	
					5970	25				
				0/2.5	5969	26				
				0/0.5	5968	27			NO SAMPLE	
									SILTY CLAYSTONE	Yellowish gray (5Y 8/1) and dk yellowish orange mottled (10YR 6/6) Est plasticity moderate Trace carb material
				2/2	5967	28				
					5966	29				
									SILTY CLAYSTONE	Yellowish gray (5Y 8/1) with some dk yellowish orange (10YR 6/6) Est plast moderate If stone, highly weathered, moderately friable Some
						30				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 32	GROUND ELEVATION (FT):	5995.1	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752234	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	LAA	58-87
EAST:	2082531	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/17/87	

REMARKS: Hollow Stem Auger.

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%	3.2/2.5	5965	30				iron staining. Trace carb. material.
					5964	31				NOTE: No water encountered while drilling.
					5963	32				
					5962	33				
					5961	34				
					5960	35				
					5959	36				
					5958	37				
					5957	38				
					5956	39				
						40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5992.9	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	752313	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: LAA	59-87
EAST:	2082563	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/20/87	

REMARKS: Hollow Stem Auger Method

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
1.25/1.7	5992	0–1	CL	GRAVELLY SANDY CLAY - Pale yellowish brown (10YR 6/2), low to mod. plasticity. Gravel angular to sub-rounded. Well graded sand fine to granule size. Some silt. Some surficial root material, some carbonaceous material slightly calcitic.
0/0.3	5991	1–2	NO SAMPLE	
1.3/1.1	5990	2–3	CL	Same as above. Gravel more rounded max. size 5 cm. Chunk of blue styrofoam present 5 cm. long. Some fibrous wood at bottom of interval - 6.5 cm. long, slightly calcitic.
0/0.9	5989	3–4	NO SAMPLE	
0.3/0.4				Fibrous wood only 8 cm. long.
0/3.6	5988, 5987, 5986, 5985	4–8	NO SAMPLE	
				Fibrous wood only
1.3/1.3	5984	8–9	CL	SANDY GRAVELLY CLAY - Grayish brown (5YR 3/2), low to mod. plasticity. Gravel angular to sub-angular. Mod. grading. Sand fine to very fine, some silt. Trace root material, some fibrous wood, slightly calcitic.
0/1.2	5983	9–10	NO SAMPLE	

WELL OR PIEZOMETER CONSTRUCTION

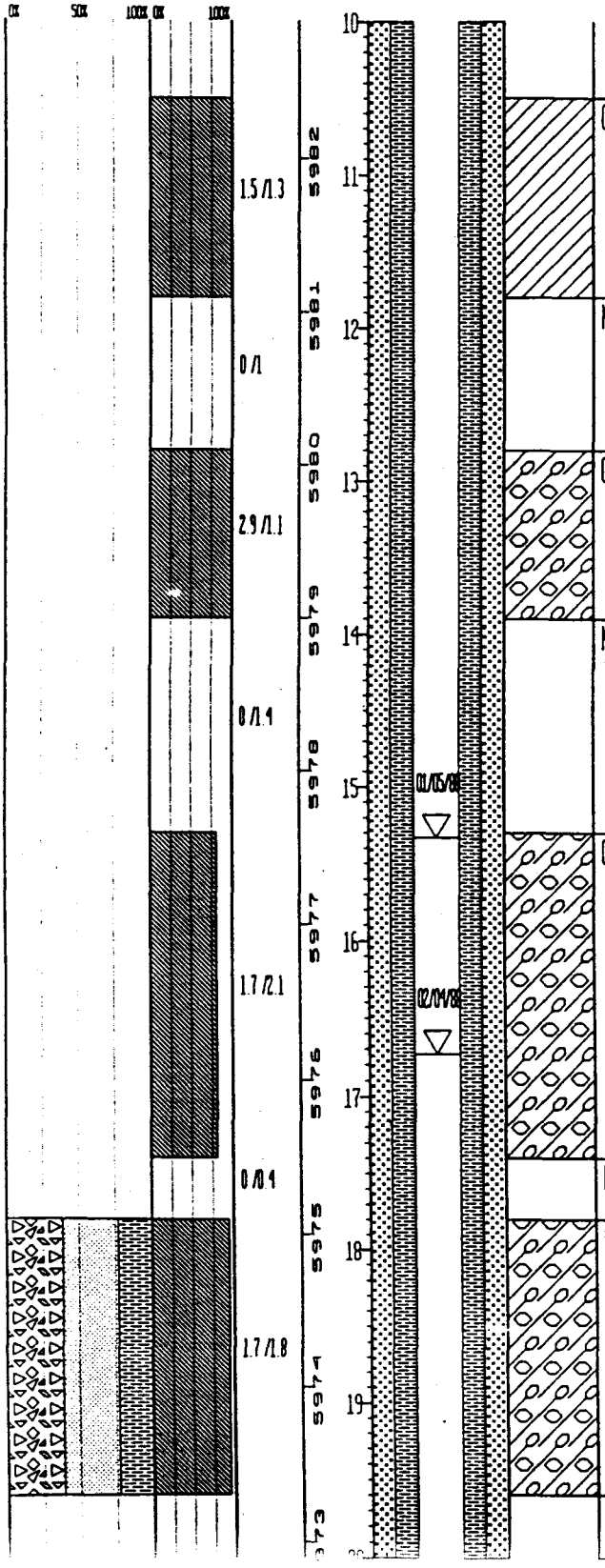
LITHOLOGY

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5992.9	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	752313	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: LAA	59-87
EAST:	2082563	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/20/87	

REMARKS: Hollow Stem Auger Method.

CHEMICAL SAMPLE DEPT
GRADATIONAL SAMPLE
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	SANDY GRAVELLY CLAY - Grayish brown (5Y 3/2). Low to mod. plast. Gravel angular to rounded. Mod. grading max. size 7.5 cm. Sand fine to very fine. Some silt. Trace root material calcitic.
NO SAMPLE	
GC	Sandy Clayey Gravel - Predominant color med. lt. gray (N6). Angular to sub-rounded, Well graded. Max. size 5 cm. Matrix mod. yellowish brown (10YR 5/4). Sand fine to coarse grained.
NO SAMPLE	
GC	Same as above
NO SAMPLE	
GC	Same as above. Less gravel, more matrix.
NO SAMPLE	

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5992.9	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	752313	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: LAA	59-87
EAST:	2082563	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/20/87	

REMARKS: Hollow Stem Auger Method.

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
				0/0.9		20				
					5972	21			CLAYSTONE	Top of Bedrock Pale yellowish orange to dark yellowish orange to pinkish gray (10YR 8/6 to 10YR 6/6 to 5YR 8/1). High plasticity.
				2.7/2.5	5971	22				
					5970	23			CLAYSTONE	Same as above. NOTE: No water encountered while drilling.
					5969	24				
				2.8/3	5968	25				
					5967	26				
					5966	27				
					5965	28				
					5964	29				
					5963	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 259.0	GROUND ELEVATION (FT)	5884.80	OLD WELL NUMBER	LF138SER	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	

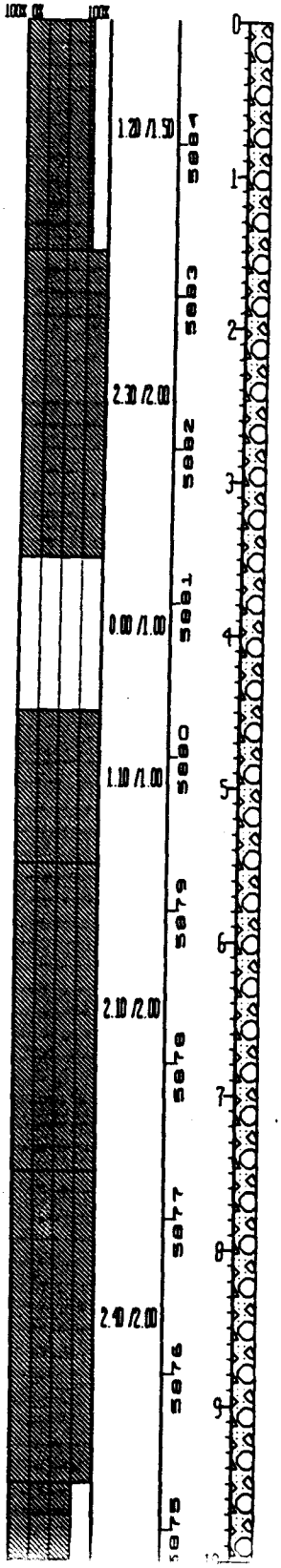
REMARKS: Hollow Stem Auger 0.0' to 28.0'. Rotary Core 28.0' to 259.0'. Surface casing set at 28.0' below ground surface on 04/25/89 by E.M. Hill. ASI Log

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
			1.50/2.00	5874	10, 11				
			2.30/2.00	5873, 5872	12, 13			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.
			2.20/2.00	5871, 5870	14, 15				
			2.40/2.00	5869, 5868	16, 17				
			2.50/2.00	5867, 5866	18, 19				
								CLAYSTONE	Silt fraction increases at approx. 19.8' and varies locally. Iron staining occurs on fracture surface.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13898R	LOG OF BORING NUMBER:
NORTH:	753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	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' to 259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. NSI Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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
CL:	Silty Clay - dark yellowish brown (10 YR 4/2), mod. plasticity. Some gravel, trace of roots. >50% clay.
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.
NO SAMPLE:	NO SAMPLE.
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.
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.
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

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT):	5883.07	OLD WELL NUMBER:	LF12B9BR	LOG OF BORING NUMBER:
NORTH:	753103	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B207089
EAST:	2094837	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/24/89	

REMARKS: Hollow Stem Auger. ASI Log.

GEOTECHNICAL SAMPLE DESCRIPTION

SAMPLE NUMBER

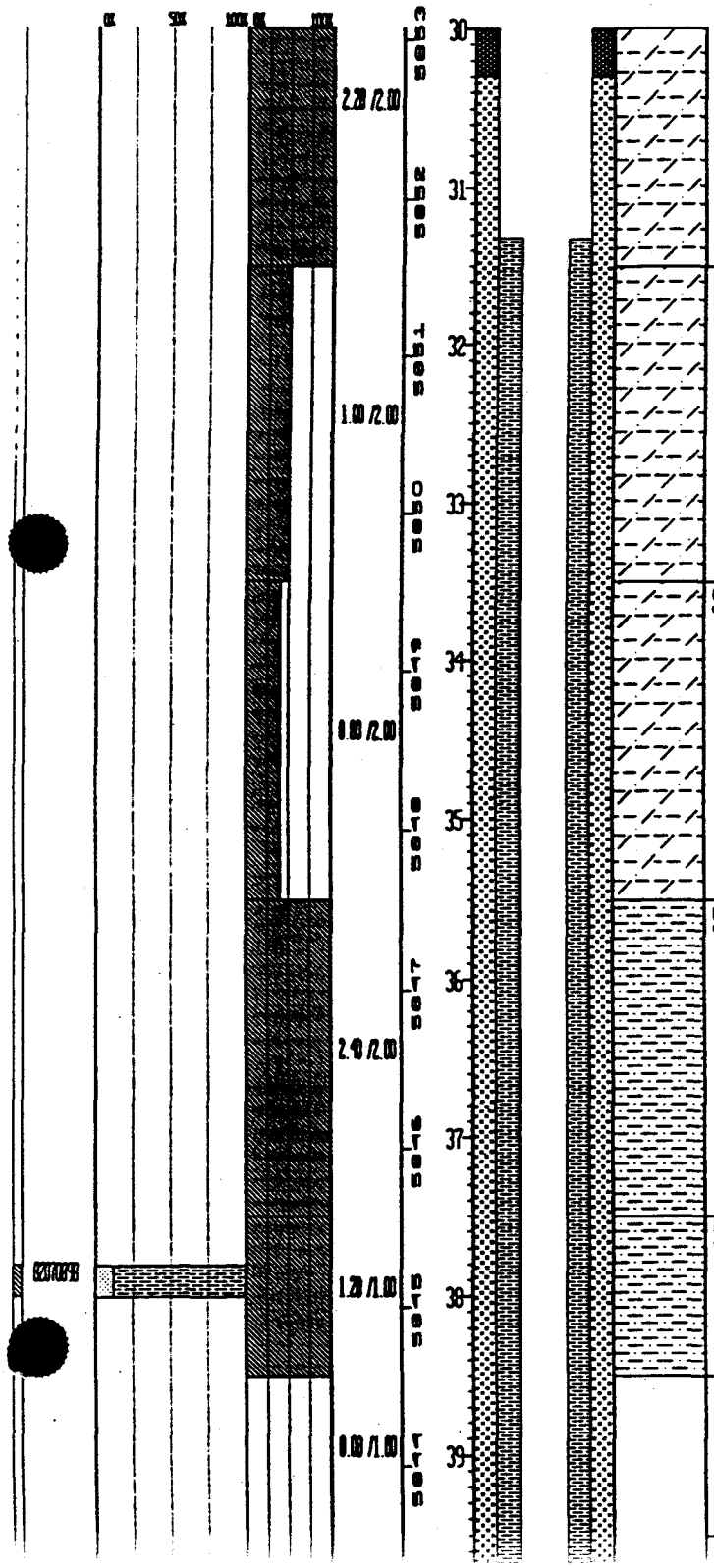
SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
		0.00 / 1.00	5883	50				
		0.00 / 1.00	5882	51			NO SAMPLE:	NO SAMPLE.
		1.40 / 1.00	5881	52			SANDY CLAYSTONE:	Olive gray to olive 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.
		1.30 / 1.00	5880	53			SANDY CLAYSTONE:	Same as above. Trace of iron staining. (Sandy Claystone with some Silt). 25% sand, 60% clay, 15% silt
		1.30 / 1.00	5879	54			SANDY CLAYSTONE:	Same as above. (Sandy Claystone with some Silt) 25% sand, 60% clay, 15% silt.
		1.20 / 1.00	5878	55			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.
		1.30 / 1.00	5877	56			SANDY CLAYSTONE:	Same as above. 35% sand, 60% clay.
		1.30 / 1.00	5876	57			SANDY CLAYSTONE:	Same as above, very friable. Totally crumbled most of interval. Bedding not evident. 35% sand, 65% clay.
		1.10 / 1.00	5875	58			SILTY CLAYSTONE:	All else same as above. Trace carbonaceous material. Bedding not evident. 65% clay, 30% silt.
		0.70 / 0.50	5874	59			SILTY CLAYSTONE:	Same as above, not as friable. Thin, platey bedding visible. Thin laminations of v.f.g. sand visible. 65% clay, 30% silt.
		1.40 / 1.00					CLAYSTONE:	All else same as above, some slickensides visible. >80% clay. Total Drilled Depth = 60.0'

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT): 5883.07	OLD WELL NUMBER: LF1289R	LOG OF BORING NUMBER:
NORTH: 753103	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: LAH	B207089
EAST: 2084937	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 04/24/89	

REMARKS: Hollow Stem Auger. ASI Log.

GEOTECHNICAL 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	5843	40				
					5842	41				
									NO SAMPLE:	NO SAMPLE.
				0.00 /1.00	5841	42				
				0.80 /1.00	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
					5839	44			SANDY CLAYSTONE:	Same as above. 30% sand, 55% clay.
				1.60 /2.00	5838	45				
				0.50 /0.50	5837	46			SANDY CLAYSTONE:	Same as above. Laminated bedding more visable. 30% sand, 55% clay.
				1.30 /1.00					SANDY CLAYSTONE:	Same as above. Bedding not evident. 30% sand, 55% clay.
				1.10 /1.00	5836	47			SANDY CLAYSTONE:	Same as above, increase in carbonaceous material content. Bedding appears horiz. from fractures. 30% sand, 55% clay.
				0.80 /1.00	5835	48			SANDY CLAYSTONE:	Same as above. (Sandy Claystone with some Silt). 20% sand, 60% clay, 20% silt.
				0.00 /0.50	5834	49			NO SAMPLE:	NO SAMPLE.
							04/24/89		SANDY CLAYSTONE:	Same as above. (Sandy Claystone with trace Silt)

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT):	5883.07	OLD WELL NUMBER:	LF1289BR	LOG OF BORING NUMBER:
NORTH:	753103	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.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.						



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.

SILTY CLAYSTONE: Same as above. (Silty Claystone with some Sand).
20% sand, 50% clay, 30% silt.
Note: Rock type stated as Sandy Silty Claystone.

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.

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.

NO SAMPLE: NO SAMPLE.

NO SAMPLE: NO SAMPLE

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT):	5883.07	OLD WELL NUMBER:	LF12895R
NORTH: 753103	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH
EAST: 2094937	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/24/89

REMARKS: Hollow Stem Auger. ASI Log.

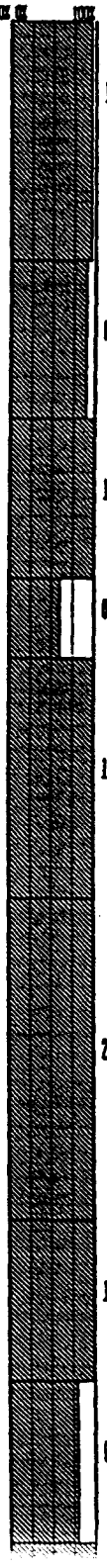
LOG OF BORING NUMBER: B207089

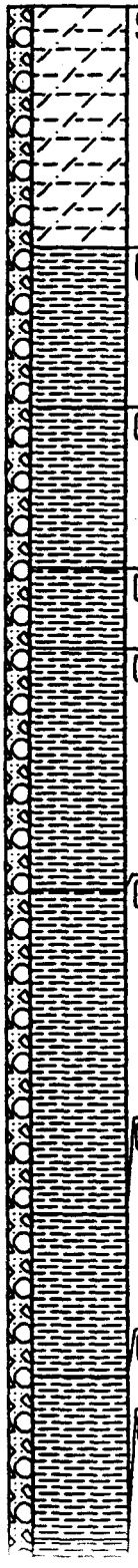
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2.00 /2.00	5863	20				
					5862	21				
				2.00 /2.00	5861	22			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.
					5860	23				
				2.20 /2.00	5859	24			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.
					5858	25				
				2.20 /2.00	5857	26			CLAYSTONE:	Same as above, except less silt. Some iron oxide. Possibly fracture fill. >75% clay.
					5856	27				
				2.20 /2.00	5855	28			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.
					5854	29				
									SILTY CLAYSTONE:	Same as above. Slightly darker in center of interval-(olive

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT):	5883.07	OLD WELL NUMBER:	LF1289BR	LOG OF BORING NUMBER:
NORTH:	753103	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.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 | GEOTECHNICAL 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)
1.90 /2.00	10
0.50 /1.00	11
1.30 /1.00	12
0.30 /0.50	13
1.80 /1.50	14
2.10 /2.00	15
1.20 /1.00	16
0.80 /1.00	17
	18
	19

Unified Soils Classification or Rock Type	Description
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.
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.
CLAYSTONE:	Same as above. Higher silt content, less friable. Trace v.f.g. sand. >80% clay.
CLAYSTONE:	Same as above. Trace iron staining. >80% clay.
CLAYSTONE:	Same as above. >80% clay
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.
CLAYSTONE:	Same 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.
CLAYSTONE:	Same as above. Not desegregated. >80% clay.
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

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 60	GROUND ELEVATION (FT):	5883.07	OLD WELL NUMBER:	LF1289BR	LOG OF BORING NUMBER:
NORTH:	753103	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.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
GEOTECHNICAL 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
1.80/1.50	5883	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.
1.80/1.80	5882	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.
0.40/0.20	5881	ML:	Same as above. More carbonaceous material. Trace f.g. sand. Trace root material.
1.40/1.30	5880	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.
0.90/0.70	5879	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.
0.80/0.70	5878	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.
1.50/1.30	5877	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.
1.80/1.70	5876	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.
0.40/0.30	5875	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.

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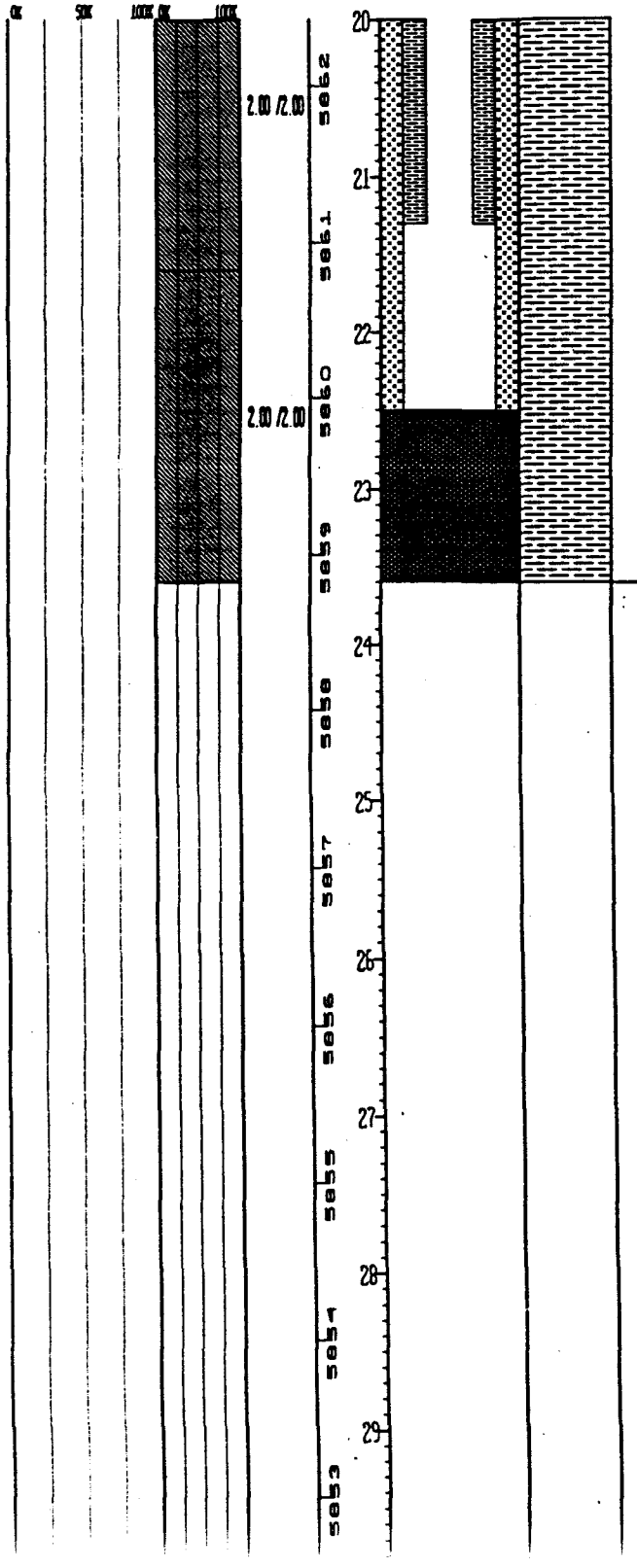
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 23.6	GROUND ELEVATION (FT):	5882.42	OLD WELL NUMBER:	LF11-89BR
NORTH: 753145	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	RTT
EAST: 2084035	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/19/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B206989

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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



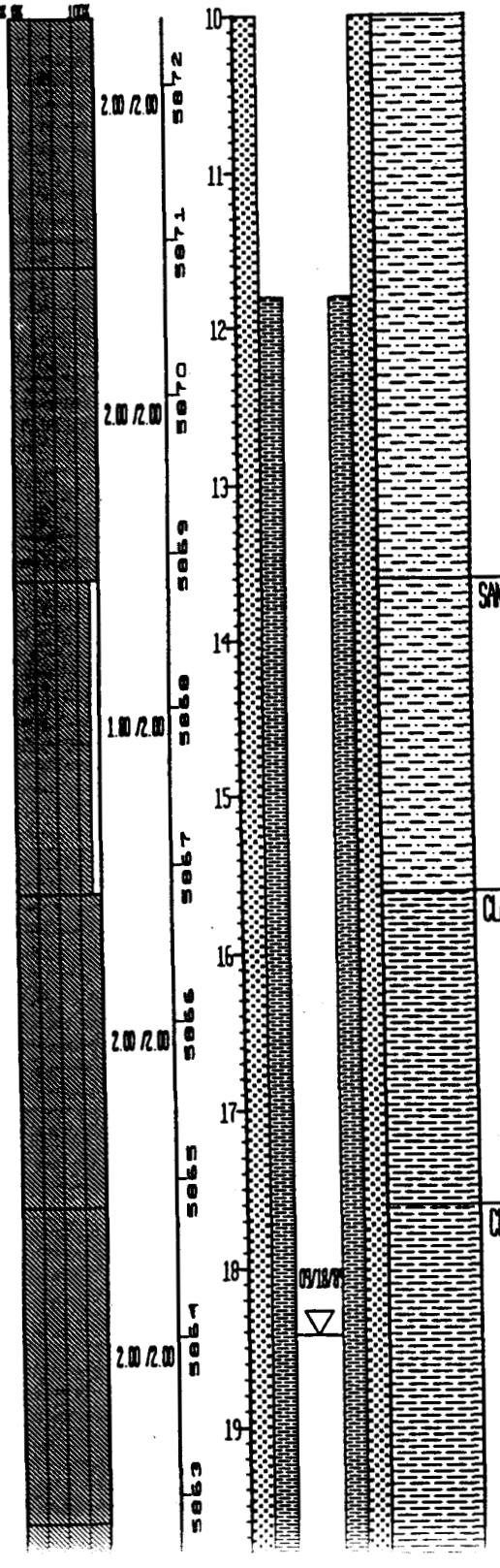
Total Drilled Depth = 23.6'.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 23.6	GROUND ELEVATION (FT):	5882.42	OLD WELL NUMBER:	LF11-89BR
NORTH: 753145	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	RTT
EAST: 2084835	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/19/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B206989

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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



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.

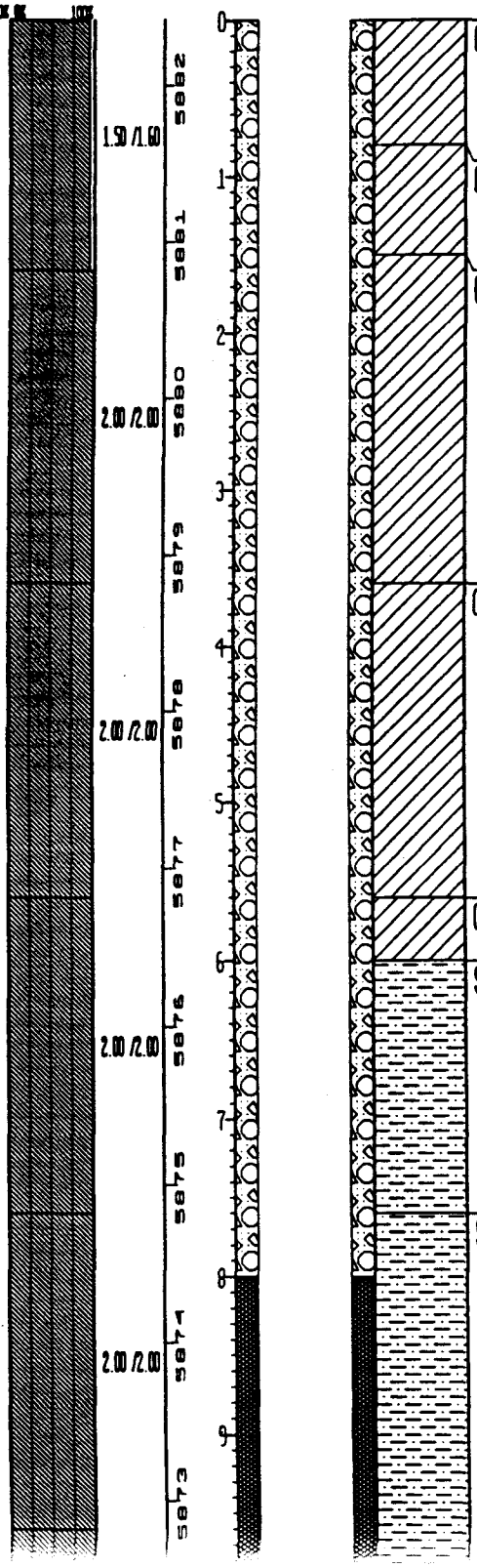
CLAYSTONE: Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 23.6	GROUND ELEVATION (FT):	5882.42	OLD WELL NUMBER:	LF11-093R
NORTH: 753145	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	RTT
EAST: 2084035	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/19/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B206989

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

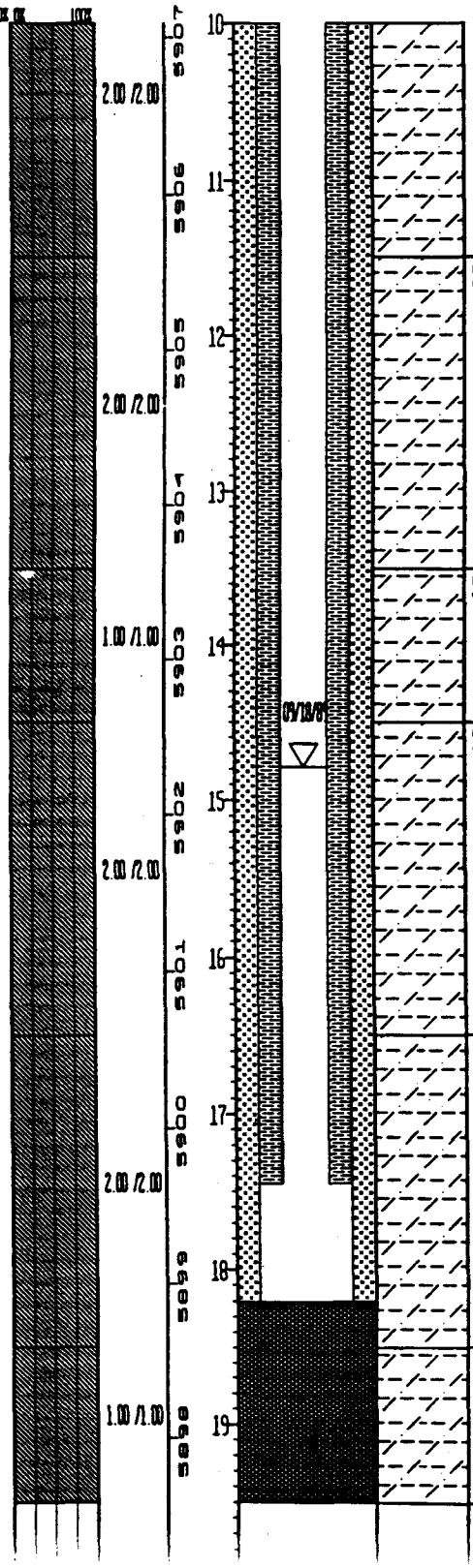


CL:	Clay - grayish brown (5 YR 3/2). Topsoil. Some gravel (1.75 cm. to 2.50 cm.), sub-rounded and sub-angular. Low plasticity, weakly cemented, poorly consol., abundt. roots, moist.
CL:	Clay - Pale brown (5 YR 5/2) to pale yellowish brown (10 YR 6/2). Some gravel, numerous roots. Med. plasticity, weakly cemented, poorly consol., moist.
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'
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.
CL:	Sandy Clay - same as above. F.g. sand.
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.
SANDY CLAYSTONE:	Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 19.5	GROUND ELEVATION (FT):	5917.09	OLD WELL NUMBER:	LF10-89BR	LOG OF BORING NUMBER:
NORTH: 752823	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	EMH	B206889
EAST: 2094781	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/27/89	

REMARKS: Hollow Stem Auger. Weston Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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



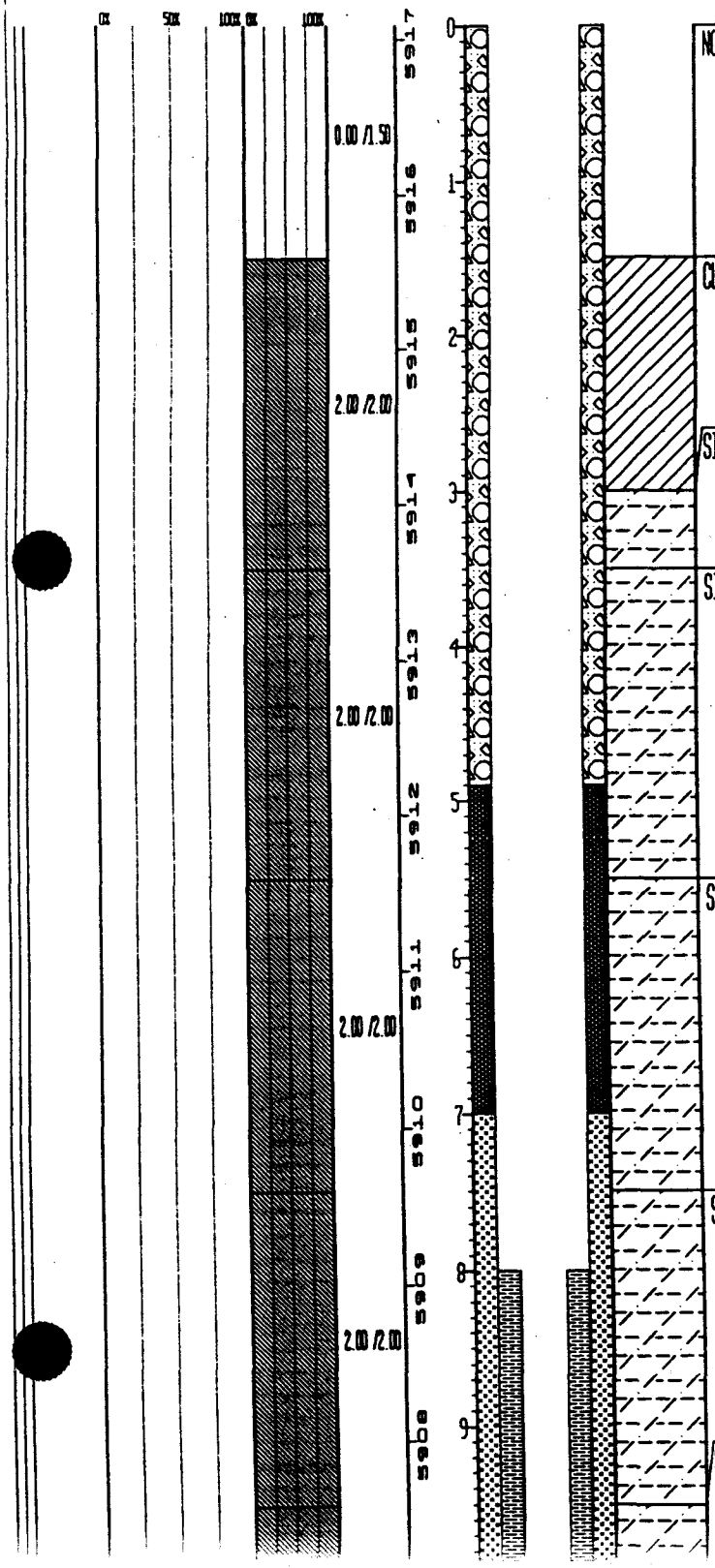
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Brownish gray (5 YR 4/1). Trace v.f.g. sand. Continuous iron-filled and very thin carbon-filled fractures, slightly weathered, soft.
SILTY CLAYSTONE	Brownish gray (5 YR 4/1). Trace v.f.g. sand. Few continuous iron-filled fractures, mod. weathered, soft, damp.
SILTY CLAYSTONE	Brownish gray (5 YR 4/1). Some v.f.g. to f.g. sand. 0.3' zone of laminated, severely weathered, sandier Claystone. Few continuous iron-filled fractures, mod. weathered, soft, damp.
SILTY CLAYSTONE	Trace to some v.f.g. to f.g. sand. Grain size increasing with depth to Sandy Silty Claystone, blocky. Few iron-filled fractures, mod. weathered, grading to highly weathered with extensive fractures. Iron mottling, friable. Trace organic spots in fractures, soft to very soft, damp.
SILTY CLAYSTONE	Brownish gray (5 YR 4/1). Trace to some v.f.g. to f.g. sand. Thin sand partings. Top strongly weathered, fractured, friable. Very soft grading to mod. weathered, blocky. Few iron-filled and organic-filled fractures, soft, damp.
	Total Drilled Depth = 19.5'.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 19.5	GROUND ELEVATION (FT):	5917.09	OLD WELL NUMBER:	LF10-89BR
NORTH: 752823	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	EMH
EAST: 2084781	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/27/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B206889

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DE
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL: 0.00 /1.50; 2.00 /2.00; 2.00 /2.00; 2.00 /2.00; 2.00 /2.00
DATUM (FT): 5917, 5916, 5915, 5914, 5913, 5912, 5911, 5910, 5909, 5908
DEPTH (FT): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



Unified Soils Classification or Rock Type	Description
NO SAMPLE:	Note: 2.5' cobble in shoe, no recovery.
CL:	Silty Clay - dark yellowish brown (10 YR 4/2). Some v.f.g. to m.g. sub-angular sand. Fine roots, stiff, damp.
SILTY CLAYSTONE:	Top of Bedrock. Brownish gray (5 YR 4/1). Laminated, frequent Lignite layers (<1 mm.), occasional calcite (calcareous) streaks. Abundt. iron staining.
SILTY CLAYSTONE:	Some v.f.g. to f.g. sand at bottom of sample. Blocky fractures, highly weathered, very soft, extensive iron staining, decreasing with depth. Lignite layers (<1 mm. to 5 mm.).
SILTY CLAYSTONE:	Some v.f.g to f.g. sand, angular, quartz. Blocky fractures, highly weathered, very soft, occasional iron-stained fractures. Few Lignite layers (<1 mm.).
SILTY CLAYSTONE:	Brownish gray (5 YR 4/1). Trace to some v.f.g to f.g. sand. Laminated to no visible bedding, highly weathered, very soft, occasional iron-stained fractures. Very few thin organic streaks, damp.
SILTY CLAYSTONE:	Brownish gray (5 YR 4/1). Trace to some v.f.g. to f.g. sand. Layer of extremely weathered Sandstone. Heavy iron staining, continuous iron-filled fractures, blocky to laminated and weathered, very soft, damp.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT):	5927.90	OLD WELL NUMBER:	LF09-89BR	LOG OF BORING NUMBER:
NORTH:	752818	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC	B206789
EAST:	2084161	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/23/89	

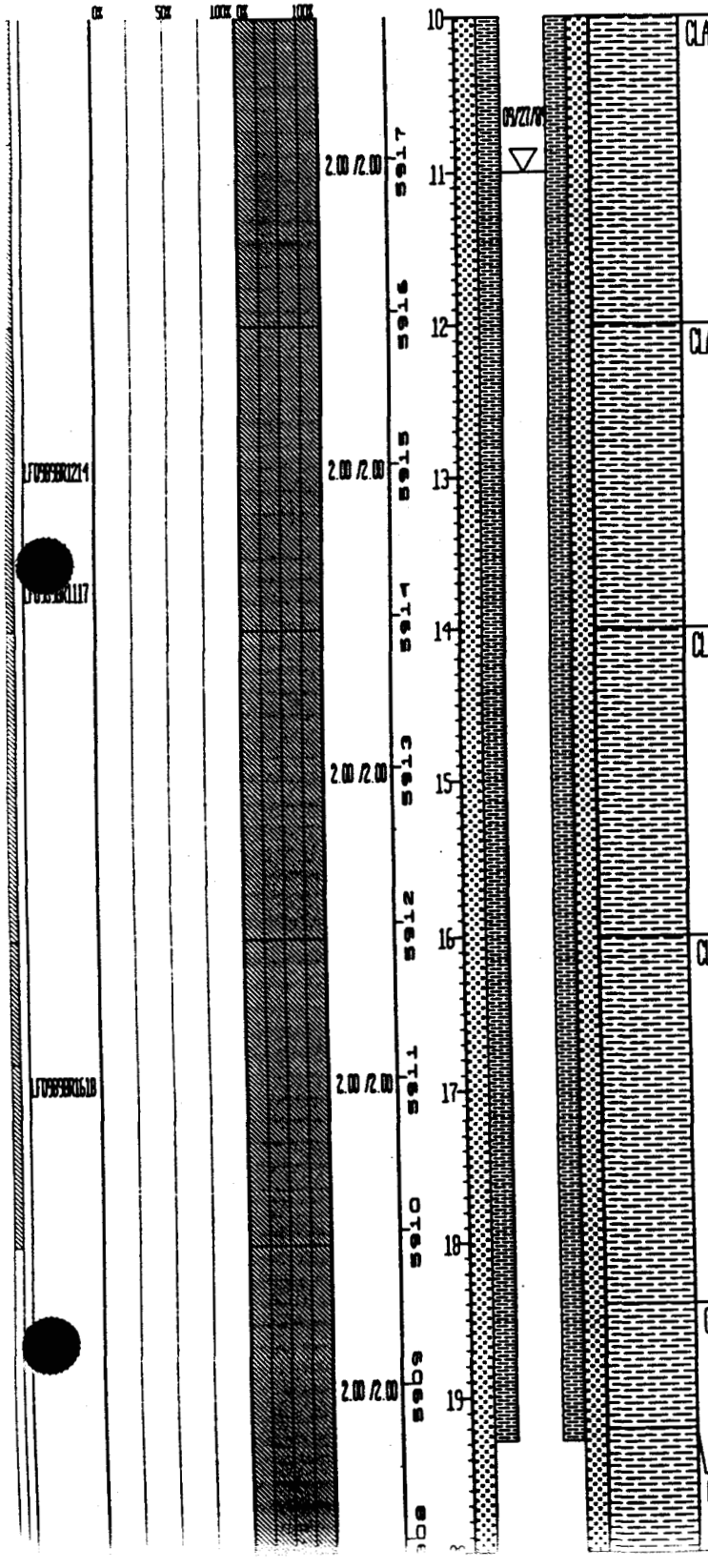
REMARKS: Hollow Stem Auger. Weston Log.

GEOTECHNICAL 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	5907	20–21			CLAYSTONE:	Med. dark gray (N 4/0) to mod. olive brown (5 Y 4/4) banded coloring. Trace iron staining. Non-stratified, blocky, non-cemented, well consol. Highly plastic, hard, slightly weathered, moist.
				2.00 /2.00	5905	22–23			CLAYSTONE:	Same as above - light olive gray (5 Y 5/2) to med. gray (N 5/0).
				2.00 /2.00	5903	24–25			CLAYSTONE:	Same as above - dark gray (N 4/0).
				2.00 /2.00	5901	26–27			CLAYSTONE:	Same as above - light olive brown (5 Y 5/6) to dark gray (N 4/0). Banded due to iron oxide staining.
									CLAYSTONE:	Same as above - light olive brown (5 Y 5/6), grading to olive/black (5 Y 2/1).
				2.00 /2.00	5899	28–29			CLAYSTONE:	Same as above - light olive brown (5 Y 5/6) to med. dark gray (N 4/0). Total Drilled Depth = 30.0'.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): 5927.90	OLD WELL NUMBER: LF09-89BR	LOG OF BORING NUMBER:	
NORTH: 752818	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: SPC	B206789	
EAST: 2084161	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/23/89		

REMARKS: Hollow Stem Auger. Weston Log.

GEOTECHNICAL SAMPLE | 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

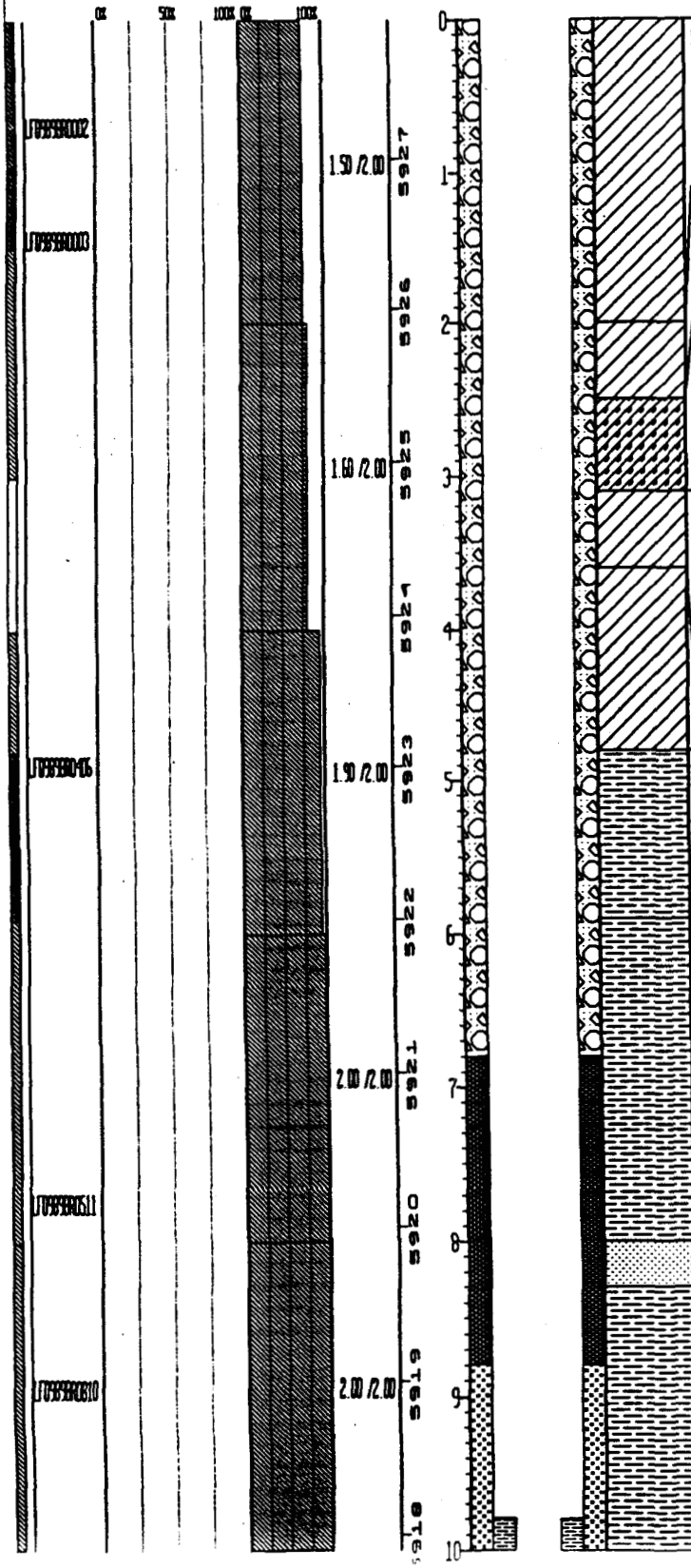


Depth (ft)	Unified Soils Classification or Rock Type	Description
10–11	CLAYSTONE:	Same as above - med. gray (N 5/0) and banded dark yellowish orange (10 YR 6/6).
12–13	CLAYSTONE:	Same as above - med. gray (N 5/0) to light olive brown (5 Y 4/4) with dark yellowish orange (10 YR 6/6) mottling.
14–15	CLAYSTONE:	Same as above - med. gray (N 5/0) to light olive gray (5 Y 5/2) with occasional bands of iron oxide staining.
16–17	CLAYSTONE:	Same as above - med. dark gray (N 4/0) with dark yellowish orange (10 YR 6/6) iron oxide staining.
18–19	CLAYSTONE:	Dark yellowish orange (10 YR 6/6) to light brown (5 YR 5/6), very mottled. Some f.g. to v.f.g. sand. Non-stratified. Some platiness due to iron oxide cementation. Well consol., hard, weathered, moist.
19–20	CLAYSTONE:	Same as above (reference interval 18.0' to 18.4'). Light olive brown (5 Y 5/6) to med. gray (N 5/0).

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT):	5927.90	OLD WELL NUMBER:	LF09-89BR	LOG OF BORING NUMBER:
NORTH:	752818	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC	B206789
EAST:	2084161	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/23/89	

REMARKS: Hollow Stem Auger. Weston Log.

CHEMICAL SAMPLE DEPTH | GEOTECHNICAL 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 4/4). Some f.g. to v.c.g. sand (fill), poorly sorted, angular to sub-angular, quartzite. Non-stratified, uncemented, stiff, med. plastic, moist.
CL:	Clay - dusky yellowish brown (10 YR 2/2). Trace f.g. to c.g. sand (fill), poorly sorted, sub-angular, quartzite. Non-stratified, non-cemented, very stiff, med. plastic, moist.
SC:	Sand and Clay - dark yellowish orange (10 YR 6/6). Trace gravel. M.g. to v.c.g. sand. 1 cm. to 4 cm. gravel. Poorly sorted, sub-angular, granite-quartzite. Non-stratified, weakly cemented, poorly consol., med. dense, low plasticity, moist. (sc-cl?)
CL:	Clay - med. gray (N 5/0). Trace sand to sandy at shoe. M.g. to c.g. sand (fill), poorly sorted, sub-angular, quartzose. Slightly stratified, blocky, weakly cemented. High to med. plastic, abundt. calcium carbonate (calcareous), moist.
CL:	Clay - same as above, with some gravel, fill.
CLAYSTONE:	Top of Bedrock. Med. gray (N 5/0) to dark yellowish orange (10 YR 6/6). Color due to banding and marbling by iron oxide staining. Non-stratified, blocky, poorly cemented, med. hard, weathered. Med.-high plastic. Trace calcium carbonate (slightly calcareous), moist.
CLAYSTONE:	Light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6). Some to trace v.f.g. to f.g. sand, rounded, well sorted. Non-stratified, blocky, weathered, med. hard to hard. Med. high to high plastic. Abundt. iron oxide staining, moist.
SANDSTONE:	Dark yellowish orange (10 YR 6/6) to light gray (N 7/0). Some clay. F.g. sand, well sorted, rounded. Non-stratified. Banded with iron oxide staining, slighlty to poorly cemented. Mod. to poorly consol., med. hard, weathered, low plastic, moist.
CLAYSTONE:	Olive gray (5 Y 4/1), banded dark yellowish orange (10 YR 6/6). Trace silt. Non-stratified, homogeneous, blocky, well consol. Weakly cemented, slightly weathered. Med. to high plastic. Iron oxide staining in part, moist.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 21.7	GROUND ELEVATION (FT): 5959.31	OLD WELL NUMBER: LF08-898R	LOG OF BORING NUMBER:
NORTH:	732588	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: EMH	B206689
EAST:	2084061	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 04/28/89	

REMARKS: Hollow Stem Auger. Weston Log.

GEOTECHNICAL 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	5939	20				
					5938	21				
					5937	22				Total Drilled Depth = 21.7'
					5936	23				
					5935	24				
					5934	25				
					5933	26				
					5932	27				
					5931	28				
					5930	29				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 21.7	GROUND ELEVATION (FT):	5959.31	OLD WELL NUMBER:	LF08-89BR
NORTH: 752588	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	EMH
EAST: 2084361	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	04/28/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B206689

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100% OR 100%)	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2.00 /2.00	5949	10				
					5948	11				
				2.00 /2.00	5947	12				SILTY CLAYSTONE: Brownish gray (5 YR 4/1), mottled with light brownish gray (5 YR 6/1) and dark yellowish orange (10 YR 6/6). Trace v.f.g. to f.g. sand. Lignite partings (<1 mm.). Iron-filled fractures. Blocky, highly weathered, very soft, damp.
					5946	13				
				2.00 /2.00	5945	14				SILTY CLAYSTONE: Brownish gray (5 YR 4/1). Trace v.f.g. to f.g. sand. Trace organics, few iron-filled fractures. Trace calcite filled fractures. Soft, mod. weathered, blocky, mod. plastic, damp.
					5944	15				
				2.00 /2.00	5943	16				SILTY CLAYSTONE: Brownish gray (5 YR 4/1). Trace v.f.g. to f.g. sand. Occasional lignite partings. Trace iron-stained fractures. Blocky, mod. weathered, damp, soft.
					5942	17				
				2.00 /2.00	5941	18				SILTY CLAYSTONE: Same as above - blocky to fissile.
					5940	19				SILTY CLAYSTONE: Mottled light brownish gray (10 YR 6/1), brownish gray (10 YR 4/1), and mod. yellowish brown (10 YR 5/4). Trace v.f.g. sand. Trace organics. Blocky, mod. plastic, mod. weathered, soft, damp.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 21.7	GROUND ELEVATION (FT): 5959.31	OLD WELL NUMBER: LF08-8998	LOG OF BORING NUMBER:
NORTH: 752588	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: EMH	B206689
EAST: 2094061	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 04/28/89	

REMARKS: Hollow Stem Auger. Weston Log.

ORIGINAL SAMPLE DEPTH
GEOTECHNICAL 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
		1.00 /1.70	5959	0			GM:	Silt, Sand and Gravel - grayish brown (5 YR 3/2). V.f.g. to c.g. sand. Fine to coarse gravel, sub-angular, granitic very loose. Humic, grass and roots, damp.
		0.40 /1.00	5958	1			CL:	Silty Clay - pale brown (5 YR 5/2), mod. plastic, soft, moist.
		0.40 /1.00	5957	2			GC:	Gravel, Cobbles and Clay - pinkish gray (5 YR 8/1), mottled with yellowish gray (5 Y 7/2). Clay is plastic, high calcite content (calcareous). Sticky, silt, moist, soft.
		2.00 /2.00	5956	3			SILTY CLAYSTONE:	Top of Bedrock. Light olive gray (5 Y 6/1), mottled with dark yellowish orange (10 YR 6/6). Trace v.f.g to f.g. sand. 1 mm. to 2 mm. lenses of caliche. Highly weathered, very soft, mod. plastic, moist.
		2.00 /2.00	5955	4			SILTY CLAYSTONE:	Brownish gray (5 YR 4/1), mottled with dark yellowish orange (10 YR 6/6). Trace v.f.g. to f.g. sand. 1 mm. to 40 mm. lenses of caliche. Blocky to fissile. Highly weathered, very soft, moist.
		2.00 /2.00	5954	5			SILTY CLAYSTONE:	Light olive gray (5 Y 6/1), mottled with dark yellowish orange (10 YR 6/6). Trace v.f.g. to f.g. sand. Trace organics. Few 1 mm. to 2 mm. caliche lenses. Blocky, fractured, very soft, slightly moist.
			5953	6				
			5952	7				
			5951	8				
			5950	9				
				10			SILTY CLAYSTONE:	Same as above - Few Sandy Silty Claystone partings

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT): 5967.80	OLD WELL NUMBER: LF0689BR	LOG OF BORING NUMBER:	
NORTH: 752458	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: F. GRIGSBY	B206589	
EAST: 2084121	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/05/89		

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 34.62' to 35.82' below ground surface. ASI Log.

GEOTECHNICAL 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

5927 5926 5925 5924 5923 5922 5921 5920 5919 5918

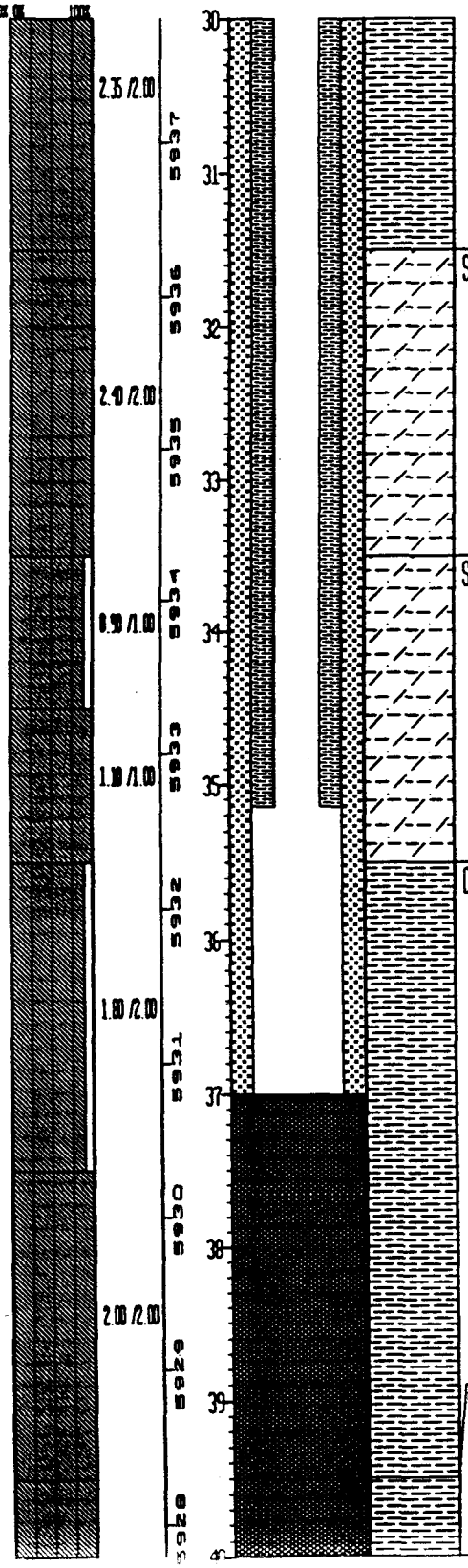
40 41 42 43 44 45 46 47 48 49

Total Drilled Depth = 41.5'.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5967.80	OLD WELL NUMBER:	LF06895R	LOG OF BORING NUMBER:
NORTH:	752458	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	F. GRIGSBY	B206589
EAST:	2084121	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/05/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 34.62' to 35.82' below ground surface. ASI Log.

CHEMICAL SAMPLE DEPTH | 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



SILTY CLAYSTONE: Light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6). More abundt. hematite. Some carbon along 35-50 degree fractures in lower part of core. >95% fines.

SILTY CLAYSTONE: Light olive gray (5 Y 5/2) to dark yellowish orange. Brittle, vertically fractured with heavy hematite coating along fracture planes, some Mn also on fracture surfaces. Abundt. disseminated hematite extending into rock from fracture planes. >95% fines.

CLAYSTONE: Light olive gray (5 Y 6/1) with grayish orange (10 YR 7/4), mottling where hematite present, no apparent bedding. Healed fracture zones with hematite coating on surfaces, some carbonaceous material, unweathered. >95% fines.

CLAYSTONE: Color change to dark yellowish brown (10 YR 4/2) with dark yellowish brown (10 YR 6/6) in hematite rock zones, healed fractures (+/-45 degrees) with slickensides on some surfaces. Mn mod. abundt., some carbonaceous material, unweathered.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5967.80	OLD WELL NUMBER:	LF06893R	LOG OF BORING NUMBER:
NORTH:	752458	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	F. GRUGSBY	B206589
EAST:	2084121	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/05/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 34.62' to 35.82' below ground surface. AST Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
				1.40 /2.00	5947	21				
				1.50 /2.00	5946	22			CLAYSTONE:	Color change to light olive gray (5 Y 6/1) to approx. 22.8' grades into pale yellowish brown (10 YR 6/2) at lower end of interval, entire interval clay with med. plasticity, no silt. >95% fines.
	B206589A				5945	23				
	B206589B			1.10 /1.00	5944	24			CLAYSTONE:	Color change to pred. yellowish gray (5 Y 7/2), med. plasticity, no silt, trace carbonaceous material, some Fe (Hematite) staining. >95% fines.
				0.65 /1.00	5943	25			CLAYSTONE:	Light olive gray (5 Y 5/2) to dusky yellow (5 Y 6/4), mottled, no apparent bedding, some convoluted structure, zones of hematitic or limonitic staining.
				1.10 /2.00	5942	26			CLAYSTONE:	Screen sampled this interval, 100% passed 200 screen, no apparent silt in 200 fractions, fines, med. plasticity.
					5941	27	05/05/89			
				1.20 /2.00	5940	28			CLAYSTONE:	Claystone with some silt. Color light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6) in hematite rich zones at bottom of interval. Core badly broken by drilling and drying. No apparent bedding. >95% fines.
					5939	29			CLAYSTONE:	Claystone with some Silt. Light olive gray (5 Y 5/2) to dark yellowish orange (10 YR 6/6) in hematite stained zones. Possible poorly developed horizontal bedding planes. Indications of heated fractures (vertical?) with hematite filling or coatings. >95% fines.
					5938	30				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT): 5967.80	OLD WELL NUMBER: LF06898R	LOG OF BORING NUMBER:
NORTH:	752458	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: F. GRIGSBY	B206589
EAST:	2084121	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/05/89	

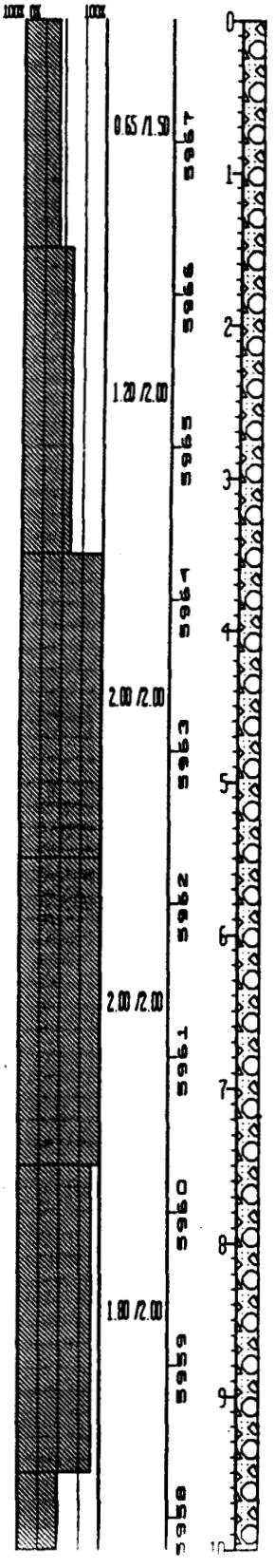
REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 34.62' to 35.82' below ground surface. AST Log.

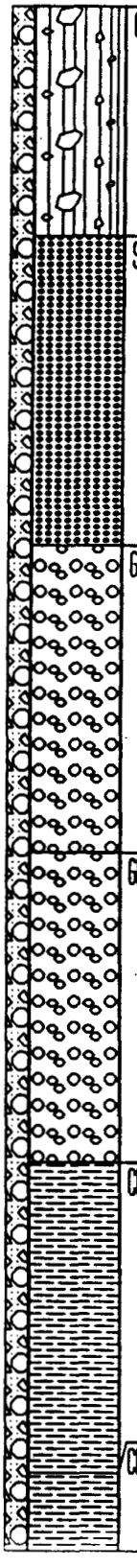
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				0.55 /2.00	5957	10–11				
				0.90 /2.00	5956	12			CLAYSTONE:	Color change to light gray (N7), trace amounts of carbonaceous material. Clay.
				0.00 /1.00	5955	13				
				1.30 /1.00	5954	14			NO SAMPLE:	NO SAMPLE.
				1.40 /2.00	5953	15			CLAYSTONE:	Pred. pale yellowish brown (10 YR 6/2) with dark yellowish orange (10 YR 6/6), mottling (Hematite), clays indurated when dry, mod. weathered, med. plasticity, no silt. Clay.
				1.70 /2.00	5952	16			CLAYSTONE:	Same as above. Trace amounts of carbonaceous material. Abundt. hematite staining. Clay.
					5951	17				
					5950	18			CLAYSTONE:	Same as above. Trace of carbonaceous material, mod. plasticity, no silt, mod. weathered. Clay.
					5949	19			CLAYSTONE:	Color change to pred. dark yellowish orange (10 YR 6/6). Trace carbonaceous material, interval well weathered (oxidized), no silt, abundt. hematite staining, med. plasticity. >95% fines.
					5948	20				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5967.80	OLD WELL NUMBER:	LF06B9ER	LOG OF BORING NUMBER:
NORTH:	752458	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	F. GRIGSBY	B206589
EAST:	2094121	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/05/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 34.62' to 35.82' below ground surface. AST Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRADE 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





GM:	Gravel with silty topsoil and caliche color from dusky yellowish brown (10 YR 2/2) to yellowish gray (5 Y 8/1). Gravel to 2.5 in. Pred. lithology dark gray quartzite, well graded, sub-angular, mod. root development. Soil, low plasticity, some clay. (ow-gc). 75% gravel, 10% caliche, 10% clay, 10% silt.
SW:	Well graded Sand with Gravel-calcareous cemented (caliche), yellowish gray (5 Y 8/1) to light olive gray (5 Y 6/1). Gravel to 1.5 in., pred. lithology quartzite to quartz sand, pred. quarzite & quartz, sub-angular to angular, weathered. 40% gravel, 55% sand, 5% fines.
GW:	Well graded Gravel with Sand - yellowish gray (5 Y 7/2) to very pale orange (10 YR 8/2), calcareous. Gravel to 2.5 in., pred. lithology quartzite with some quartz, sub-angular to angular, some large pieces sub-rounded, sand pred. sub-angular to sub-rounded, quartzose, weathered. 70% gravel, >25% sand, <5% fines.
GW:	Well graded Gravel - same as above. 70% gravel, >25% sand, <5% fines.
CLAYSTONE:	Grayish yellow (5 Y 8/4) to yellowish gray (5 Y 7/2) - some gravel imbedded in top 2 in. +/-. Some caliche fragments imbedded in clay, (may be stuff from upper zone). Some mica flakes throughout interval. Clay apparently very pliable when fresh (now very deformed), calcareous interval weathered.
CLAYSTONE:	Same as above, color pred. yellowish gray (5 Y 7/2) with grayish orange (10 YR 7/4), mottling (Hematite), interval mod. weathered, slightly calcareous in upper 6 in. Clay.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5969.14	OLD WELL NUMBER:	LF0589	LOG OF BORING NUMBER:
NORTH:	752427	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206489
EAST:	2083964	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/03/89	

REMARKS: Hollow Stem Auger. ASI Log.

CHEMICAL SAMPLE DEPTH / 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%	100% 0% 100%	1.80 /2.00	5965	40				
					5964	41				
					5963	42				Total Drilled Depth = 41.5'
					5962	43				
					5961	44				
					5960	45				
					5959	46				
					5958	47				
					5957	48				
					5956	49				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT): 5969.14	OLD WELL NUMBER: LF0589	LOG OF BORING NUMBER:
NORTH: 752427	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: LAH	B206489
EAST: 2083964	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/03/89	

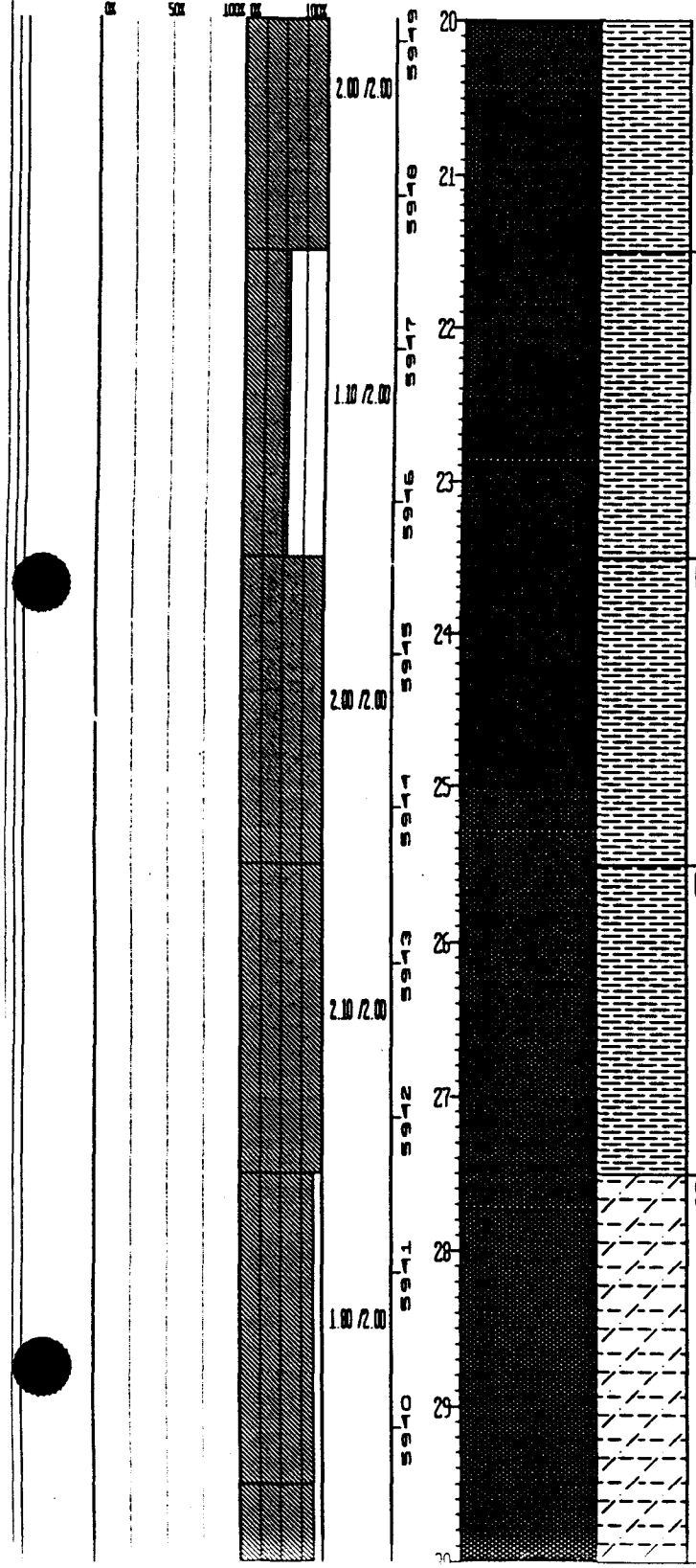
REMARKS: Hollow Stem Auger. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	B206489			1.80 /2.00	5939	30				
					5938	31				
				2.30 /2.00	5937	32			SILTY CLAYSTONE	Very pale orange (10 YR 8/2) to grayish orange (10 YR 7/4), slightly friable. Bedding not evident. Iron staining in high angle fractures. Trace carbonaceous material. Some v.f.g. sand. (Silty Claystone with some Sand). 10% sand, 30% silt, >50% clay.
					5936	33				
				2.20 /2.00	5935	34				
					5934	35				
				1.70 /2.00	5933	36			SILTY CLAYSTONE	Same as above, more friable. Staining still in fractures, but more irregular fractures. Less silt toward bottom. >65% clay.
					5932	37				
				0.90 /2.00	5931	38			SILTY CLAYSTONE	Same as above. Abundt. iron staining and some iron precipitation in middle of interval. Some carbonaceous material. >60% clay.
					5930	39			CLAYSTONE	Dark yellowish brown (10 YR 4/2) to dark yellowish orange (10 YR 6/6), friable, weathered. Bedding not evident. Trace carbonaceous material. Color changes to light olive gray (5 YR 6/1). Less friable. Iron stains in fractures. >70% clay.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT): 5969.14	OLD WELL NUMBER: LF0589	LOG OF BORING NUMBER:	
NORTH: 752427	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: LAH	B206489	
EAST: 2083964	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/03/89		

REMARKS: Hollow Stem Auger. ASI Log.

CHEMICAL SAMPLE DE... GEOTECHNICAL SAMP... 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



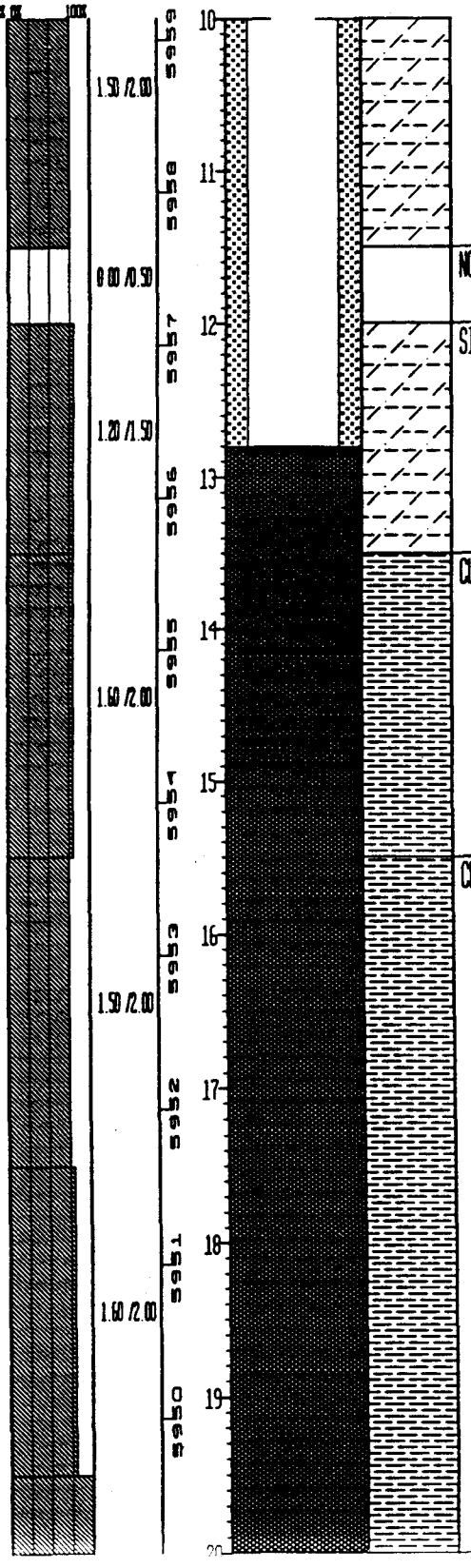
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE:	Very pale orange (10 YR 8/2) to dark yellowish orange (10 YR 6/6). Highly weathered, mod. to highly friable. Bedding not evident. >70% clay.
CLAYSTONE:	Same as above. Very pale orange (10 YR 8/2) to pale yellowish brown (10 YR 6/2). Trace carbonaceous material. >70% clay.
CLAYSTONE:	Same as above. More friable. Color changes to light olive gray (5 YR 6/1). >70% clay.
SILTY CLAYSTONE:	Grayish orange (10 YR 7/4) to pinkish gray (5 YR 8/1). Bedding not evident. Mod. to slightly friable. Trace carbonaceous material and iron staining. >70% clay, 20-25% silt.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5959.14	OLD WELL NUMBER:	LF0589
NORTH: 752427	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH
EAST: 2083964	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/03/89

REMARKS: Hollow Stem Auger. ASI Log.

LOG OF BORING NUMBER: B206489

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% – 50%)
PERCENT RECOVERY (100% 0% – 100%)
RECOVERY/INTERVAL
DATUM (FT): 5959, 5958, 5957, 5956, 5955, 5954, 5953, 5952, 5951, 5950
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
NO SAMPLE:	NO SAMPLE.
SILTY CLAYSTONE:	Same as 9.5' - 11.5'. Color change at bottom to light brownish gray (5 YR 6/1). >70% clay.
CLAYSTONE:	Pinkish gray (5 YR 8/1) to light brownish (5 YR 6/1). Mod. friable to friable. Bedding not evident. Some dark yellowish orange (10 YR 6/6). Mottles, weathered, trace silt.
CLAYSTONE:	Same as above. Trace carbonaceous material, more dark yellowish orange (10 YR 6/6) mottles. >70% clay.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 41.5	GROUND ELEVATION (FT):	5969.14	OLD WELL NUMBER:	LF0589
NORTH: 752427	AREA: LANDFILL	CASING DIAMETER (IN):	4 5 0.0.	GEOLOGIST:	LAH
EAST: 2083964	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/03/89

REMARKS: Hollow Stem Auger. AST Log.

LOG OF BORING NUMBER: B206489

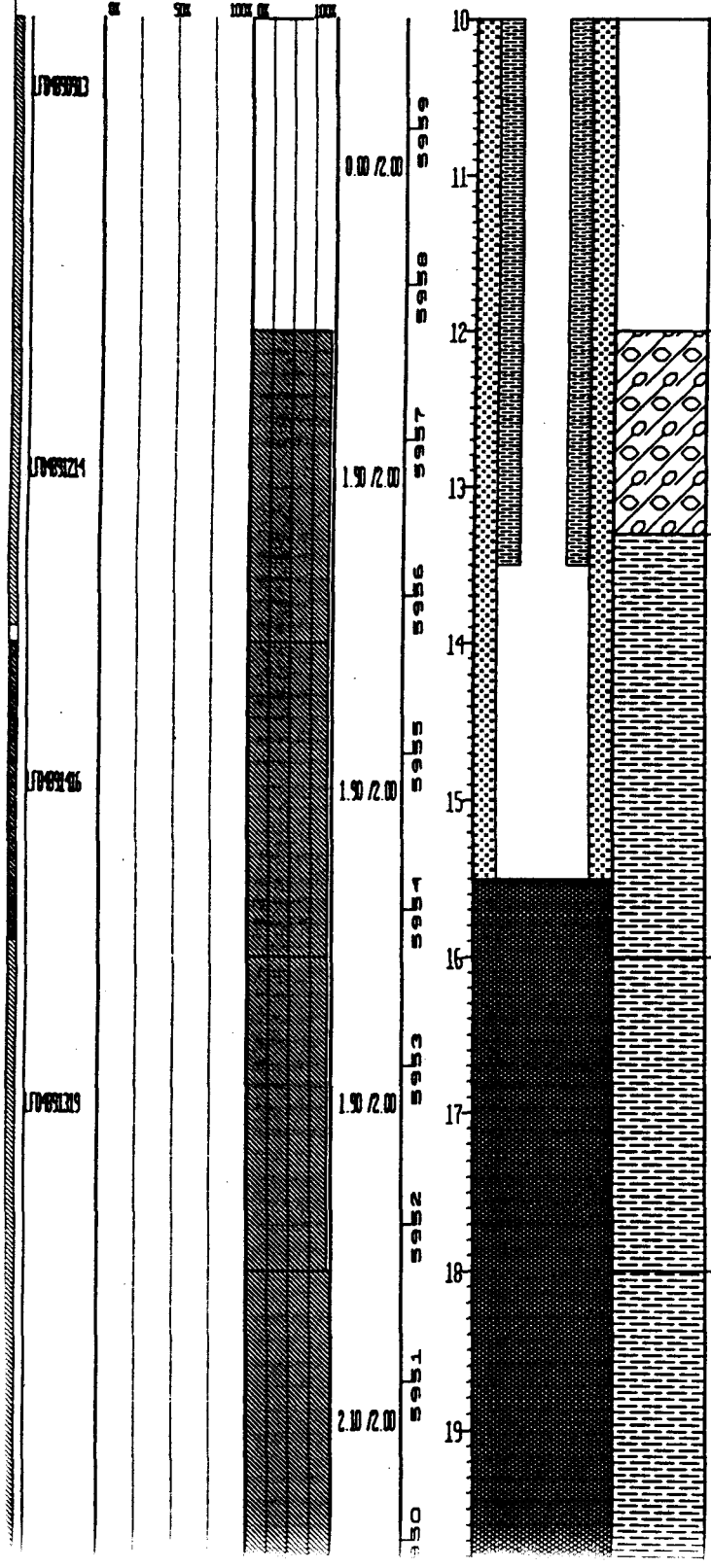
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1.10 /1.50	5969	0			CL:	Silty Clay (topsoil) - Dark yellowish brown (10 YR 4/2) to dusky yellowish brown, (10 YR 2/2). Mod. plasticity, trace sand, v.f.g. to m.g. Trace gravel (2 cm). Slightly calcareous, trace root material. >50% clay.
					5968	1				
				1.00 /2.00	5967	2			CL:	Silty Clay - same as above. Becomes Caliche with Gravel. Very pale orange (10 YR 8/2). Gravel granules to 7 cm., sub-angular to sub-rounded. Poorly graded. Some sand, v.f.g. to f.g.
					5966	3				
				1.10 /2.00	5965	4	09/21/89		GC:	Clayey Sandy Gravel. Very pale orange (10 YR 8/2) to grayish orange (10 YR 7/4). Gravel granules to 6 cm., sub-angular, med. graded. Sand v.f.g. to v.c.g., well graded. Mildly calcareous. (Sandy Gravel with some Clay). 45% gravel, 40% sand, 15% clay.
					5964	5				
				1.00 /2.00	5963	6			GC:	Clayey Sandy Gravel - Same as above. Gravel to 5 cm., sub-rounded, mod. graded. More clay toward bottom. Trace caliche toward bottom.
					5962	7				
				2.00 /2.00	5961	8			SILTY CLAYSTONE:	Top of Bedrock at 7.3'. Very pale orange (10 YR 8/2). Some dark yellowish orange (10 YR 6/6) mottles, especially toward bottom. 30% silt, >60% clay.
					5960	9			SILTY CLAYSTONE:	Very pale orange (10 YR 8/2) to dark yellowish orange (10 YR 6/6), mottled. Highly weathered, bedding not evident. Some iron staining, some caliche. >70% clay

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 20	GROUND ELEVATION (FT):	5969.70	OLD WELL NUMBER:	LF04-89
NORTH: 752548	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC
EAST: 2083926	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/19/89

LOG OF BORING NUMBER: B206389

REMARKS: Hollow Stem Auger. Dry ice was used to eliminate the threat of explosion of the methane gas emanating from the landfill.
Weston Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
NO SAMPLE:	Drilled with center bit. No sample recovery.
GC:	Sand and Gravel - same as above (reference intrval 9.0' to 10.0').
CLAYSTONE:	Top of Bedrock. Light olive gray (5 Y 6/1) to med. gray (N 5/0). Some silt, trace sand. High to med. plasticity, mod. cemented, mod. consol. Iron oxide stained, weathered, moist.
CLAYSTONE:	Dark yellowish orange (10 YR 6/6) to light olive gray (5 Y 5/2). Trace silt. Laminated, homogeneous, med. to high plasticity, very hard. Some iron oxide stain, highly weathered.
CLAYSTONE:	Same as above - increased iron oxide staining at 19.0' to 20.0'. Total Drilled Depth = 20.0'.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 20	GROUND ELEVATION (FT):	5969.70	OLD WELL NUMBER:	LF04-89
NORTH: 752548	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC
EAST: 2083926	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/19/89

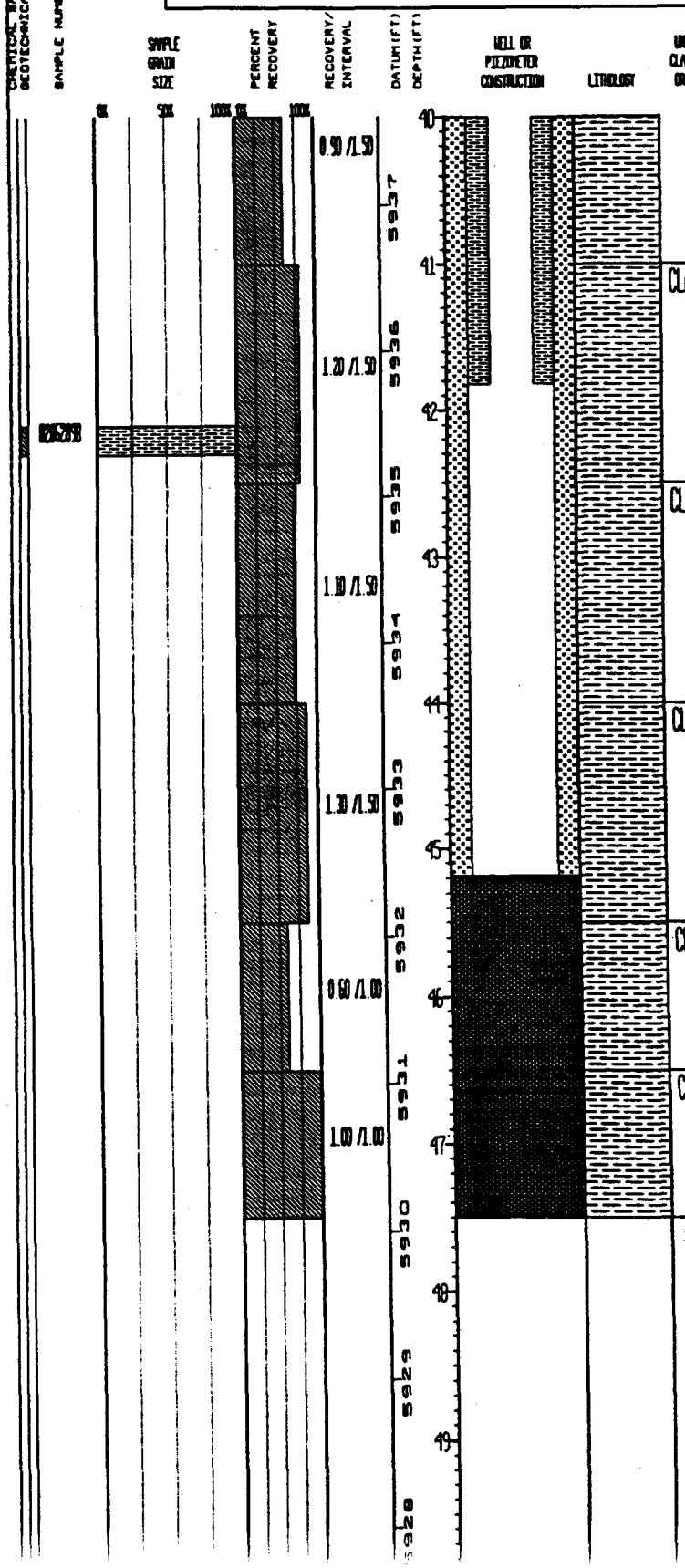
REMARKS: Hollow Stem Auger. Dry ice was used to eliminate the threat of explosion of the methane gas emanating from the landfill. Weston Log.

LOG OF BORING NUMBER: B206389

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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			CL:	Sandy Clay - mod. yellowish brown (10 YR 5/4). Some gravel, very stiff to stiff, moist.
	LT0489002			1.70 /2.20	5969	1			GC:	Gravelly Sand and Clay - dusky yellowish brown (10 YR 2/2). Med. dense with asphalt and scattered metal debris, moist.
	LT0489003				5968					
						2			NO SAMPLE:	NO SAMPLE.
				1.6 /1.80	5967	3			SC:	Sand and Clay - dark yellowish brown (10 YR 4/2). Some gravel, non-stratified. F.g. to c.g. sands, sub-angular, quartzites, med. dense. Some paper and wood trash, moist.
	LT0489005				5966					
	LT0489006					4				
				0.90 /2.00	5965	5				
					5964					
						6			NO SAMPLE:	Drilled with center bit. No sample recovery.
				0.00 /2.00	5963	7				
					5962					
						8			GC:	Sand and Gravel - dark yellowish orange (10 YR 6/6). Clayey, non-stratified, homogeneous. V.f.g. to v.c.g. sand, poor sorting, sub-angular, quartzites. Non-cemented, mod. consol., med. dense to dense. Moist to slightly moist.
				0.00 /1.00	5961					
						9				
	LT0489010			0.70 /1.00	5960					

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 47.5	GROUND ELEVATION (FT):	5977.59	OLD WELL NUMBER:	LF0389BR	LOG OF BORING NUMBER:
NORTH:	752253	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206289
EAST:	2083564	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/02/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 41.45' to 42.65' below ground surface. ASI Log.

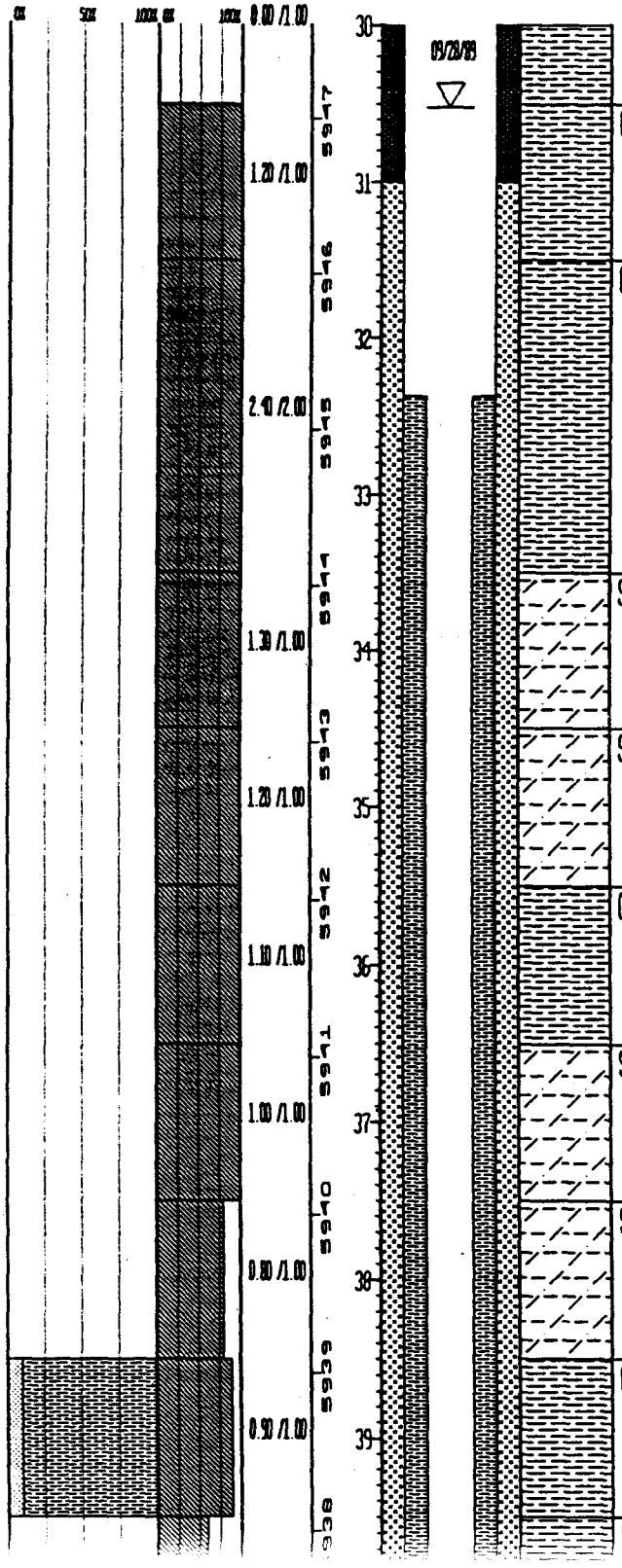


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE:	Same as above, unconsol.
CLAYSTONE:	Same as above.
CLAYSTONE:	Same as above. Color change to olive black. Trace carbonaceous material.
CLAYSTONE:	Same as above. Color change to brownish black (5 YR 2/1). Some carbonaceous material.
CLAYSTONE:	Same as above. Color change to brownish gray (5 YR 4/1). No carbonaceous material.
	Total Drilled Depth = 47.5'.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 47.5	GROUND ELEVATION (FT):	5977.59	OLD WELL NUMBER:	LF0389R	LOG OF BORING NUMBER:
NORTH:	752253	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206289
EAST:	2083564	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/02/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 41.45' to 42.65' below ground surface. ASI Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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:	Brownish gray (5 YR 4/1), mod. friable, bedding not evident, some silt, dark yellowish orange silt.
CLAYSTONE:	Same as above, trace carbonaceous material. Color change to light olive gray (5 Y 6/1), becomes silty toward bottom of interval.
SILTY CLAYSTONE:	Same as above.
SILTY CLAYSTONE:	Same as above.
CLAYSTONE:	Same as above, mod. friable.
SILTY CLAYSTONE:	Same as above. 20% silt.
SILTY CLAYSTONE:	Same as above. 45% silt.
CLAYSTONE:	Same as above, trace carbonaceous material, less silty. (Claystone with some Silt). 10% silt.
CLAYSTONE:	Brownish gray (5 YR 4/1), mod. friable, bedding not evident.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 47.5	GROUND ELEVATION (FT):	5977.59	OLD WELL NUMBER:	LF0389R	LOG OF BORING NUMBER:
NORTH:	752253	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206289
EAST:	2083564	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/02/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 41.45' to 42.65' below ground surface. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
				1.70 /2.00	5957	20				
						21				
				0.40 /0.50	5956				SILTY CLAYSTONE	Same as above, some iron staining.
						22			CLAYSTONE	Light brownish gray (5 YR 6/1), mod. friable, bedding not evident, some silt.
				1.50 /1.50	5955					
						23				
					5954				CLAYSTONE	Same as above. Some dark yellowish orange (10 YR 6/6) mottling, some staining.
						24				
				2.10 /2.00	5953					
						25				
					5952				CLAYSTONE	Dusky yellowish brown (10 YR 2/2), bedding not evident, mod. friable, trace staining.
						26				
				1.50 /2.00	5951					
						27				
					5950				SILTY CLAYSTONE	Mottled light brownish gray. Bedding not evident. Trace silt, slightly friable. Trace iron staining. Trace carbonaceous material.
				1.10 /1.00		28				
					5949				SILTY CLAYSTONE	Brownish gray (5 YR 4/1), highly weathered, highly friable, bedding not evident.
				1.10 /1.00		29				
					5948				CLAYSTONE	Light brownish gray (5 YR 4/1), highly friable, highly

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 47.5	GROUND ELEVATION (FT):	5977.59	OLD WELL NUMBER:	LF03899R	LOG OF BORING NUMBER:
NORTH:	752253	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206289
EAST:	2083564	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/02/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 41.45' to 42.65' below ground surface. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRADE SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1.50 /1.00	5967	10				
				1.50 /0.20	5966	11			SC:	Same as above, with some gravel.
				1.10 /2.00	5965	12	05/02/89 ▽		SC:	Same as 9.5'-11.3' with some gravel. Sub-rounded, .5 cm.-3 cm.
				0.80 /1.00	5964	13			SC:	Clayey Sand and Gravel - light brown (5 YR 6/4). Sand, poorly sorted, v.f.g. to v.c.g. Angular to sub-rounded, gravel granules to ¾ cm. (Gravelly Clayey Sand). 30% gravel, 40% sand, 30% clay.
				1.20 /1.00	5963	14			SC:	Same as above.
				2.40 /2.00	5962	15			CLAYSTONE:	Top of Bedrock. Claystone - light brownish gray (5 Y 4/1), highly weathered, mod. friable, some dark yellowish orange mottling.
				1.30 /2.00	5961	16			CLAYSTONE:	Same as above, trace iron staining.
					5960	17			CLAYSTONE:	Same as above, trace silt.
					5959	18				
					5958	19			SILTY CLAYSTONE:	Grayish orange (10 YR 7/4), highly weathered, mod. friable,

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 47.5	GROUND ELEVATION (FT):	5977.59	OLD WELL NUMBER:	LF03895R	LOG OF BORING NUMBER:
NORTH:	752253	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	LAH	B206289
EAST:	2083564	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/02/89	

REMARKS: Hollow Stem Auger. Set stainless steel centralizer from 41.45' to 42.65' below ground surface. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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	5977	0			CL:	Silty Clay (topsoil) - pale yellowish brown (10 YR 6/2). Mod. plasticity, bedding not evident. Some sand, v.f.g. to c.g. Trace gravel and root material, grades to gravel. Granules to cobbles (7 cm).
				0.40 /0.40	5976	1			GC:	Clayey Sand and Gravel - matrix dark reddish brown (10 R 3/4). Gravel poorly sorted, granules to 3 cm. Sub-angular to sub-rounded. Sand v.f.g. to granules, some silt. 25% gravel, 25% sand.
				0.50 /0.50	5975	2			CL:	Sandy Gravelly Clay - same as above with larger clay content. Grades to gravel in sandy silty clay matrix.
				0.00 /0.70	5974	3			NO SAMPLE:	NO SAMPLE.
				0.50 /1.00	5973	4			GC:	Clayey Gravel - matrix grayish orange to mod. yellowish brown. Gravel angular, poorly sorted, well graded, granules to 7 cm. Silty clay matrix, some sand v.f.g. to c.g. 70% gravel.
				0.00 /1.00	5972	5			NO SAMPLE:	NO SAMPLE.
				1.10 /2.00	5971	6			CL:	Silty Clay - grayish orange (10 YR 7/4) to dark yellowish orange (10 YR 6/6). Low plasticity. Abundant gravel, granules to 5 cm., gravel sub-rounded, some sand v.f.g to v.c.g. Mod. well sorted.
				0.70 /2.00	5970	7			CL:	Sandy Clay - very pale orange (10 YR 8/2). Mod. plasticity. Sand v.f.g. to f.g., well sorted. Some gravel at top of interval. (Gravel as above). Some silt.
					5969	8			CL:	Same as above. Grades to clayey sand toward bottom. Clayey Sand - light brown (5 YR 5/6). Sand poorly sorted v.f.g. to v.c.g. Sub-angular to sub-rounded. Some silt.
					5968	9				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 45.0	GROUND ELEVATION (FT):	5984.50	OLD WELL NUMBER:	LF02-89BR
NORTH: 752332	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC
EAST: 2083301	LOCATOR NUMBER: K10	BOREHOLE DIAMETER (IN):	11.0	DATE DRILLED:	05/25/89

LOG OF BORING NUMBER: B206189

REMARKS: Hollow Stem Auger. Dry ice was placed in and around the auger to inhibit the ventilation on methane gas emanating from the landfill soils. Weston Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (GR / SOIL / ROCK GR / ROCK)	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	MODIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1.00 /1.00	5941	40			CLAYSTONE:	Same as above.
				1.00 /1.00	5943	41			CLAYSTONE:	Same as above - brownish gray (5 YR 4/1) to med. dark gray (N 4/0).
				1.00 /1.00	5942	42			CLAYSTONE:	Same as above - increasing silt content, increasing manganese oxide staining.
				0.40 /1.00	5941	43			CLAYSTONE:	Same as above - trace v.f.g. sand.
				0.00 /1.00	5940	44			NO SAMPLE:	NO SAMPLE.
					5939	45			:	Total Drilled Depth = 45.0'.
					5938	46				
					5937	47				
					5936	48				
					5935	49				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 45.0	GROUND ELEVATION (FT):	5984.50	OLD WELL NUMBER:	LF02-898R	LOG OF BORING NUMBER:
NORTH:	752332	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC	B206189
EAST:	2083301	LOCATOR NUMBER: K10	BOREHOLE DIAMETER (IN):	11.0	DATE DRILLED:	05/25/89	

REMARKS: Hollow Stem Auger. Dry ice was placed in and around the auger to inhibit the ventilation on methane gas emanating from the landfill soils. Weston Log.

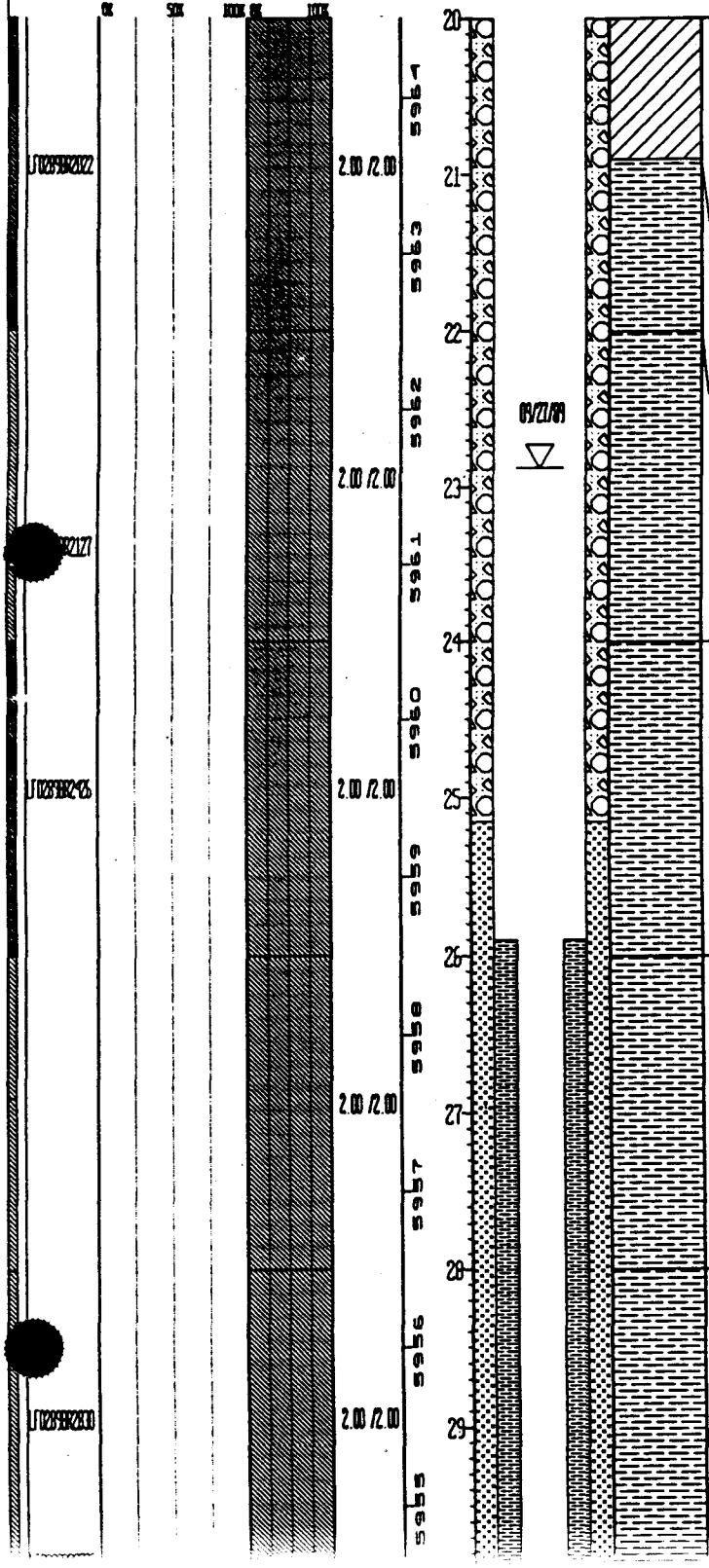
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2.00 /2.00	5954	30			CLAYSTONE:	Same as above - light olive brown (5 Y 5/6), med. gray (N 5/0), light olive gray (5 Y 5/2), very mottled. Highly plastic, trace iron oxide staining.
				2.00 /2.00	5953	31			CLAYSTONE:	Same as above - olive gray (5 Y 4/1), light olive brown (5 Y 5/6), dark gray (N 3/0). Laminated, dark gray zone due to manganese oxide staining.
	LT0898G2M			2.00 /2.00	5952	32			CLAYSTONE:	Same as above - brownish black (5 YR 2/1), med. gray (N 5/0), med. dark gray (N 4/0), mottled.
				1.00 /1.00	5951	33			CLAYSTONE:	Same as above - dark gray (N 3/0) to light olive gray (5 Y 6/1). Slightly silty, trace v.f.g. sand, slightly mottled.
				1.00 /1.00	5950	34			CLAYSTONE:	Same as above - med. gray (N 6/0) to med. dark gray (N 4/0). Blocky to platey, very hard.
				1.00 /1.00	5949	35			CLAYSTONE:	Same as above.
				1.00 /1.00	5948	36			CLAYSTONE:	Same as above - med. gray (N 5/0) to light gray (N 7/0).
				1.00 /1.00	5947	37			CLAYSTONE:	Same as above - dark gray (N 3/0) to light olive gray (5 Y 6/1). Laminated, manganese oxide staining in discrete layers.
				1.00 /1.00	5946	38				
				1.00 /1.00	5945	39				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 45.0	GROUND ELEVATION (FT):	5984.50	OLD WELL NUMBER:	LF02-89BR	LOG OF BORING NUMBER:
NORTH:	752332	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC	B206189
EAST:	2083301	LOCATOR NUMBER: K10	BOREHOLE DIAMETER (IN):	11.0	DATE DRILLED:	05/25/89	

REMARKS: Hollow Stem Auger. Dry ice was placed in and around the auger to inhibit the ventilation on methane gas emanating from the landfill soils. Weston Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DE

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:	Sandy Gravelly Clay - dark yellowish orange (10 YR 6/6). F.g. to c.g. sand. 1 cm. to 8 cm. gravel and pebbles, poorly sorted, sub-angular, granite and quartzite. Non-stratified, mod. consol., non-cemented, med. plastic, very stiff to hard. A 4 cm. sandy gravel lense at contact with Claystone bedrock. Very moist.
CLAYSTONE:	Top of Bedrock at 21.0'. Light olive brown (5 Y 5/6) to light olive gray (5 Y 5/2). Non-stratified, blocky, well consol., non-cemented, iron oxide banding, hard, med. to high plastic, weathered, moist.
CLAYSTONE:	Same as above - light to heavy iron oxide staining at 23.9'.
CLAYSTONE:	Same as above - grayish brown (5 YR 3/2). Pale yellowish brown (10 YR 6/2), grayish orange (10 YR 7/4), very mottled. Abundt. iron oxide staining.
CLAYSTONE:	Same as above - maganese oxide and iron oxide staining, very thin silty sand interbeds.
CLAYSTONE:	Same as above - dark yellowish orange (10 YR 6/6), light olive gray (5 Y 5/2), dusky yellowish brown (10 YR 2/2). Very hard to hard, no sand, mottled to 29.1'.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 45.0	GROUND ELEVATION (FT):	5984.50	OLD WELL NUMBER:	LF02-89BR
NORTH: 752332	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	SPC
EAST: 2083301	LOCATOR NUMBER: K10	BOREHOLE DIAMETER (IN):	11.0	DATE DRILLED:	05/25/89

LOG OF BORING NUMBER: **B206189**

REMARKS: Hollow Stem Auger. Dry ice was placed in and around the auger to inhibit the ventilation on methane gas emanating from the landfill soils. Weston Log.

GEOTECHNICAL 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	5974, 5973	10, 11			SC:	Clayey Sand - grayish green (10 GY 5/2) to yellowish gray (5 Y 7/2). some iron oxide stain, dark yellowish orange (10 YR 6/6). F.g. to c.g. sand. 1 cm. to 2 cm. gravel, poorly sorted, sub-angular, quartzose. Slightly stratified to laminated, mod. consol., weakly cemented, med. dense, low plastic, moist.
	LF02B9BR1016 LF02B9BR1214			2.00 /2.00	5972, 5971	12, 13			SC:	Clayey Sand - light brown (5 YR 5/6). F.g. to v.c.g. sand. Trace 1 cm. to 2 cm. gravel, poor sorting, sub-angular. Quartzose lenses to non-stratified. Mod. consol., weakly cemented, med. dense, low plastic, iron oxide staining, moist.
				1.70 /2.00	5970, 5969	14, 15			SC:	Clayey Sand - same as above. Dark yellowish orange (10 YR 6/6) to dark yellowish brown (10 YR 4/2). Low to non-plastic, med. dense to dense.
	LF02B9BR1618 LF02B9BR1620			2.00 /2.00	5968, 5967	16, 17			SC:	Clayey Gravelly Sand - light brown (5 YR 5/6) to mod. yellowish brown (10 YR 5/4). F.g. to v.c.g. sand. 1 cm. to 2 cm. gravel, poorly sorted, sub-angular, quartzose. Slightly stratified, very thin (.5 cm.) clean sand lenses. Mod. consol., weakly cemented, med. dense to dense, med. to low plastic, moist.
						18	05/25/89 ▽		SC:	Clayey Gravelly Sand - same as above.
				1.99 /2.00	5966, 5965	19			SC:	Sand - dark yellowish orange (10 YR 6/6). Trace silt. F.g. to c.g. sand. Some (1 cm. to 3 cm.) gravel, poorly sorted, sub-angular, quartzose to arkosic. Unconsol., non-stratified, non-plastic, med. dense, wet.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 45.0	GROUND ELEVATION (FT): 5984.50	OLD WELL NUMBER: LF02-89BR	LOG OF BORING NUMBER:
NORTH: 752332	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: SPC	B206189
EAST: 2083301	LOCATOR NUMBER: K10	BOREHOLE DIAMETER (IN): 11.0	DATE DRILLED: 05/25/89	

REMARKS: Hollow Stem Auger. Dry ice was placed in and around the auger to inhibit the ventilation on methane gas emanating from the landfill soils. Weston Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
				0.30 /1.00	5984	0			SC:	Sand and Clay - mod. yellowish brown (10 YR 5/4). Some 1 cm. to 2 cm. gravel. F.g. to v.c.g. sand, poorly sorted, angular, quartzose. Non-stratified, unconsol., non-cemented, loose, dry. (sc-cl?)
	LF02SB0002									
	LF02SB0003				5983	1			SC:	Gravelly Clayey Sand - mod. yellowish brown (10 YR 5/4). F.g. to v.c.g. sand. 1 cm. to 2 cm. gravel, poorly sorted, angular to sub-angular, quartzose. Non-stratified, unconsol., non-cemented, loose, dry.
				1.10 /2.00	5982	2				
				0.20 /1.00	5981	3			CL:	Sandy Gravelly Clay - pale yellowish brown (10 YR 6/2). F.g. to c.g. sand. 2 cm. to 7 cm. gravel to trace pebbles, poorly sorted, sub-angular, quartzose. Non-stratified, unconsol., non-cemented, med. dense to loose, dry.
					5980	4			CL:	Sandy Gravelly Clay - mod. yellowish brown (10 YR 5/4). F.g. to v.c.g. sand. 1 cm. to 5 cm. gravel, poorly sorted, sub-angular, granite and quartzites. Non-stratified, mod. consol., stiff, low plasticity, slightly calcareous, moist.
	LF02SB0006			2.00 /2.00	5979	5				
	LF02SB0009				5978	6			CL:	Sandy Gravelly Clay - same as above. Mod. yellowish brown (10 YR 5/4), mod. olive brown (5 Y 4/4), mod. reddish brown (10 YR 4/6). 1 cm. to 8 cm. gravel.
				1.40 /2.00	5977	7				
					5976	8			CL:	Sandy Gravelly Clay - same as above. Mod. yellowish brown (10 YR 5/4) to black (N 1/0). 1 cm. to 4 cm. gravel, wood, plastic and metal debris.
	LF02SB0010			2.00 /2.00	5975	9				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 27.5	GROUND ELEVATION (FT): 5993.30	OLD WELL NUMBER: LF01-89	LOG OF BORING NUMBER:
NORTH: 752310	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: RTT	B106089
EAST: 2082580	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/18/89	

REMARKS: Hollow Stem Auger. Dry ice was placed down hollow stemauger starting at 9.5' to neutralize the methane gases encountered down hole. Weston Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	LF0189021	GR	SOIL / ROCK GR	100% / 100%	1.20 /1.00	20				
				1.00 /1.00	5973	21			SC:	Clayey Sand and Gravel - dark yellowish orange (10 YR 6/6) to light brown (5 YR 5/6). Gravel (1.25 mm. to 2.25 mm.), sub-angular, sub-rounded. F.g. (2.5 phi to 2.0 phi), to c.g. (1.0 phi to 0.5 phi) sand. Weakly cemented, poorly consol., med. dense, severely oxide stained, moist. (sc-gc?)
					5972	22				
	LF0189224			2.00 /2.00	5971				CLAYSTONE:	Top of Bedrock. Pale yellowish brown (10 YR 6/2), light olive gray (5 Y 5/2). Massive, homogeneous, med. plasticity, med. hard, slightly oxide stained, moist.
					5970	23				
						24			CLAYSTONE:	Same as above, severely oxide stained at 23.5'-24.5', then mod. to slightly stained in lower run. Med. gray (N 5/0) to med. dark gray (N 4/0).
	LF0189226			2.00 /2.00	5969					
	LF0189227				5968	25				
						26			SANDY CLAYSTONE:	Same as above, more sand, slightly moist.
				1.00 /2.00	5967					
					5966	27				
										Total Drilled Depth = 27.5'.
					5965	28				
					5964	29				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 27.5	GROUND ELEVATION (FT): 5993.30	OLD WELL NUMBER: LF01-89	LOG OF BORING NUMBER:
NORTH: 752310	AREA: LANDFILL	CASING DIAMETER (IN): 4.5 O.D.	GEOLOGIST: RTT	B106089
EAST: 2082580	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED: 05/18/89	

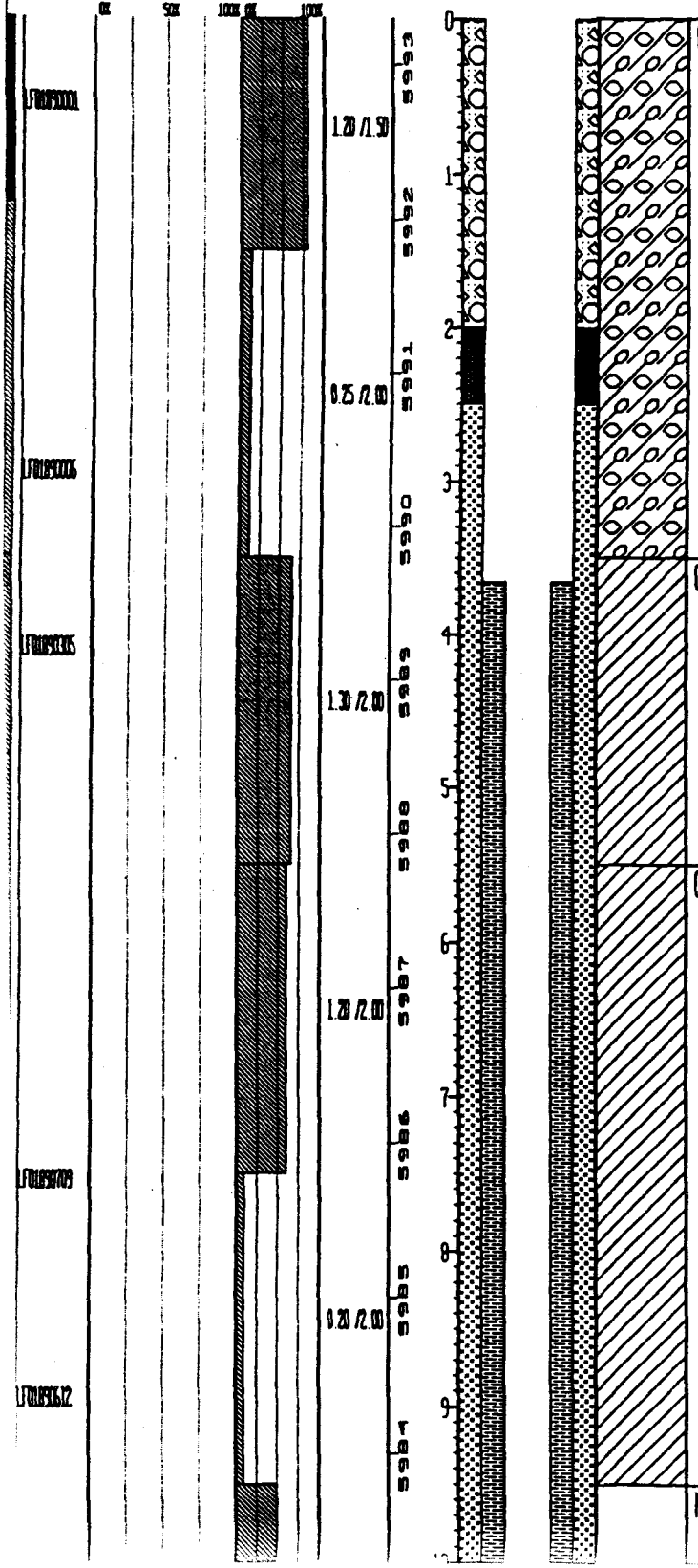
REMARKS: Hollow Stem Auger. Dry ice was placed down hollow stemauger starting at 9.5' to neutralize the methane gases encountered down hole. Weston Log.

CHEMICAL SAMPLE DEPTH / 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
				1.00 /2.00	5983	10				
					5982	11				Landfill Debris - grayish black (N 2/0) to dusky brown (5 YR 2/2). Paper, wood, some scattered gravel (0.25 mm.), angular to sub-angular.
	LF0189121A			1.50 /2.00	5981	12				Landfill Debris - same as above. Gravelly Clay with glass, wire, wood and paper.
	LF0189121B				5980	13				
				0.90 /2.00	5979	14				
	LF0189161B				5978	15				
				0.20 /2.00	5977	16			CL:	Clay - mod. brown (5 YR 4/4) to grayish brown (5 YR 3/2). Some wood, low plasticity, weakly cemented, moist.
					5976	17				
				0.20 /2.00	5975	18			CL:	Clay - pale brown (5 YR 5/2) to grayish brown (5 YR 3/2). Some gravel, weakly cemented, poorly consol., low plasticity, moist.
	LF0189182Z				5974	19	05/18/89 ▽ 10/13/89		SC:	Clayey Sand and Gravel - pale yellowish brown (10 YR 6/2) to dark yellowish orange (10 YR 6/6). Severely oxide stained. V f.g. (3.5 phi to 3.0 phi) to f.g. (2.5 phi to 2.0 phi) sand. Gravel (1.25 mm. to 1.75 mm.), sub-rounded, rounded. Weakly cemented, very moist to moist. (sc-oc?)

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 27.5	GROUND ELEVATION (FT):	5993.30	OLD WELL NUMBER:	LF01-89	LOG OF BORING NUMBER:
NORTH:	752310	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	RTT	B106089
EAST:	2082580	LOCATOR NUMBER: J12	BOREHOLE DIAMETER (IN):	7.25	DATE DRILLED:	05/18/89	

REMARKS: Hollow Stem Auger. Dry ice was placed down hollow stemauger starting at 9.5' to neutralize the methane gases encountered down hole.
Weston Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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:	Clayey Gravel - light brown (5 YR 5/6), grayish brown (5 YR 3/2) and mod. yellowish brown (10 YR 5/4). Some sand. Gravel (.10 mm. to 4.5 in.), with some asphalt, angular, sub-angular and few sub-rounded. Weakly cemented, poorly consol., few roots, low to no plasticity, slightly moist.
CL:	Clay and Gravel - dusky brown (5 YR 2/2), pale brown (5 YR 5/2) and some light brown (5 YR 5/6). Trash consistsing of wood chips, dry wall, plywood chips. F.g. to m.g. sand. Grave (0.20 mm. to 3.25 mm.). Weakly consol., non-plastic, med. stiff, moist. (cl-gc?)
CL:	Clay with Sand and Gravel - dusky rown (5 YR 2/2), pale brown (5 YR 5/2). Wood fragments, paper, asphalt, and gravel (0.25 mm. to 1.75 mm.). V.f.-g. sand (3.5 phi to 3.0 phi), weakly cemented, poorly consol. Stiff, low plasticity, moist.
NO SAMPLE:	Drilled with center bit. No sample recovery.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 15	GROUND ELEVATION (FT): 5969.11	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752441	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD	72-87
EAST: 2083953	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/16/87	
REMARKS: Hollow Stem Auger				

CRITICAL SAMPLE OR GRADATIONAL SAMPLE	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
				0/2	5959	10				NO SAMPLE
					5958	11				
				0/1	5957	12				NO SAMPLE
				0.3/2	5956	13				SILTY CLAYSTONE: Grayish orange (10 YR 7/4) to a pinkish gray (5 YR 8/1) - low plast, some fine sand.
					5955	14				
					5954	15				
					5953	16				
					5952	17				
					5951	18				
					5950	19				
						20				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 15	GROUND ELEVATION (FT):	5969.11	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752441	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD	72-87
EAST:	2083953	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	12/16/87	
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): 5969, 5968, 5967, 5966, 5965, 5964, 5963, 5962, 5961, 5960

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

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

SAMPLE NUMBER	RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
72870000H	0.93/2	GP:	CALCAREOUS GRAVEL-predominantly very light gray (N 8), angular to sub-rounded, mod. grading max size = 6.5 cm., some clay and roots at top 3" of interval, trace of sand. (Gp/Gw).
72870002H	0.9/1.5	GP:	Same as above; except no clay and roots and increased sand fraction, max size = 6.5 cm. (Gp/Gw)
	0/0.5	NO SAMPLE:	
72870004UC	0.2/2	GP	Same as above. Max gravel size = 2.5 cm., some silt. (Gp/Gw).
72870006WT	1.55/2	CL	SILTY CLAY - grayish orange (10 YR 7/4) to pinkish gray (5YR8/1) - low plast. some fine sand, trace of calcite in pockets.
72870008BR	1.75/2	SILTY CLAYSTONE:	Top of bedrock Same as above

02/04/88

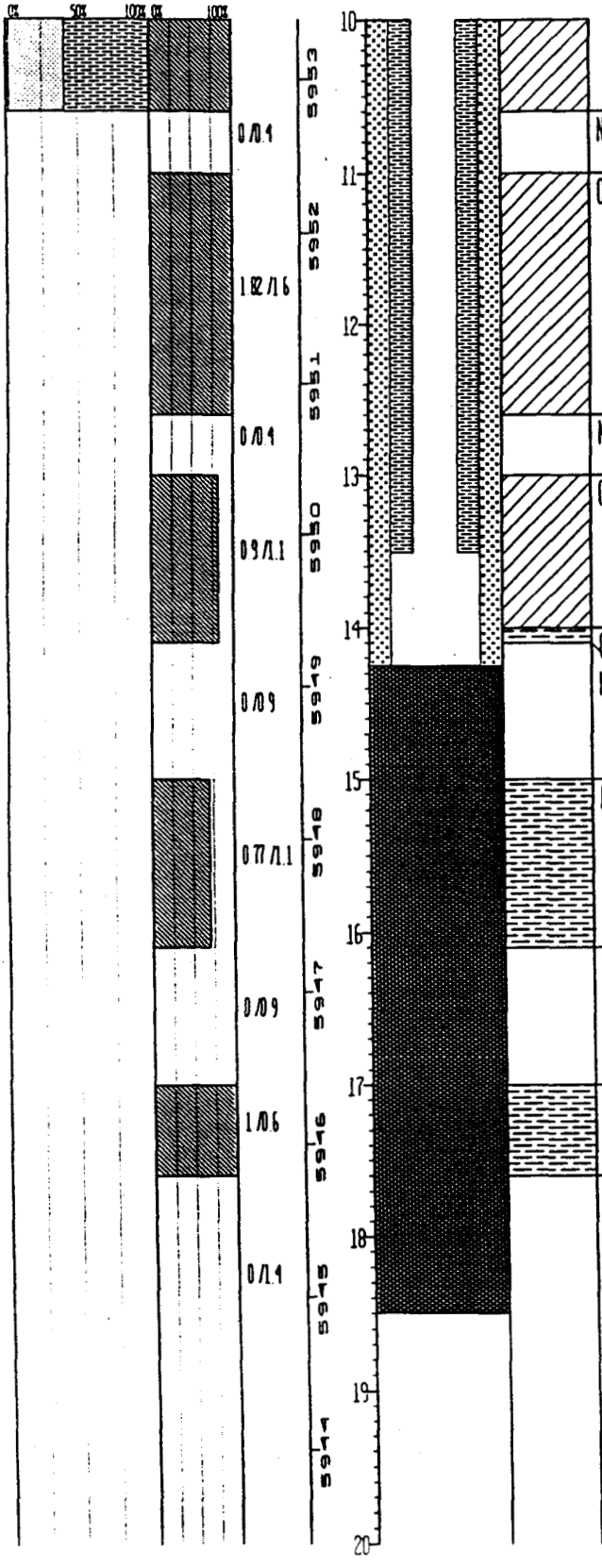
01/06/88

12/16/87

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 19	GROUND ELEVATION (FT): 5963.39	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753322	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	71-87
EAST: 2084087	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/10/87	

REMARKS: Hollow Stem Auger

CHEMICAL SAMPLE / GRADATIONAL SAMPLE | 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

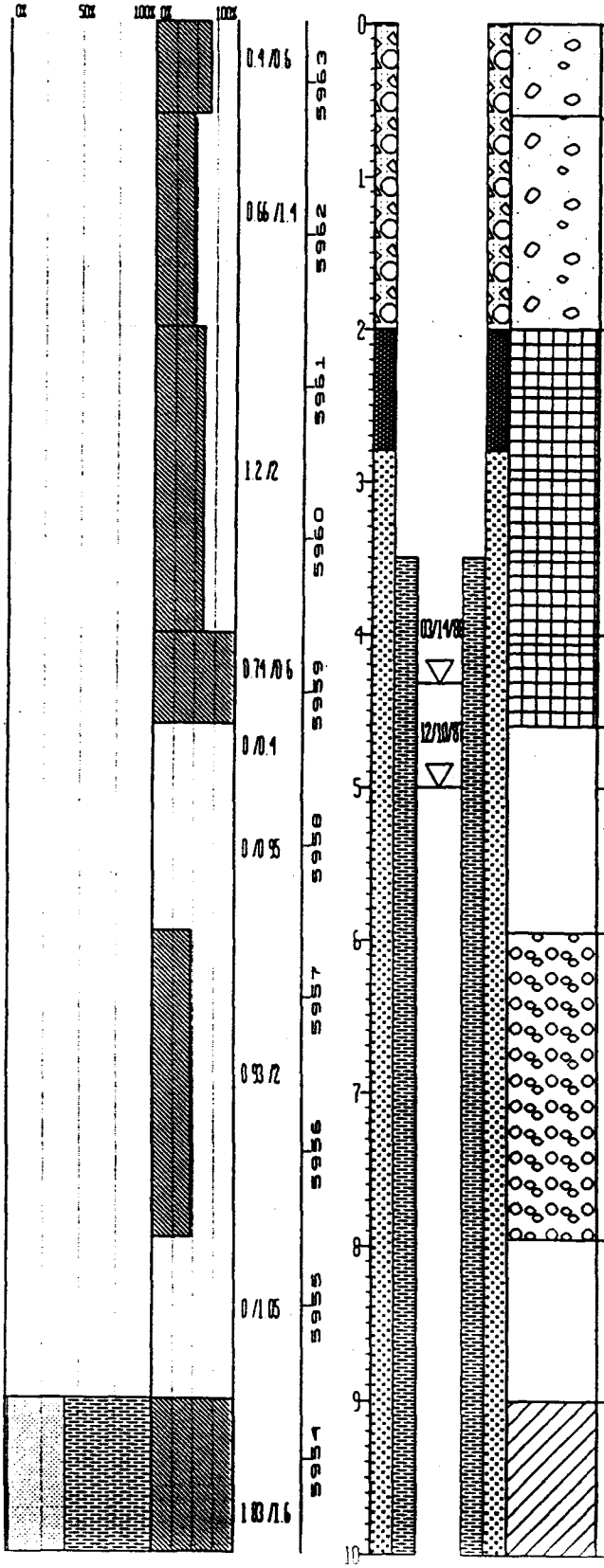


NO SAMPLE:	
CL:	Same as previous description.
NO SAMPLE:	
CL:	CLAY - dark yellowish orange (10 YR 6/6), moderate plasticity, trace of fine to coarse gravel. Contains a mineralize iron nodule (siderite, limonite?) is approx. 5 cm. in size.
CLAYSTONE:	Top of Bedrock
NO SAMPLE	
CLAYSTONE:	Very light gray (N8) highly plastic, trace of medium grained sand.
NO SAMPLE:	
CLAYSTONE:	Same as previous sample.
NO SAMPLE:	

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 19	GROUND ELEVATION (FT): 5963.39	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	753322	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	71-87
EAST:	2084087	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/10/87	

REMARKS: Hollow Stem Auger

GRADATIONAL SAMPLE 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



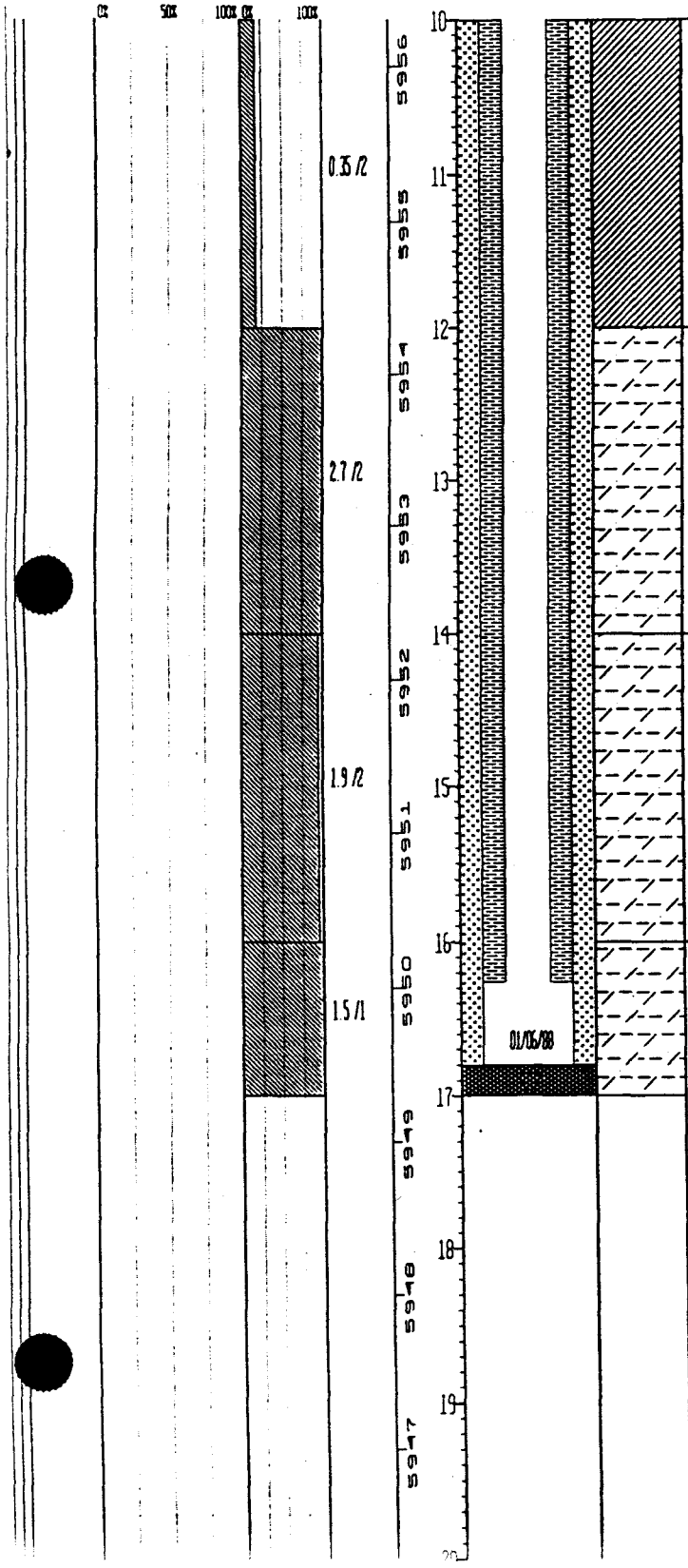
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GP	GRAVEL - Medium gray (N5) angular to sub-rounded, low sphericity, 4.5 cm. is max size, poorly graded, some clay grayish brown (5 YR 3/2), trace of roots.
GP	Same as above with an increase in clay fraction and roots.
CALICHE	Fine to very coarse Sandy Gravelly Caliche (calcareous cement) very light gray (N8) to dark gray (N3). Sand and gravel is sub-rounded to rounded, moderate sphericity well graded, max size = 5 cm.
CALICHE	Same as above
NO SAMPLE	
NO SAMPLE	
GW	Clayey Sandy Gravel - dark yellowish orange (10 YR 6/6) to grayish orange (10 YR 7/4), sub-angular to rounded, low to moderate sphericity, 3 cm. is max size, well graded, some silt.
NO SAMPLE	
CL	SANDY CLAY - Fine to very coarse, mottled grayish orange (10 YR 7/4) and very light gray (N8) low plasticity, trace of gravel.

6023

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 17	GROUND ELEVATION (FT):	5966.3	PROJECT NUMBER:	667.11
NORTH: 752571	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/TSD
EAST: 2084196	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	07/17/87
REMARKS: Hollow Stem Auger					

LOG OF BORING NUMBER: **70-87**

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	Gravelly Silty Clay - light gray (N7), high plasticity, gravel max. size = 7 cm. and is dark gray (N3).
SILTY CLAYSTONE	Top of Bedrock Mottled very light gray (N8) and dark yellowish orange (10 YR 6/6), high plasticity, trace of fine sand.
SILTY CLAYSTONE	Same as above.
SILTY CLAYSTONE	Medium gray (N5), medium plasticity, trace of fine sand.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 17	GROUND ELEVATION (FT): 5966.3	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752571	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	70-87
EAST: 2084196	LOCATOR NUMBER: L12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 07/17/87	

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

RECOVERY/INTERVAL	DATUM (FT)	UNIFIED SOILS CLASSIFICATION	DESCRIPTION
0.9/2	5966–5965	GC:	GRAVEL - very light gray (N8) angular to sub-rounded, low sphericity, 4 cm. is max. size, moderately well graded. Some clay and sand moderate brown (5 YR 3/4).
0.8/1	5965–5964	GC:	Clayey Gravel - very light gray (N8) angular to sub-rounded, low sphericity, 3.5 cm. is max. size, moderately well graded, clay is moderate brown (5 YR 3/4) some sand.
0.8/1	5964–5963	GW:	SANDY GRAVEL - medium light gray (N6) angular to sub-rounded, low to moderate sphericity, 3 cm. is max. size, moderately graded, some clay.
0.85/2	5963–5961	GW:	Same as above.
0.6/2	5961–5959	GC:	SILTY GRAVEL - medium gray (N5) (grayish orange (10 YR 7/4)-silt) angular to sub-angular, low to moderate sphericity, 1.5 cm. is max. size, well graded, some sand.
0/2	5959–5957	NO SAMPLE:	

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

GW 11/88

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 20	GROUND ELEVATION (FT):	5968.48	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH: 753145	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	TSD	68-87
EAST: 2083777	LOCATOR NUMBER: K13	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	12/04/87	

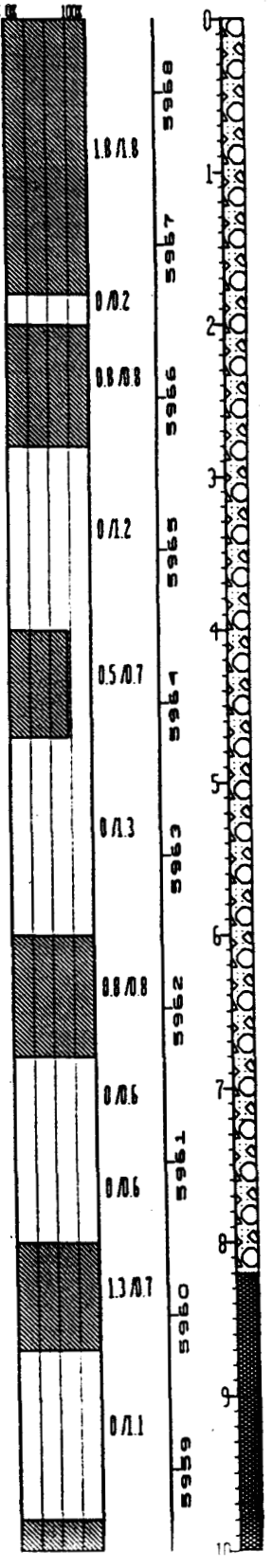
REMARKS: Hollow Stem Auger.

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
				2.6/2	5958	10	12/04/87		CL:	SILTY CLAY - grayish orange (10 YR 7/4) mod. plast., some sand and iron staining as mottles, trace of gravel and carbonaceous staining.
				0/0.2	5957	11			GC:	Clayey Sand and Gravel - grayish orange (10 YR 7/4), rounded to sub-rounded well graded, max. size approx. 6 cm.
				1.2/2	5956	12			NO SAMPLE:	
				0/1	5955	13			GC:	Same as above: moderately graded.
				2.1/0.8	5954	14			NO SAMPLE:	
				0/0.2	5953	15			GC:	Same as above: sub-angular to sub-rounded.
				1.35/0.9	5952	16			SILTY CLAYSTONE:	Top of Bedrock Grayish orange (10 YR 7/4) and very lt. gray-mottled.
				1.5/1	5951	17			NO SAMPLE:	
				1.35/1.1	5950	18			SILTY CLAYSTONE:	Dark yellowish orange (10 YR 6/6) and lt olive gray (5 YR 6/1) - mottled, some iron staining and carbonaceous staining.
				0.6/1	5949	19			SILTY CLAYSTONE:	Same as above - est. med. plasticity.
									SILTY CLAYSTONE:	Same as above - trace of fine sand in a lens 1/4 from bottom.
									SILTY CLAYSTONE:	Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 20	GROUND ELEVATION (FT): 5968.48	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753145	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD	68-87
EAST: 2083777	LOCATOR NUMBER: K13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/04/87	

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
GC:	Sandy Clayey Gravel - dark reddish brown (10 YR 3/4) (clay matrix) sub-angular to sub-rounded mod. well graded, max. size approx. 5 cm., some silt.
NO SAMPLE:	
CL:	Grades into a GRAVELLY CLAY, moderate reddish brown (10 YR 4/6) to a moderate yellowish brown (10 YR 5/4), est. low plast., some sand.
NO SAMPLE:	
CL:	SANDY GRAVELLY CLAY - Grayish orange (10 YR 7/4), est. low plasticity, some silt, max. gravel size = 3.5 cm.
NO SAMPLE:	
CL:	Same as above: max. gravel size = 5 cm.
NO SAMPLE:	
NO SAMPLE:	
CL:	Same as above.
NO SAMPLE:	

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 21.4	GROUND ELEVATION (FT): 5969.5	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753164	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	67-87
EAST: 2083774	LOCATOR NUMBER: K13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/03/87	
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%

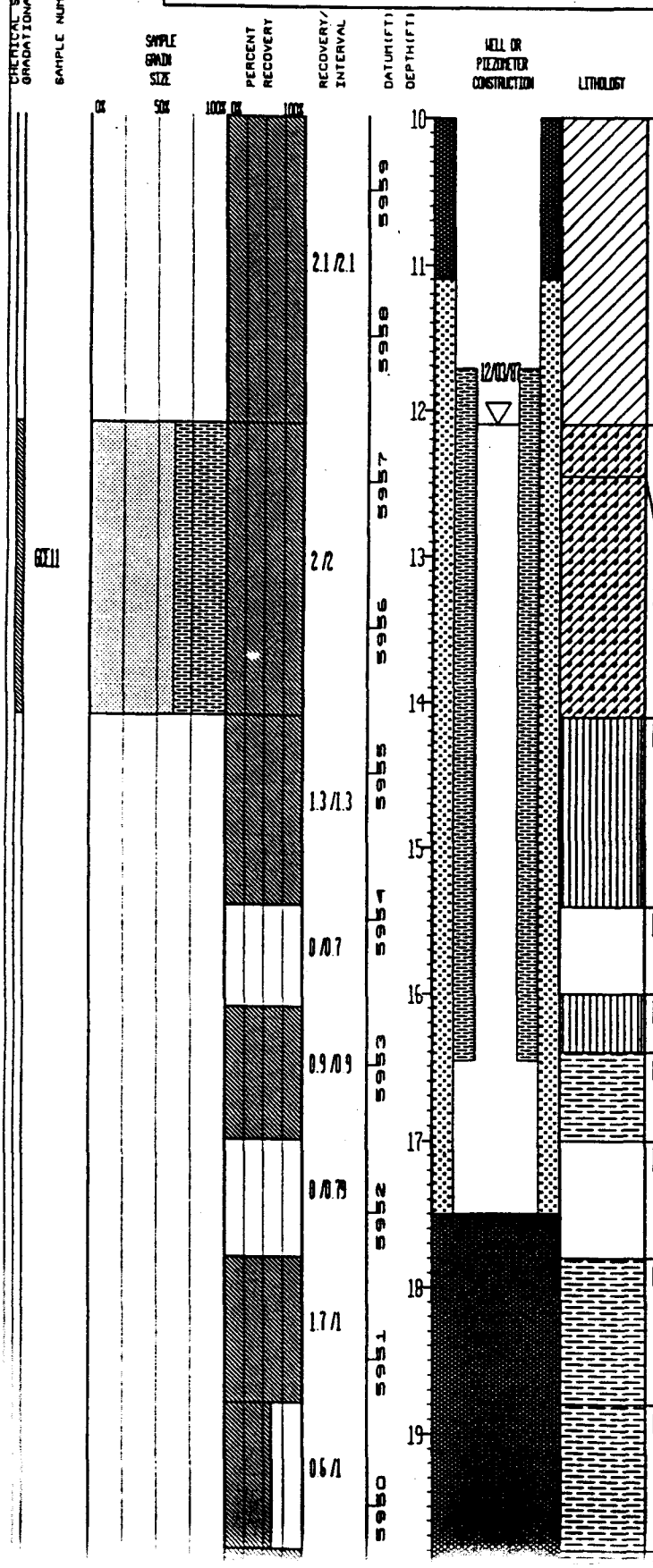
1.6/1.6

5949 5948 5947 5946 5945 5944 5943 5942 5941 5940

20 21 22 23 24 25 26 27 28 29

CLAYSTONE: As above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 21.4	GROUND ELEVATION (FT): 5969.5	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:	
NORTH: 753164	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	67-87	
EAST: 2083774	LOCATOR NUMBER: K13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/03/87		
REMARKS: Hollow Stem Auger.					



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL:	As above (reference interval 9.0 to 9.6 ft.).
SC:	Sc per sieve analysis 12.1'- 14.1'. Per field log: sw - Sand dark, yellowish orange (10YR 6/6), angular to sub-rounded, well graded, medium grained to very fine grained, trace of coarse grained sand and silt, 12.14 to 12.45 ft.
SC:	Sc per sieve analysis 12.1'- 14.1' Per field log: Cl' - Grades to Sandy Clay, mottled yellowish gray (5Y 8/1) to grayish orange (10YR 7/4), moderate plasticity, gradual increase in sand fraction to 14.1 ft.
MH:	SILT - mottled yellowish gray (5Y 8/1) to grayish orange (10 YR 7/4), trace of fine sand.
NO SAMPLE:	
MH:	As above (reference interval 14.1 to 15.4 ft.) with some gravel.
CLAYSTONE:	Top of Bedrock Very light gray (N7), high plasticity
NO SAMPLE:	
CLAYSTONE:	As above (reference interval from 16.4 to 17.8 ft.) with local iron staining.
CLAYSTONE:	As above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 21.4	GROUND ELEVATION (FT): 5969.5	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 753164	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	67-87
EAST: 2083774	LOCATOR NUMBER: K13	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/03/87	
REMARKS: Hollow Stem Auger.				

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE
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)	WELL OR PIEZOMETER CONSTRUCTION	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0.5/0.5	5969		CL:	GRAVELLY CLAY - dark yellowish brown (10YR 4/2), moderate plasticity, some sand and silt.
0/1.5	5968	01/06/88	NO SAMPLE:	
1.1/1.1	5967		GC:	Clayey Gravel - medium light gray (N7), clay matrix is (10R 3/4), angular to sub-angular poorly graded, max. size = 7 cm. Some silt, trace of sand.
0/0.9	5966		NO SAMPLE:	
1.6/1.6	5965		GC:	As above (reference interval 2.0 to 3.4 ft.), matrix color grades to very pale orange (10YR 8/2), max. gravel size is 6 cm.
0/0.4	5964		NO SAMPLE:	
0.9/0.9	5963		CL:	GRAVELLY CLAY - very pale orange (10YR 8/2), moderate plasticity, some silt and fine sand.
0/1.1	5962	04/11/88	NO SAMPLE:	
1.6/1.6	5961		CL:	As above (reference interval 6.0 to 6.9 ft.) color is grayish orange (10 YR 7/4).
0/0.4	5960		CH:	Grades to Clay - yellowish gray (5Y 8/1), high plasticity some sand and silt.
			NO SAMPLE:	

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 23	GROUND ELEVATION (FT): 5981.9	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	752150	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/DAT	66-87
EAST:	2083325	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/23/87	

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
			0/0.7		20				NO SAMPLE
			0.2/0.29	5961	21				SANDY CLAYSTONE: VFG grayish orange (10YR 7/4) massive bedding, well weathered, mod.-highly friable some iron staining as mottles abundant micro fractures, trace of Mg staining.
			1.4/1	5960					SANDY CLAYSTONE: Same as above: floury texture.
			1.3/1	5959	22				SANDY CLAYSTONE: Same as above: consolidated texture.
				5958	23				
				5957	24				
				5956	25				
				5955	26				
				5954	27				
				5953	28				
				5952	29				
					30				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 23	GROUND ELEVATION (FT): 5981.9	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752150	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/DAT	66-87
EAST: 2083325	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/23/87	

REMARKS: Hollow Stem Auger.

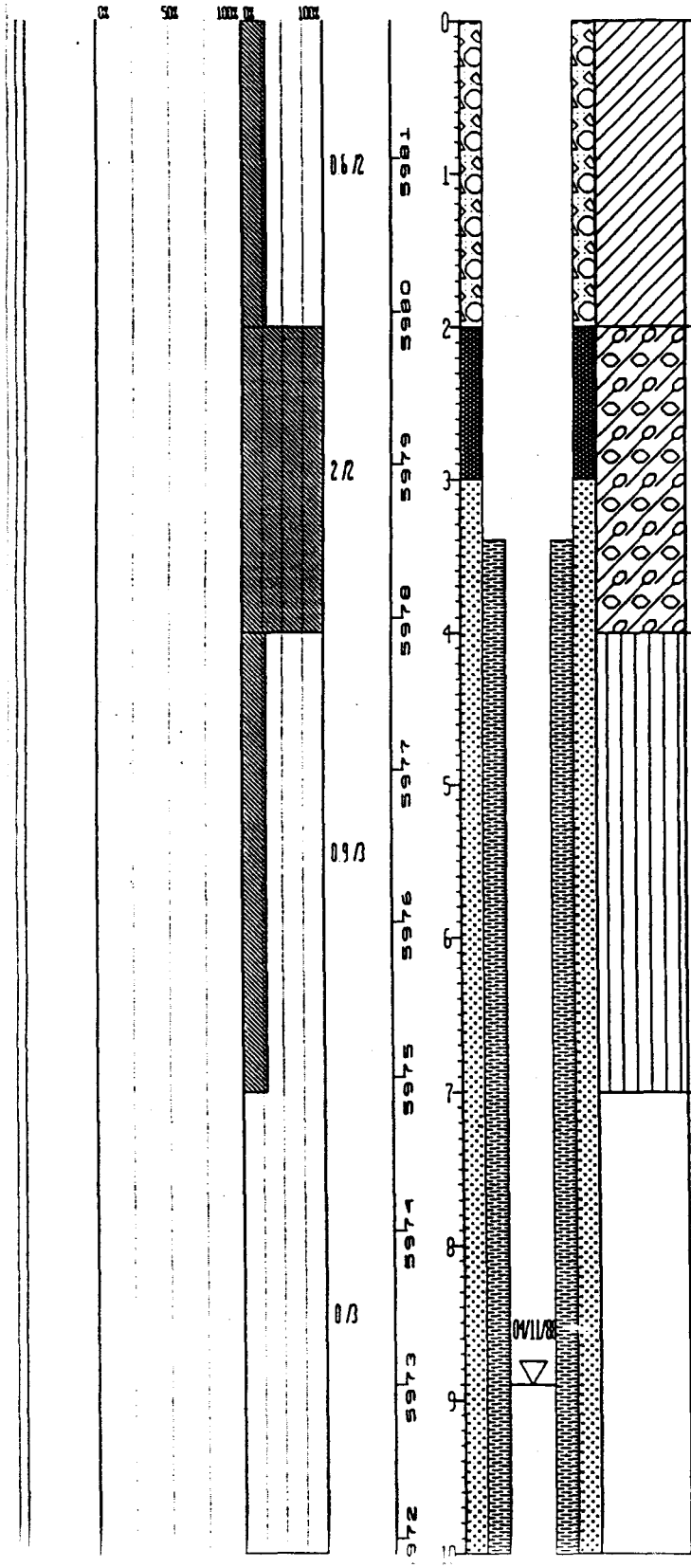
CHEMICAL SAMPLE / GRADATIONAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				2/2	5971	10–11	01/05/88		CL	GRAVELLY CLAY - moderate yellowish brown (10YR 5/4) moderate plasticity, some silt, trace of sand, color grades to grayish orange (10YR 7/4) below 11 ft.
				2.5/2.5	5970–5969	12–13			SP	SAND - grayish orange (10YR 7/4), moderately graded, angular to sub-angular, med. to very fine grained, trace of silt and clay.
									SP	GRAVELLY SAND - angular to sub-rounded, moderately graded, very coarse grained, to very fine grained.
					5968	14			CL	Grades to a GRAVELLY SANDY CLAY - grayish orange (10YR 7/4) low plasticity.
					5967	15	11/23/87		CH	Clay - light gray (N7), high plasticity, trace of sand and silt.
				2.5/2.5	5966–5965	16–17			CLAYSTONE	Top of Bedrock.
	60226			1.6/1					SANDSTONE	Grayish orange (10YR 7/4), sub-rounded to rounded, poorly graded, medium grained, very clean.
				1.5/1	5964–5963	18–19			CLAYSTONE	Dark yellowish orange (10YR 6/6) grading to yellowish gray (5Y 8/1) with depth, bedding not apparent, highly weathered, highly to slightly friable, localized iron staining.
				1/1	5962	20			CLAYSTONE	Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 23	GROUND ELEVATION (FT):	5981.9	PROJECT NUMBER:	667.11
NORTH: 752150	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/DAT
EAST: 2083325	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/23/87

REMARKS: Hollow Stem Auger.

LOG OF BORING NUMBER: 66-87

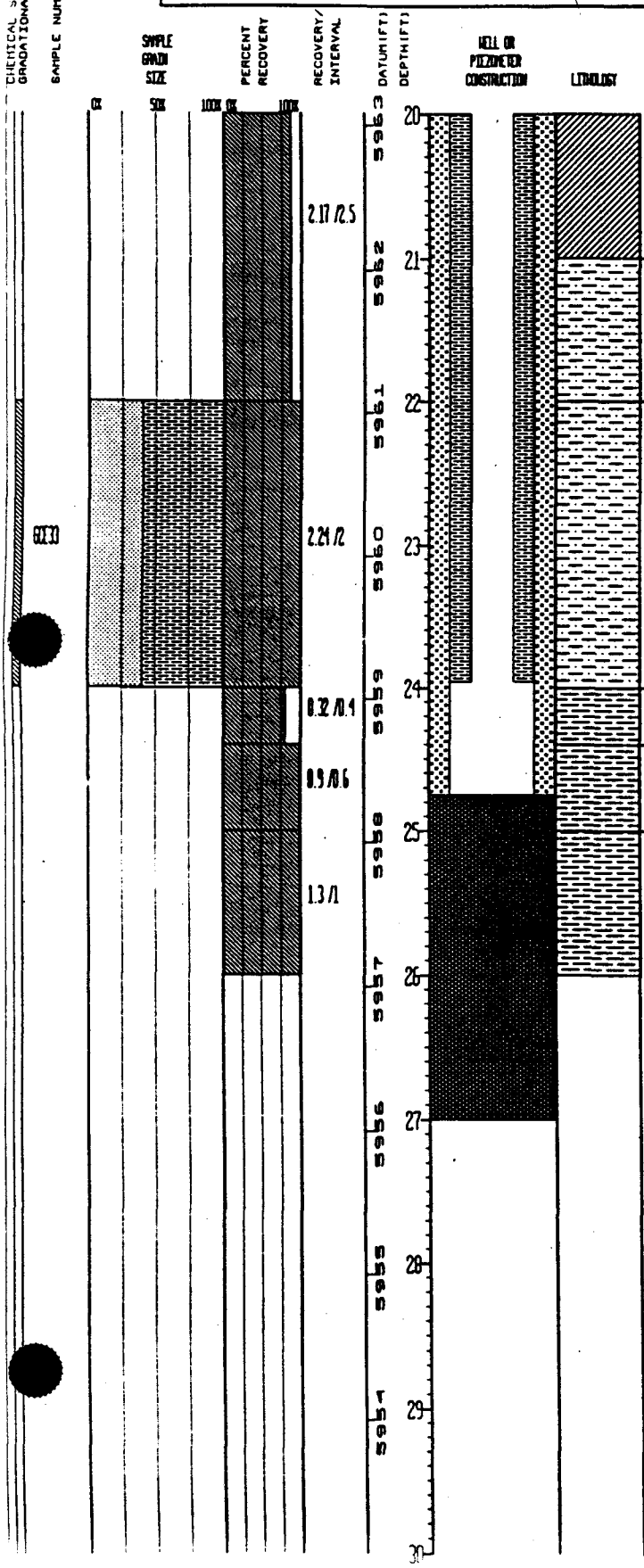
CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	GRAVELLY CLAY - dark yellowish brown (10YR 4/2), moderate plasticity, some roots and part debris, some silt.
GC	Clayey Gravel - medium light gray (N6), clay matrix is moderate reddish brown (10R 4/6), angular to sub-rounded, poorly graded, some silt, clay matrix grades to light brown, (5YR 6/4), and increases in volume below 3 ft.
ML	GRAVELLY, SANDY SILT - grayish orange (10YR 7/4), trace of clay.
NO SAMPLE	

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5983.08	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752230	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/DCB	65-87
EAST: 2083299	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/08/87	

REMARKS: Hollow Stem Auger.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SANDY CLAYSTONE:	Top of Bedrock
SANDY CLAYSTONE:	Medium to fine, yellowish gray (5Y 7/2) medium to high plasticity, trace of silt and gravel. Sand occurs in lenses and pockets and is mainly fine clean sand.
CLAYSTONE:	Light olive gray (5Y 6/1) high plasticity, trace of sand and silt.
CLAYSTONE:	Same as above.
CLAYSTONE:	Same as above.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5983.08	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752230	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSD/DCB	65-87
EAST: 2083299	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/08/87	

REMARKS: Hollow Stem Auger.

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
					5973	10	04/11/88			change occurs in lower 1/3 of interval to a clayey medium to very fine grained sand yellowish gray (5Y 8/1) angular to sub-angular well graded some gravel.
				1.9/2.5	5972	11				
					5971	12			SW:	Gravelly Clayey Sand - dark yellowish orange (10YR 6/6) and very pale orange (10YR 8/2), sub-angular to rounded well graded, trace of silt.
				1.52/2.5	5970	13				
					5969	14	12/09/87			
					5968	15			SW:	Same as above with the color being only dark yellowish orange (10YR 6/6) and max. gravel size = 5 cm.
				1.36/2.5	5967	16				
					5966	17			SW:	Same as above.
				1.6/2.5	5965	18			CH:	Sandy Gravelly Clay - very light gray (N8) and grayish orange (10YR 7/4), medium to high plasticity, trace of silt.
					5964	19			CH:	Sandy Clay - yellowish gray (5Y 7/2), medium to high plasticity, some gravel, trace of silt.
						20				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 26	GROUND ELEVATION (FT): 5983.08	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752230	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: TSO/DCB	65-87
EAST: 2083299	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/08/87	

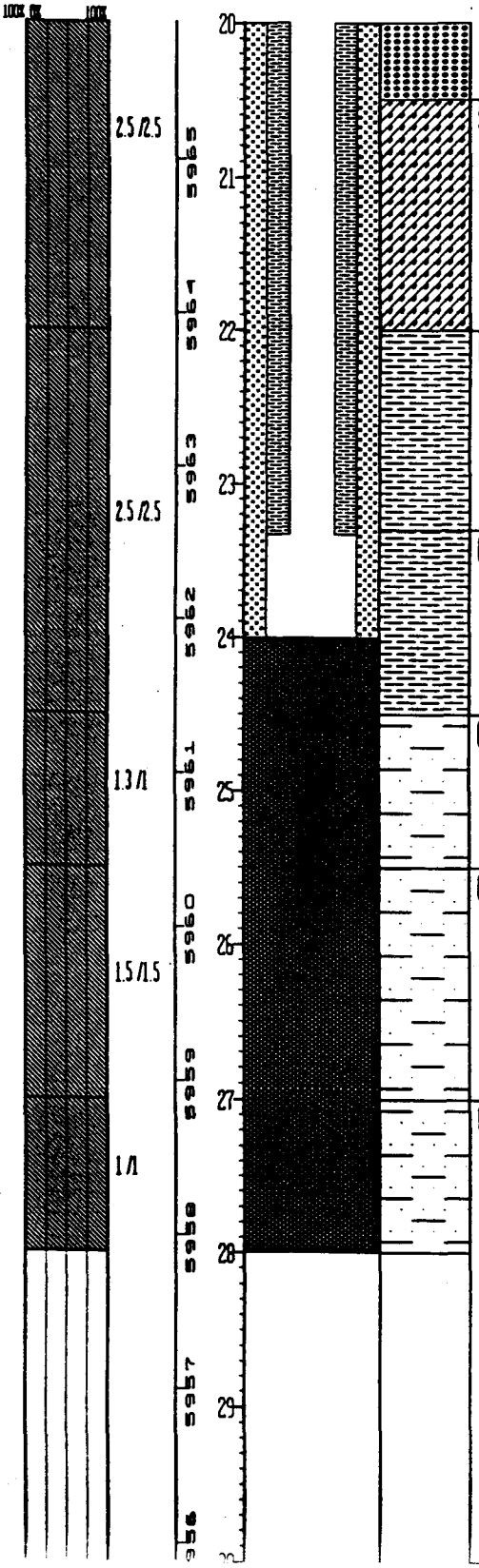
REMARKS: Hollow Stem Auger.

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
			100%	1.7/2	5983	0			GC:	Sandy Clayey Gravel - medium gray (N5) sub-angular to sub-rounded moderately graded, clay color is dark yellowish brown (10YR 4/2).
				1.75/2	5982	1			CL:	GRAVELLY CLAY - yellowish gray (5Y 8/1) medium plasticity, some silt and sand.
				2.4/3	5981	2			CL:	Same as above.
				1.25/2.5	5980	3			GW:	GRAVEL - light gray (N7) angular to well rounded, well graded some sand, trace of clay and silt.
					5979	4			SP:	GRAVELLY SAND - moderate yellowish brown (10YR 5/4) angular to sub-rounded, poor to moderately graded, some clay and silt. Gradational
					5978	5				
					5977	6				
					5976	7				
					5975	8				
					5974	9				
						10				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 28	GROUND ELEVATION (FT): 5985.89	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752328	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: R.T. TREAT	64-87
EAST: 2083260	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/04/87	

REMARKS: Hollow Stem Auger. ASI did not log this well. All information is from Weston log only.

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



SC:	Slightly Sandy Clay: pale yellowish brown (10 YR 6/2) to light gray (N 6/0); scattered sand (2.0-1.5 0); moderately cemented; low plastic; moist.
CLAYSTONE:	Top of Bedrock Moderate yellowish brown (10 YR 5/4) to dark yellowish orange (10YR 6/6) with some light brown (5 YR 5/6); fine-grained sand (3.0-2.5 0); low to medium plastic; moderately cemented; moist.
CLAYSTONE:	Light brown (5 YR 6/4 to 5 YR 5/6) to moderate brown (5 YR 4/4); sandy to very sandy streaks; fine-grained sand (3.0-2.5 0); moderately cemented; severely oxide stained; low plastic; poorly sorted; highly weathered; moist.
CLAYEY SANDSTONE:	Dark yellowish orange (10 YR 6/6) to light brown (5 YR 5/6) and pale brown (5 YR 5/2); fine-grained sand (3.5-3.0 0 to 3.0-2.5 0); severely oxide stained; weakly cemented; poorly sorted; weathered; moist.
CLAYEY SANDSTONE:	Yellowish orange (10 YR 6/6) to light brown (5 YR 5/6) with blotches of light gray (N 7/0); streaky; fine-grained sand (3.0-2.5 o to 2.5-2.0 0); weakly cemented; poorly sorted; massive; highly weathered; moist to very moist at bottom of run.
CLAYEY SANDSTONE:	As noted in previous run.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 28	GROUND ELEVATION (FT): 5985.89	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752328	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: R.T. TREAT	64-87
EAST: 2083250	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/04/87	

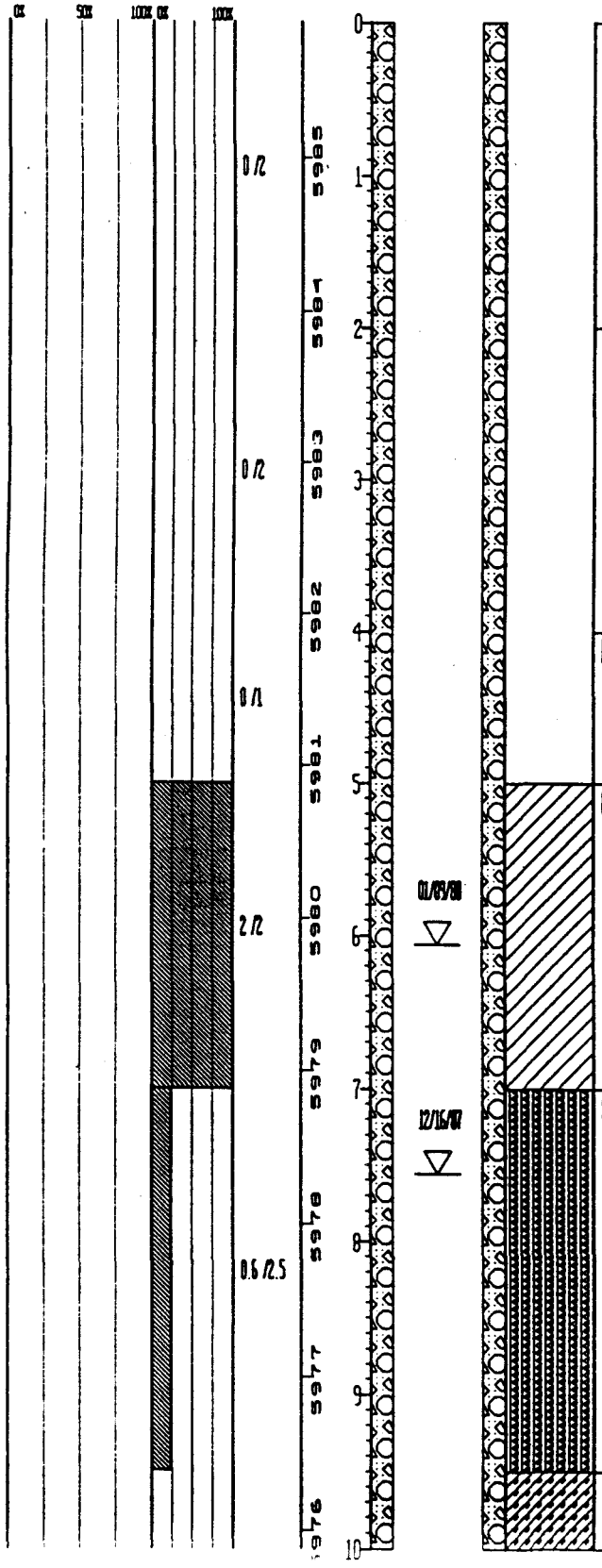
REMARKS: Hollow Stem Auger. AST did not log this well. All information is from Weston log only.

SAMPLE NUMBER	SAMPLE GRADN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
			0/2.5	5975	10–11				grained sand (3.0-2.5 0); scattered amounts of continued trash debris.
			0/1	5974	12			NO SAMPLE:	Center bit used.
			1.5/1.5	5973–5972	13–14	12/04/87		SC:	SAND: moderate yellowish brown (10 YR 5/4) to dark yellowish orange (10 YR 6/6); well sorted sand ranging from 2.5-2.0 0 to 0.0-0.5 0; rounded, sub-rounded, and some angular; weakly cemented; slightly clayey; moist to very moist at end.
			2.5/2.5	5971–5970	15–16			SC:	SAND: light brown (5 YR 5/6), moderate brown (5 YR 4/4) to pale yellowish brown (10 YR 6/2), and dark yellowish orange (10 YR 6/6); sand ranging from 3.5-3.0 0 up to 2.0-2.5 0; weakly cemented; poorly sorted; clayey sand with coarse deposits noted from 16.5-17.0' and some scattered gravel below 16.5'; saturated sand at 14.5' to otherwise moist deposits.
			2.5/2.5	5969–5968–5967	17–18–19			GC:	Sand and Gravel: colors as stated in previous run; sand grain size as above and somewhat finer; poorly sorted; clayey to very clayey; scattered gravel ranging from 0.50 mm to a few 2.25 mm; weakly to moderately cemented; moist.
				5966	20			SW:	Sand and Gravel: as noted in previous run.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 28	GROUND ELEVATION (FT): 5985.89	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752328	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: R.T. TREAT	64-87
EAST: 2083260	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 12/04/87	

REMARKS: Hollow Stem Auger. ASI did not log this well. All information is from Weston log only.

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



NO SAMPLE:	Cuttings appeared as clay with gravel; sandy; some asphalt fragments.
NO SAMPLE:	
NO SAMPLE:	Center bit used.
CL:	CLAY: moderate yellowish brown (10 YR 5/4); fine-grained sand with gravel; grayish brown (5 YR 3/2) to dusky brown (5 YR 2/2); slightly clayey, fine-, medium- and coarse-grained sand (1.0-2.5 0 to 0.5-1.00); gravel 0.15 mm up to 1.75 mm; sub-rounded, angular, and angular; weakly cemented; poorly sorted gravel; well sorted sand; few scattered asphalt fragments; light moist.
SM:	Silty Sand With Gravel: dusky brown (5 YR 2/2); sand ranging from 3.5-3.0 0 to 2.0-1.5 0; weakly cemented; poorly sorted; gravel ranging from 0.25-0.75 mm; light moist. Special Note: During this run, most of the cuttings now appearing as a sanitary landfill deposit. Consisting of wood particles, insulated wire fragments, construction ribbon, surgical gloves, saranex suits, and plastics.
SC:	Auger cuttings during this run now appearing as a Clayey Sand or a very Sandy Clay; moderate olive brown (5 Y 4/4) to an olive (5 Y 3/2); fine-

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT):	5985.42	PROJECT NUMBER:	667.11
NORTH: 752717	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB
EAST: 2083138	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/30/87
REMARKS: Hollow Stem Auger.					

LOG OF BORING NUMBER: 63-87

GRADATIONAL SAMPLE	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
				2/2	5965	20				
				0.7/2	5964	21			CL	Interval grades SILTY CLAY, grayish orange (10 YR 7/4), low to moderate plasticity, some gravel and sand.
				2/2	5963	22				
				2/2	5962	23			CL	As above, with trace of gravel and sand, moderate plasticity.
				2/2	5961	24				
				0.5/0.5	5960	25			CLAYSTONE	Top of Bedrock Grayish orange (10YR 7/4), bedding not apparent, highly weathered moderately friable, carbonaceous mineralization occurs locally, color grades to very light gray (N8)
				1.5/1.5	5959	26				
				0/1	5958	27			CLAYSTONE	Same as above.
					5957	28			CLAYSTONE	Same as above.
					5956	29			NO SAMPLE	
						30				

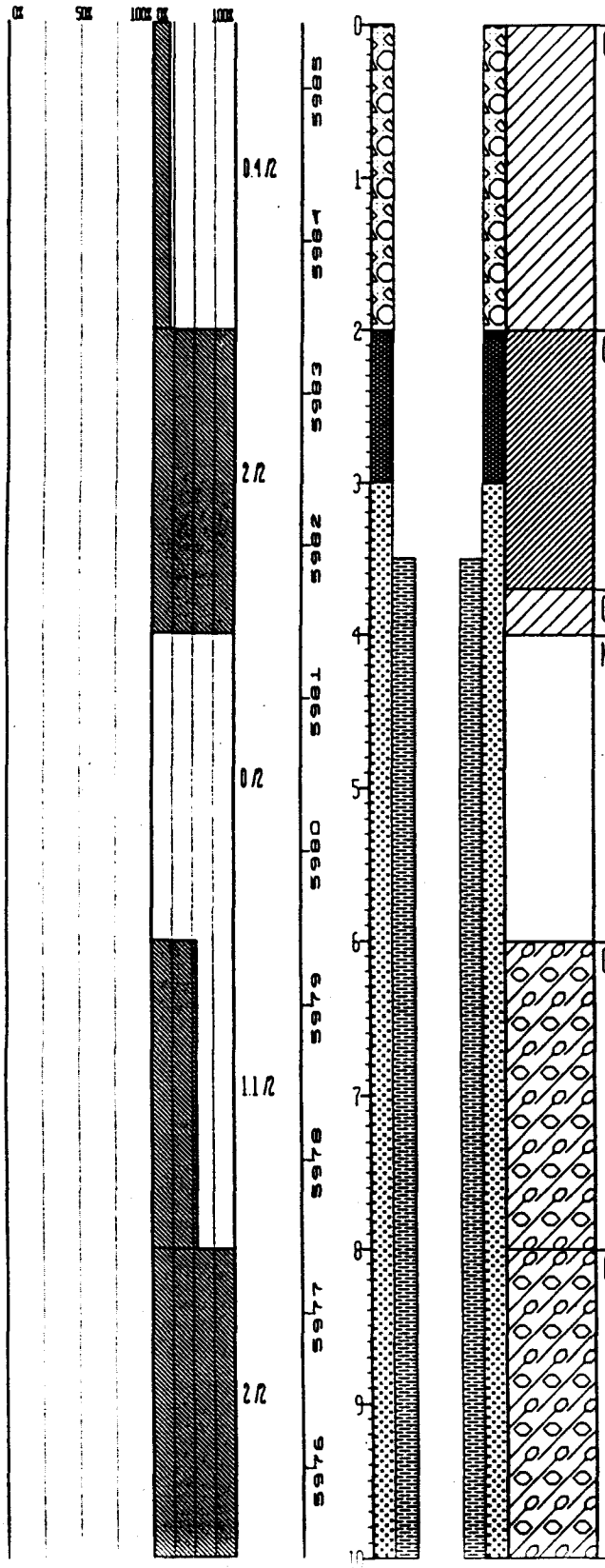
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): 5985.42	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752717	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	63-87
EAST: 2083138	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/30/87	

REMARKS: Hollow Stem Auger

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRADIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
				1/1	5975	10			GC	As above.
				0/1	5974	11			NO SAMPLE	
				1/2	5973	12			GC	As above (reference interval 19.5 to 11 ft) max. gravel size is 5 cm
					5972	13	12/01/87			
				2/2	5971	14			GC	As above with color change in clay matrix to light brown (5YR 5/6)
	6X31				5970	15				
				0/2	5969	16			NO SAMPLE	
					5968	17				
				1/1	5967	18			GC	Gravelly Clayey Sand - light brown (5YR 5/6), angular to sub-rounded, moderately graded, VCG to FG sand, max. gravel size 5 cm
				2/2	5966	19			GC	As above.
						20				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): 5985.42	PROJECT NUMBER: 667 11	LOG OF BORING NUMBER
NORTH: 752717	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	63-87
EAST: 2083138	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/30/87	
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

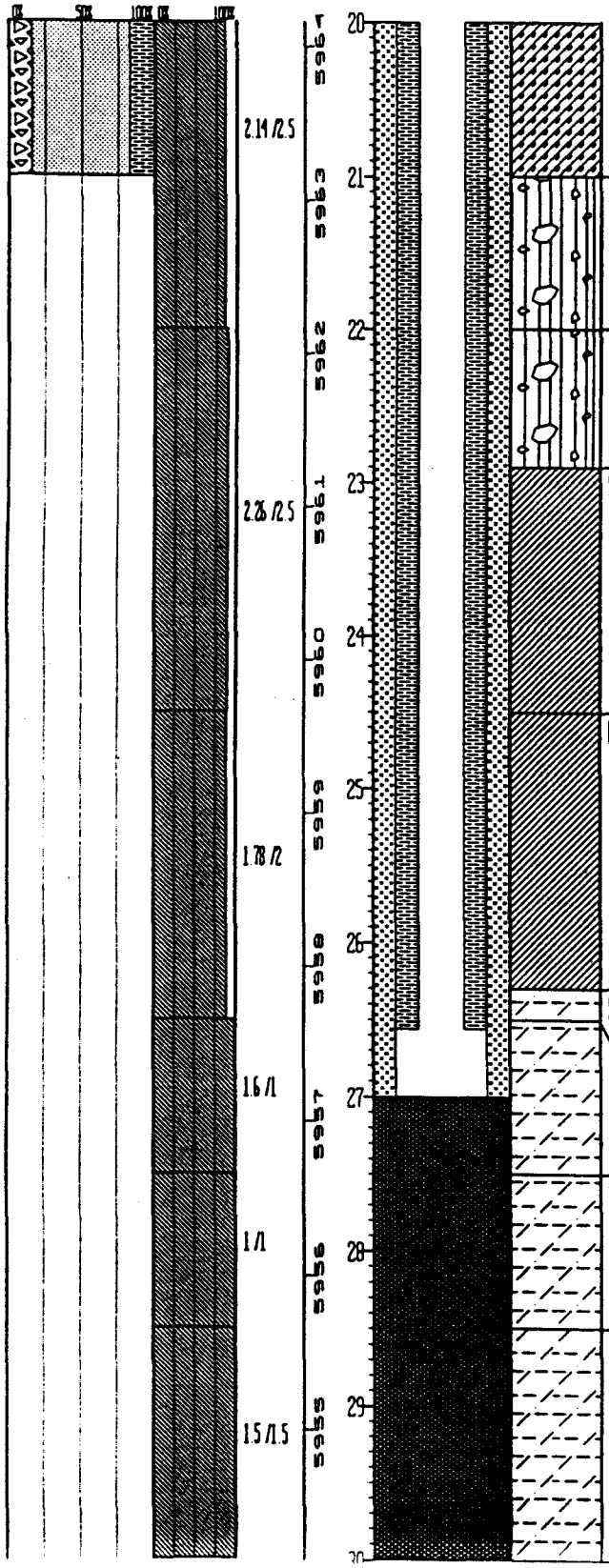


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	GRAVELLY CLAY - moderate brown (5YR 3/4), moderate plasticity, max. gravel size 5.5 cm., trace of organic debris.
CH	Clay - grayish orange (10YR 7/4), moderately high plasticity, trace of gravel and silt.
CL	GRAVELLY CLAY - as above, calcareous
NO SAMPLE	
GC	SANDY GRAVEL - medium gray (N5), sand matrix is light brown (5YR 5/6), sub-angular to sub-rounded, moderately graded max. size 5 cm., some clay and a gradual increase in the clay content with depth.
GC	Clayey Gravel - medium light gray (N6), clay matrix is moderate yellowish brown (10YR 5/4), to grayish orange (10YR 7/4), sub-angular, poorly graded, max. size 3.5 cm

STATE PLANE COORDINATE	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): 5984.16	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752800	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	62-87
EAST: 2083097	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/24/87	

REMARKS: Hollow Stem Auger

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE 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



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GM:	Silty Clayey Gravel - variegated coloring, gray, pink very light pink, medium gray (N5) to grayish orange pink (5YR 7/2) silt and clay coloring grayish orange (10YR 7/4), sub-rounded, moderate sphericity moderate grading, some sand.
GM:	Same as above, max. gravel size 6 cm.
CH:	Grades into a Silty Clay - mottled very light gray (N8) and grayish orange (10R 7/4), high plasticity, trace of sand.
CH:	Same as above.
SILTY CLAYSTONE:	Top of Bedrock Same as above.
SILTY CLAYSTONE:	Same as above.
SILTY CLAYSTONE:	Grayish orange (10YR 7/4), medium plasticity, with vertical stringers of fine to very fine sand. Note: 0.6 feet of material same as above occurs in box 3 of 3 and is labeled as part of 27.5 feet interval.
SILTY CLAYSTONE:	Very light gray (N8), grayish orange (10YR 7/4), high plasticity.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): 5984.16	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752800	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	62-87
EAST: 2083097	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/24/87	

REMARKS: Hollow Stem Auger.

CHLORIDE, SULFATE, SOIL pH, GRADATIONAL SAMPLE NORTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE

PERCENT RECOVERY

RECOVERY/INTERVAL

DATUM (FT)

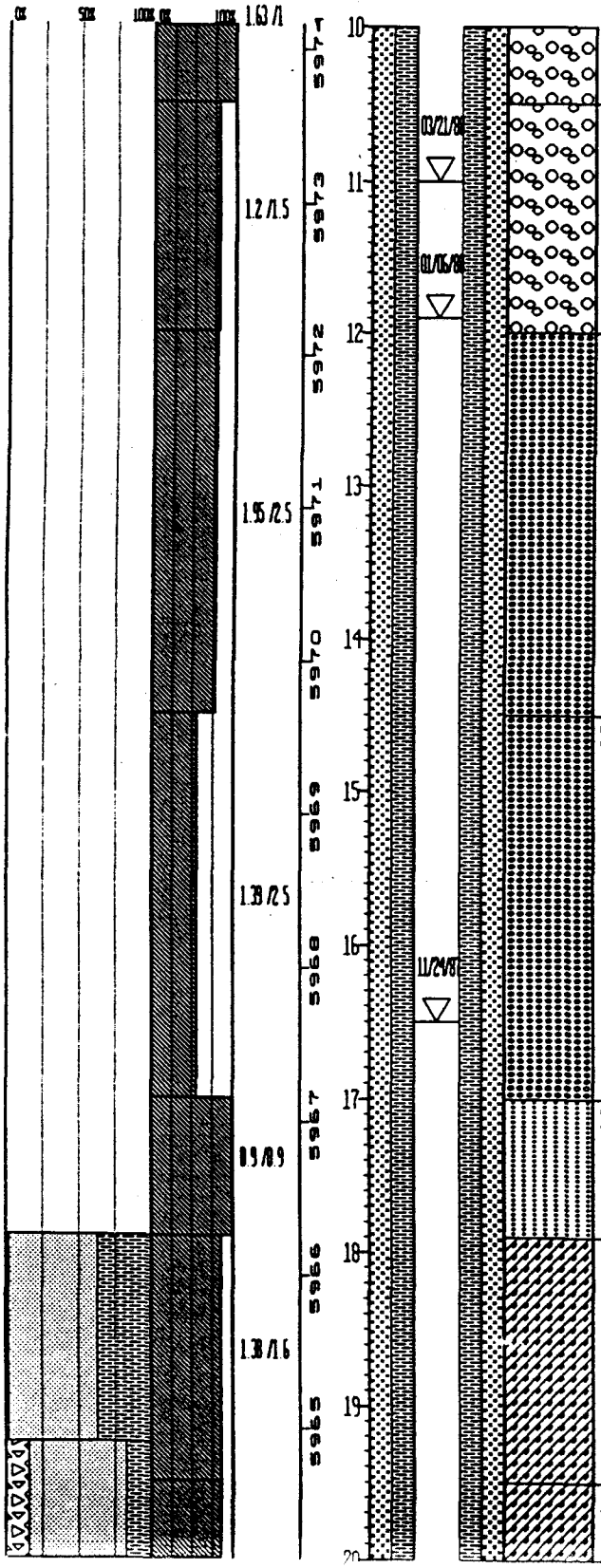
DEPTH (FT)

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION



GW:	Same as above.
SW:	GRAVELLY SAND - yellowish gray (5Y 8/1), sub-angular to rounded, low to high sphericity, well-graded, some silt
SW:	SANDY GRAVEL - moderate brown (5YR 4/4), sub-rounded/sub-angular, low to moderate sphericity, poorly graded, trace of silt.
SP:	SAND - grayish orange (10YR 7/4), sub-rounded, poorly graded, some silt. At 17.5 ft. the interval changes to very fine grained sand, yellowish gray (5Y 8/1), some silt, trace coarse to medium grained sand.
SC:	Sc per sieve analysis 17.9'-19.5' Per Field log: Cl' - Alternating fine to medium grained sand and clay. Sand, yellowish gray (5Y 8/1), grayish orange (10YR 7/4). Clay, yellowish gray (5Y 8/1) grayish orange (10YR 7/4), moderate plasticity.
SC:	Sc per sieve analysis 19'-21' Per Field log: Clay - yellowish gray (5Y 8/1), high plasticity, some sand.

6027

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 30	GROUND ELEVATION (FT): -	5984.16	PROJECT NUMBER:	667.11
NORTH: 752800	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/TSD
EAST: 2083097	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/24/87
REMARKS: Hollow Stem Auger					

LOG OF BORING NUMBER: **62-87**

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE DEPTH

SAMPLE NUMBER

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 1.29/2; 0.43/2; 0/3; 0/1; 0/1.5; 1.63/1

DATUM (FT): 5984, 5983, 5982, 5981, 5980, 5979, 5978, 5977, 5976, 5975

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
CL	SILTY CLAY - pale, yellowish brown (10YR 6/2), moderate plasticity, trace of sand.
CL	GRAVELLY CLAY - dark yellowish brown (10YR 4/2) moderate plasticity, some sand, max. gravel size 4 cm
	NO SAMPLE
	NO SAMPLE
	NO SAMPLE
GW	Clayey Sandy Gravel - very light gray (N8) to medium gray (N6), sub-angular to sub-rounded, moderately graded, trace of silt.

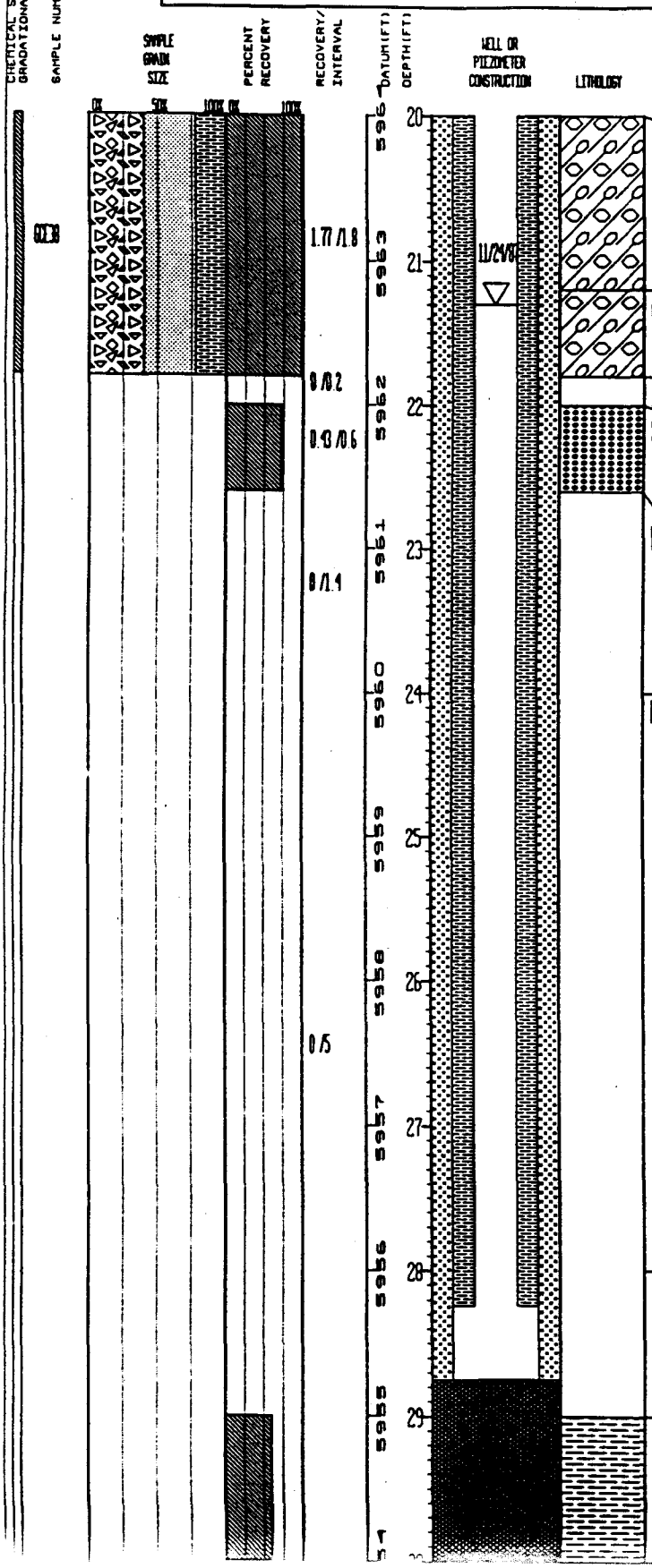
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 34	GROUND ELEVATION (FT): 5994	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752860	AREA: LANDFILL	CASING DIAMETER (IN): 2.10	GEOLOGIST: DCB/TSD	61-87
EAST: 2083072	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/24/87	

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
				1.25/2.1	5955	30				
					5953	31			CLAYSTONE:	Description is same as above.
				1.97/2	5952	32				
					5951	33			CLAYSTONE:	Same as above change in color of clay. Top 1/3 of interval is moderate brown (5YR 3/4), lower 2/3 of interval is moderate yellowish brown (10YR 5/4)
				1.86/0.9	5950	34				
					5949	35				
					5948	36				
					5947	37				
					5946	38				
					5945	39				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 34	GROUND ELEVATION (FT): 5984	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 752860	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	61-87
EAST: 2083072	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/24/87	

REMARKS: Hollow Stem Auger.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GC:	Gc per sieve analysis 20'-21.8' Per field log: Clay - mottled (light gray (N7) and dark yellowish orange (10YR 6/6), high plasticity, trace of fine to medium sand and mica.
GC:	Gc per sieve analysis 20'-21.8' Per field log: Sandy Clay - moderate yellowish brown (10YR 5/4), low plasticity some gravel - max. size = 2.5 cm.
NO SAMPLE:	
SW:	GRAVELLY SAND - V.fine to coarse, moderate yellowish brown (10YR 5/4), sub-rounded to rounded, moderate sphericity, well graded, some silt. Max. gravel size is 2 cm.
NO SAMPLE:	
NO SAMPLE:	
NO SAMPLE:	Top of Bedrock at 28.0'
CLAYSTONE:	Medium light gray (N6) and dark yellowish orange (10YR 6/6), medium grained sand.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 34	GROUND ELEVATION (FT): 5984	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH:	752860	AREA: LANDFILL	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB/TSD	61-87
EAST:	2083072	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN): 7.5	DATE DRILLED: 11/24/87	

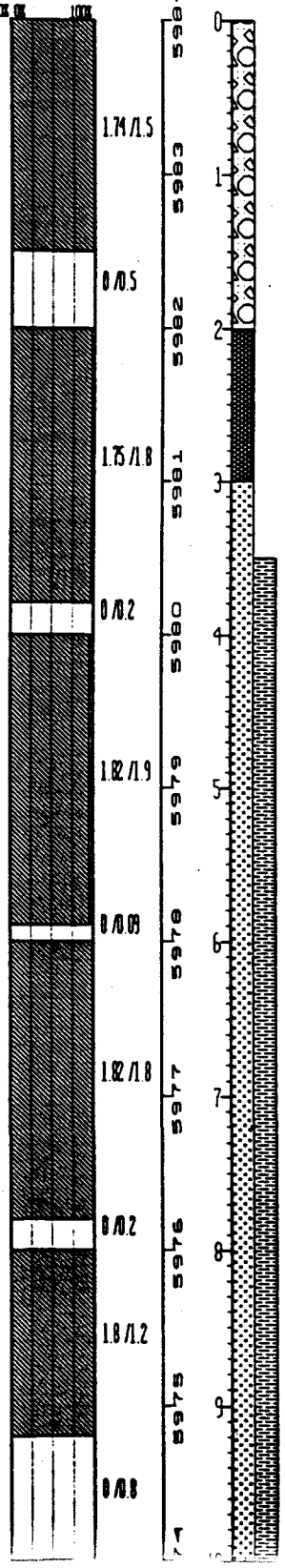
REMARKS: Hollow Stem Auger.

CHEMICAL SAMPLE DEPTH / GRADATIONAL SAMPLE	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
				0.58/0.8	5974	10			GC:	Clayey Sandy Gravel - medium dark gray (N4) (sand and clay are grayish orange 10 YR 7/4), angular to rounded, low to moderate sphericity, max. size 3.5 cm., moderate grading, trace silt and mica.
				0/1.2	5973	11	01/06/88		NO SAMPLE:	
				2.34/2	5972	12			GC:	Clayey Sandy Gravel - variegated coloring gray, pink, very light gray, orange-brown, dominant color medium light gray (N6), (clay and sand mottled moderate yellowish brown (10YR 5/4) and dark yellowish orange (10YR 6/6)), angular to sub-rounded, low to moderate sphericity, max. size 7 cm., some mica, moderately graded
				1.36/1.6	5971	13				
					5970	14			GC:	Same as above.
GC36				0/0.4	5969	15			NO SAMPLE:	
				2.32/2	5968	16			CL:	GRAVELLY CLAY - grayish orange (10YR 7/4) low plasticity, some sand - gravel and sand fraction approach 50% of sample volume.
				1.76/1.8	5967	17			CL:	Same as above.
					5966	18				
				0/0.2	5965	19	11/24/87		SC:	Clayey Sand - fine to very coarse sand, grayish orange (10YR 7/4) sub-angular to rounded, moderate sphericity, poorly graded some gravel.
									NO SAMPLE:	

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34	GROUND ELEVATION (FT)	5984	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH:	752860	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST	DCB/TSD	61-87
EAST:	2083072	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED	11/24/87	

REMARKS: Hollow Stem Auger

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



GC	Clayey Gravel - medium light gray (N6) to moderate reddish brown (10R 4/6). Angular to sub-rounded, low to moderate sphericity, 5.5cm = max.size, moderately well graded, trace of sand and roots
NO SAMPLE	
GW	GRAVEL - medium light gray (N6) to very light gray (N8), angular to sub-rounded, low to moderate sphericity, moderately graded. 4.5 cm = maximum size, some micaceous silty clay (moderate reddish brown (10R 4/6)) and sand. Lower 1/3 of interval consists of description 4' to 5.9'
NO SAMPLE	
GC	Clayey Sandy Gravel - light bluish gray (5B 7/1) (sand and clay are grayish orange (10YR 7/4)), angular to rounded, low to moderate sphericity, max. size 6.5 cm., moderate grading, trace of mica and silt
NO SAMPLE	
GC	Same as above, change in color of clay fraction, moderate yellowish brown (10YR 5/4).
NO SAMPLE	
GC	Same as above, change in color of clay fraction, dark yellowish orange (10YR 6/6)
NO SAMPLE	

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 32	GROUND ELEVATION (FT)	5984 03	PROJECT NUMBER	667 11	LOG OF BORING NUMBER
NORTH	752930	AREA LANDFILL	CASING DIAMETER (IN)	2 ID	GEOLOGIST	DCB/TSD	60-87
EAST	2083035	LOCATOR NUMBER K12	BOREHOLE DIAMETER (IN)	7 5	DATE DRILLED	11/19/87	

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
	0% 50% 100%	0% 100%	0 /2	5954	30				
			1.82 /1	5953	31			CLAYSTONE	Medium light gray (N6), high plasticity, local occurrences of dark tabular mineral (coal?)
				5952	32				
				5951	33				
				5950	34				
				5949	35				
				5948	36				
				5947	37				
				5946	38				
				5945	39				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 32	GROUND ELEVATION (FT):	5984.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH:	752930	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/TSD	60-87
EAST:	2083035	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/19/87	

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
					5964	20				gravel max. size 5 mm.
	60.17			0.8/2.5	5963	21				
					5962	22			SW:	GRAVELLY SAND - grayish orange (10YR 7/4), very fine to coarse grained sand (very fine sand is restricted to upper 5 inches of interval). Sub-angular to rounded, well graded, trace of silt.
				1.5/2.5	5961	23				
					5960	24				
					5959	25			SW:	Same as above
	60.18			1.85/2.5	5958	26			SC:	Sc per sieve analysis 24.5'-27 Per field log: Cl - Sandy Clay grayish orange (10YR 6/6), medium plasticity, some gravel.
					5957	27			CLAYSTONE:	Top of Bedrock Mottled light olive gray (5Y 6/1) and dark yellowish orange (10YR 6/6), high plasticity, some sand (grayish orange (10YR 7/4)) fine to medium grained occurs in lenses approx. 1 cm. thick.
				1.13/2	5956	28				
					5955	29			NO SAMPLE:	

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 32	GROUND ELEVATION (FT):	5984.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER:
NORTH: 752930	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/TSD	60-87
EAST: 2083035	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/19/87	
REMARKS: Hollow Stem Auger.						

CHEMICAL SAMPLE DEPTH
GRADATIONAL SAMPLE DEPTH
SAMPLE NUMBER

SAMPLE GRAIN SIZE: CL SIL SAN GRV

PERCENT RECOVERY: 100% CR 100%

RECOVERY/INTERVAL: 0.95/1; 0.75/1.5; 1.14/2.5; 0.73/2.5; 3.1/2.5

DATUM (FT): 597.4, 597.3, 597.2, 597.1, 597.0, 596.9, 596.8, 596.7, 596.6, 596.5

DEPTH (FT): 10, 11, 12, 13, 14, 15, 16, 17, 18, 19

WELL OR PIEZOMETER CONSTRUCTION: 11/19/87

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	clay, dark yellowish orange (10YR 6/6) moderately plastic. A 0.25 ft. sand interval occurs at the base of this interval -Clayey sand moderately yellowish brown (10YR 5/4), medium to coarse grained, poorly graded sub-angular to rounded, high sphericity.
GW:	Same as above - minus the sand layer.
GW:	Same as above.
GM:	SANDY GRAVEL - very light gray (N8) on fresh surface, sub-angular to sub-rounded, moderate to low sphericity, 5 cm. max. size, poorly graded; some silt, light brown (5YR 6/4)
CL:	CLAY - mottled grayish orange (10YR 7/4), grayish yellow (5Y 8/4), high plasticity; some fine sand and trace of gravel, max. size 5 mm. A sand interval 0.25 ft. occurs at the top of this interval and grades into the mottled clay, fine grained and variegated color. A fine to very coarse grained sand and fine gravel occurs within the lower half of this interval, gravelly sand, dark yellowish orange (10YR 6/6), sub-angular to sub-rounded, moderate to high sphericity, maximum size 1.5 cm., well graded, some silt, dark yellowish orange (10YR 6/6).
SM:	SILTY SAND - dark yellowish orange (10YR 6/6), fine to very coarse grained, sub-rounded, low to high sphericity, poorly graded, trace of fine

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 32	GROUND ELEVATION (FT):	5984.03	PROJECT NUMBER:	667.11	LOG OF BORING NUMBER
NORTH:	752930	AREA: LANDFILL	CASING DIAMETER (IN):	2 ID	GEOLOGIST:	DCB/TSD	60-87
EAST:	2083035	LOCATOR NUMBER: K12	BOREHOLE DIAMETER (IN):	7.5	DATE DRILLED:	11/19/87	

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

RECOVERY/INTERVAL	UNIFIED SOILS CLASSIFICATION	DESCRIPTION
1.15/2.5	GW	GRAVEL - grayish red (10YR 4/2) to medium gray (N5) on fresh surface, sub-angular, low to high sphericity, 6cm maximum size, moderately well graded, some clayey silt, moderate yellowish brown (10YR 4/2), moderate plasticity, trace of fine sand.
0/1.5	NO SAMPLE	
0.63/3	CH	Sandy Clay - medium light brown (5YR 5/6), high plasticity, some silt and gravel size 1.5 cm
0/2.5	NO SAMPLE	
	GW	SANDY GRAVEL - medium light gray (N6), angular to sub-rounded, low to medium sphericity, 6.5 mm maximum size, moderately well graded, trace of

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

Datum (ft): 5984, 5983, 5982, 5981, 5980, 5979, 5978, 5977, 5976, 5975

03/14/88

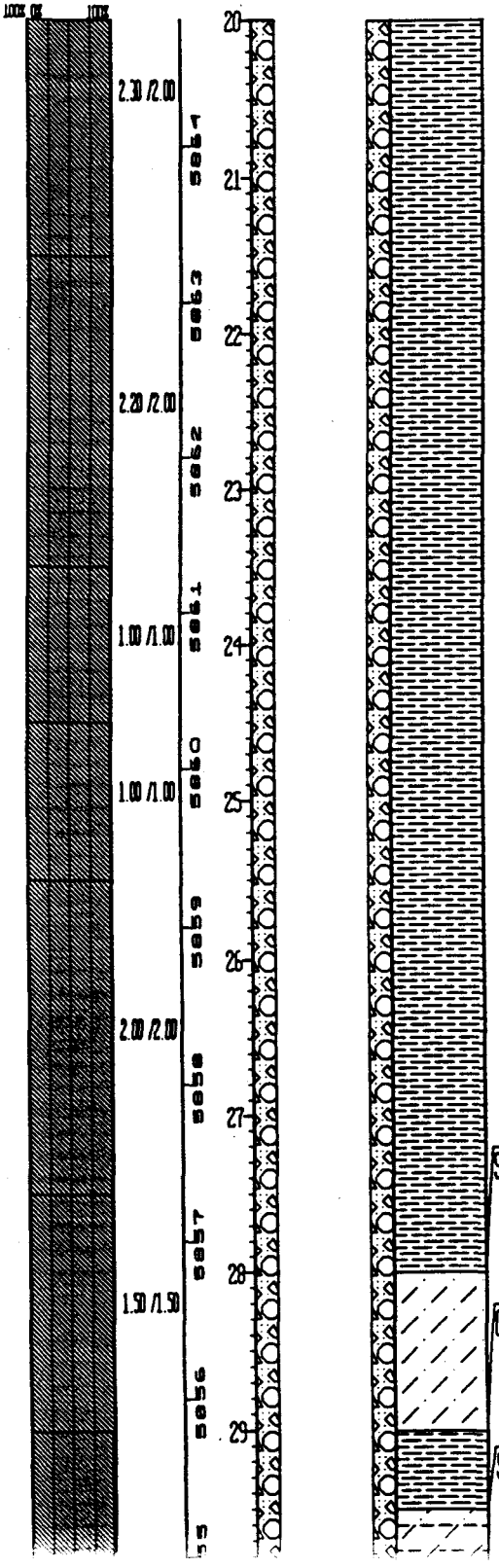
01/05/88

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5894.80	OLD WELL NUMBER:	LF1389BR
NORTH: 753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	GEOLOGIST:	DCB
EAST: 2084837	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4.0	DATE DRILLED:	06/13/89

LOG OF BORING NUMBER: B207189

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. AST Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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



SILTSTONE: Light gray (N7), poorly bedded, slightly friable. Some clay, iron staining on fractures.

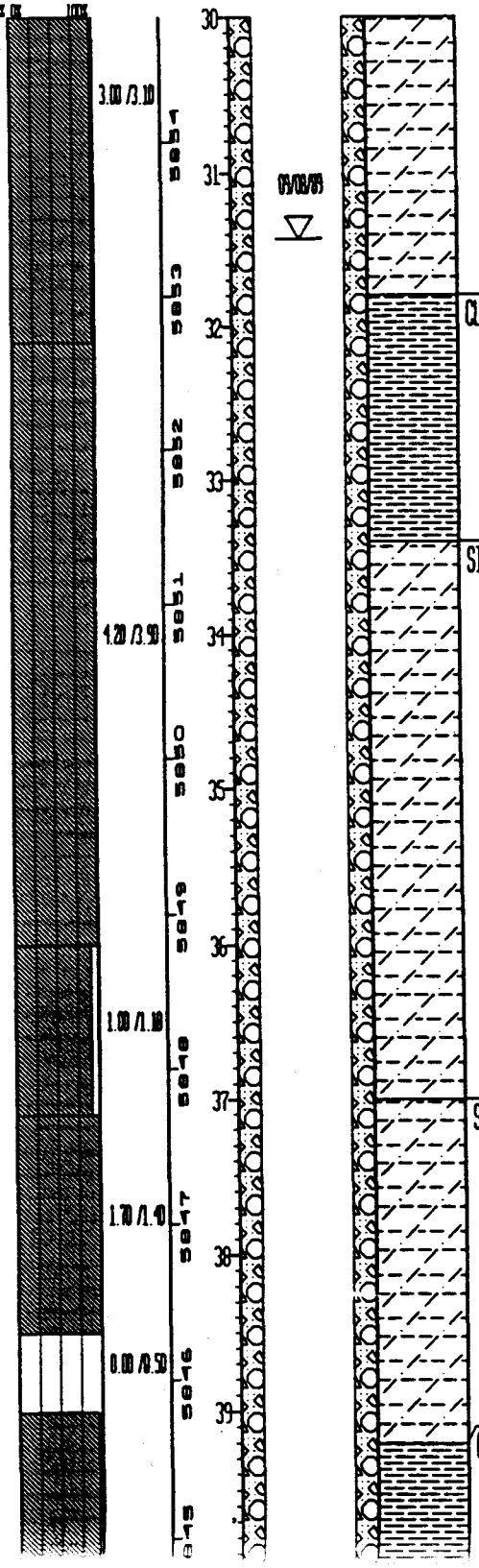
CLAYSTONE: Highly weathered. Dark yellowish brown (10 YR 4/2), bedding not apparent. Mod. friable, slight amount of iron staining locally.
>50% clay.

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):	5881.80	OLD WELL NUMBER:	LF13B9BR	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' to 259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. AST Log.

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



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'.

SILTY CLAYSTONE: Med. dark gray (N4), bedding not apparent. Weathered, slightly friable. >50% clay.

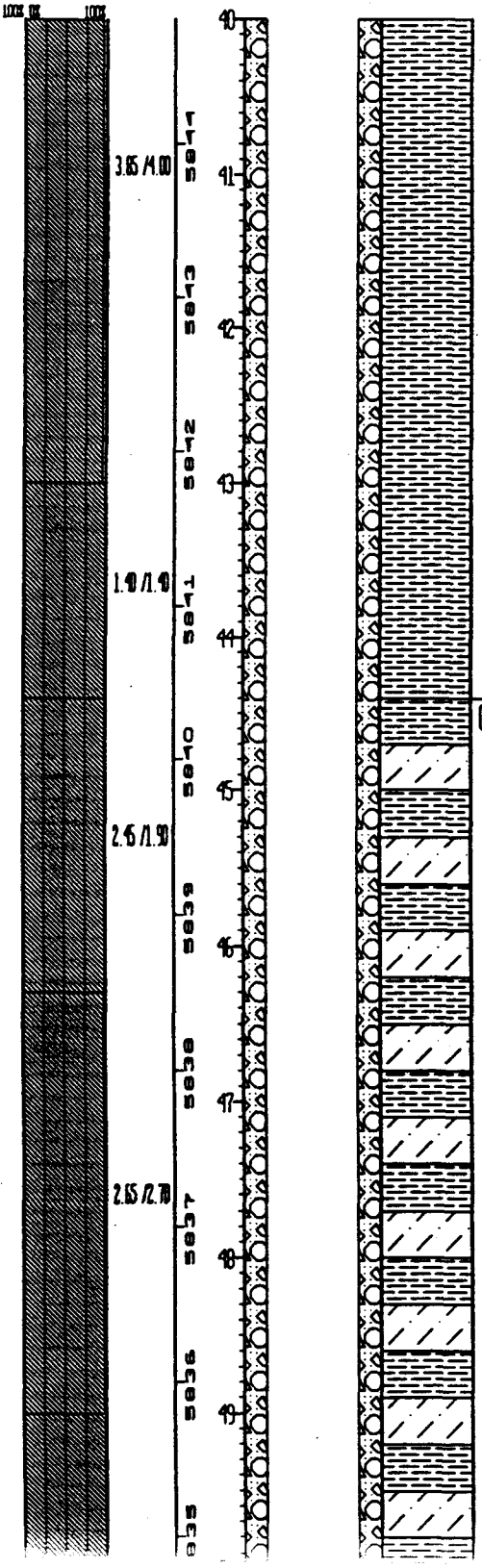
SILTY CLAYSTONE: Same as above, bedding is thin (2 mm.) where apparent. >50% clay.

CLAYSTONE: Dark gray (N3), thin bedded (2 mm.) where apparent. Weathered, mod. friable. Mod. silt component, slight amount of carbonaceous material. >50% clay

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT): 5984.80	OLD WELL NUMBER: LF13898R	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 surf ace on 04/25/89 by E.M. Hill. AST Log.

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
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:	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	OLD WELL NUMBER:	LF13895R	LOG OF BORING NUMBER:
NORTH:	753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	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 surf ace on 04/25/89 by E.M. Hill. MSI Log.

GEOTECHNICAL 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%

1.25 /1.00
2.90 /2.60
1.70 /1.50
1.60 /3.50

5834 5833 5832 5831 5830 5829 5828 5827 5826 5825

50 51 52 53 54 55 56 57 58 59 60

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.

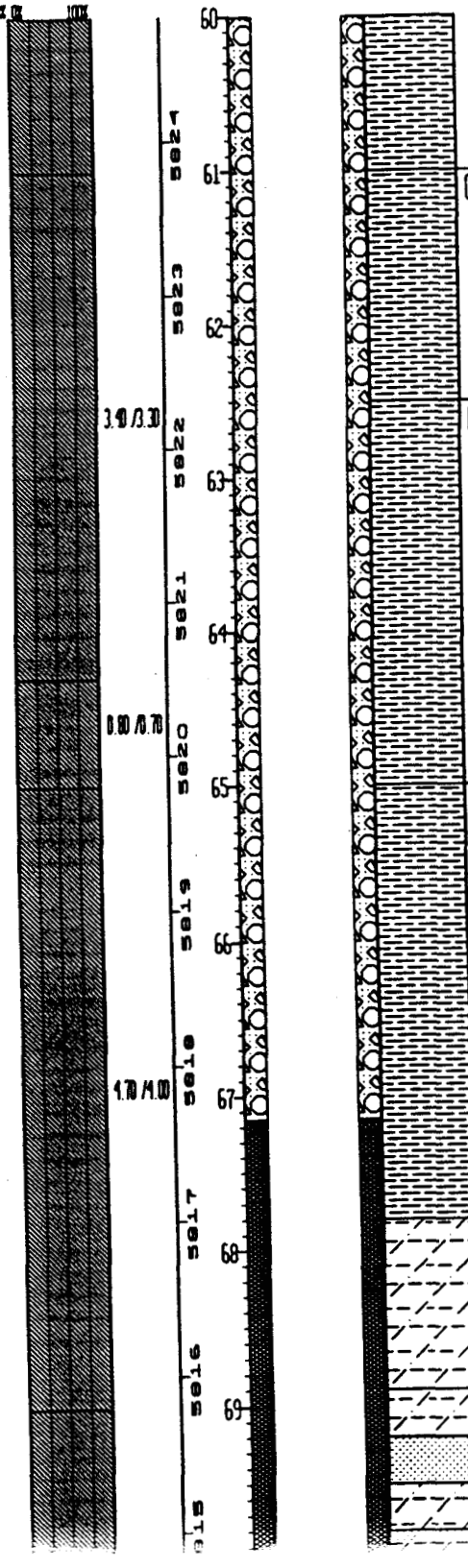
STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389BR
NORTH: 753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	GEOLOGIST:	DCB
EAST: 2084837	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4.0	DATE DRILLED:	06/13/89

LOG OF BORING NUMBER: **B207189**

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.

GEOTECHNICAL SAMPLE DESIGN

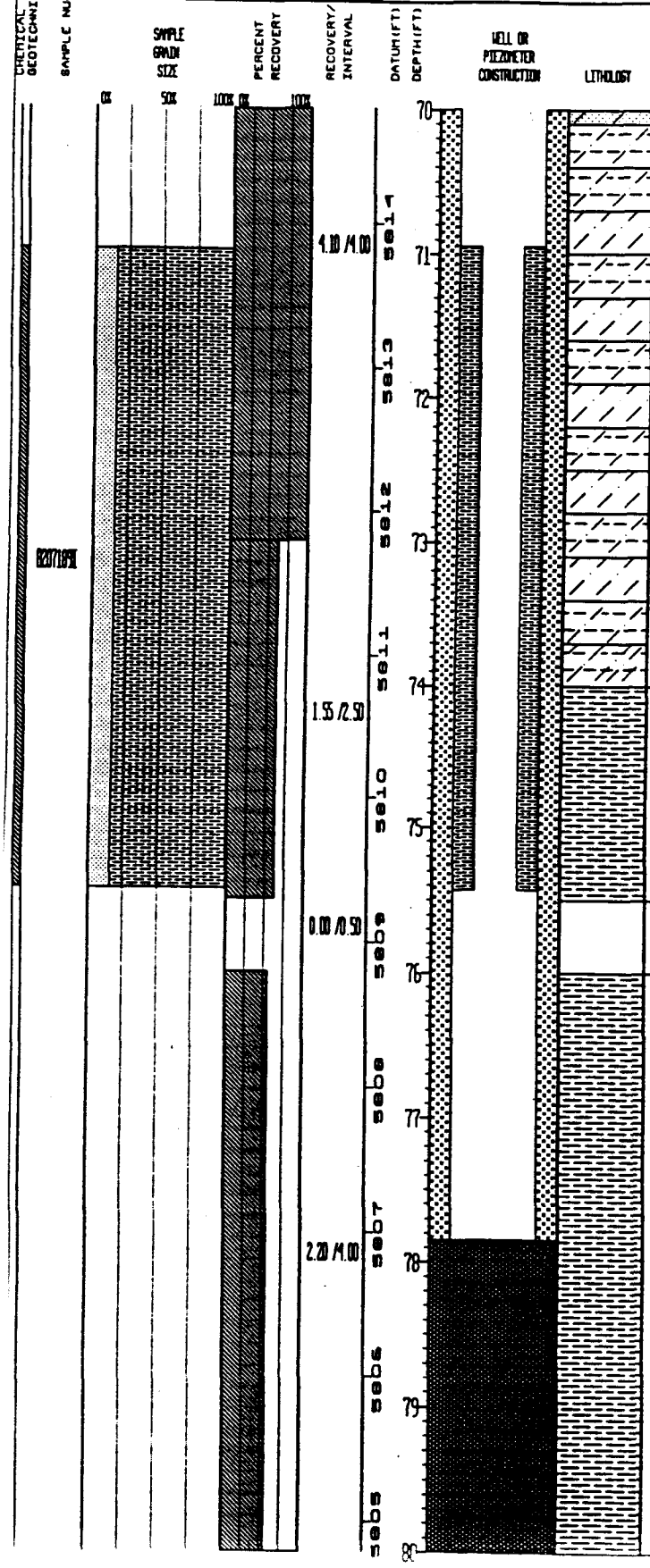
SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



Unified Soils Classification or Rock Type	Description
CLAYSTONE:	Same as above, interval grades to dark gray (N3). >50% clay.
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.
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.
SILTY CLAYSTONE:	Light gray (N7) to med. dark gray (N4). Bedding not apparent, slightly weathered, slightly friable.
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.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13898R	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 surf ace on 04/25/89 by E.M. Hill. ASI Log.

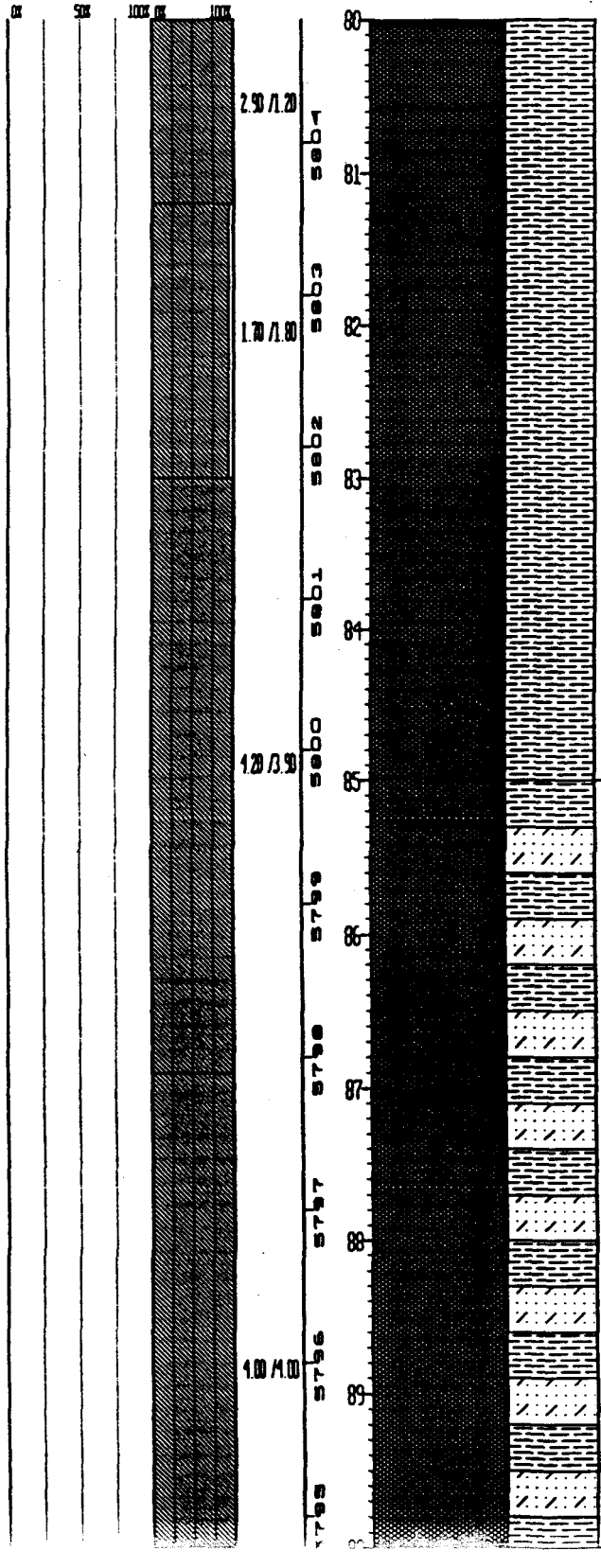


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE:	Interval grades to interbedded Silty Claystone and Siltstone. Silty Claystone and Siltstone med. dark gray (N4) to very light gray (N8), respectively. Thin bedded (<2 mm.), bedding exhibits soft sediment deformation. Slightly friable, 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	OLD WELL NUMBER:	LF1389ER	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' to 259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. NSI Log.

CHEMICAL SAMPLE DEPTH
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

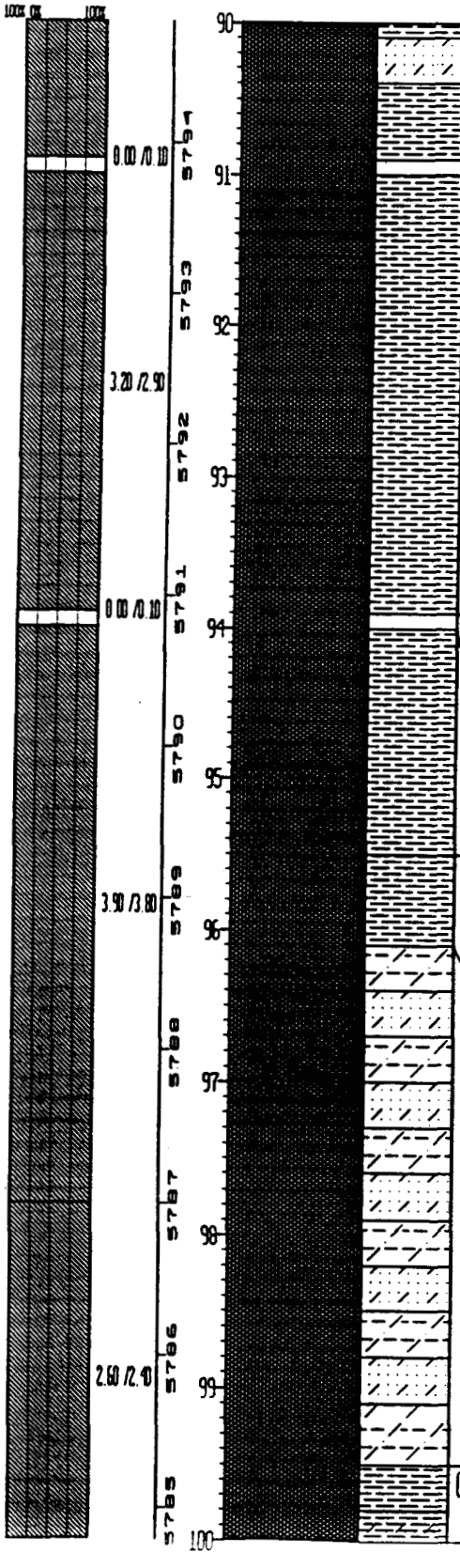


CLAYSTONE:	Dark gray (N3), interfingering discontinuous beds of Silty Sandstone, <3 mm. thick, very light gray (N8). Slightly friable, occasional carbonaceous material and iron stains. Sand is f.g. to v.f.g., Claystone has mod. silt fraction. Approx. 10% to 20% v.f.g. sand and silt, >70% clay.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13898R	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' to 259.0'. Surface casing set at 28.0' below ground surface on 04/25/89 by E.M. Hill. ASI Log.

GEOTECHNICAL 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



NO SAMPLE:	NO SAMPLE.
CLAYSTONE:	Same as above (reference interval 85.0' to 90.9').
NO SAMPLE:	NO SAMPLE.
CLAYSTONE:	Same as above (reference interval 85.0' to 90.9').
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.
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	OLD WELL NUMBER:	LF13895R	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	

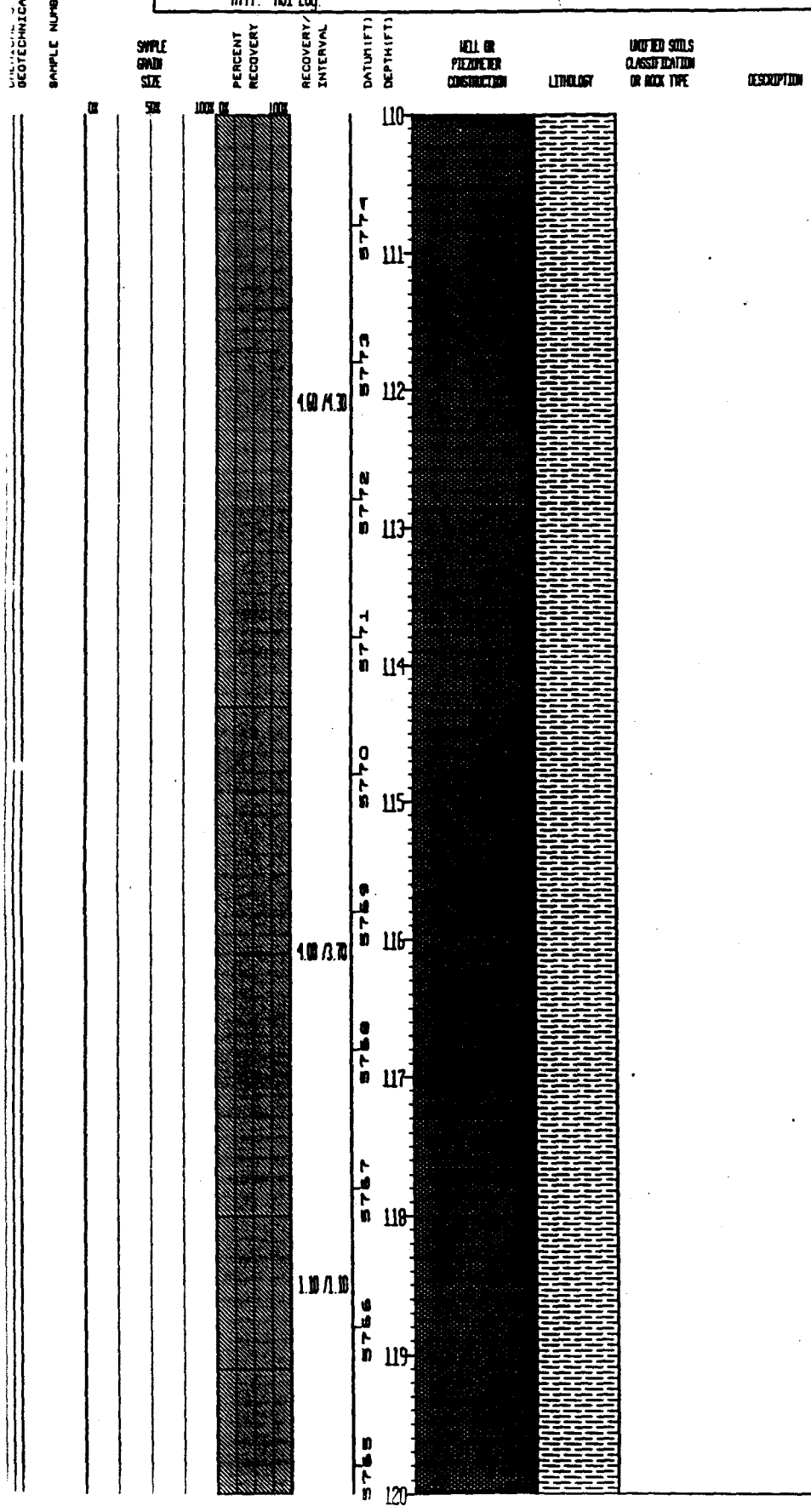
REMARKS: Hollow Stem Auger: 0.0' to 28.0'; Rotary Core: 28.0' to259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. AST Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
					5784	100				
				1.80 /1.80		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 (<4 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	107			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 /4.00	5777	108				
					5776	109			CLAYSTONE:	Med. dark gray (N4), bedding not apparent. Mod. friable, slight silt component. >50% clay.
					5775	110				

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389BR
NORTH: 753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	GEOLOGIST:	DCB
EAST: 2084837	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4.0	DATE DRILLED:	06/13/89

LOG OF BORING NUMBER: B207189

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.



STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13898R	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 surf ace on 04/25/89 by E.M. Hill. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE 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
				2.90 /2.70	5764	120				
						121			CLAYSTONE:	Light brown (5 YR 6/4), massively bedded. Slightly friable, well indurated. Slight silt fraction.
				0.00 /0.20	5763				NO SAMPLE:	NO SAMPLE.
						122			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.
					5762	123				
				4.30 /4.00	5761	124				
					5760	125				
					5759	126				
				2.30 /2.30	5758	127				
					5757	128				
				0.00 /0.70	5756				NO SAMPLE:	NO SAMPLE.
				0.00 /0.30		129			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.
					5755					

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13899R	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	

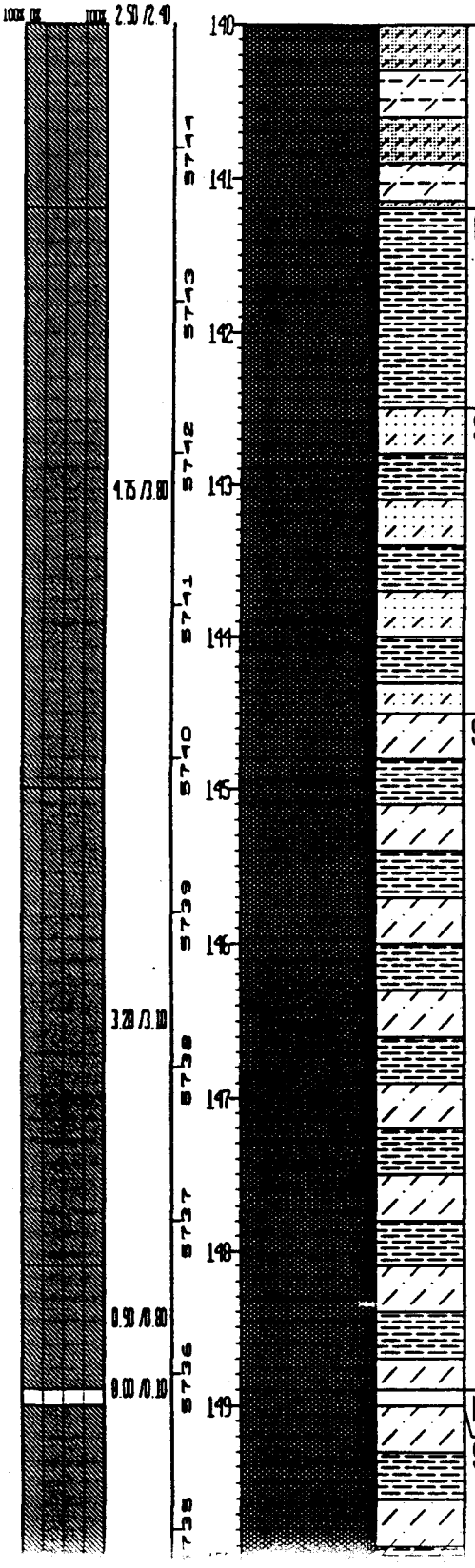
REMARKS: Hollow Stem Auger: 0.0' to 28.0'; Rotory Core: 28.0' to259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. NSI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
				3.80 /3.70	5754	130				
					5753	131				
					5752	132				
					5751	133				
					5750	134				
				4.10 /4.10	5749	135				
					5748	136				
					5747	137			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.
				1.90 /1.70	5746	138			CLAYSTONE	Med. dark gray (N4), bedding not apparent. Mod. friable, slight silt component. Slight amount of carbonaceous material. >50% clay.
					5745	139				
				2.30 /2.40		140				

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389BR	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' to 259.0'. Surface casing set at 28.0' below ground surface on 04/25/89 by E.M. Hill. ASI Log.

GEOTECHNICAL 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
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.
CLAYSTONE:	Interval grades to Claystone. Med. dark gray (N4), bedding not apparent. Slightly friable, slight to mod. carbonaceous material. >50% clay.
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.
SILTSTONE:	Interbedded Siltstone and Claystone, light gray (N7) and med. gray (N5), respectively. Thin bedded (<4 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.
NO SAMPLE:	NO SAMPLE.
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	OLD WELL NUMBER:	LF1389BR	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	

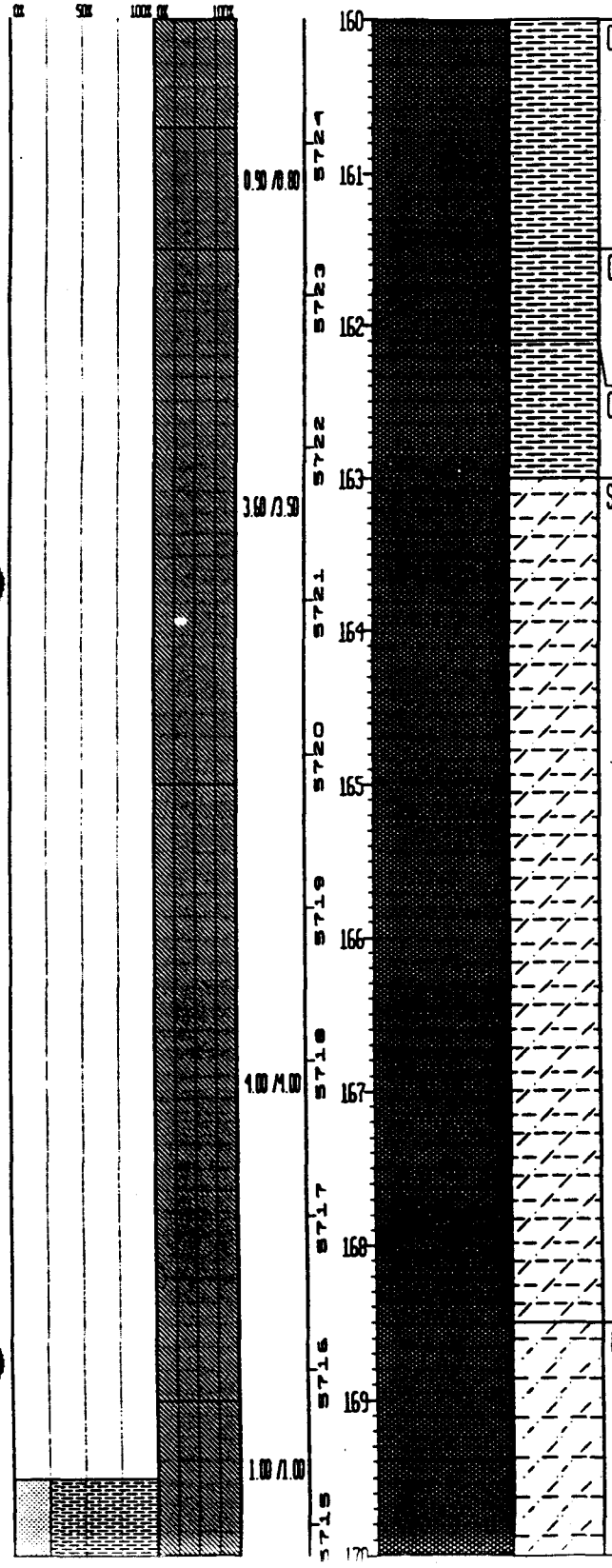
REMARKS: Hollow Stem Auger: 0.0' to 28.0'; Rotary Core: 28.0' to259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. ASI Log.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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 /3.70	5734	150				
					5733	151				
					5732	152				
					5731	153			CLAYSTONE:	Dark gray (N3), bedding not apparent. Mod. friable. Interval is carbonaceous from approx. 155.5' to 156.3'. >50% clay.
				3.30 /1.00	5730	154				
					5729	155				
					5728	156				
				0.00 /0.30	5727	157			NO SAMPLE:	NO SAMPLE.
				0.00 /0.30					CLAYSTONE:	Same as above (reference interval 152.7' to 156.7'). >50% clay.
				0.00 /1.00	5726	158			NO SAMPLE:	NO SAMPLE.
					5725	159				
				1.60 /1.60		160			CLAYSTONE:	Same as above (reference interval 152.7' to 156.7'). >50% clay.

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT): 5884.80	OLD WELL NUMBER: LF13859R	LOG OF BORING NUMBER:
NORTH: 753092	AREA: LANDFILL	CASING DIAMETER (IN): 2 3/8 O.D.	GEOLOGIST: DCB	B207189
EAST: 2094837	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' 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
GEOTECHNICAL 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
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.

B207189C

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389BR	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	

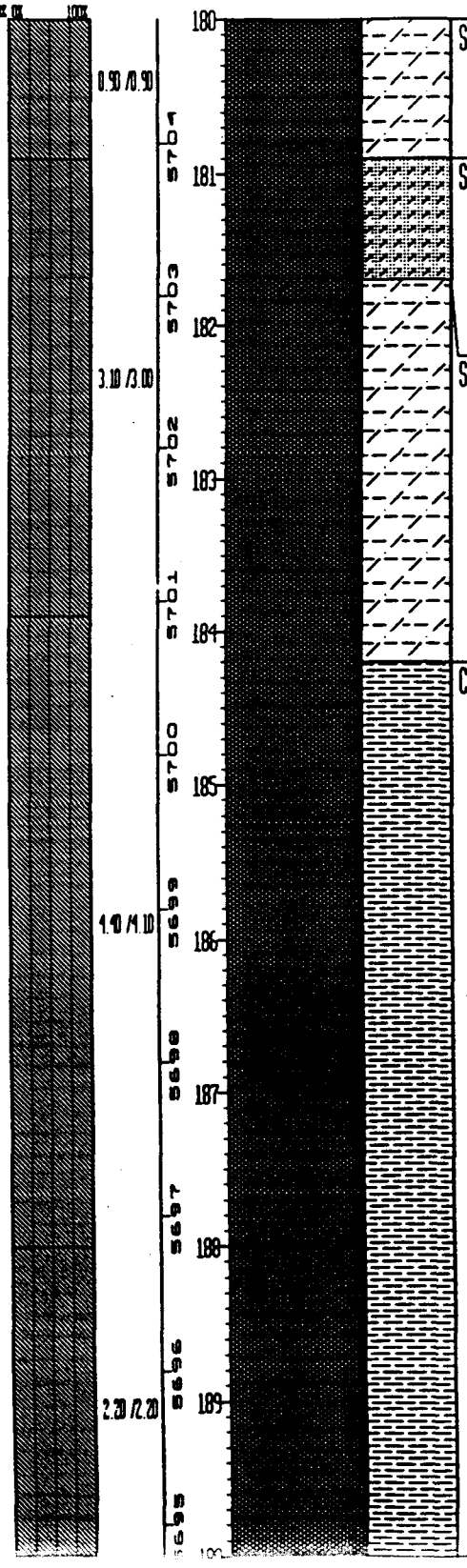
REMARKS: Hollow Stem Auger: 0.0' to 28.0'; Rotary Core: 28.0' to259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. ASI Log.

GEOTECHNICAL 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
	B207189C	0% 50% 100%	0% 100%			170				
					5714					
				3.30 /3.00		171				
					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	175			CLAYSTONE:	Med. dark gray (N4), bedding not apparent. Slightly friable, mod. silt fraction. Mod. to abundt. carbonaceous material. >50% clay.
					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	OLD WELL NUMBER: LF13B9BR	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 surf ace on 04/25/89 by E.M. Hill. ASI Log.

CHEMICAL SAMPLE DEPTH | GEOTECHNICAL 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: 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.

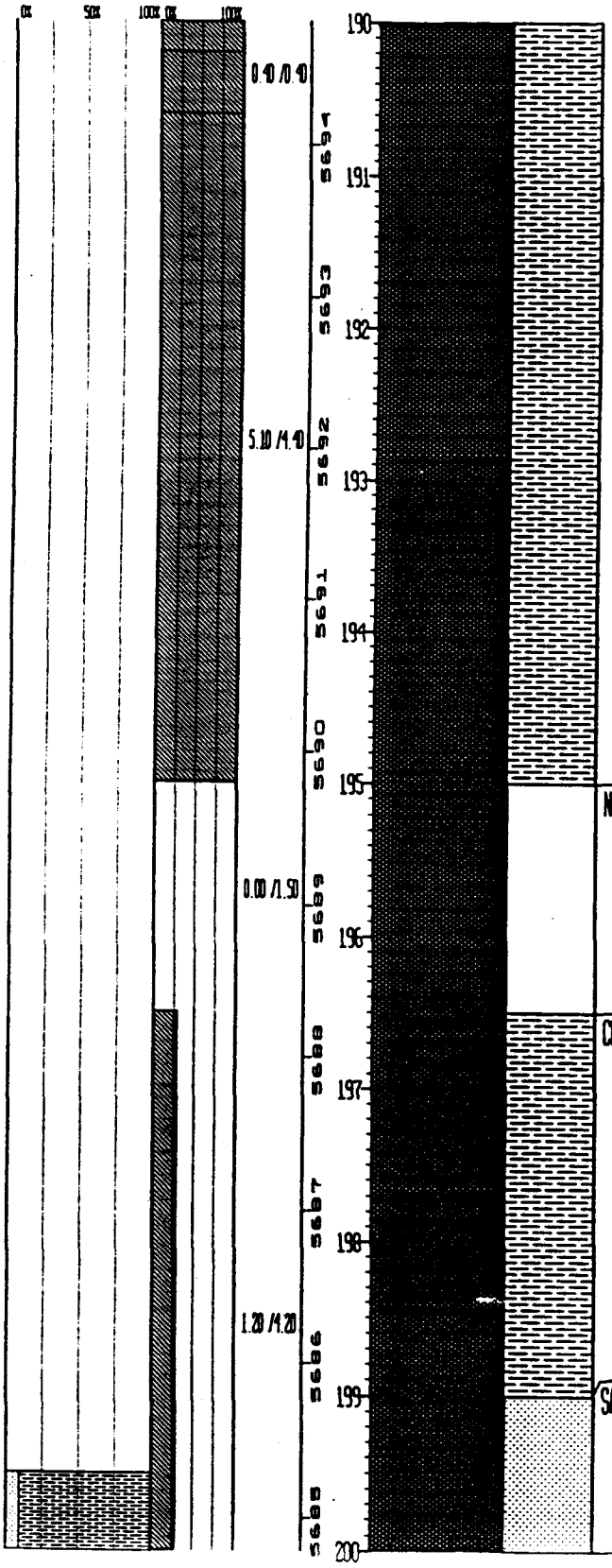
SILTY CLAYSTONE: Med. dark gray (N4), poorly bedded. Slightly friable, silt fraction varies from Claystone. Some silt to sitly. >50% clay.

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.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13898R	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 surf ace on 04/25/89 by E.M. Hill. AST Log.

GEOTECHNICAL 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



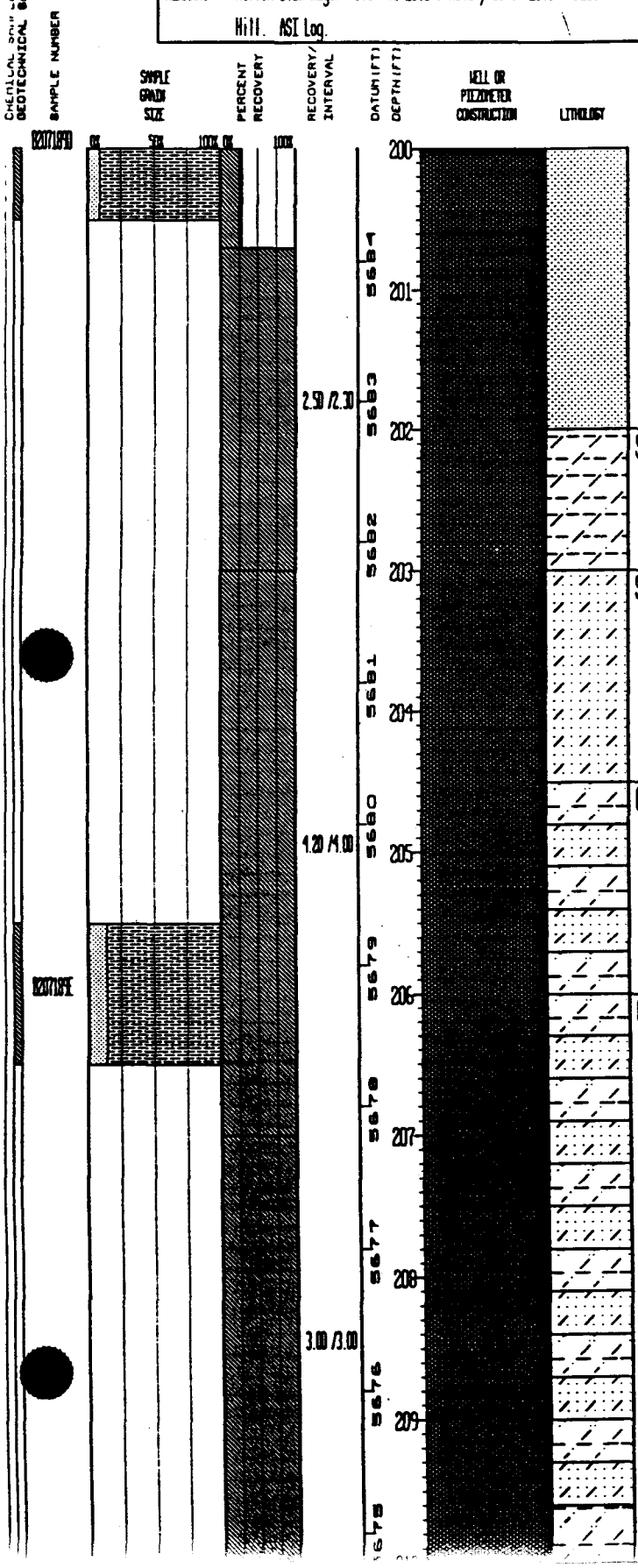
NO SAMPLE:	NO SAMPLE.
CLAYSTONE:	Same as above (reference interval 184.2' to 195.0'). Silt fraction increase with depth. Slickensides at approx. 198.0', attitude approx. 60 degrees. >50% clay.
SANDSTONE:	Light gray (N7), thin bedded where apparent. Slightly friable, sand is v.f.g. Carbonaceous material 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.

B207189

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389BR
NORTH: 753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	GEOLOGIST:	DCB
EAST: 2084837	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	4.0	DATE DRILLED:	06/13/89

LOG OF BORING NUMBER: **B207189**

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 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.

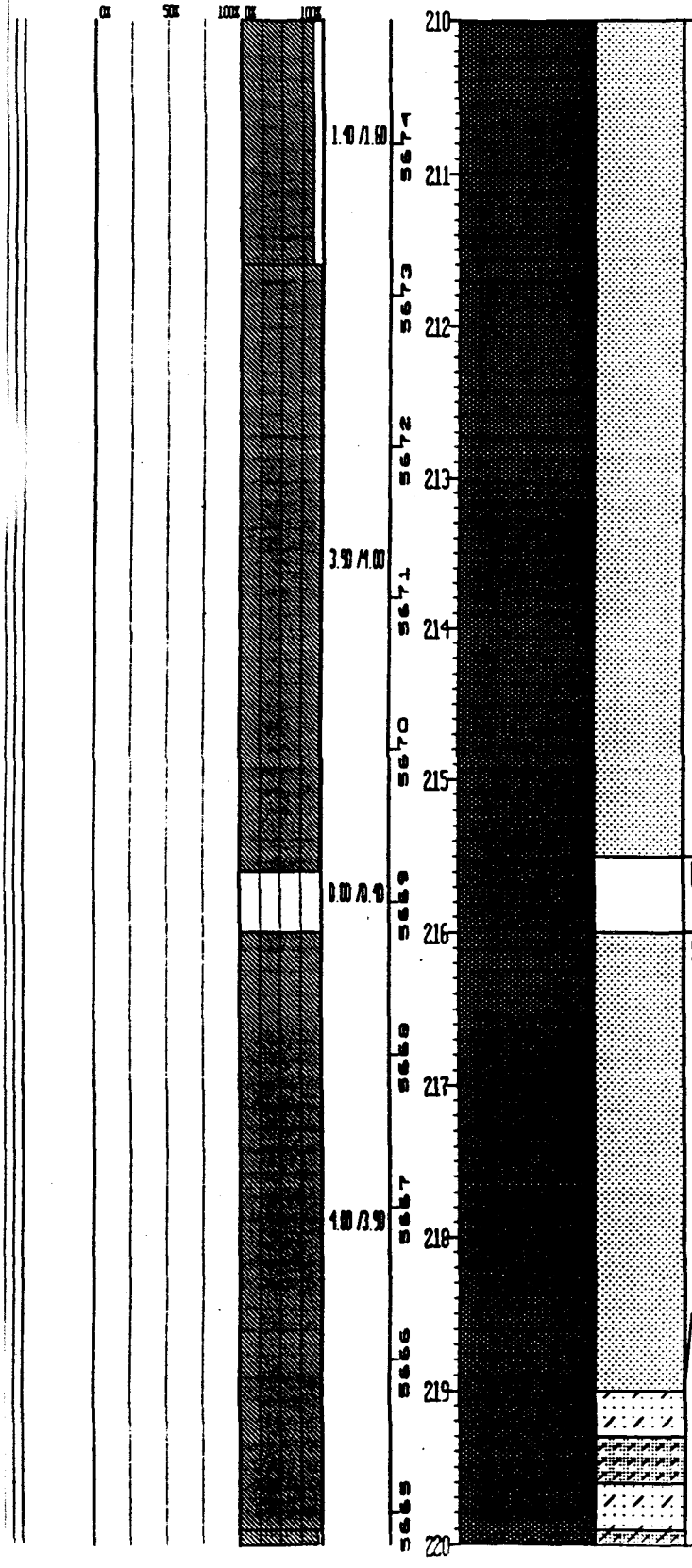
CLAYEY SILTSTONE: Interbedded Clayey Siltstone, some v.f.g. sand and Silty Sandstone, med. gray (N5) and light gray (N7) respectively. 35% sand, approx. 45% silt, approx. 20% clay.

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): 5884.80	OLD WELL NUMBER: LF1389BR	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 surf ace on 04/25/89 by E.M. Hill. ASI Log.

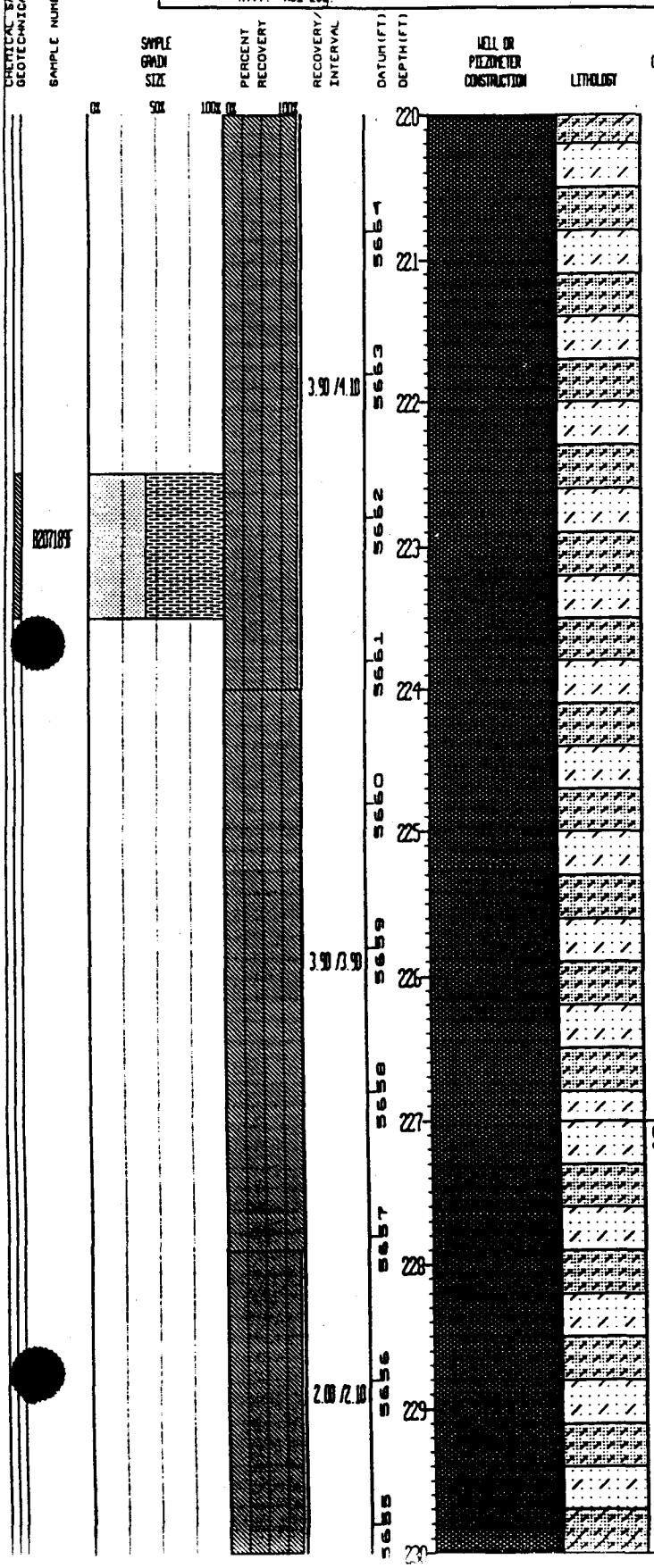
CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
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.
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.
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.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13899R	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	

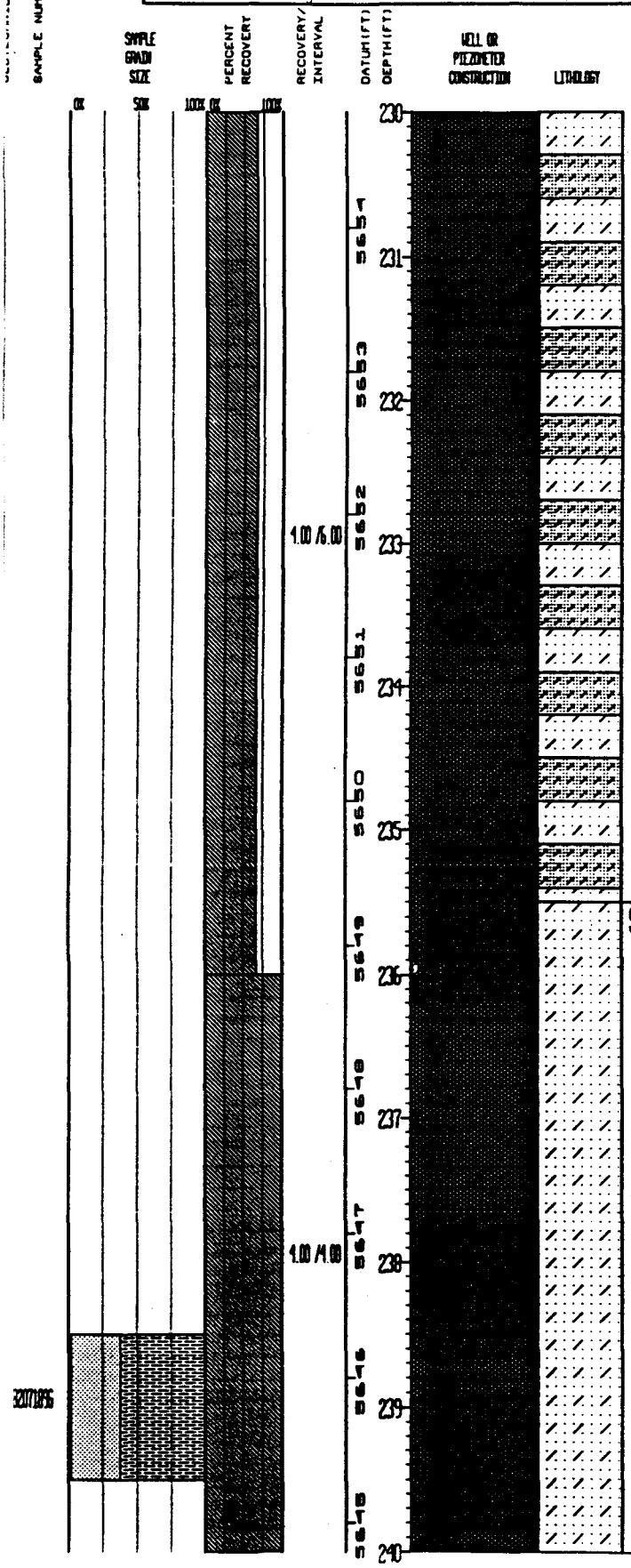
REMARKS: Hollow Stem Auger: 0.0' to 28.0'; Rotary Core: 28.0' to 259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. AST Log.



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	OLD WELL NUMBER:	LF138SBR	LOG OF BORING NUMBER:
NORTH:	753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	GEOLOGIST:	DCB	B207189
EAST:	2094937	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. AST Log.



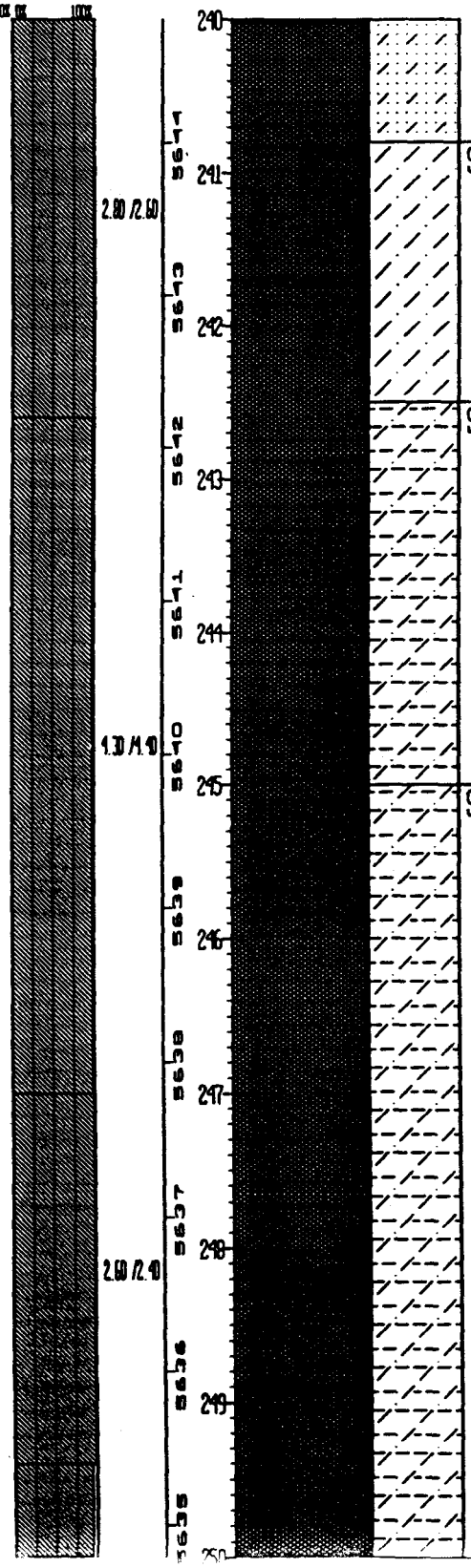
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION

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.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF13B9ER	LOG OF BORING NUMBER:
NORTH:	753092	AREA: LANDFILL	CASING DIAMETER (IN):	2 3/8 O.D.	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' to 259.0'. Surface casing set at 28.0' below ground surf ace on 04/25/89 by E.M. Hill. AST Log.

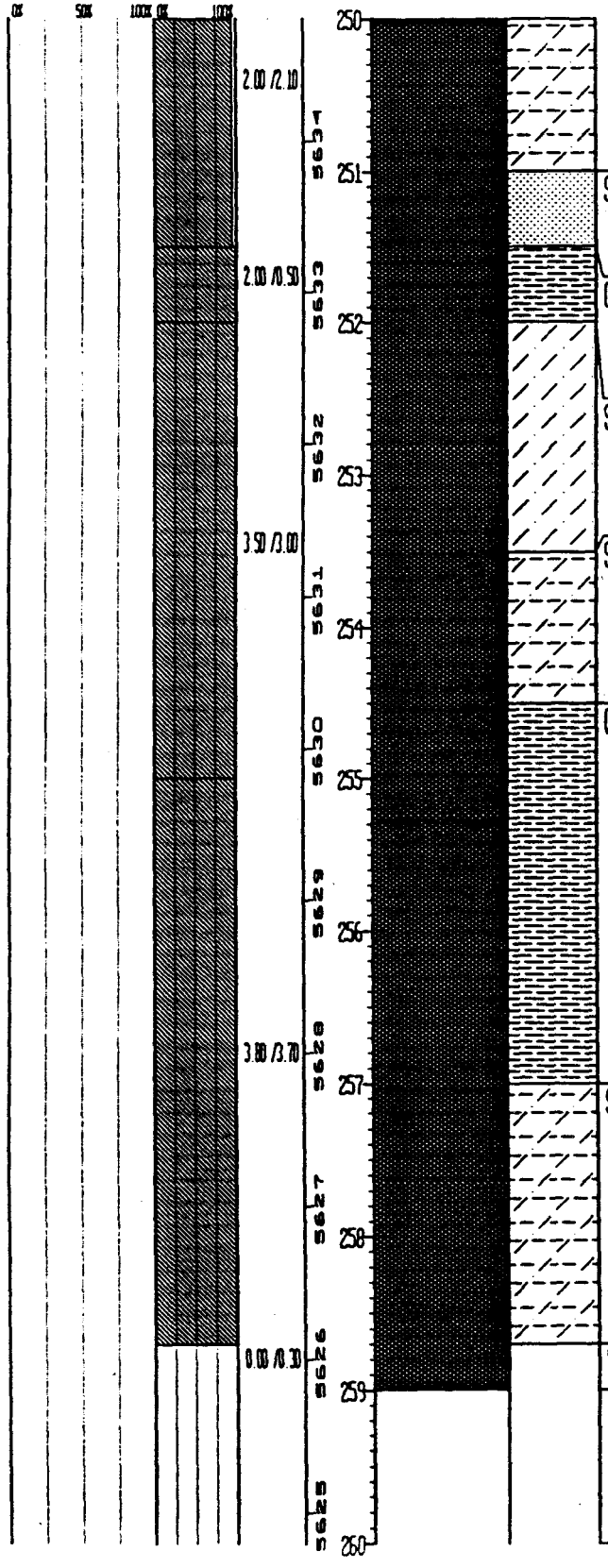
CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRADE SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



SILTSTONE:	Light gray (N7), massive bedding. Slightly friable, trace of clay, some v.f.g. sand. Approx. 10% sand, >50% silt.
SILTY CLAYSTONE:	Med. dark gray (N4), poorly bedded. Slightly friable. Slickensides at approx. 242.8', attitude 40 degrees. >50% clay.
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.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 259.0	GROUND ELEVATION (FT):	5884.80	OLD WELL NUMBER:	LF1389ER	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' to 259.0'. 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
SANDSTONE:	Very light gray (N8), thin bedded. Slightly friable, v.f.g. sand. >50% v.f.g. sand.
CLAYSTONE:	Carbonaceous Claystone and low grade coal. Grayish black (N2). Bedding not apparent. Slightly friable. >50% clay and coal.
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.
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.
CLAYSTONE:	Med. dark gray (N4), poorly bedded. Slightly friable, trace to some silt. >50% clay.
SILTY CLAYSTONE:	Light gray (N7), poorly bedded. Slightly friable, trace of carbonaceous material. >50% clay.
NO SAMPLE:	Core missing.
	Total Drilled Depth = 259.0'.

STATE PLANE COORDINATE:		TOTAL DEPTH (FT): 19.5	GROUND ELEVATION (FT):	5948.27	OLD WELL NUMBER:	LF14-89BR	LOG OF BORING NUMBER:
NORTH:	753267	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	EMH/RTT	B207289
EAST:	2084360	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	8-5/8	DATE DRILLED:	04/27/89	

REMARKS: Hollow Stem Auger. Weston Log.

CHEMICAL SAMPLE DEPTH / 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			ML:	Silt - grayish brown (5 YR 3/2). Humic, rooted, loose, damp.
				1.50 /1.50		1			SILTY CLAYSTONE:	Top of Bedrock. Pale yellowish brown (10 YR 6/2). Some v.f.g. sand, highly weathered, blocky, friable. Frequent iron staining in distinct fractures, very soft, damp.
				1.50 /2.00		2			SILTY CLAYSTONE:	Pale yellowish brown (10 YR 6/2). Abundt. streaks and mottles, dark yellowish brown (10 YR 6/6). Trace to some v.f.g. to f.g. sand, highly weathered, very soft. Few calcite (calcareous) streaks up to 3 mm. Rooted, trace organic partings, blocky, friable, damp.
						3				
				2.00 /2.00		4			SILTY CLAYSTONE:	Light olive gray (5 Y 6/1) mottled with dark yellowish orange (10 YR 6/6). Mod. weathered, very soft, few calcite (calcareous) lenses, damp.
						5				
				2.00 /2.00		6			SILTY CLAYSTONE:	Pale yellowish brown (10 YR 6/2) mottled with dark yellowish orange (10 YR 6/6) decreasing with depth. Trace v.f.g. sand. Laminate lignite partings (< 1 mm.) increasing with depth. Highly weathered, very soft, damp.
						7				
				2.00 /2.00		8			SILTY CLAYSTONE:	Pale yellowish brown (10 YR 6/2), occasional dark yellowish orange (10 YR 6/6) mottling. Trace v.f.g. sand, few lignite partings, few very small calcite (calcareous) lenses, highly weathered, very soft, damp.
						9			SILTY CLAYSTONE:	Pale yellowish brown (10 YR 6/2) with occasional dark yellowish orange (10 YR 6/6) mottling and fractures. Trace to some sand, few thin lignite partings and streaks, blocky to fissile, highly weathered, very soft, damp

STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 19.5	GROUND ELEVATION (FT):	5948.27	OLD WELL NUMBER:	LF14-89R
NORTH: 753267	AREA: LANDFILL	CASING DIAMETER (IN):	4.5 O.D.	GEOLOGIST:	EHWRTT
EAST: 2084360	LOCATOR NUMBER: L13	BOREHOLE DIAMETER (IN):	8-5/8	DATE DRILLED:	04/27/89

REMARKS: Hollow Stem Auger. Weston Log.

LOG OF BORING NUMBER: B20728

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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	5938	10				
					5937	11				
				2.00 /2.00	5936	12				SILTY CLAYSTONE: Pale yellowish brown (10 YR 6/2), mottled with grayish orange (10 YR 7/4). Trace to some v.f.g. to f.g. sand, occasional (<1 mm.) lignite partings, iron stained fractures, blocky, very soft, highly weathered, damp.
					5935	13				
				2.00 /2.00	5934	14				SILTY CLAYSTONE: Pale yellowish brown (10 YR 6/2), mottled with decreasing dark yellowish orange (10 YR 6/6). Trace v.f.g. to f.g. sand, iron filled fractures, increasing lignite partings, blocky to fissile, mod. weathered, very soft, damp.
					5933	15				
				2.00 /2.00	5932	16				
					5931	17				
				2.00 /2.00	5930	18				SILTY CLAYSTONE: Pale yellowish brown (10 YR 6/2) to med. gray (N 5/0). Massive, homogeneous, blocky, iron-stained, med. hard, med. consol., med. plastic, damp.
					5929	19				

Total Drilled Depth = 19.5'.

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44292

Rig Geologist: K. Tegtmeyer Company: EG&G

		FEET
Time: 1355 Interval: 0.0 - 4.1' Run: 4.1' Recovery: 1.5' % 37	Gravelly sandy clay, reddish brown to olive gray clay, fine to coarse gravel, fine to coarse sand, slightly moist above 1.3', wet below 1.3'. Below 1.5' contains shredded garbage, pungent odor.	0 1 1.5' 2
	CORE LOSS	3 4 4.1'
Time: 1405 Interval: 4.1'-6.2' Run: 2.1' Recovery 0.5' % 24	Assorted garbage, pieces of plastic, wood + paper mixed with dark grayish brown mud w/some sand. wet.	4.6' 5
	CORE LOSS	6 6.2'
Time: 1414 Interval: 6.2' - 9.8' Run: 3.6' Recovery: 0 % 9.	CENTER BIT NO CORE RECOVERY	7 8 9 9.8'

NOTES:

10

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92

Borehole Number: 44292

Rig Geologist: K. Tegtmeyer

Company: EG&G

		FEET
Time: 1426 Interval: 9.8'-14.0' Run: 4.2' Recovery: 0.5' % 12	wood, paper, and plastic fragments in dark brownish gray mud, wet, loose. CORE LOSS	10.3' 11 12 13 14
Time: 1432 Interval: 14.0'-19.0' Run: 5.0' Recovery: 1.0' %: 20	Paper, wood, foam, plastic in dark black organic rich mud matrix w/ some gravel at base (~15.0'). wet to most, loose CORE LOSS	15 16 17 18 19
Time: 1450 Interval: 19.0'-20.7' Run: 1.7' Recovery: 1.0' %: 59	Paper, plastic, foam, electrical wires, etc in dark black organic-rich mud. wet, loose, soupy, flowing.	20

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44292

Rig Geologist: K. Tegtmeyer Company: EG+G

20 FEET

CORE LOSS

29.7'

Time: 1513
Interval: 20.7' - 22.8'
Run: 2.1'
Recovery: 0
% 0

CENTER BIT / NO CORE RECOVERED

22.8'

Time: 1530
Interval: 22.8' - 23.8'
Run: 1.0'
Recovery: 0.7'
% 70

Plastic, paper, wood, wires in dark gray to black sandy mud, wet.

CORE LOSS

23.8'

Time: 0810
Interval: 23.8' - 24.9'
Run: 1.1'
Recovery: 0' % 0

CENTER BIT
NO CORE RECOVERED

24.9'

Time: 0855
Interval: 24.9' - 29.1'
Run: 4.2'
Recovery: 2.6
% 62

Organic & inorganic wastes in clayey mud, olive gray to brown, some fine to medium gravel, loose, wet.

26.8'

Black organic rich silty clay matrix containing gravel plus organic and inorganic wastes including wood, metal, paper, wet, loose

27.5'

CORE LOSS

29

Black organic rich silty clay matrix of mud containing inorganic waste (paper, plastic metal, etc) wet, loose.

29.5'

30

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/9/92 Borehole Number: 44292

Rig Geologist: K-Tegtmeyer Company: EG & G

30 FEET

Time: 0915
Interval: 29.1' - 30.5'
Run: 1.4'
Recovery: 1.1'
% 79

CORE LOSS

30.2

30.5 Box 1 ↑
Box 2 ↓

Time: 0948
Interval: 30.5' - 34.6'
Run: 4.1'
Recovery 0'
% 0

CENTER BIT - NO CORE RECOVERED

31

32

33

NO RECOVERY

34

34.6'

Time: 1006
Interval: 34.6' - 39.0'
Run: 4.4'
recovery: 0.7'
% 16

mixed clay (greenish gray), sandy gravel (pinkish gray) and black mud with organic waste wet, loose.

35

35.5'

36

CORE LOSS

37

38

39 5941.58

Time: 1020
Interval: 39.0' - 44.0'
Run: 5.0'
Recovery 1.4' %

Mixture of olive gray to yellowish orange claystone and dark gray mud containing trash & organic material. wet. Loose.

40

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/9/93

Borehole Number: 44292

Rig Geologist: K. Teetmeyer

Company: EG&G

40 FEET

40.4'

41

42

CORE LOSS

43

44

Time: 1032
Interval: 44.0' - 47.0'
Run: 3.0'
Recovery: 0'

NO CORE RECOVERY

45

46

47 — 5933.58'

Time: 1050
Interval: 47.0' - 52.0'
Run: 5.0'
Recovery: 0.6'
%:

Mixed olive gray to yellowish gray silty claystone and dark olive gray silty mud with some inorganic wastes (plastic, metal). Wet, loose

47.6'

48

CORE LOSS

49

50

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/9/92

Borehole Number: 4429z

Rig Geologist: K. Tegtmeyer

Company: E&G

50 FEET

CORE LOSS

51

52

Time: 1126
Interval: 52.0' - 55.5'
Run: 3.5'
Recovery: 0.1'
%:

Mixed clay, silt, sand and gravel, in claystone matrix, dark gray, extremely wet, fluid.

52.1'

53

CORE LOSS

54

55

55.5' 5925.08

Time: 1157
Interval: 55.5'-56.0'
Run: 0.5'
Recovery: 0.5'
100%

Drive Sample: Claystone, dark gray, stiff, wet. Contains large granite cobble lodged in drive sample. Cobble probably pushed down from higher in hole - blocked core barrel resulting in poor core recovery.

56

57

Total Depth = 56.0'

58

59

60

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: June 5, 1992 Borehole Number: Well 44397

Rig Geologist: K. Tegtmeyer Company: EG&G

FEET

Time 1038
Interval: 0.- 1.8'
Run 4.3'
Recovery 1.8
% 42

Reddish brown clayey gravel w/ some trash in lower 1' > dry, loose

1.8'

CORE LOSS 1.8'- 4.3'

4.3'

Time 1040
Interval: 4.3'- 9.3'
Run: 5.01
Recovery; 1.4'
8%

Gravelly clay, reddish brown grading downwards into olive gray clay and dark gray, organic rich clayey silt + trash, dry

5.7'

CORE LOSS

9.3'

Gravelly clay, dark olive gray to black, organic rich, slightly moist loose

9.8'

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: June 5, 1992

Borehole Number: 44392

Geologist: K. Tegtmeyer

Company: EG-G

		FEET
Time: 1049 Interval: 9.3' - 14.3' Run: 5.0' Recovery: 0.5' %: 10	CORE LOSS	10 11 12 13 14
Time: 1054 Interval: 14.3' - 19.3' Run 5.0' Recovery: 0.2' %: 4	Gravelly sandy clay, dark olive to black dry, loose	14.3' 15 16 17 18 19
Time: 1100 Interval: 19.3' - 14.3'		19.3'

NOTES:

20

PRELIMINARY WELL-SITE FIELD LOG

Date: June 5, 1992

Borehole Number: 44392

Rig Geologist: K. Tostmeyer

Company: EG&G

FEET

Run: 5.0'
Recovery: 0'
% 0

CORE LOSS
NO RECOVERY

21
22
23
24
24.3

Time:
Interval: 24.3 - 29.3
Run: 5.0'
Recovery: 0'
% 0

CORE LOSS
NO RECOVERY

25
26
27
28
29
29.3

30

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: June 5, 1992

Borehole Number: 44392

Rig Geologist: K. Tegtmeyer

Company: EG&G

30 FEET

Time: 1315
Interval: 29.3' - 34.3'
Run: 5.0'
Recovery: 3.8'
%: 76

Clay with silt mixed with trace gravel and organic material, dark gray to dark brown, wet, slightly stiff to stiff. Core twisted in barrel, metal fragments at 29.3'

31

32

32.1' -5953.62

Silty claystone, yellowish brown to olive gray, wet, stiff massive.

33

33.1'

CORE LOSS

34

34.3'

TOTAL DEPTH = 34.3'

35

36

37

38

39

40

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44#92

Rig Geologist: K. Teetmeyer Company: EG+G

		FEET
Time: 1057 Interval: 0.0' - 3.7' Run: 3.7' Recovery: 1.0' %	Gravelly sandy clay, reddish brown, medium to coarse gravel, at 1.0' olive gray clay, slightly moist, loose.	0 1
	CORE LOSS	2 3
Time: 1104 Interval: 3.7' - 5.0' Run: 1.3' Recovery: 0.0' % 0	CENTER BIT NO CORE RECOVERY	3.7' 4
Time: 1115 Interval: 5.0' - 8.8' Run: 3.8' Recovery: 3.0' %	Gravelly sandy clay medium to fine gravel and medium to coarse sand in reddish brown clay, slightly moist to dry, loose.	5 6
	Gravelly silty clay in dark black organic-rich matrix, tarry smell + look, dry, slightly stiff.	7 7.5 8
	CORE LOSS	
Time: 1252 Interval: 8.8' - 11.5' Run: 2.7' Recovery: 1.7'	Gravelly silty clay with mixed refuse, (wood, paper, plastic) dark gray to black and grayish brown, medium gravel with trace med. to coarse sand. Slightly moist to dry loose.	8.8 9 10

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44492

Rig Geologist: K. Tegtmeyer Company: EG&G

		FEET
		10.5'
	CORE LOSS	11
		11.5'
Time: 1252 Interval: 11.5 - 12.5 Run: 1.0' Recovery: 0.0' %0	NO RECOVERY / CENTER BIT	12
Time: 1310 Interval: 12.5 - 17.5' Run: 5.0' Recovery: 2.5' %: 50	Black, organic-rich mud mixed with wood fragments	12.5'
		12.8'
		13
	Gravelly clayey sand, light reddish brown to yellowish brown, fine to coarse gravel and medium to coarse sand, gravel coarsens downwards, top 0.5' contains a few fragments of wood and other organic material	13.3'
		14
		15
	CORE LOSS	16
		17
		17.5'
Time: 1335 Interval: 17.5' - 22.5' Run: 5.0' Recovery: 5.0' % 100	Gravelly clayey sand, fine to medium gravel and clay in medium to coarse sand, dark reddish brown, wet, loose	18
		18.8'
	Silty clay, light olive gray to yellowish orange, massive, wet to moist, moderately stiff.	19
		20

6/8/92 KT ~~12.8'~~ = Base of Fill 13.3'

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92

Borehole Number: 44492

Rig Geologist: K. Tegtmeyer

Company: EG & G

		FEET
		21
	Clayey sand with some gravel, fine gravel and fine to medium sand in yellowish brown clay matrix, wet, loose	21.8 22
Time: 1441 Interval: 22.5'-27.0' Run: 2.5' Recovery: 2.6' %: 100	Clayey sand with some gravel, fine gravel and fine to medium sand in yellowish brown clay matrix. Gravel content highest in top 0.5' of interval (possible slough?) wet, loose.	22.5 23 24
	Interbedded silty claystone and clayey siltstone, light olive gray to yellowish orange, slightly moist to wet, slightly stiff to moderately stiff.	25 26
	Total Depth = 27.0'	27 28 29

30

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44592

Rig Geologist: K. Tegtmeyer Company: EG&G

FEET

Time: 0827
Interval: 0.0' - 4.1'
Run: 4.1'
Recovery: 3.0'
Ja:

Gravelly sandy clay, fine to coarse gravel and fine to coarse sand in dark brown to dark reddish brown silty clay matrix. Slightly moist, loose

2.3'

Clay with some gravel, olive gray clay with medium gravel and trace sand, slightly moist, slightly stiff

CORE LOSS

4.1'

Time: 0844
Interval: 4.1'-9.0'
Run: 4.9'
Recovery: 3.5'

Gravelly clay to clayey gravel, a gravel is fine to coarse, of variable abundance, in a dark olive gray clay. Below 6' clay is organic rich, dark gray to black, slightly moist, loose to slightly stiff depending on clay content.

7.6'

CORE LOSS

Time: 0858
Interval: 9.0'-13.8'
Run: 4.8'
Recovery: 0.0' 0%

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44592

Rig Geologist: K. Tegmeyer Company: EG+G

FEET

NO CORE RECOVERED

Time: 0920
Interval: 13.8'-15.5'
Run: 2.7'
Recovery: 0'
% 0

NO CORE RECOVERED

Time: 0930
Interval: 15.5'-16.8'
Run: 1.3'
Recovery: 0.0'

CENTER BIT / NO RECOVERY

Time: 0952
Interval: 16.8'-23.2'
Run: 6.4'
Recovery: 2.9'
%

Inorganic and organic wastes in clayey rich mud, dark yellowish brown mud contains fragments of wood, paper, plastic, electrical wiring. Decreasing trash content below 19'. Wet. Loose

NOTES:

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/8/92 Borehole Number: 44592

Rig Geologist: K. Tegtmeyer Company: EG+G

FEET

CORE LOSS

Time: 1006
Interval: 23.2'-28.9'
Run: 5.7'
Recovery: 5.2'
% > 100

Clay with some gravel and sand, fine to medium gravel mixed into disturbed clay. Clay is light olive gray to yellowish orange. Moist, moderately stiff, Fe-oxide stains on clay.

23.2'

5959.86 Top of Bedrock

Silty claystone to Claystone with trace silt. Light olive gray to light gray wet, moderately stiff. Silt content variable throughout interval.

28.9'

Total Depth = 28.9'

NOTES:

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1B (REV. 2)

PRELIMINARY WELL-SITE FIELD LOG

PAGE 1 OF 3

Date: 6/15/92 Borehole Number: 44692

Rig Geologist: K. Tegtmeyer Company: EG+G

		FEET
Time: 0740 Interval: 0.0'-4.1' Run: 4.1' Recovery: 3.2' To: 78	Gravelly sandy clay, fine to coarse gravel and medium to coarse sand in reddish brown clay, asphalt chunks at 1.5'. Moist. Loose	0 1
	Clay with some gravel and sand, yellowish gray to olive gray, fine to medium gravel + coarse sand, moist slightly stiff.	2 3
	CORE LOSS	3.2' 4
Time: 0748 Interval: 4.1'-9.3' Run: 5.2' Recovery: 4.2' To: 81	Gravelly clay with some sand to clayey gravel, gravel is medium to coarse, sand fine to coarse, in dark reddish brown to dark olive brown clay, slightly moist, slightly stiff to loose, between 6.8'-7.2' clayey matrix is organic rich, dark gray to black.	4.1' 5 6 7 8
	CORE LOSS	8.3' 9
		9.3' 10

NOTES:

(4811-930-0135-930)(1-mm GT.1B)(03/01/92)

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1B (REV. 2)

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/15/92 Borehole Number: 44692

Rig Geologist: K. Tegtmeyer Company: EG+G

10 FEET

Time: 0757
Interval: 9.3' - 14.3'
Run: 5.0'
Recovery: 3.3'
% 66

Clay with some gravel + trash, dark gray to dark brown clay matrix containing some med-m to coarse gravel and assorted inorganic wastes such as plastic + paper products, wet, loose.

11
12
12.6'
13
14
14.3'

CORE LOSS

Time: 0808
Interval: 14.3' - 19.3'
Run: 5.0'
Recovery: 0.0'
%: 0

15
16
17
18
19
19.3'

CORE LOSS
NO RECOVERY

Time: 0810 Run: 1.0'
Interval: 19.3' - 20.3' Recovery: 0' %0

NOTES:

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1B (REV. 2)

PRELIMINARY WELL-SITE FIELD LOG

Date: 6/15/92 Borehole Number: 4492

Rig Geologist: K. Tegtmeyer Company: EG+G

FEET

NO CORE RECOVERY

20.3'

TOTAL DEPTH = 20.3'

21 22 23 24 25 26 27 28 29 30

NOTES:

BOREHOLE LOG

BOREHOLE NO.: TH047192 PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 1

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 24.0 DEPTH TO WATER TABLE (FT): NE DATE: 9/25/92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	DEPTH (FT) TO	SOIL SYMBOL	SOIL DESCRIPTION
0	5	FILL	GRAVEL, VERY ANGULAR, CLAYEY, MEDIUM STIFF, MEDIUM TO HIGH
			PLASTICITY, MOIST, BROWN
5	15	FILL	CLAY, STIFF, HIGH PLASTICITY, SANDY, MEDIUM TO COARSE, ANGULAR, GRAVELLY
			FINE, ANGULAR, MOIST, BROWN TO GREY
15	20	FILL	SAND, ANGULAR, CLAYEY, LOW TO MEDIUM PLASTICITY, GRAVELLY, ANGULAR
			TO SUBROUND, FINE TO COARSE, MOIST, BROWN
20	24	FILL	CLAY, VERY STIFF, MEDIUM TO HIGH PLASTICITY, SANDY, FINE TO MEDIUM
			ANGULAR, MOIST, BROWN
24	31	CS ~~FILL~~	CLAYSTONE, VERY HARD, DRY, DARK BLUE/GREY, SOME IRON STAINING
			TD @ 31'

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE		COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM	HARDNESS: HARD/STIFF	HARDNESS: VERY HARD	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
5.0	10/7	CAL	FILL																												0
6.5	—	ST	FILL		X			10		X	X		90					BROWN GREY													.75
8.5	8/12	CAL	FILL																												0
10.8	9/11	CAL	FILL		X			20-30			X	X	70									X									.33
12.4	—	ST	FILL		X			10-20		X		X	70-80					BROWN GREY												FESTRAW GREY	1.5
15.6	22/13	CAL	FILL		X			40-50		X	X	X	30					BROWN													.33
17.5-17.5	—	ST	FILL	SAMPLE DISCARDED DUE TO COARSE GRAVEL (3"+) IN TUBE (50-60% of sample																											
20.2	13/20	CAL	FILL		X			20	X	X			80					BROWN													.33
23.7	26/27	CAL	CS ~~FILL~~		X								100					DK GREY				X									.33
31.0	12/20	CAL	CS ~~FILL~~																												0
31.2	50/5"	CAL	CS ~~FILL~~	X														DK BLUE					X							FESTRAW	.33

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4033-210-542) (W-C Log Forms) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: TH047292 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 2

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): NE DEPTH TO WATER TABLE (FT): NE DATE: 9/28/92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	DEPTH (FT) TO	SOIL SYMBOL	SOIL DESCRIPTION
0	5	FILL	GRAVEL, VERY ANGULAR, CLAYEY, HIGH PLASTICITY, MOIST, BROWN
5	10	FILL	CLAY, HIGH PLASTICITY, SLIGHTLY SANDY, FINE TO MEDIUM, ANGULAR TO SUBROUND,
			MOIST BROWN
10	20	FILL	CLAY, MEDIUM PLASTICITY, GRAVELLY, SUBROUND, MEDIUM TO FINE W/DEPTH,
			SANDY, FINE TO MEDIUM WITH DEPTH, ANGULAR, ~~GREY~~, MOIST, GREY, BROWN
			OLIVE, ORANGE/RED
20	30	FILL	CLAY, VERY STIFF, MEDIUM TO HIGH PLASTICITY, SANDY, FINE TO MEDIUM,
			ANGULAR, GRAVELLY, FINE TO MEDIUM, SUBANGULAR, MOIST, BROWN, GREY
30	34.2	FILL	SILT, VERY STIFF, SANDY, VERY FINE, DRY TO SLIGHTLY MOIST,
			DARK GREY, SOME IRON STAINING

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE		COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM/MED STIFF	HARDNESS: HARD/STIFF	HARDNESS: VERY HARD/VERY STIFF	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
0-5	—	BAG	FILL		X			80					20					BROWN													1
5	50/4"	CAL	FILL																												0
7.9	4/5	CAL	FILL																												0
8.2	—	ST	FILL																												0
5-11	—	BKT	FILL		X			10	X	X			90					BROWN			X	X									—
11.7	13/14	CAL	FILL		X	X		40		10	10	20	60					GREY BROWN OLIVE					X								.33
17.2	—	ST	FILL		X	X		30	15	10	5		70					GREY TO REDORANGE													1.0
19.9	12/17	CAL	FILL		X			30	15	15			70					RED ORANGE					X								.33
23.9	17/17	CAL	FILL		X			25	15	10			75					BROWN					X								0
15-25	—	BKT	FILL		X			30	30				70					BROWN				X									—
28.7	18/22	CAL	FILL		X			50	10	5			50					BROWN OLIVE GREY					X							Fe	0
30.7	19/19	CAL	FILL	X	X			25	X				75					DK GREY					X							FeStain	.33
33.7	27/23	CAL	FILL	X	X											X		DK GREY					X							FeStain	.33

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Forms) (9/4/92 10:59 AM)

REWORKED/WEATHERED

BOREHOLE LOG

BOREHOLE NO.: THO47292 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 2 OF 2

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 45.5 DEPTH TO WATER TABLE (FT): NE DATE: 9/29/92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	DEPTH (FT) TO	SOIL SYMBOL	SOIL DESCRIPTION
34.2	45.5	FILL	FILL, SILT, LOW TO MEDIUM PLASTICITY, SLIGHTLY MOIST TO MOIST,
			BROWN AND GREY, HARD TO DRILL, SOME IRON STAINING
45.5	51.2	MS	SILTSTONE, VERY HARD, SLIGHTLY MOIST, BROWN, GREY, OLIVE,
			IRON CONCRETIONS AT 50'-51', TRACE CARBONACEOUS STAINING
			TD @ 51.2'

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE	COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM	HARDNESS: HARD	HARDNESS: VERY HARD	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
39.7	9/14	CAL	FILL		X								100		X		DK GREY TAN OLIVE													.33
45.7	33/50	CAL	MS		X								100		X		BROWN GREY					X							Fe STAIN	.33
50.9	50/6"	CAL	MS		X								100		X		DK GREY					X								.33

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-543) (W-C Log Forms) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: THØ47392 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 2

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 29.Ø DEPTH TO WATER TABLE (FT): NE DATE: 9/25/92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	DEPTH (FT) TO	SOIL SYMBOL	SOIL DESCRIPTION
Ø	3	FILL	GRAVEL, VERY ANGULAR, SANDY, ANGULAR, CLAYEY, LOW PLASTICITY,
			MOIST, BROWN
3	12	FILL	CLAY, STIFF, MEDIUM TO HIGH PLASTICITY, SANDY, FINE TO MEDIUM, ANGULAR,
			MOIST, GREY, BROWN TRACE FINE GRAVEL
12	18	FILL	CLAY, STIFF, MEDIUM TO HIGH PLASTICITY, SANDY/GRAVELLY, FINE TO COARSE
			SAND, ANGULAR, SUBANGULAR, FINE GRAVEL, MOIST, BROWN, GREY
			CLAY SEEMS TO BE WEATHERED/REWORKED BEDROCK
18	29	FILL	CLAY, STIFF, HIGH PLASTICITY, SANDY, FINE TO MEDIUM, ANGULAR
			MOIST, BROWN, GRAVELLY LAYERS INTERMITTENT 27'-29'
29	36	CS	CLAYSTONE, VERY HARD, SLIGHTLY SANDY, FINE, DRY TO SLIGHTLY
			MOIST, DARK BLUE TO GREY, TAN

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE	BEDROCK	COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM	HARDNESS: HARD	HARDNESS: VERY HARD	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
2.Ø	3Ø/4"	CAL	FILL																												Ø
3.Ø	3Ø/2"	CAL	FILL																												Ø
5.Ø	3Ø/4"	CAL	FILL																												Ø
5.Ø	—	ST	FILL		X													GREY													1.6
7.7	4/6	CAL	FILL		X			1Ø	X	X								GREY													.33
12.7	3/8	CAL	FILL	X				3Ø-4Ø	X	X	X							GREY													.33
17.7	1Ø/17	CAL	FILL		X			3Ø-4Ø	X	X	X							PINK GREY												Fe STAIN	.33
18	—	ST	FILL		X			15-2Ø	X				8Ø-9Ø					PINK GREY												Fe LVS STAIN	2.Ø
22.3	11/11	CAL	FILL			X		2Ø	X				8Ø					GREY/BROWN													.33
22.5	—	ST	FILL		X			2Ø	X				8Ø					BLUE GREY												GREEN	1.Ø
29.Ø	7/4"	CAL	FILL															GREY/BROWN												Fe STAIN	Ø
29.Ø	5Ø/6"	CAL	FILL/CS																												Ø
3Ø.Ø	5Ø/4"	CAL	CS	X														DK BLUE BROWN												TAN	

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-5421) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: THO47392 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 2 OF 2

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 29.0 DEPTH TO WATER TABLE (FT): N/E DATE: 9/25/92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	DEPTH (FT) TO	SOIL SYMBOL	SOIL DESCRIPTION
			LVS

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE	COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM	HARDNESS: HARD	HARDNESS: VERY HARD	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
35.0	30/50 (6"/1")	CAL	CS	X												X	DK BLUE GREY/BROWN					X								.33

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-547) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: TH047492 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 1

RIG GEOLOGIST: Mike May/Luke Van Saten SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 12.5 DEPTH TO WATER TABLE (FT): NE DATE: 10-21-92

CLASSIFICATION OF LAYERS

DEPTH (FT) FROM	TO MRM	SOIL SYMBOL	SOIL DESCRIPTION
0	4	Fill	Gravel, fine to coarse, angular to subround, sandy, fine to medium grained, angular to subangular, slightly moist, dark brown, medium dense
4	12.5	Fill	Clay, low to medium plasticity, sandy, fine, angular to subangular, moist, brown, orangish brown, black, very stiff, iron staining
12.5	19.3	SS	Sandstone, Bedrock, fine grained, subangular to subround, clayey, moist, gray, brown, orangish brown, very hard.

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE: DRY	MOISTURE: MOIST	MOISTURE: VERY MOIST	MOISTURE: WET	% SAND	GRADING: FINE	GRADING: MEDIUM	GRADING: COARSE	GRADING: GRAVEL	% FINES (-#200)	BEDROCK: SANDSTONE	BEDROCK: SILTSTONE	BEDROCK: CLAYSTONE	COLOR	HARDNESS: VERY SOFT	HARDNESS: SOFT	HARDNESS: FIRM	HARDNESS: HARD	HARDNESS: VERY HARD	CONDITION: CEMENTED	CONDITION: MASSIVE	CONDITION: STRATIFIED	CONDITION: POROUS	CONDITION: FRACTURED	CONDITION: CALCAREOUS	OTHERS	RECOVERY (FT)
1	4/7	Cal	Fill	X				30	X	X	X	60	10				Brown													.3
4	8/12	Cal	Fill		X			50	X	X		40	10				Brown													.3
0-5	NA	Bucket	Fill		X				X	X							Brown													NA
8	15/20	Cal	Fill		X			10	X				90				Brown Black													.3
5-10	NA	Bucket	Fill		X			10	X	X			90				Brown													NA
11-12.5	NA	ST	Fill		X			10					90				Orangish Brown, Brown												Fe Oxide	.7
12.5-13	27/50 4"	Cal	SS		X			80					20	X			Gray Brown					X								.3
10-15	NA	Bucket	Fill/SS		X	Mix of material above (clay) and below (sandstone)																								NA
18	27/50 3"	Cal	SS		X			80					20	X			Brown, Orangish Brown					X								.3

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

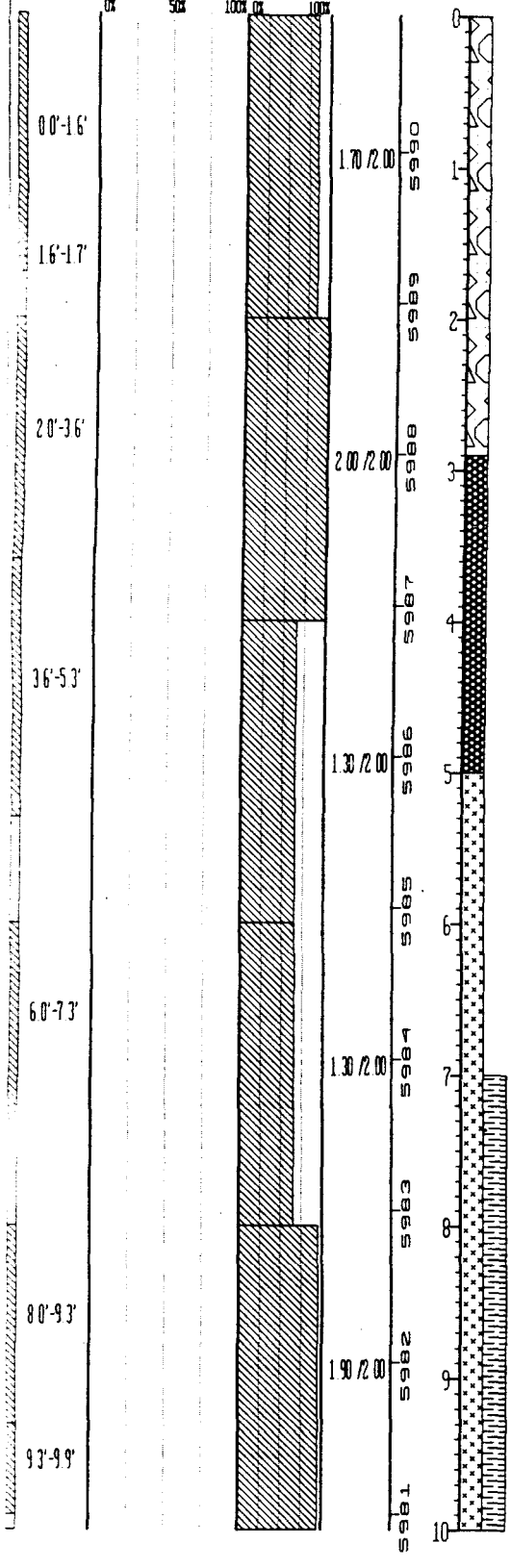
2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT) 5990.90	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752675	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70093
EAST	2082657	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 01/12/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-2.9', BENTONITE SEAL 2.9'-5.0', SAND 5.0'-22.1', NATURAL BACKFILL 22.1'-24.4', CENTRALIZERS PLACED 3.0' AND 23.9', 2.0' SUMP 22.0'-24.0', DEPTH TO BEDROCK 22.2'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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

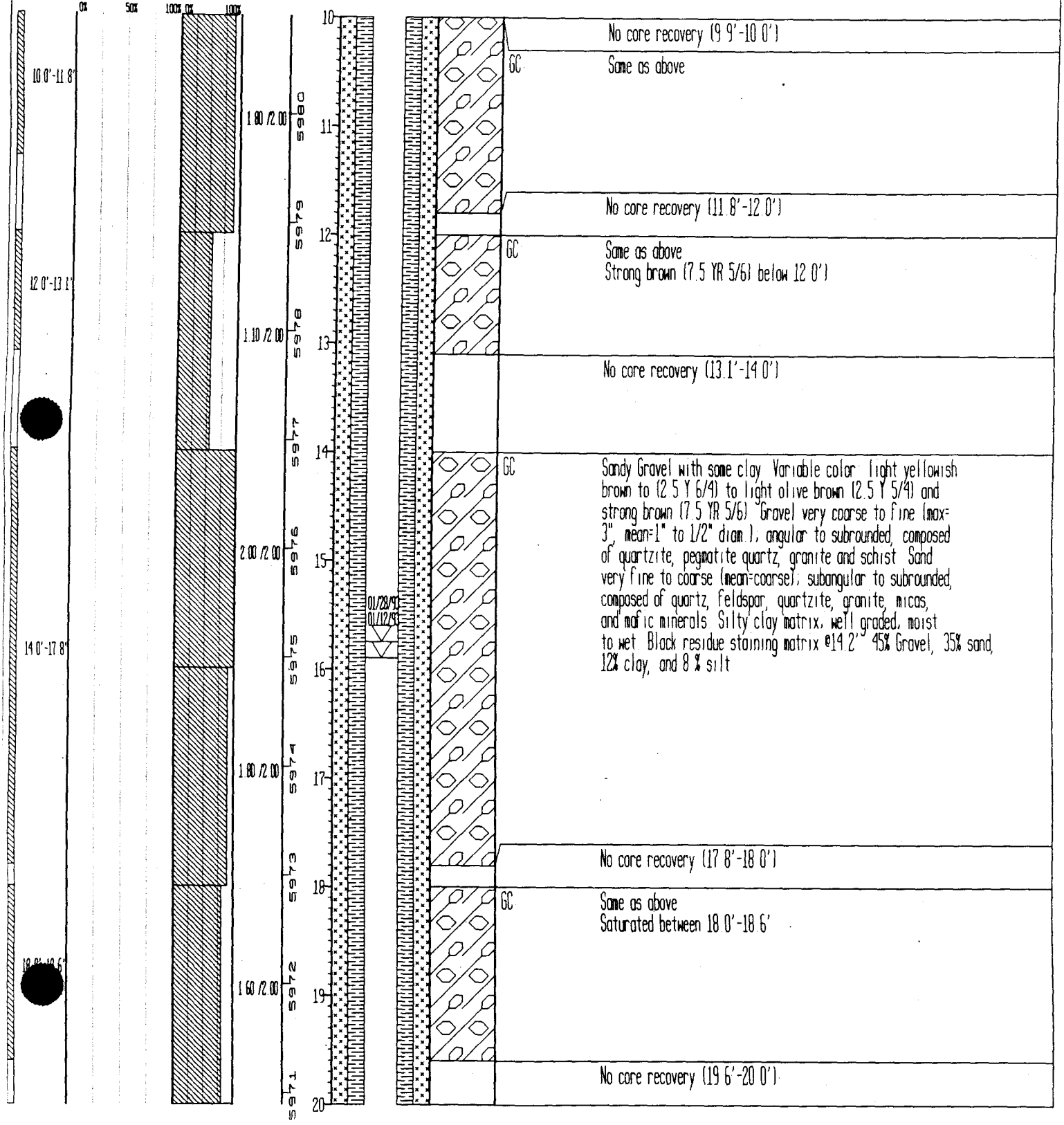


Unified Soils Classification or Rock Type	Description
GM	Sandy Gravel with some silt. Dark Brown (7.5 YR 3/2). Coarse to fine gravel (max=1 1/2", mean=1" diam) and coarse to very fine sand (mean=medium) in clayey silt matrix. Well graded. Subangular to rounded gravel and sand composed mainly of quartzite and quartz with some granite, feldspar, and mica, not bedded, moist. 62% Gravel, 20% sand, 12% silt, and 6% clay.
SM	See description below (Same as 2.0'-3.6')
	No core recovery (1.7'-2.0')
SM	Gravelly Sand with some silt and clay. Reddish brown (2.5 YR 4/4). Fine to medium gravel (up to 2 1/2", mean=1/2" diam). Very fine to coarse sand (mean=medium) in a silty clay matrix. Well graded, sand and gravel, subangular to sub-rounded, composed of quartz, quartzite, and granite. Low plasticity. Strongly weathered gravel often ground to powder. Not bedded, slightly moist. 37% Gravel, 45% sand, 13% silt, and 5% clay.
GW	Sandy Gravel. Light olive brown (2.5 Y 5/3). Gravel is fine to coarse (max=2", mean=3/4" diam) angular to subrounded. Sand is very fine to coarse (mean=coarse). Subangular to subrounded. Silty matrix, well graded. Gravel and sand composed of rock frags of weathered schist, granite and quartzite. Not bedded, slightly moist. 45% Gravel, 44 % sand, 8 % silt, and 3 % clay.
	No core recovery (5.3'-6.0')
GW	Same as above.
	No core recovery (7.3'-8.0')
SC	Clayey Sand with some silt and gravel. Light yellowish brown (2.5 Y 6/4). Coarse to fine gravel (max=2", mean=1/2" diam), very fine to coarse sand (mean=fine) in silty clay matrix, well graded. Gravel and sand angular to subangular composed of quartzite, quartz, granite, and feldspar. Moist. 21% Gravel, 38% sand, 25% clay, and 16% silt.
GC	Sandy Gravel with some clay. Light yellowish brown (2.5 Y 6/4) to strong brown (7.5 YR 5/6). Gravel coarse to fine (max=2", mean=1 1/4" diam), angular to rounded, composed of granite, quartzite, and some schist. Sand very fine to coarse (mean=fine), subangular to subrounded, composed of quartz rock frags, feldspar, micas, and others. Silty clay matrix, well graded, not bedded, moist. 43% Gravel, 38% sand, 12% clay, and 7% silt.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT) 5990.90	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752675	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70093
EAST	2082657	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 01/12/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-2.9', BENTONITE SEAL 2.9'-5.0', SAND 5.0'-22.1', NATURAL BACKFILL 22.1'-24.4', CENTRALIZERS PLACED 3.0' AND 23.9', 2.0' SUMP 22.0'-24.0', DEPTH TO BEDROCK 22.2' *

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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



No core recovery (9.9'-10.0')

GC Same as above

No core recovery (11.8'-12.0')

GC Same as above
Strong brown (7.5 YR 5/6) below 12.0')

No core recovery (13.1'-14.0')

GC Sandy Gravel with some clay. Variable color: light yellowish brown to (2.5 Y 6/4) to light olive brown (2.5 Y 5/4) and strong brown (7.5 YR 5/6). Gravel very coarse to fine (max= 3", mean=1" to 1/2" diam.), angular to subrounded, composed of quartzite, pegmatite quartz, granite and schist. Sand very fine to coarse (mean=coarse), subangular to subrounded, composed of quartz, feldspar, quartzite, granite, micas, and mafic minerals. Silty clay matrix, well graded, moist to wet. Black residue staining matrix @14.2'. 45% Gravel, 35% sand, 12% clay, and 8 % silt

No core recovery (17.8'-18.0')

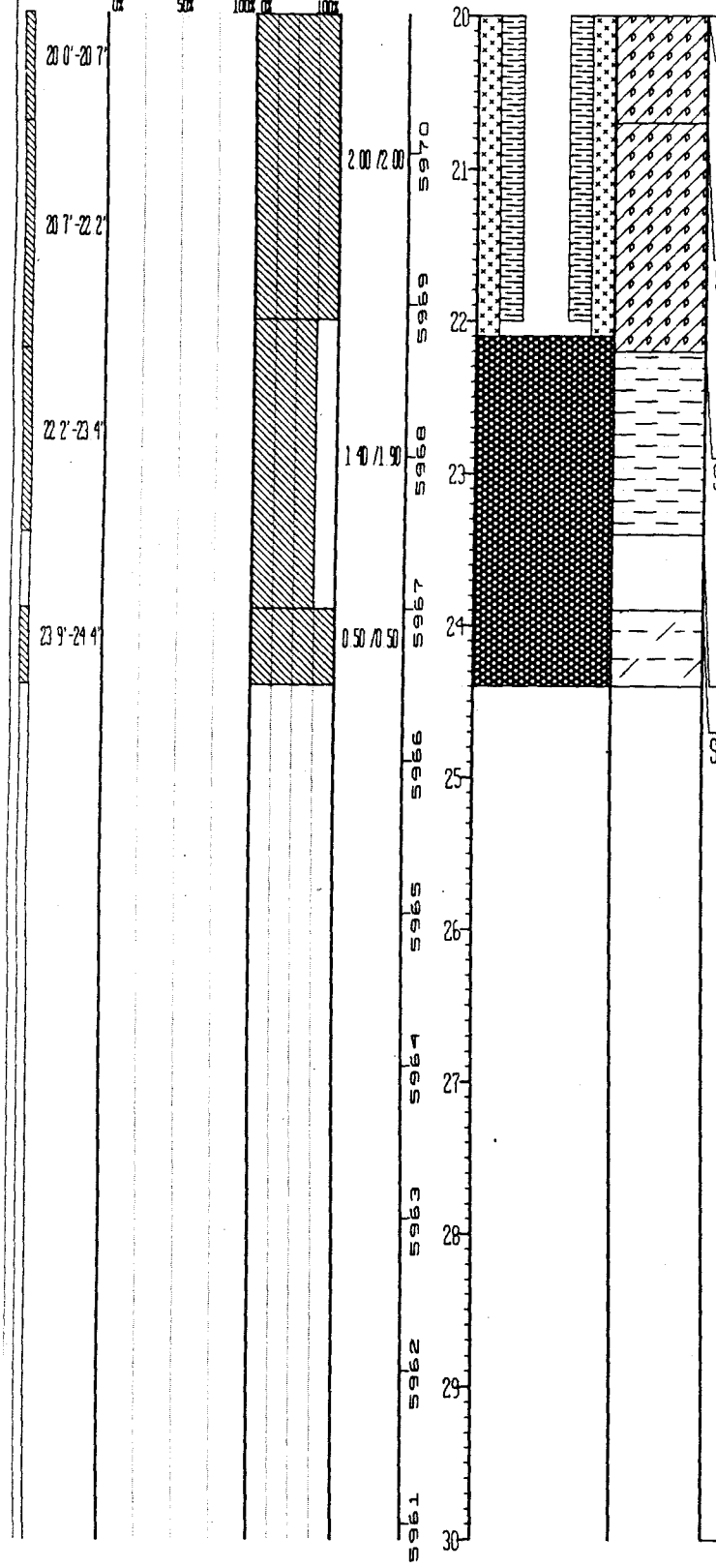
GC Same as above
Saturated between 18.0'-18.6'

No core recovery (19.6'-20.0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT)	5990.90	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752675	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70093
EAST	2082657	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	01/12/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-2.9', BENTONITE SEAL 2.9'-5.0', SAND 5.0'-22.1', NATURAL BACKFILL 22.1'-24.4', CENTRALIZERS PLACED 3.0' AND 23.9', 2.0' SUMP 22.0'-24.0', DEPTH TO BEDROCK 22.2'

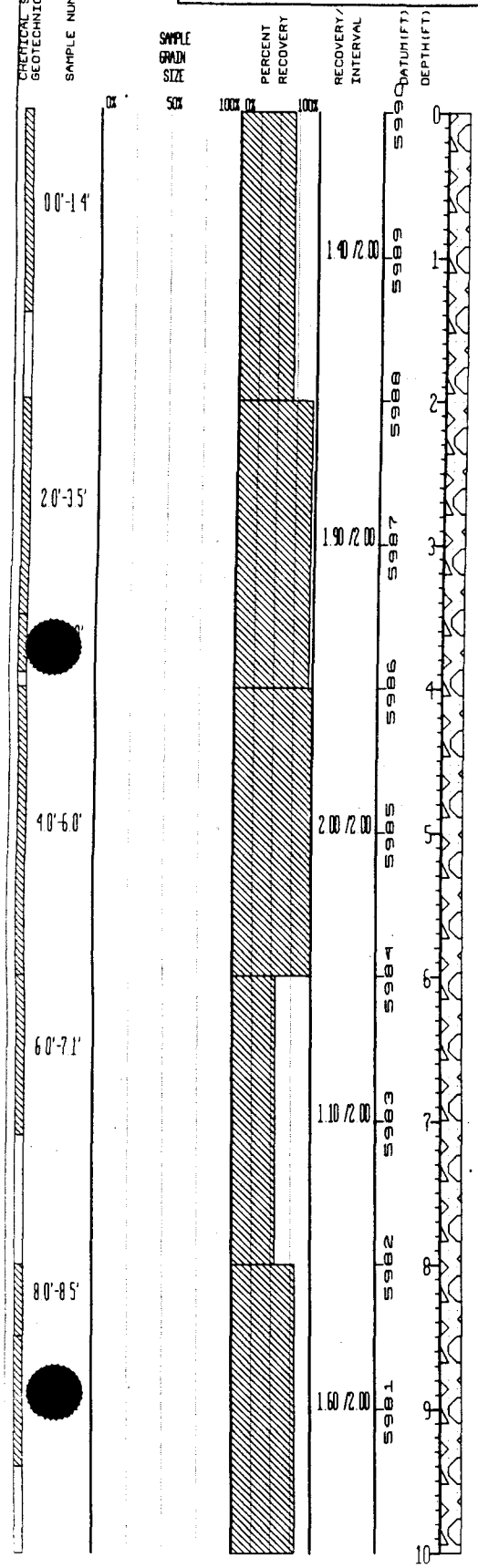
CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE (0% 50% 100%)
PERCENT RECOVERY (0% 100%)
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (19.6'-20.0')
SC	Gravelly Sand with some clay. Strong brown (7.5 YR 5/6) Medium to fine gravel (mean=1" diam) and very fine to coarse sand (mean=coarse) in silty clay matrix. Moderately graded, subangular to subrounded gravel and sand composed of the same composition as above (14.0'-19.6'). Not bedded, moist. 29 % Gravel, 53% sand, 12% clay, and 6% silt
SC	Gravelly Clayey Sand. Strong brown (7.5 YR 5/6) with black patchy stained areas. Well-graded mixture of alluvial sediments and reworked bedrock material. Gravel coarse to fine (mean=1" diam); sand very fine to coarse. Gravel is strongly weathered bedrock frags. Not bedded, moist. 30 % Gravel, 42% sand, 20% clay, and 8% silt
SANDY CLAYSTONE	Sandy Claystone with some silt. Light gray (2.5 Y 7/2) to light olive brown (2.5 Y 5/6). Very fine grained sand. Well sorted. Porosity = 25%, no cement, friable. Sand is mainly quartz. Bedding appears reworked by weathering. Fe-oxide and Mn-oxide stains follow subhorizontal wavy surfaces (thin bedding). Moist. 30 % Sand, 50% clay, and 20% silt. Top of Bedrock 22.2'
	No core recovery (23.4'-23.9')
SILTY CLAYSTONE	Silty Claystone. Light olive brown (2.5 Y 5/4) with black Mn-oxide staining on planar surfaces. Strongly weathered. Porosity=15%. No cement, slightly friable, moist. 35% Silt, and 65% clay. Total Depth 24.4'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 39.4	GROUND ELEVATION (FT) 5990.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752688	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70193
EAST	2082674	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 01/15/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-19.5', BENTONITE SEAL 19.5'-21.5', SAND 21.5'-37.6', NATURAL BACK-FILL 37.6'-39.4'. CENTRALIZERS PLACED 18.5' AND 38.55'. HOLE DIAMETER 10.25" 0.0'-37.5' AND 3.0" 37.5'-39.4'. 2.0' SUMP 37.3'-39.3' DEPTH TO BEDROCK 19.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GM	Sandy Gravel with some silt. Dark brown (7.5 YR 3/2). Coarse to fine gravel (max=2 1/2", mean=1 1/2" diam), very fine to coarse sand (mean=medium) in clayey silt matrix. Well graded subangular to subrounded gravel and sand composed mainly of quartzite and quartz with some granite, feldspar, metamorphic frags. Not bedded, slightly moist. 65% Gravel, 20% sand, 10% silt, and 5% clay
	No core recovery (1.4'-2.0')
SM	Gravelly sand with some silt and clay. Reddish brown (2.5 YR 4/4). Fine to medium gravel (max=2", mean=3/4" diam), very fine to coarse sand (mean=medium), in a silty clay matrix. Well graded. Angular to subangular gravel and sand comprised of granite, quartzite, schist, and quartz. Gravel strongly weathered and often ground to powder. Not bedded, moist. 39% Gravel, 43% sand, 13% silt, and 5% clay
GW	Sandy Gravel. Light olive brown (2.5 Y 5/3). Fine to coarse gravel (max=2", mean=1 1/4" diam), angular to subrounded. Very fine to coarse sand (mean=coarse), subangular to subrounded. Gravel and sand mainly composed of rock frags, weathered granite, schist, and quartzite. Not bedded, slightly moist. 45% Gravel, 46% sand, 7% silt, 2% clay
	No core recovery (3.9'-4.0')
GW	Same as above
SM	Gravelly sand with some silt. Light olive brown (2.5 Y 5/6 to 2.5 Y 6/4). Coarse to fine gravel (max=2 1/2", mean=1" diam) and very fine to coarse (mean=coarse) sand, in clayey silt matrix. Well graded. Angular to subrounded gravel and sand composed of quartzite, quartz, granite, schist, with some sand of feldspar and mafic minerals. Not bedded, moist. 30% Gravel, 45% sand, 16% silt, 9% clay
	No core recovery (7.1'-8.0')
SM	Same as above
SC	Clayey Sand with Some silt and gravel. Light yellowish brown (2.5 Y 6/4). Coarse to fine gravel (max=2", mean=1/2" diam) and very fine to coarse sand (mean=fine) in silty clay matrix. Well graded. Angular to subangular sand and gravel composed of quartzite, quartz, granite, and feldspar. Not bedded, moist. 21% Gravel, 39% sand, 28% clay, and 12% silt
	No core recovery (9.4'-10.0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 39.4	GROUND ELEVATION (FT) 5990.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752688	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70193
EAST	2082674	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 01/15/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-19.5', BENTONITE SEAL 19.5'-21.5', SAND 21.5'-37.6', NATURAL BACK-FILL 37.6'-39.4', CENTRALIZERS PLACED 18.5' AND 38.55', HOLE DIAMETER 10.25" 0.0'-37.5' AND 3.0" 37.5'-39.4', 2.0' SUMP 37.3'-39.3' DEPTH TO BEDROCK 19.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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				No core recovery (9.4'-10.0')
10.0'-11.3'				1.30 /2.00	5989	11			GC	Sandy Gravel with some clay. Light yellowish brown (2.5 Y 6/4). Coarse to fine gravel (max=2 1/2", mean=1 1/4" diam) and very fine to coarse sand (mean=fine) in silty clay matrix. Well graded. Angular to rounded gravel, some broken by drilling, subangular to subrounded sand. Gravel composed of quartzite, granite, and some schist. Sand composed of quartz, rock fragments, feldspars and micas. Not bedded, moist. 44% Gravel, 39% sand, 12% clay, and 5% silt
					5988	12				No core recovery (11.3'-12.0')
12.0'-13.9'				1.90 /2.00	5987	13			GC	Sandy Gravel with some clay. Strong brown (7.5 YR 5/6). Very coarse to fine gravel (max=3", mean=1" diam) and very fine to coarse sand (mean=coarse) in silty clay matrix. Well graded angular to subrounded gravel and subangular to subrounded sand. Gravel composed of quartzite, quartz, granite, schist, sand composed of quartz, feldspar, quartzite, granite, micas and mafic minerals. Moist to wet. 45% Gravel, 32% sand, 15% clay, and 8% silt
					5986	14	01/28/93 ▽			No core recovery (13.9'-14.0')
14.0'-15.1'				1.60 /2.00	5985	15			GC	Same as above
15.1'-15.6'									SM	Silty Gravelly Sand. Light yellowish brown (2.5 Y 6/4) to light brown (7.5 YR 6/4). Coarse to fine gravel (max=2 1/2", mean=3/4" diam) and very fine to coarse sand (mean=coarse) in clayey silt matrix. Well graded. Angular to subrounded gravel and sand composed of quartzite, quartz, granite, and schist with some sand of feldspar, micas, mafic minerals. Not bedded, saturated. 18.5% Gravel, 55.5% sand, 20% silt, and 6% clay
16.0'-16.5'					5984	16				
16.5'-17.7'				1.70 /2.00	5983	17				No core recovery (15.6'-16.0')
									SM	Same as above
					5982	18			GC	Sandy Gravel with some clay. Same as interval from 12.0' to 15.1'
										No core recovery (17.7'-18.0')
18.0'-19.0'									GC	Same as above. Saturated.
19.0'-19.5'				1.60 /2.00	5981	19			SC	Clayey Gravelly Sand. Light brownish gray (2.5 Y 6/2) to dark brown (7.5 YR 4/4). Fine gravel and very fine to coarse sand (mean=medium) composed of same composition as above. Decreasing sand and gravel with depth - transition to bedrock clay. Clay is of low plasticity. Crudely bedded at boundary with reworked bedrock. Moist. 10% Gravel, 45% sand, 35% clay, and 10% silt.
						20				

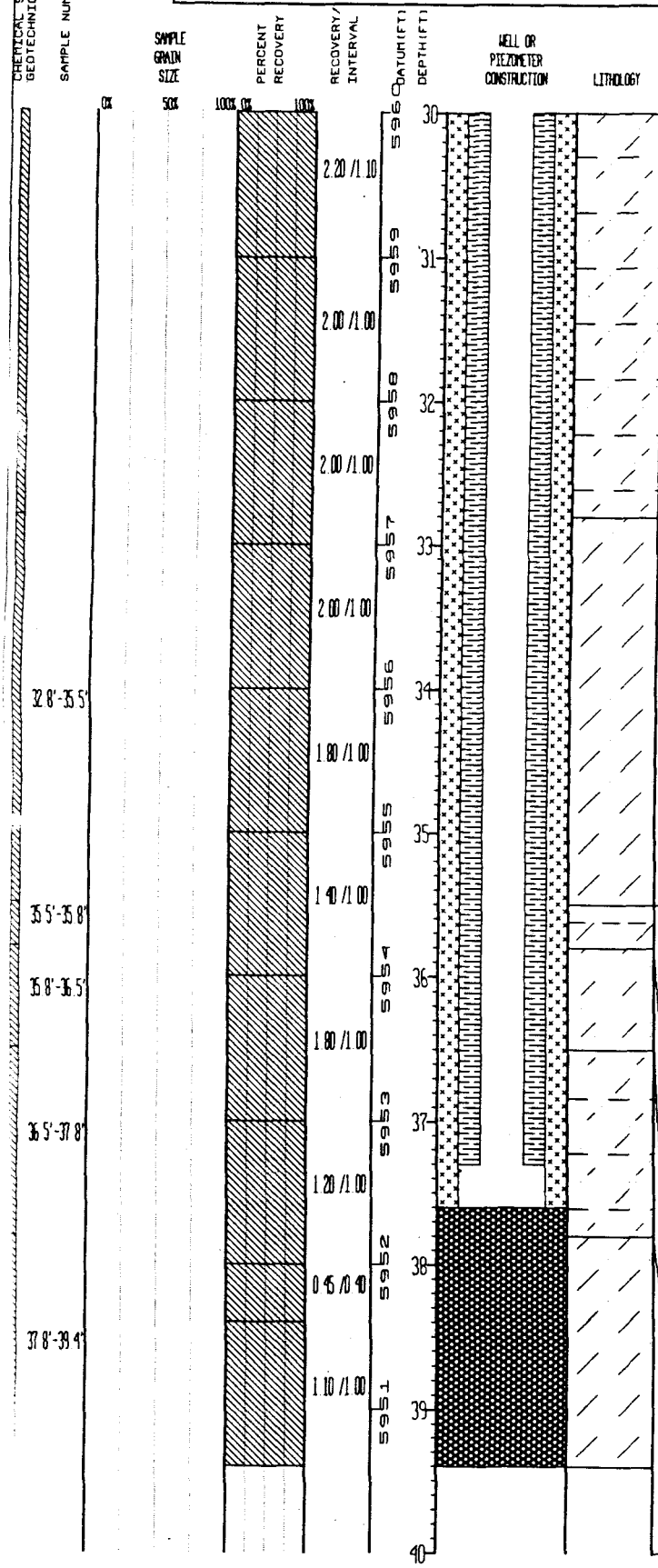
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 39 4	GROUND ELEVATION (FT) 5990 00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752688	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70193
EAST	2082674	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 10 25	DATE DRILLED 01/15/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-19 5', BENTONITE SEAL 19 5'-21 5', SAND 21 5'- 37 6', NATURAL BACK- FILL 37 6'-39 4', CENTRALIZERS PLACED 18 5' AND 38 55', HOLE DIAMETER 10 25" 0 0'- 37 5' AND 3 0" 37 5' - 39 4', 2 0' SUMP 37 3'- 39 3' DEPTH TO BEDROCK 19 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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'-22 0'				2 00 /2 00	5969	21	01/15/93		SILTY CLAYSTONE	Silty Claystone with trace of very fine sand Light olive gray (5 Y 6/2) to olive yellow (2 5 Y 6/8) where stained by Fe-oxides, moderately sorted, porosity=18%, no cement, moderately to highly friable, massive claystone with mottled coloring due to weathering, increasing silt content with depth Moist 20% Silt and 80% clay
				2 20 /2 00	5967	23			CLAYEY SILTSTONE	Clayey Siltstone with some very fine sand Gray (5 Y 6/1) to light yellowish brown (2 5 Y 6/4) and olive yellow (2 5 Y 6/8), moderately sorted, porosity=20%-25%, no cement, highly to moderately friable, composed of varying proportions of clay and silt, siltstone often contains up to 10% of very fine sand, mottled coloring due to weathering, thin and irregular subparallel bedding to disturbed bedding, not fractured, moist to wet 5% Sand, 65% silt, and 30% clay
22 0'-26 8'				1 00 /1 00	5966	24				
				1 00 /1 00	5965	25				
				1 40 /0 90	5964	26				
				1 70 /1 00	5963	27			CLAYEY SILTSTONE	Clayey Siltstone Light olive brown (2 5 Y 5/6) to olive yellow (2 5 Y 6/8), variable porosity 10%-25%, no cement, highly friable, silt and clay vary throughout interval but bedding is not apparent, much of core heavily damaged during drilling, mottled due to Fe-oxide staining, weathered not fractured (except where damaged), moist to wet (saturated) bottom 0 5" of interval stained bright olive yellow (Fe-hydroxide stain) Carbonaceous fragments present, especially from 30 0'-31 0' 60% Silt and 40% clay
				1 10 /1 00	5962	28				
				1 70 /1 00	5961	29				
26 8'-32 8'						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 39.4	GROUND ELEVATION (FT) 5990.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752688	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70193
EAST	2082674	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 01/15/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-19.5', BENTONITE SEAL 19.5'-21.5', SAND 21.5'-37.6', NATURAL BACK-FILL 37.6'-39.4', CENTRALIZERS PLACED 18.5' AND 38.55', HOLE DIAMETER 10.25" 0.0'-37.5' AND 3.0" 37.5'-39.4', 2.0' SUMP 37.3'-39.3' DEPTH TO BEDROCK 19.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYEY SILTSTONE	Clayey Siltstone Light olive brown (2.5 Y 5/6) to olive yellow (2.5 Y 6/8), variable porosity 10%-25%, no cement, highly friable, silt and clay vary throughout interval but bedding is not apparent, much of core heavily damaged during drilling, mottled due to Fe-oxide staining, weathered not fractured (except where damaged), moist to wet (saturated) bottom 0.5" of interval stained bright olive yellow (Fe-hydroxide stain). Carbonaceous fragments present, especially from 30.0'-31.0'. 60% Silt and 40% clay
SILTSTONE	Siltstone with some clay Light olive brown (2.5 Y 5/4) to olive yellow (2.5 Y 6/8), porosity = 20%-25%, no cement, highly to moderately friable, clay content varies, subhorizontal bedding occurs in siltiest intervals, not fractured but damaged during drilling, moist 85% Silt and 15% clay
SILTY CLAYSTONE	Silty Claystone Dark grayish brown (2.5 Y 4/2), porosity = 10%-15%, no cement, slightly to moderately friable, grades into overlying siltstone, not bedded, not fractured but broken during drilling, slightly moist 70% Clay and 30% sand
SILTY SANDSTONE	Silty Sandstone Light gray (5 Y 6/1) to olive yellow (2.5 Y 6/6), very fine sand, moderately sorted, porosity = 25%, no cement, highly friable, intermixed with claystone and siltstone but not bedded 70% Sand, 25% silt, and 5% clay
CLAYEY SILTSTONE	Clayey Siltstone Dark gray (5 Y 4/1) to dark grayish brown (2.5 Y 4/2), porosity varies from 10% to 25%, no cement, slightly to moderately friable, Fe-oxide stains present but limited, thin irregular planar bedding 60% Silt and 40% clay
SILTSTONE	Siltstone with some clay Light olive brown (2.5 Y 5/4) to gray (5 Y 5/1), porosity=20%-25%, no cement, moderately friable, clay content varies (max=25%) in thin 1" intervals within siltstone, irregular bedding, subhorizontal, not fractured, moist 85% Silt and 15% clay Total Depth 39.4'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73.3	GROUND ELEVATION (FT) 5993.11	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH:	752681	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70293
EAST:	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 6.5	DATE DRILLED 01/11/93	

REMARKS: MOBIL DRILL B-57, HSA; GROUT 0.0'-47.9', BENTONITE SEA L 47.9'-50.1', SAND 50.1'-69', NATURAL BACKFILL AND BENTONITE 69.0'-69.1'; CENTRALIZERS PLACED AT 9.6', 29.6', AND 47.1'; BOREHOLE DIAMETER 10.25" 0.0'-69.5' AND 3.0" 69.5'-73.3'; 2' SUMP 67.1'-69.1'; DEPTH TP BEDROCK 21.5'

CHEMICAL SAMPLE DEPTH / 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
0.0'-1.0'		0% 50% 100%	0% 100%	1.00/2.00	5993 5992	0 1			GC	Sandy Clayey Gravel with some silt. Dark brown (7.5 YR 3/2) coarse to fine gravel (mean=1.5"diam) and very fine to coarse sand (mean=coarse) in silty clay matrix. Well graded. Angular to subrounded gravel, and subangular sand. Gravel composed of granite, quartzite, and quartz, sand composed of quartz, feldspar, and rock fragments. Some plant material in upper 3", moist. 46% Gravel, 28% sand, 15 clay, and 11% silt
										No core recovery (1.0'-2.0')
2.0'-3.3'				1.30/2.00	5991 5990	2 3			GC	Sandy Clayey Gravel. Dark reddish brown (2.5 YR 3/4). Coarse to fine gravel (max=2.5"diam) and very fine to coarse sand (mean=medium to coarse) in silty clay matrix. Well graded. Angular to subrounded gravel, angular to subangular sand. Low plasticity, stiff clay matrix. Gravel composed of quartz, quartzite, schist, and weathered granite. Sand composed of quartz, rock fragments, feldspars, micas, and mafic minerals. Slightly moist. 40% Gravel, 38% sand, 20% clay, and 2% silt
										No core recovery (3.3'-4.0')
4.0'-5.4'				1.40/2.00	5989 5988	4 5			SM	Silty Gravelly Sand. Pink (7.5 YR 7/3) to strong brown (7.5 YR 5/6). Coarse to fine gravel (max=2.2"diam, mean=medium to fine) and very fine to coarse sand (mean=medium to fine). Subangular to subrounded gravel and subangular sand. Gravel and sand composed of quartzite, quartz, and other rock frags. Sand also includes weathered granite, feldspar, micas, and mafic minerals. Not bedded, moist to slightly moist. 16% Gravel, 50% sand, 20% silt, and 14% clay
										No core recovery (5.4'-6.0')
6.0'-7.0'				1.00/2.00	5987 5986	6 7			SM	Same as above
										No core recovery (7.0'-8.0')
8'-11.2'				2.00/2.00	5985 5984	8 9 10			SM	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73 3	GROUND ELEVATION (FT)	5993 11	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752681	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	6.5	DATE DRILLED	01/11/93	

REMARKS MOBIL DRILL B-57, HSA, GROUT 0 0'-47 9', BENTONITE SEA L 47 9'-50 1', SAND 50 1'-69', NATURAL BACKFILL AND BENTONITE 69 0'-69.1', CENTRALIZERS PLACED AT 9.6', 29 6', AND 47 1', BOREHOLE DIAMTER 10 25" 0 0'-69.5' AND 3 0" 69 5'-73 3', 2' SUMP 67 1'-69 1', DEPTH TP BEDROCK 21 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%		5983	10			SM	Same as above
				1.20 /2.00	5982	11				
										No core recovery (11 2'-12 0')
12 0'-12 7'					5981	12			SM	Gravelly Sand Strong brown (7 5 YR 5/6) Coarse to fine gravel (max=1 5", mean=3/4" diam) and very fine to coarse sand (mean=medium) Well graded, subangular to subrounded grains Gravel composed of quartzite and other metamorphic rock and quartz Sand composed of quartz, rock frags, quartz and a trace of feldspar Moist 18% Gravel, 50% Sand 16% silt, and 16% clay
				0.70 /2.00	5980	13				
										No core recovery (12 7'-14 0')
14 0'-15 2'					5979	14			/SM	Gravelly Sand Dark brown (7 5 YR 3/2) Gravel is coarse to fine (max=3", mean=3/4" diam), angular to subrounded, composed of quartzite, pegmatite quartz, other rock frags including schist, coarsest gravel at base of interval Sand is very fine to coarse (mean=medium), subangular, composed of quartz, feldspar, and rock frags Well graded, moist 26% Gravel, 53% sand, 12% silt, and 9% clay
				1.70 /2.00	5978	15				
15 2'-15 7'					5977	16			GM	Sandy Gravel with some silt Brown (7 5 YR 5/4) Medium to fine gravel (max=2", mean=1" diam), angular to subrounded, composed of weathered granite, schist, and pegmatite quartz Very fine to coarse sand, subangular to subrounded, composed of quartz and feldspar rock frags, biotite, and mica Well graded Silty clay matrix 47% Gravel, 36% sand, 12% silt and 5% clay
16 0'-17 5'										
										No core recovery (15 7'-16 0')
				1 50 /2.00	5976	17			GM	Same as above
										No core recovery (17 5'-18 0')
18 0'-18 3'					5975	18			SM	Silty Gravelly Sand Dark Brown (7 5 YR 4/4) Medium to fine gravel (max=1 1/2", mean=3/4"diam), subangular to rounded, composed of highly weathered granite, quartzite, pegmatite quartz, feldspar, and schist Very fine to coarse sand (mean =fine), subangular to subrounded, composed of quartz, schist frags, granite frags, weathered feldspar, and micas Well to moderately graded, in clayey silt matrix, very moist to wet 13% Gravel, 39% sand, 35% silt, and 13% clay
				0.30 /2.00	5974	19				
						20				No core recovery (18 3'-20 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73 3	GROUND ELEVATION (FT) 5993 11	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752681	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 6 5	DATE DRILLED 01/11/93	

REMARKS MOBIL DRILL B-57, HSA, GROUT 0 0'-47 9', BENTONITE SEAL 47 9'-50 1', SAND 50 1'-69', NATURAL BACKFILL AND BENTONITE 69 0'-69 1', CENTRALIZERS PLACED AT 9 6', 29.6', AND 47 1', BOREHOLE DIAMETER 10 25" 0 0'-69 5' AND 3 0" 69 5'-73 3', 2' SUMP 67 1'-69 1', DEPTH TP BEDROCK 21 5'

CHEMICAL SAMPLE DEPTH / 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
										No core recovery (18 3'-20 0')
20 0'-21 5'						20			SM	Same as above Top of bedrock 21 5'
				2 00 /2 00	5972	21			CLAYEY SILTSTONE	Clayey Siltstone with some sand Very finely intermixed silty sandstone and sandy claystone Light gray (5 Y 7/1)-fresh and light olive yellow (2 5 Y 6/8)-weathered Very fine grained sand in silty clay matrix Well sorted Subangular sand of 30%-40% porosity No cement (clay) Highly friable, appears reworked and strongly weathered Mainly quartz sand, trace of mafic minerals No planar bedding features Lowest 2' of interval contains more clay-rich zones with sandy silt High angle voids filled with Fe-hydroxide (goethite or limonite between 24 0'-25 0') Frequently Fe-hydroxide stained along irregular surfaces and in patches Slightly moist In general coarsens upward 20% Sand, 50% silt, and 30% clay **NOTE Interval 21 5'-26 2' in a heterogeneous mixture of 2 end members (Clayey Siltstone and Sandy Silt) The mixture varies in composition depending on fraction of the 2 end members No bedding features appear
					5971	22	01/28/93			
				2 00 /2 00	5970	23				
					5969	24				
				2 00 /2 00	5968	25			CLAYEY SILTSTONE	Clayey Siltstone with some sand Light yellowish brown (2 5 Y 6/4) to olive yellow (2 5 Y 6/8) Moderately sorted Very fine grained, subangular sand, porosity=15%, no cement, moderately friable, mainly comprised of quartz and mafic minerals (possibly oxides), wavy banded coloring may be indicative of bedding, low angle fractures at 27 1' filled Fe-hydroxide material Slightly moist 12% Sand, 45% silt, and 43% clay
					5967	26				
26 2'-28 0'				2 00 /2 00	5966	27			CLAYEY SILTSTONE	Reworked and disturbed slough from 27 5' to 29 2' of Silty Clayey Sand with trace of gravel Light yellowish brown (2 5 Y 6/4) Fine gravel (mean= 5"), mixed with fine to very fine sand in a silt and clay matrix, subangular to subrounded grains of sand and gravel 5% Gravel, 38% sand, 30% silt, and 27% clay * A reworked slough at bottom of cased interval - NOT INDICATIVE OF BEDROCK LITHOLOGY
					5965	28				
28 0'-29 2'				1 40 /1.20	5964	29			SANDY SILTSTONE	Interbedded Sandy Siltstone and Clayey Siltstone (laminated) Dark grayish brown (2 5 Y 4/2) to olive yellow (2 5 Y 6/8), sand is very fine, moderately sorted, subangular Porosity = 20%, no cement, moderately friable, strongly Fe stained along some laminae and adjacent to Fe-hydroxide filled voids Wavy bedding/laminae and trace of carbonaceous material present
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73.3	GROUND ELEVATION (FT) 5993.11	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752681	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 6.5	DATE DRILLED 01/11/93	

REMARKS: MOBIL DRILL B-57, HSA, GROUT 0.0'-47.9', BENTONITE SEAL 47.9'-50.1', SAND 50.1'-69', NATURAL BACKFILL AND BENTONITE 69.0'-69.1', CENTRALIZERS PLACED AT 9.6', 29.6', AND 47.1', BOREHOLE DIAMETER 10.25" 0.0'-69.5' AND 3.0" 69.5'-73.3', 2' SUMP 67.1'-69.1', DEPTH TP BEDROCK 21.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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	5963	30				
				2.00/2.00	5962	31			SILTY CLAYSTONE	Silty Claystone with a trace of sand. Very fine sand occurs only within silty beds. Grayish brown (2.5 Y 5/2) to olive yellow (2.5 Y 6/8) above 33.2', grayish brown to light olive brown (2.5 Y 5/4) below 33.2', more strongly Fe stained above 33.0'. Well to moderately sorted, porosity varies from 10% in clay-rich beds to 20% in silt-rich beds with sand, moderately to highly friable, mainly claystone above 32.8' and increasing silt content with depth with a max silt content of 40%. Wavy laminations, very thin beds. Moist. 5% Sand, 70% clay, and 29% silt.
				2.00/2.00	5961	32				
30.9'-35.2'					5960	33				
				2.00/2.00	5959	34				
					5958	35				
				2.00/2.00	5957	36			CLAYEY SILTSTONE	Clayey Siltstone with some Sandy Siltstone. Grayish brown (2.5 Y 5/2) to olive yellow (2.5 Y 6/6), very fine sand well to moderately sorted, subangular, porosity = 25%, no cement, moderately to highly friable. No systematic structures, no planar bedding apparent, Fe stains along irregular surfaces give mottled appearance. Moist. 10% Sand, 70% silt, and 20% clay.
35.2'-37.9'					5956	37				
				1.80/1.80	5955	38			SANDY SILTSTONE	Sandy Siltstone with some clay. Dark grayish brown (2.5 Y 4/2) to light yellowish brown (2.5 Y 6/3) and olive yellow (2.5 Y 6/6). Very fine sand, well sorted, subangular, porosity=25%-30%, no cement, highly friable. No bedding or internal systematic structures are apparent, Fe stains on irregular surfaces give mottled appearance. 20% Sand, 55% silt, and 25% clay.
					5954	39				
37.9'-42.0'				2.00/2.00		40				

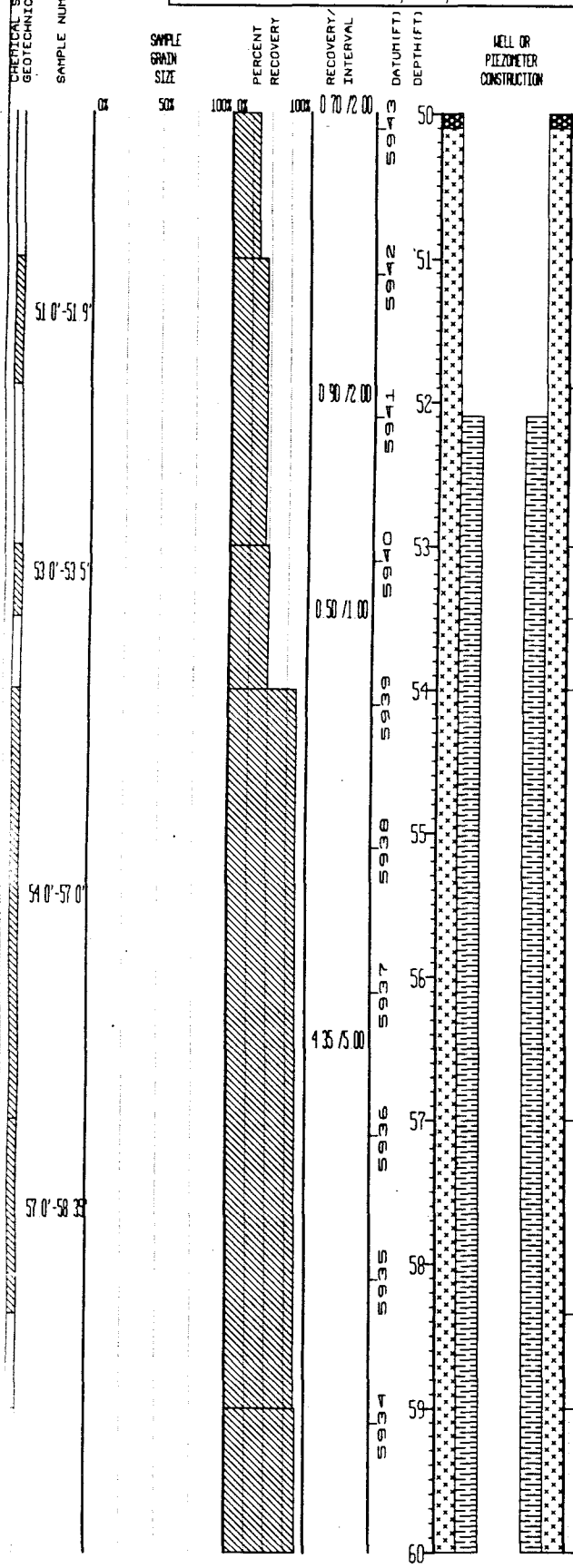
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73.3	GROUND ELEVATION (FT) 5993.11	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752681	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 6.5	DATE DRILLED 01/11/93	

REMARKS MOBIL DRILL B-57, HSA. GROUT 0.0'-47.9', BENTONITE SEAL 47.9'-50.1', SAND 50.1'-69', NATURAL BACKFILL AND BENTONITE 69.0'-69.1'. CENTRALIZERS PLACED AT 9.6', 29.6', AND 47.1'; BOREHOLE DIAMETER 10.25" 0.0'-69.5' AND 3.0" 69.5'-73.3'. 2' SUMP 67.1'-69.1'. DEPTH TP BEDROCK 21.5'

CHEMICAL SAMPLE DEPTH / 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% 100%	0% 100%	2.00/2.00	5953	40			SANDY SILTSTONE	Sandy Siltstone with some clay. Dark grayish brown (2.5 Y 4/2) to light yellowish brown (2.5 Y 6/3) and olive yellow (2.5 Y 6/6). Very fine sand, well sorted, subangular, porosity=25%-30%, no cement, highly friable. No bedding or internal systematic structures are apparent, Fe stains on irregular surfaces give mottled appearance. 20% Sand, 55% silt, and 25% clay.
					5952	41				
				1.10/2.00	5951	42			SILTY CLAYSTONE	See description below. Same as interval 43.0'-45.8'
										No core recovery (42.1'-43.0')
					5950	43			SILTY CLAYSTONE	Silty Claystone. Very dark grayish brown (2.5 Y 3/2), with trace of carbonaceous material and Fe stains (olive yellow) and trace of Fe-stone nodules (around 44'), porosity = 10%-15%, slightly to moderately friable. Laminae of contrasting color (very dark and dark grayish brown) present. Moist. 20% Silt and 80% clay
				2.00/2.00	5949	44				
43.0'-45.8'					5948	45				
45.8'-46.1'				1.10/2.00	5947	46			SILTY SANDSTONE	Silty Sandstone. Olive gray (5 Y 5/2), fine to very fine sand and silt, trace of clay, well to moderately sorted, subangular, porosity = 10%, CaCO3 cement, slightly friable. Low angle cross-laminations present. 75% Sand, 1% clay, and 24% silt.
47.0'-47.2'					5946	47				No core recovery (46.1'-47.0')
47.2'-47.8'									SILTY SANDSTONE	Same as above
				0.80/2.00	5945	48			SILTSTONE	Siltstone with some clay. Very dark gray (5 Y 3/1), porosity = 15%, CaCO3 cement, highly friable where cement absent, moderately friable elsewhere. No bedding, not fractured, but highly disturbed and crumbling. 85% Silt and 15% clay
										No core recovery (47.8'-49.0')
49.0'-49.7'					5944	49	01/11/93		SILTSTONE	Same as above
				0.70/2.00		50				No core recovery (49.7'-51.0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73.3	GROUND ELEVATION (FT)	5993.11	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752681	AREA OFF PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	6.5	DATE DRILLED	01/11/93	

REMARKS MOBIL DRILL B-57, HSA, GROUT 0.0'-47.9', BENTONITE SEAL 47.9'-50.1', SAND 50.1'-69', NATURAL BACKFILL AND BENTONITE 69.0'-69.1', CENTRALIZERS PLACED AT 9.6', 29.6', AND 47.1', BOREHOLE DIAMETER 10.25" 0.0'-69.5' AND 3.0" 69.5'-73.3', 2' SUMP 67.1'-69.1', DEPTH TP BEDROCK 21.5'



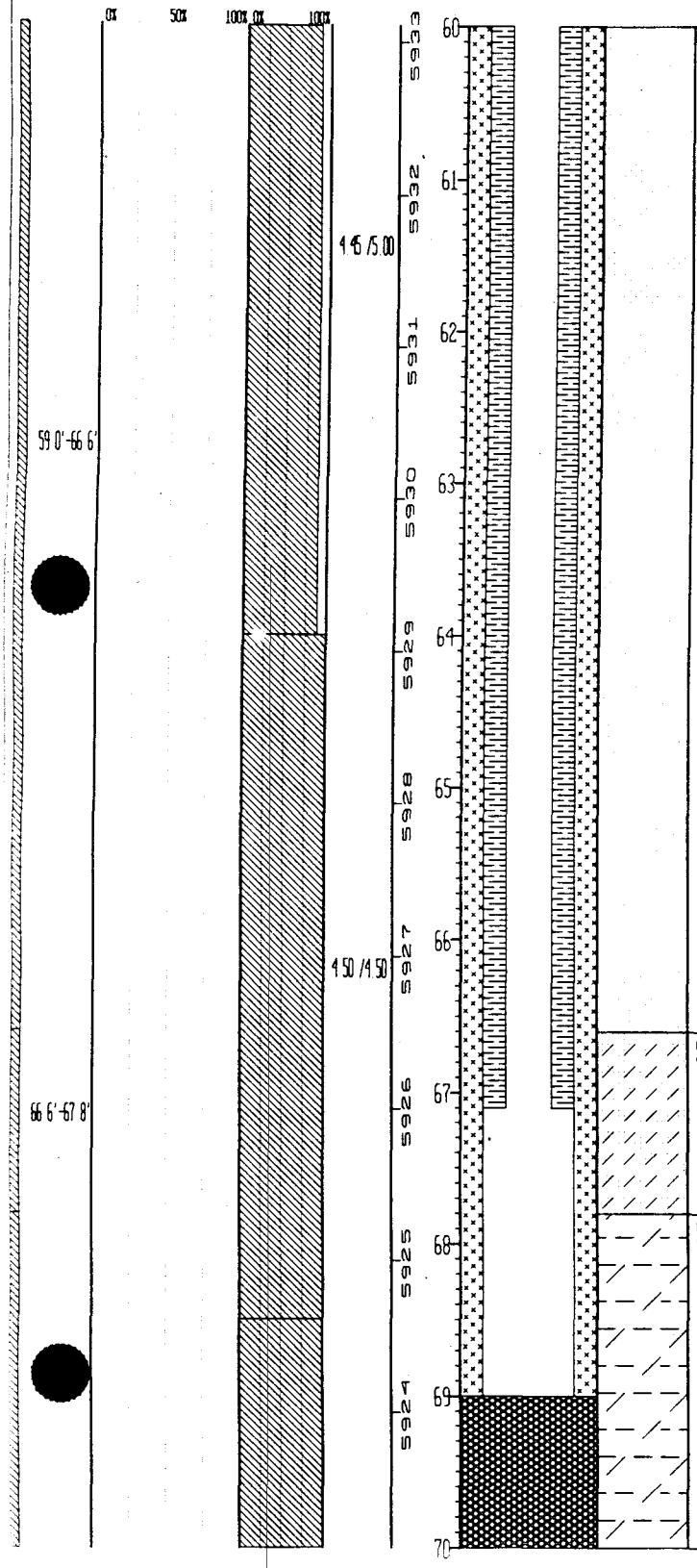
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (49.7'-51.0')
SILTSTONE	Same as above, not disturbed.
	No core recovery (51.9'-53.0')
SILTSTONE	Same as above, not disturbed
	No core recovery (53.5'-54.0')
SILTSTONE	Same as above, not disturbed
SILTSTONE	Siltstone with some clay. Very dark gray (5 Y 3/1). Porosity <10%, no cement, slightly friable. Appears massive, not fractured, not weathered. Moist. 90% Silt and 10% clay
	No core recovery (58.35'-59.0')
SANDSTONE	See description below.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73 3	GROUND ELEVATION (FT)	5993 11	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752681	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	6 5	DATE DRILLED	01/11/93	

REMARKS MOBIL DRILL B-57, HSA, GROUT 0 0'-47 9', BENTONITE SEA L 47 9'-50 1', SAND 50 1'-69', NATURAL BACKFILL AND BENTONITE 69 0'-69 1', CENTRALIZERS PLACED AT 9 6', 29 6', AND 47 1', BOREHOLE DIAMETER 10 25" 0 0'-69 5' AND 3 0" 69 5'-73 3', 2' SUMP 67 1'-69 1', DEPTH TP BEDROCK 21 5'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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
SANDSTONE	Sandstone with some silt Gray (5 Y 3/1) to very dark gray (5 Y 6/1), very fine to fine sand, some silt, some carbonaceous material, well sorted, subangular to subrounded, porosity = 15%-25% depending on silt/carbonaceous content, trace of CaCO3 cement, moderately to highly friable, mainly quartz and mafic minerals (pyroxene, oxides, hornblende? (green)), trace of rose quartz (no micas, feldspars) Finely laminated and cross-laminated, carbonaceous layers mark bedding surfaces, cross laminae are trough shaped and wedge shaped CaCO3 more abundant below 65 0' 85% Sand and 15% silt 66 0'-66 5' Sulfides present, disseminated on bedding surface (pyrite/chalcopyrite)
SANDY SILTSTONE	Sandy Siltstone with some clay Very dark gray (5 Y 3/1) Sand is fine grained, composed dominantly of quartz and mafic oxides, porosity = 15%, some to trace CaCO3 cement as caliche, some carbonaceous material Bedding appears disturbed, convoluted Moist 25% Sand, 60% silt, and 15% clay
SILTY CLAYSTONE	Silty Claystone Very dark gray (5 Y 3/1) Low porosity (10%) no cement, trace of CaCO3, slightly to non-friable, trace of carbonaceous material Appears massive with rare laminae marked by carbonaceous material on bedding surface, not fractured Moist 70% Clay and 30% silt

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 73.3	GROUND ELEVATION (FT)	5993.11	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752581	AREA CU7 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70293
EAST	2082665	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	6.5	DATE DRILLED	01/11/93	

REMARKS MOBIL DRILL B-57, HSA, GROUT 0.0'-47.9', BENTONITE SEAL 47.9'-50.1', SAND 50.1'-69', NATURAL BACKFILL AND BENTONITE 69.0'-69.1', CENTRALIZERS PLACED AT 9.6', 29.6', AND 47.1', BOREHOLE DIAMETER 10.25" 0.0'-69.5' AND 3.0" 69.5'-73.3', 2' SUMP 67.1'-69.1', DEPTH TP BEDROCK 21.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
67.8'-73.3'		0% 50%	100% 0% 100%	5.60 /4.80	5923 5922 5921 5920 5919 5918 5917 5916 5915 5914	70 71 72 73 74 75 76 77 78 79 80			SILTY CLAYSTONE	Silty Claystone, same as above Total Depth 73.3'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26 00	GROUND ELEVATION (FT)	5997 90	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752090	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J BOYLAN	70393
EAST	2082389	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/02/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-4 25', BENTONITE SEAL 4 25'-6 5', SAND 6 5'-24 5', NATURAL BACKFILL 24 5'-26', CENTRALIZERS PLACED AT 3 8' AND 24 2', 2' SUMP 22 8'-24 8', DEPTH TO BEDROCK 22 8'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	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 0'-7'			0 70 /2 00	5997	0–1			SC	Gravelly Sand with silt and clay Very dark grayish brown (10 YR 3/2) Coarse to fine sand (mean=fine) with coarse to fine gravel (max=3", mean=0 5"diam) Sand subangular to subrounded comprised of quartz, trace of dark minerals Gravel subangular to subrounded, comprised of quartzite and igneous rock frags Not bedded, well graded Slightly moist 19% Gravel, 67% sand, 7% clay, and 7% silt
					5996	1–2				No core recovery (0 7'-2 0')
	2 0'-2 9'			0 90 /2 00	5995	2–3			SC	Gravelly Clayey Sand Grayish brown (2 5 Y 5/2), dark grayish brown (2 Y 4/3) and dark reddish gray (2 5 YR 4/6) staining Coarse to fine sand (mean=fine) with coarse to fine gravel Sand subangular to subrounded, comprised of quartz and a trace of dark minerals and rock frags Gravel subangular to subrounded, comprised of igneous rock frags and quartzite Not bedded, poorly sorted Slightly moist 15% Gravel, 63% sand, 14% clay, and 8% silt
					5994	3–4				No core recovery (2 9'-4 0')
	4'-6 0'			2 00 /2 00	5993	4–5			SM	Gravelly Sand Light olive brown (5 Y 5/3) to olive brown (5 Y 5/3), becoming dark yellowish brown (10 YR 4/6) at base Sand coarse to fine (mean=fine) Gravel coarse to fine (max=3", mean=1" diam) Sand subangular to subrounded, comprised of quartz with a trace of dark minerals and rock frags Gravel subangular to subrounded comprised of quartzite and igneous rock frags Not bedded, poorly sorted Slightly moist 32% Gravel, 50% sand, 7% clay, and 11% silt
					5992	5–6				
	6 0'-7 1'			1 10 /2 00	5991	6–7			GC	Sandy Gravel Dark yellowish brown (10 YR 4/4) with very dark gray (2 5 YR N3) cobbles Coarse to fine gravel (max=3", mean= 2"diam), fractured, subangular to subrounded, comprised of igneous frags with some smaller granite and quartzite frags Sand coarse to fine, subangular to subrounded, comprised of quartz, trace of dark minerals, and rock frags Fines upward, possibly two graded (fining up) sequences Slightly moist 50% Gravel, 35% sand, and 15% fines
					5990	7–8				No core recovery (7 1'-8 0')
	8 0'-8 8'			0 80 /2 00	5989	8–9			GC	Same as above See description 6 0'-7 1'
					5988	9–10				No core recovery (8 8'-10 0')

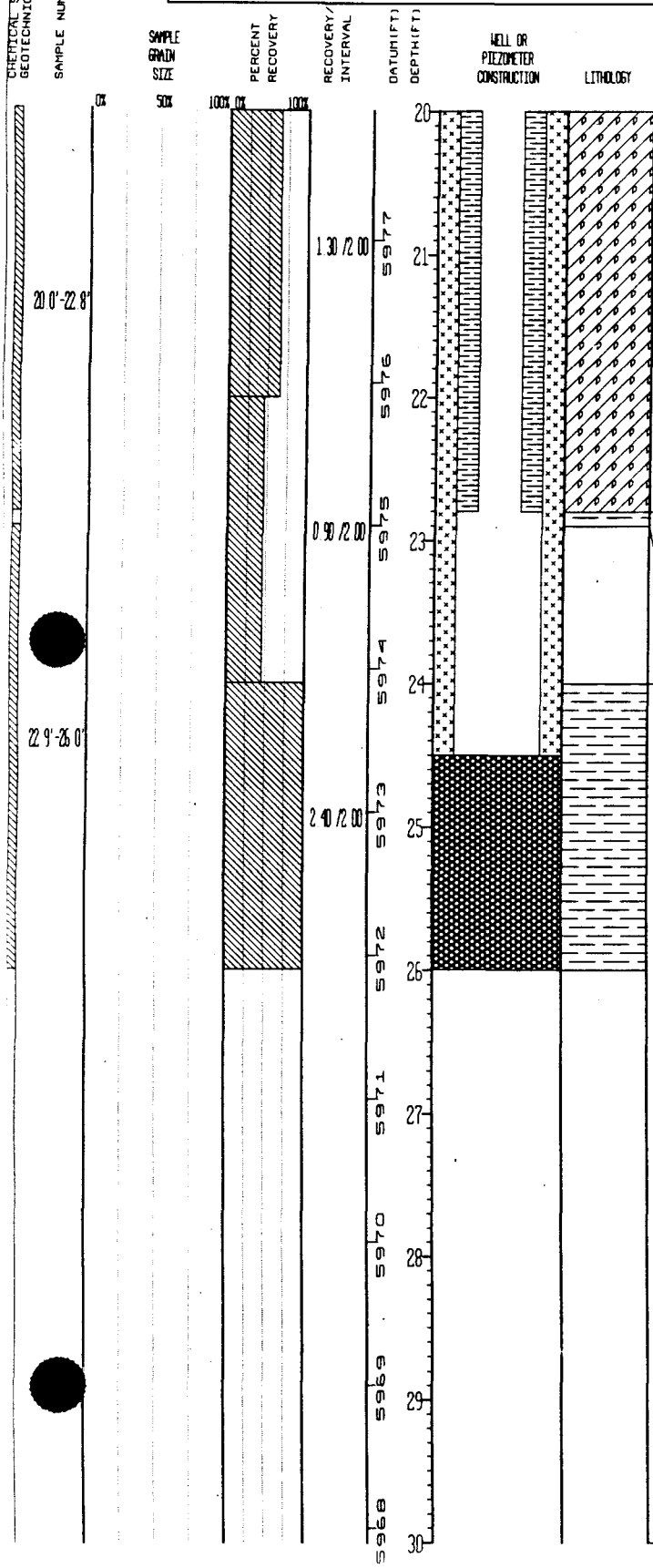
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26.00	GROUND ELEVATION (FT)	5997.90	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752090	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN	70393
EAST	2082389	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/02/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-4.25', BENTONITE SEAL 4.25'-6.5', SAND 6.5'-24.5', NATURAL BACKFILL 24.5'-26', CENTRALIZERS PLACED AT 3.8' AND 24.2', 2' SUMP 22.8'-24.8', DEPTH TO BEDROCK 22.8'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
10.0'-11.1'						10			SM	Gravelly Sand. Dark yellowish brown (10 YR 4/4) to olive gray (5 Y 5/2) with reddish brown (5 YR 4/4) staining. Fine to coarse sand (mean=fine) and coarse to fine gravel (max=2", mean=0.5" diam). Sand subangular to subrounded, comprised of quartz with a trace of mica and dark minerals. Gravel subangular to subrounded, comprised of igneous rock frags and pegmatitic quartzite. No bedding. Slightly moist. 30% Gravel, 50% sand, and 20% fines.
11.1'-11.4'				1.40/2.00	5987	11				
12.0'-12.9'					5986	12			SC	Sand with some gravel and clay. Light olive brown (5 Y 5/4) to brown (10 YR 5/3). Coarse to fine (mean=fine) sand and coarse to fine gravel (max=2", mean=0.5" diam). Sand subangular to subrounded, comprised of quartz with a trace of mica and dark minerals. Gravel subangular to subrounded, comprised of granitic, mafic, igneous, arkosic, and quatzite rock frags. No bedding. Slightly moist. 14% Gravel, 71% sand, and 10% clay, and 5% silt.
12.9'-13.8'				1.80/2.00	5985	13				
							02/22/93			No core recovery (11.4'-12.0')
					5984	14	02/26/93		SC	Same as above. See description 11.0'-11.4'
14.0'-14.6'				0.60/2.00	5983	15			CL	Sandy Clay with some gravel and silt. Mottled dark yellowish brown (10 YR 4/6) and light olive gray (5 Y 6/2). Coarse to fine gravel (max=2.5", mean=0.5" diam) and coarse to fine (mean=medium) sand. Gravel and sand angular to subrounded, comprised mainly of quartzite and schist. Low to moderate plasticity. Moderately well graded. No bedding. Slightly moist. 15% Gravel, 35% sand, 35% clay, and 15% silt.
										No core recovery (13.8'-14.0')
16.0'-16.4'				0.40/2.00	5982	16			SC	Gravel, sand, clay mixture. Strong brown (7.5 YR 5/6) to yellowish brown (10 YR 5/4). Gravels broken during drilling (>3" diam) and very coarse to very fine sand (mean=medium). Sand angular to subrounded. Poorly to moderately graded. Igneous and metamorphic gravels, sand is predominantly quartz. No bedding. Slightly moist. 20% Gravel, 50% sand, and 30% fines.
					5981	17				
										No core recovery (14.6'-16.0')
					5980				SC	Same as above. See description 14.0'-14.6'
										No core recovery (16.4'-18.0')
18.0'-18.3'						18			SC	Same as above. See description 14.0'-14.6'
18.3'-20.0'				2.00/2.00	5979	19			SC	Sand with gravel and clay. Light yellowish brown (2.5 Y 6/3) dominates to 20.0'. Fine to coarse gravel (max=2", mean=.25"-.5") and very fine to very coarse sand (mean=fine to medium). Grains subangular to subrounded, comprised of quartz and quarztitic metamorphic rock frags with abundant Fe-oxide grains below 20.0'. Moderately well graded, no bedding. Coarser below 21.0'. Slightly moist. 7% Gravel, 82% sand, 4% silt, and 7% clay.
					5978	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26.00	GROUND ELEVATION (FT)	5997.90	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752090	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN	70393
EAST	2082389	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/02/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-4.25', BENTONITE SEAL 4.25'-6.5', SAND 6.5'-24.5', NATURAL BACKFILL 24.5'-26', CENTRALIZERS PLACED AT 3.8' AND 24.2', 2' SUMP 22.8'-24.8', DEPTH TO BEDROCK 22.8'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	Same as above. See description 18.3'-20.0', with a color change to strong brown (7.5 YR 5/6, 4/6) to reddish yellow (7.5 YR 6/6). Coarsens below 21.0'
CLAYSTONE	Claystone. Top of bedrock 22.8'. See description below
	No core recovery (22.9'-24.0')
CLAYSTONE	Claystone. Light brownish gray (2.5 Y 6/2) above 25.0' to light olive brown (2.5 Y 5/3), yellowish brown (10 YR 5/6, 5/8) and dark yellowish brown (10 YR 4/6, 3/6). Core is thin, extruded due to gravel clast pushed by auger. Trace to some silt. Porosity=5%-10%. Argillaceous cement plus Fe-oxide in yellowed areas. Non- to slightly- friable. No apparent bedding. Slightly moist. 95% Clay and 5% silt. Total Depth 26.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46.0	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH	752111	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70493
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/29/93	

REMARKS: MOBIL DRILL B-57, HSA. SAMPLED FOR ANALYSIS 0.0'-22.0', CEMENT GROUT 0.0'-21.2', BENTONITE SEAL 21.2'-23.3', SAND 21.2'-46', NO BACKFILL. CENTRALIZERS PLACED AT 3.5', 21.0', AND 45.7'. 2' SUMP 44.0'-46'. DEPTH TO BEDROCK 21.3'

AL SAMPLE DEPTH / CHNICAL 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			GM	No core remaining after sampling. Field description - Silty gravel-sand mixture. Dark brown. Gravel maximum diam >3", rounded, increasing clay content below 1.1', moist (Sample duplicate BH70046ST 0'-1.5')
	BH70045ST			1.50 /2.00	5997	1				Sample recovery 1.15'-1.4'
									GM	Same as above
										No core recovery 1.5'-2.0'
2.0'-2.45'	BH70047ST				5996	2			SC	Gravelly Clayey Sand. Red (2.5 YR 4/6) to very dusky red (2.5 YR 5/2). Coarse to fine gravel (max=2", mean=1" diam) and coarse to very fine sand (mean=coarse) in silty clay matrix, well graded. Gravel angular (where broken) to sub-angular, sand subangular. Low plasticity matrix. Gravel composed of quartzite and granite. Sand composed of quartz, feldspar, and rock frags. Not bedded, moist. 35% Gravel, 38% sand, 20% clay, 7% silt
2.7'-2.8'				0.80 /2.00	5995	3				
										Sample recovery 2.45'-2.7'
					5994	4			GM	See description below, same as 4.0'-5.9'
										No core recovery 2.8'-4.0'
	BH70048ST 4.9'			1.90 /2.00	5993	5			GM	Sandy Gravel with some silt. Light olive brown (2.5 Y 5/3). Coarse to fine gravel (max=3", mean=1 1/2" diam) and very fine to coarse sand in silty clay matrix, well graded. Gravel angular to subrounded and composed of quartzite, granite, pegmatite, and schist. Subangular to subrounded sand composed of quartz, feldspar, rock frags. Not bedded. Moist. 52% Gravel, 40% sand, 6% silt, and 2% clay
					5992	6				No core recovery 5.9'-6.0'
	BH70049ST 7.9'			1.90 /2.00	5991	7			GM	Same as above (Sample duplicate BH70050ST 6.0'-7.9')
										No core recovery 7.9'-8.0'
	BH70051ST 8.0'-10.8'			2.00 /2.00	5990	8			SM	Gravelly Sand with trace of silt and clay. Reddish yellow (7.5 YR 6/8) to light yellowish brown (2.5 Y 7/3). Coarse to fine gravel (max=2 1/2", mean=3/4" diam) and very fine to coarse sand (mean=coarse), well graded. Gravel subangular to subrounded, composed of quartz, quartzite, granite, schist, and pegmatite. Sand subangular to subrounded, composed of quartz, feldspar and rock frags. Not bedded, some color variation where secondary Fe oxides/hydroxides present. Some gravel broken during drilling (originally >3" diam). Slightly moist. 42% Gravel, 48% sand, 5% silt, 5% clay
					5989	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46 0	GROUND ELEVATION (FT)	5998 00	PROJECT NUMBER	986073	LOG OF BORING NUMBER
NORTH	752111	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70493
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7 0	DATE DRILLED	01/29/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED FOR ANALYSIS 0 0'-22 0', CEMENT GROUT 0 0'-21 2', BENTONITE SEAL 21 2'-23 3', SAND 21 2'-46', NO BACKFILL, CENTRALIZERS PLACED AT 3 5', 21 0', AND 45 7', 2' SUMP 44 0'-46', DEPTH TO BEDROCK 21 3'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERED	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH70052ST	0% 50% 100%	0% 100%		5988	10				
				0 80 /2 00	5987	11				No core recovery 10 8'-12 0'
12 0'-12 8'					5986	12			SM	Same as above
12 8'-13 6'	BH70053ST			2 00 /2 00	5985	13			SC	Clayey Sand with some gravel Strong brown (7 5 YR 4/6) Fine gravel (<1"diam) and coarse to very fine sand (mean=medium) in a silty clay matrix, moderately graded Subangular sand and gravel composed of quartz, rock frags, feldspar with a trace of black carbonaceous material Clay matrix has low plasticity with mottled coloring No bedding Moist 15% Gravel, 48% sand, 30% clay, and 77% silt
13 6'-15 5'	BH70054ST			1 50 /2 00	5984	14			SC	Gravelly Sand with some clay Strong brown (7 5 YR 5/6) Very coarse to fine gravel (max>3", mean=1 1/2"diam) and very fine to coarse sand (mean=medium to coarse) in silty clay matrix, well graded Gravel angular to subrounded, composed of quartzite, granite, quartz, and schist (coarsest at 15 0'-15 5' and 19 0'-20 0') Sand subangular to subrounded, composed of quartz, quartzite, feldspar, mica, mafic minerals, and other rock frags Not bedded, but distinct gravel-rich and clay-rich layers Moist 25% Gravel, 57% sand, 12% clay, and 6% silt
					5983	15	02/26/93 ▽			
					5982	16				No core recovery 15 5'-16 0'
	BH70055ST 17 7'			1 70 /2 00	5981	17			SC	Same as above
					5980	18				No core recovery 17 7'-18 0'
				2 00 /2 00	5979	19			SC	Same as above Gravel coarse 19 0'-20 0' (Sample duplicate BH70057ST 18 0'-20 0')
18 0'-21 3'						20				

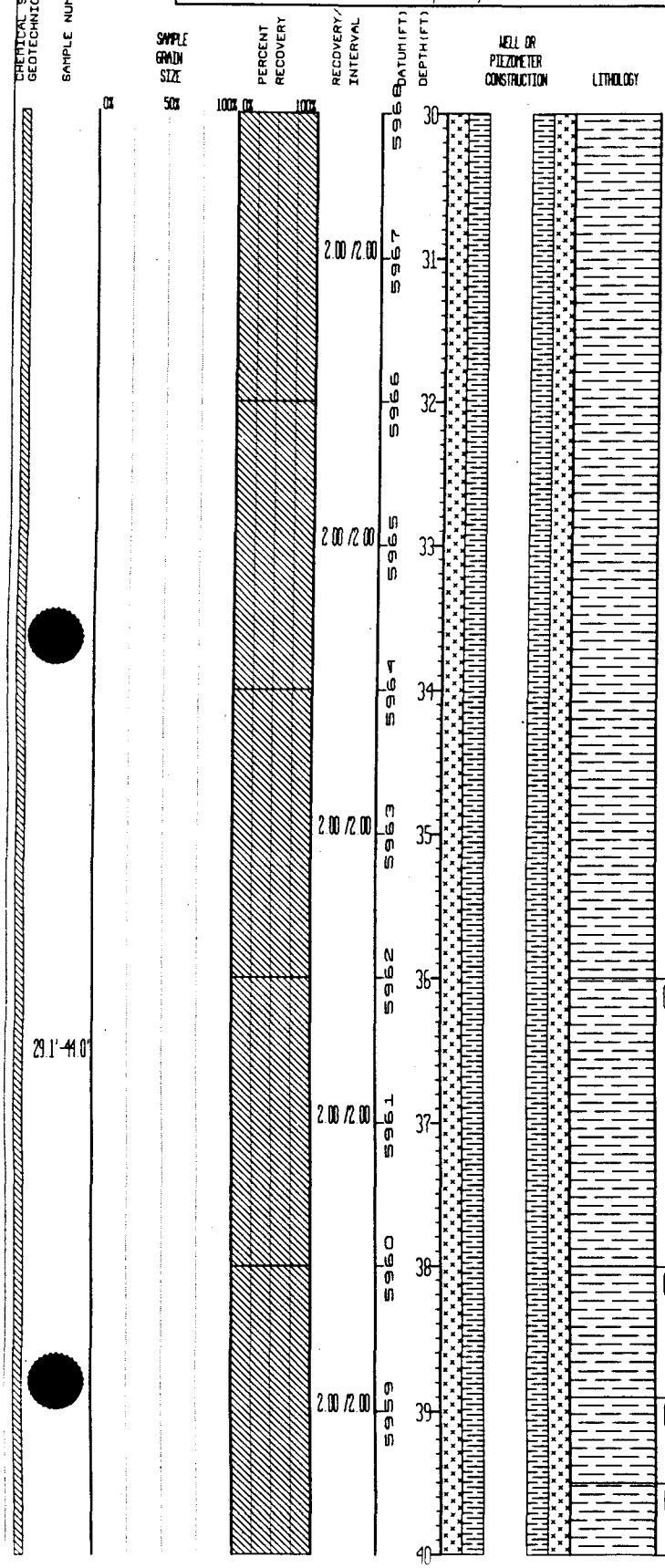
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46.0	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH	752111	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70493
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/29/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED FOR ANALYSIS 0.0'-22.0', CEMENT GROUT 0.0'-21.2', BENTONITE SEAL 21.2'-23.3', SAND 21.2'-46', NO BACKFILL, CENTRALIZERS PLACED AT 3.5', 21.0', AND 45.7', 2' SUMP 44.0'-46', DEPTH TO BEDROCK 21.3'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
						20			SC	Same as above Gravel coarse 19.0'-20.0' (Sample duplicate BH70057ST 18.0'-20.0')
	BH70058ST			2.00/2.00	5977	21			SC	Same as above Top of Bedrock 21.3'
					5976	22			CLAYSTONE	Claystone with some silt. Grayish brown (2.5 Y 5/2). Porosity=5%-15%, no cement, slightly to non-friable, trace of carbonaceous material 21.3' to 22.5'. Mottled coloring with olive yellow (Fe-hydroxide) stains. Massive. Increasing silt content with depth, not fractured. Moist. 90% Clay and 10% silt.
				2.00/2.00	5975	23				
21.3'-26.4'					5974	24				
				2.00/2.00	5973	25				
					5972	25				
				2.00/2.00	5971	27			SILTY CLAYSTONE	Silty Claystone. Light brownish gray (2.5 Y 6/2) to light yellowish brown (2.5 Y 6/3). Porosity=20%-25%, no cement, highly to moderately friable, massive, not fractured - but core is broken by drilling, increasing silt content with depth. 75% Clay and 25% silt.
26.4'-29.1'					5970	28				
				2.00/2.00	5969	29			CLAYSTONE	Claystone with some silt. Olive gray (5 Y 4/1) to dark gray (5 YR 4/1). Porosity is variable; 5% in undisturbed claystone, up to 20% in weathered areas, no cement, slightly to moderately friable, trace of carbonaceous material dispersed throughout (<1%). Not bedded, massive. Mottled color variations, not fractured. Moist. 90% Clay and 10% silt.
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46 0	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH 752111		AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70493
EAST 2082390		LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 01/29/93	

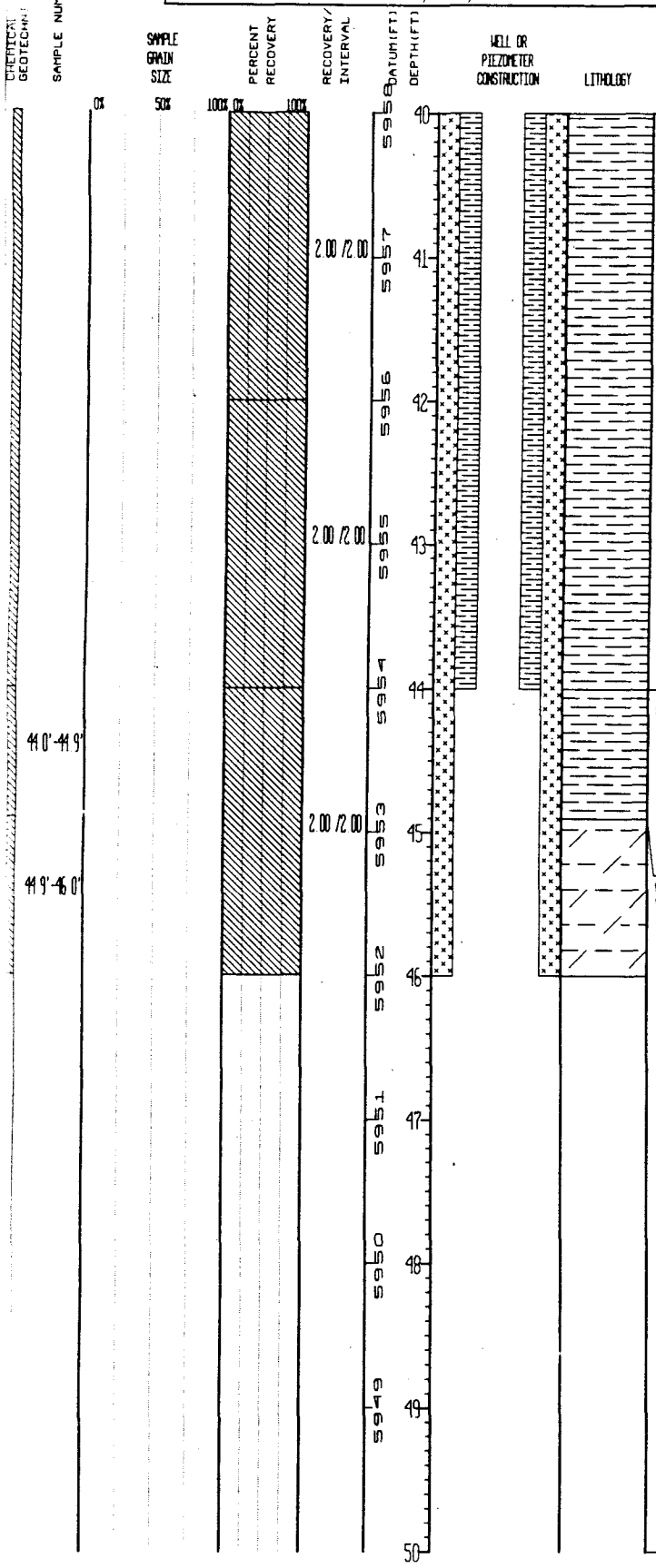
REMARKS: MOBIL DRILL B-57, HSA, SAMPLED FOR ANALYSIS 0 0'-22 0', CEMENT GROUT 0 0'-21 2', BENTONITE SEAL 21 2'-23 3', SAND 21 2'-46', NO BACKFILL, CENTRALIZERS PLACED AT 3 5', 21 0', AND 45 7', 2' SUMP 44 0'-46', DEPTH TO BEDROCK 21 3'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Same as above but olive yellow (2.5 Y 6/6), 36 0'-38.0'
CLAYSTONE	Same as interval above (29 1'-36 0')
CLAYSTONE	Same as above with Fe-stone concretions (<1 1/2" diam) and bright orange staining from 38 9'-39 5'
CLAYSTONE	Claystone same as interval 29 1'-36 0' above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46 0	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH	752111	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70493
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 01/29/93	

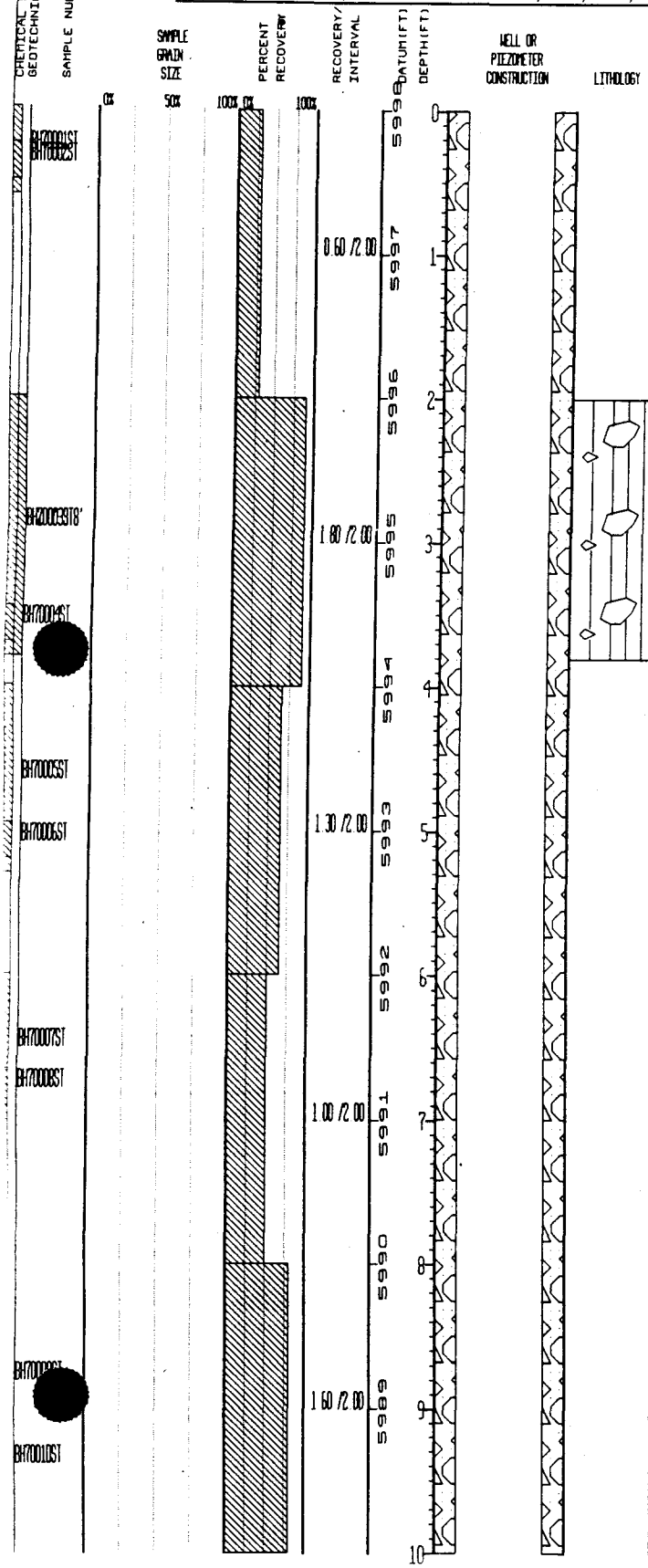
REMARKS MOBIL DRILL B-57, HSA, SAMPLED FOR ANALYSIS 0 0'-22 0', CEMENT GROUT 0 0'-21 2', BENTONITE SEAL 21 2'-23 3', SAND 21 2'-46', NO BACKFILL, CENTRALIZERS PLACED AT 3 5', 21 0', AND 45 7', 2' SUMP 44 0'-46', DEPTH TO BEDROCK 21 3'.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone same as interval 29.1'-36.0' above.
CLAYSTONE	Claystone with some carbonaceous material Very dark gray (10 YR 3/1) Porosity=5%-15%, no cement, slightly friable, contains black carbonaceous frags of variable size (up to coarse sand) with one thin bed containing coal-like carbonaceous fragments Not fractured, trace of CaCO3 Moist 92% Clay, 5% silt, and 3% carbonaceous material
SILTY CLAYSTONE	Silty Claystone Grayish brown (2 5 Y 5/2) to light olive brown (2 5 Y 5/4) Mottled coloring, porosity<5%, no cement, not friable, trace of CaCO3 at 45.0' Massive, not fractured Moist 70% Clay and 30% silt Total Depth 46 0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT)	5998.00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7.0	DATE DRILLED	01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core remaining after sampling. Field description - Sandy Gravel to Gravelly Sand. Dark brown to strong brown, slightly moist.
	No core recovery 0.6'-2.0'
GM	Sandy Gravel. Light olive brown (2.5 Y 5/4) to strong brown (7.5 YR 5/6). Coarse to fine gravel (max=1 1/2", mean=1" diam) and coarse to very fine sand (mean=medium to coarse) in clayey silt matrix, well graded. Gravel angular to sub-rounded, composed of quartz, schist, quartzite, granite. Sand subangular to subrounded composed of quartz, and rock frags. Moist. Little core remaining after sampling. 50% Gravel, 38% sand, 8% silt, and 4% clay.
	No core recovery (3.8'-4.0')
	No core remaining after sampling. Field description - Sandy Gravelly Clay, olive gray, moist
	No core recovery (5.3'-6.0')
	No core remaining after sampling. Field description - Gravelly Silt and Sand mixture. Very light brown to olive brown. Massive, not bedded, moist
	No core recovery (7.0'-8.0')
	No core remaining after sampling. Field description - Clayey Sandy Gravel. Olive to yellowish brown. Massive, not bedded, moist
	No core recovery (9.6'-10.0')

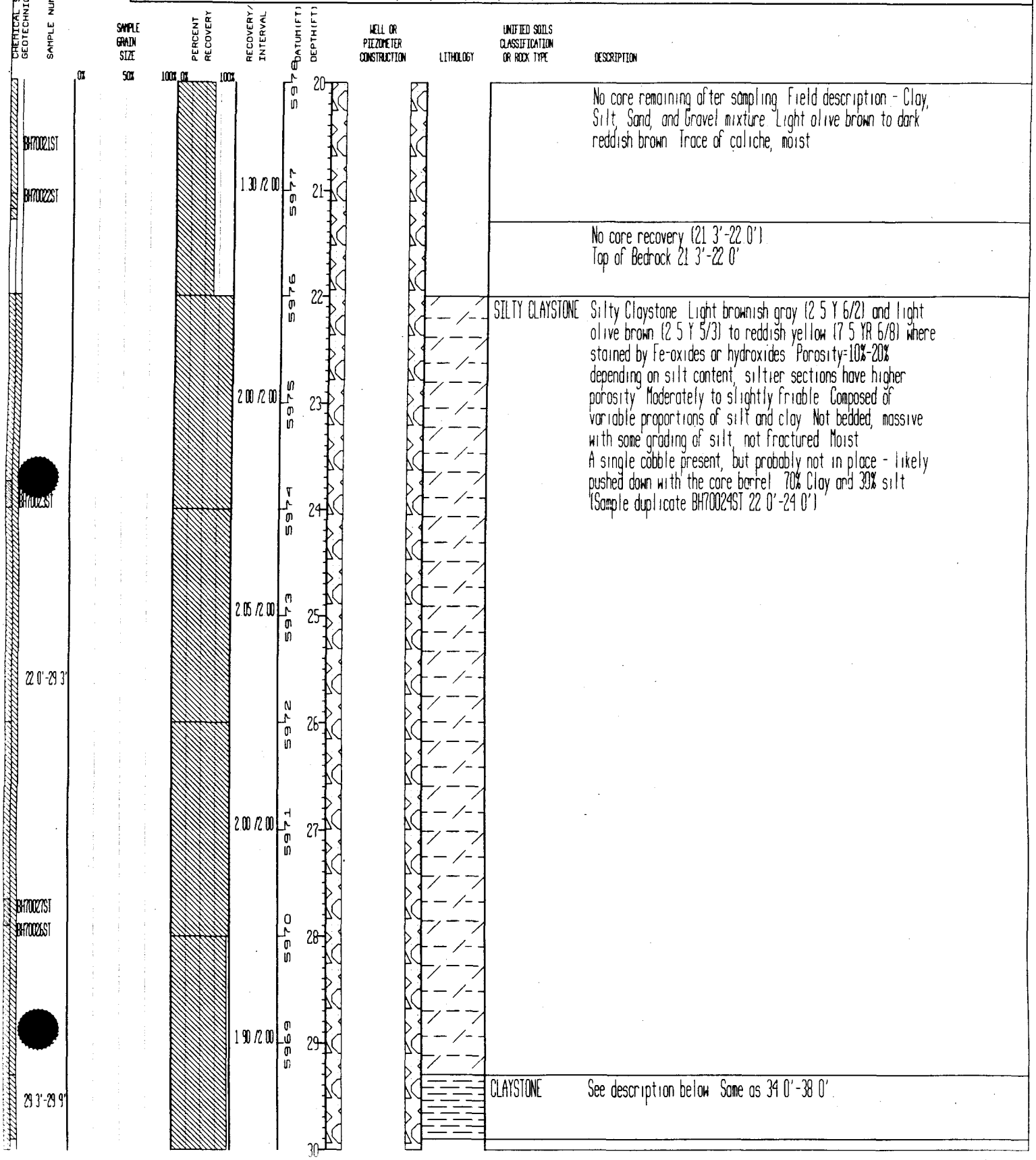
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA OU? PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'

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
BH70011ST				5988	10				No core remaining after sampling. Field description - Clay, Silt, Sand, Gravel mixture. Yellowish brown to dark brown. Not bedded, moist.
BH70012ST			1.20 /2.00	5987	11				No core recovery (11.2'-12.0')
				5986	12				No core remaining after sampling. Field description - Same as above.
BH70013ST BH70014ST			1.00 /2.00	5985	13				No core recovery (13.0'-14.0')
				5984	14				No core remaining after sampling. Field description - Same as above with increasing gravel content.
BH70015ST BH70016ST			1.10 /2.00	5983	15				No core recovery (15.1'-16.0')
				5982	16				No core remaining after sampling. Field description - Same as above.
BH70017ST BH70018ST			0.90 /2.00	5981	17				No core recovery (16.9'-18.0')
				5980	18				No core remaining after sampling. Field description - Gravelly Clayey Silt and Sand. Brown to dark brown. Not bedded, possible caliche present at base, moist.
BH70019ST BH70020ST			1.00 /2.00	5979	19				No core recovery (19.0'-20.0')
					20				

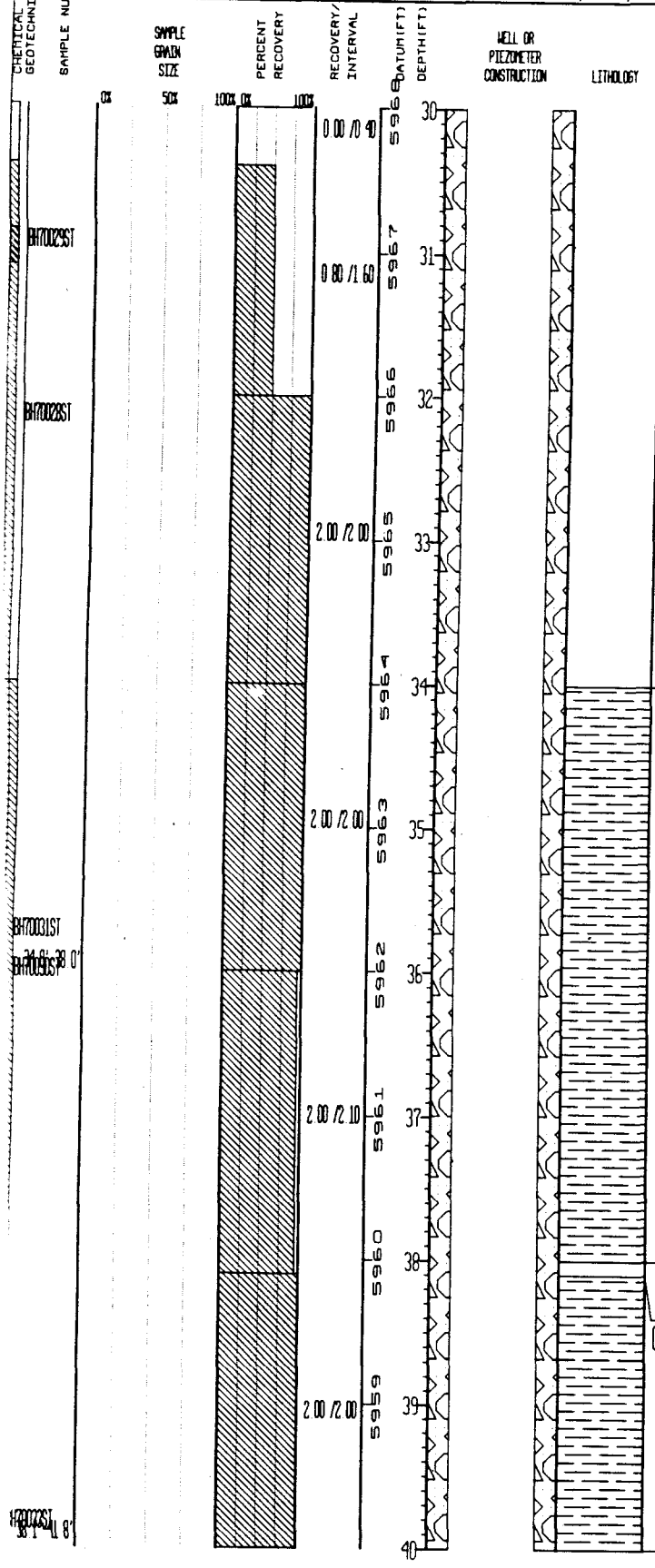
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151 5	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-65 1', CEMENT GROUT 0 0'-118 2', BENTONITE SEAL 118 2'-120 6', SAND 120 6'-137 2', NATURAL BACKFILL 137 2'-151 5', CENTRALIZERS PLACED AT 17 0', 37 0', 57 0', 77 0', 97 0', 117 0', 137 0', 2' SUMP 136 0'-138 0', DEPTH TO BEDROCK 22 0', ROTARY DRILLED 56 6'-151 5'



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

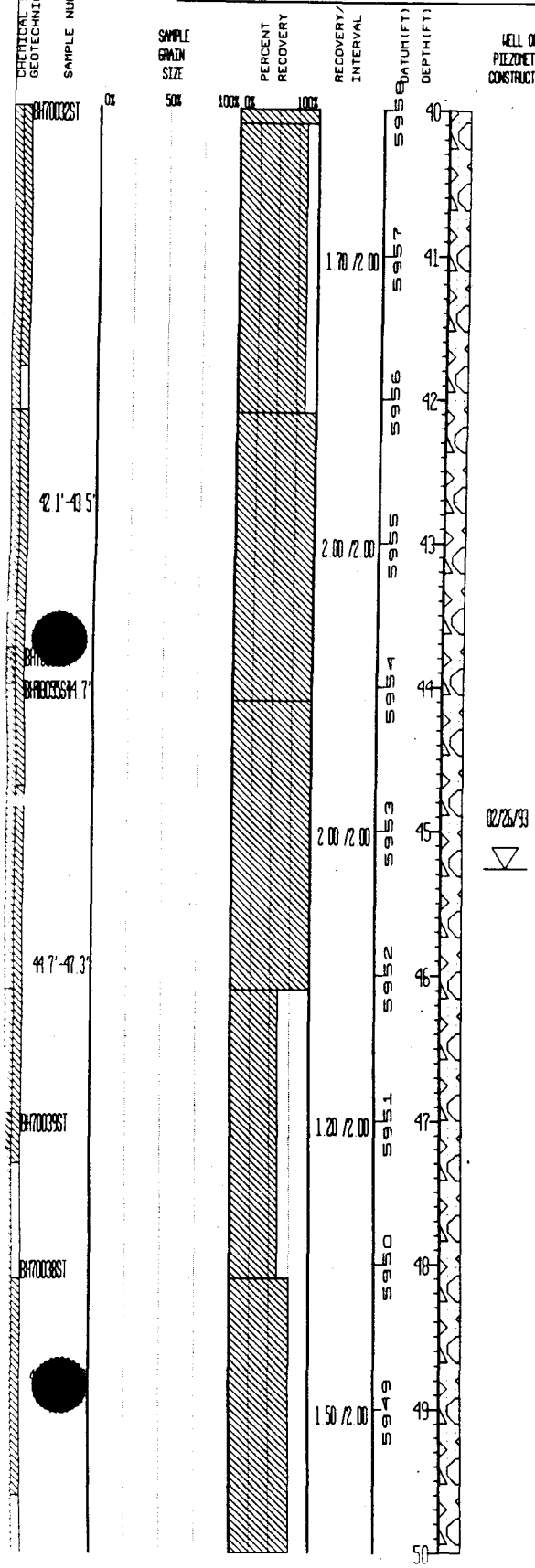
REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (29.9'-30.4')
	No core remaining after sampling. Field description - Claystone, olive gray and mottled with orange Fe-oxide stains. Massive, not bedded. Moist to slightly moist.
	No core recovery (31.2'-32.0')
	Same as above (30.4'-31.2')
CLAYSTONE	Claystone with some silt. Light olive brown (2.5 Y 5/3) to gray (5 Y 5/1) with stains colored olive yellow (2.5 Y 6/8). Porosity varies from 8% to 20% depending on degree of weathering. No cement. Moderately to slightly friable. Massive. Mottled coloring due to Fe-hydroxide staining. Trace of caliche below 41.0'. Not fractured. Moist. 90% Gravel and 10% silt
	No core recovery (38.0'-38.1')
CLAYSTONE	Same as above with additional small Fe-oxide concretions present 38.1'-38.3'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'



LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	CLAYSTONE	Same as above (Sample duplicate BH70034ST 38.1'-42.1')
		No core recovery (41.8'-42.1')
	CLAYSTONE	Same as above (Sample duplicate BH70037ST 42.1'-46.1')
	CLAYSTONE	Claystone with some carbonaceous material. Dark brown (7.5 YR 4/2) with medium sand-sized frags of black carbonaceous material. Porosity<10%, no cement, slightly friable, not bedded. Claystone smeared during drilling. 92% Clay and 8% silt
	CLAYSTONE	Claystone with some silt. Light olive brown (2.5 Y 5/3), olive yellow (2.5 Y 6/6) and dark grayish brown (2.5 Y 4/2). Trace of $CaCO_3$ throughout with some concentrated at 54.0'-55.0'. Carbonaceous material also present throughout, but localized at 45' & 55', porosity=20%, no cement, moderately to highly friable, no bedding apparent except where carbonaceous material marks subhorizontal bedding surfaces - irregular and thin to medium thickness. Not fractured, but commonly broken by drilling. 85% Clay and 15% silt
		No core recovery (47.3'-48.1')
	CLAYSTONE	Same as above
		No core recovery (49.6'-50.1')

STATE PLANE COORDINATE		TOTAL DEPTH (FT): 151.5	GROUND ELEVATION (FT): 5998.00	PROJECT NUMBER: 989073	LOG OF BORING NUMBER
NORTH	752100	AREA C/J7 PRESENT LANDFILL	CASING DIAMETER (IN): 2	GEOLOGIST: JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER: 12J	BOREHOLE DIAMETER (IN): 7.0	DATE DRILLED: 01/18/93	

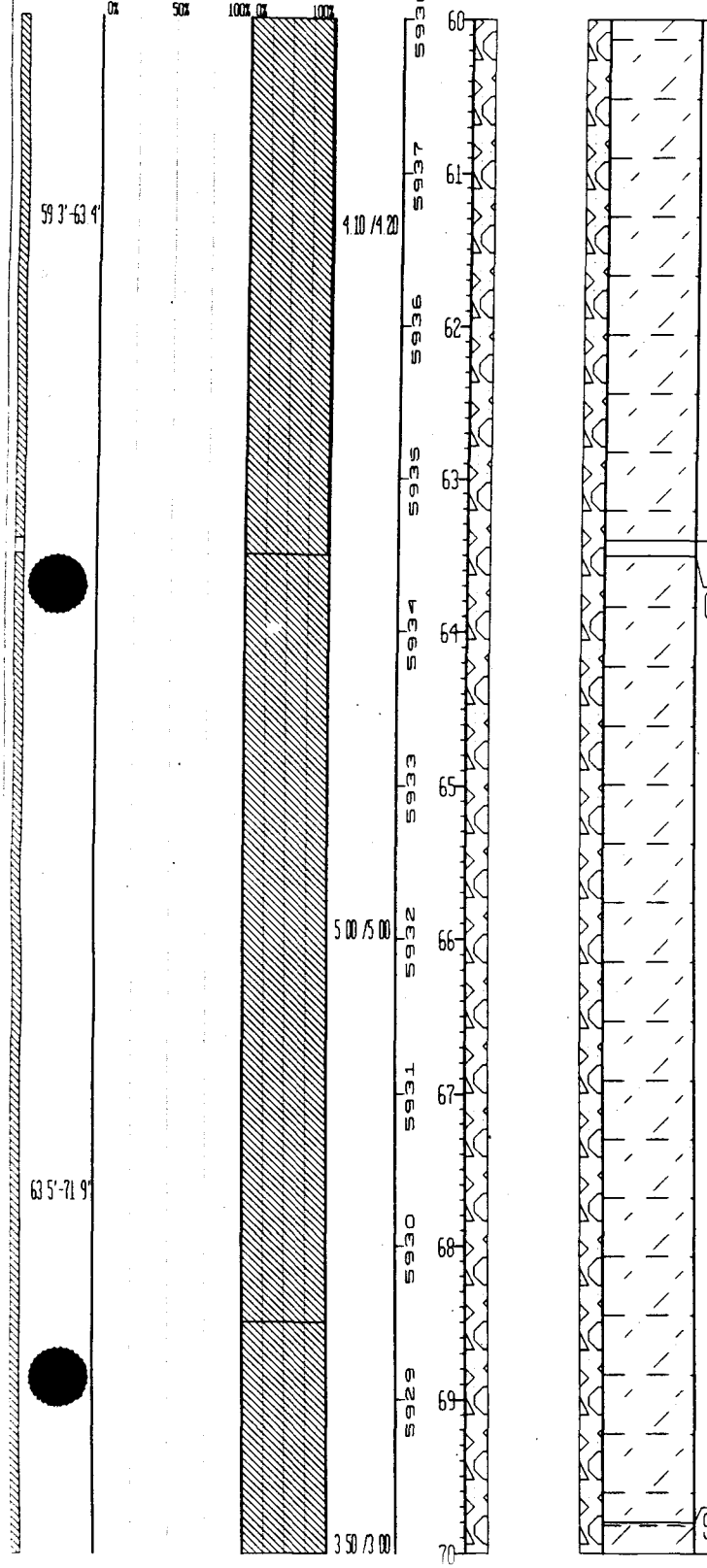
REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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				No core recovery (49.6'-50.1')
50.1'-51.3'	BH70041ST			1.20/2.00	5947	51			CLAYSTONE	Same as above
										No core recovery (51.3'-52.1')
	BH70040ST				5946	52			CLAYSTONE	Same as above
52.1'-53.8'				1.70/2.00	5945	53				
					5944	54				No core recovery 953.8'-54.1')
									CLAYSTONE	Same as above
54.1'-56.0'				2.00/2.00	5943	55				
	BH70043ST BH70042ST				5942	56			CLAYEY SILTSTONE	Clayey Siltstone with some carbonaceous material. Very dark gray (5 Y 3/1). Porosity=10%-15%, no cement, moderately to slightly friable. Fine to very fine sand-sized frags of black carbonaceous material and trace of CaCO3 (fills voids). Wavy horizontal bedding marked by lighter silt and black carbonaceous material on bedding surfaces, bedding is thin, not fractured. Moist. 60% Silt, 35% clay, and 5% carbonaceous material.
56.0'-57.6'				1.50/2.00	5941	57				
					5940	58				No core recovery 957.6'-58.1'0
58.1'-59.1'				1.00/1.20	5939	59			CLAYEY SILTSTONE	Same as above
										No core recovery (59.1'-59.3')
						60			CLAYEY SILTSTONE	Same as above

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151 5	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 0U7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-65 1', CEMENT GROUT 0 0'-118 2', BENTONITE SEAL 118 2'-120 6', SAND 120 6'-137 2', NATURAL BACKFILL 137 2'-151 5', CENTRALIZERS PLACED AT 17 0', 37 0', 57 0', 77 0', 97 0', 117 0', 137 0', 2' SUMP 136 0'-138 0', DEPTH TO BEDROCK 22 0', ROTARY DRILLED 56 6'-151 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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 SILTSTONE Same as above

No core recovery (63 4'-63 5')

CLAYEY SILTSTONE Same as above with additional description - Hard calcareous laminae scattered between 64 2'-66 0', and hard brown siltstone nodules scattered below 68 7'

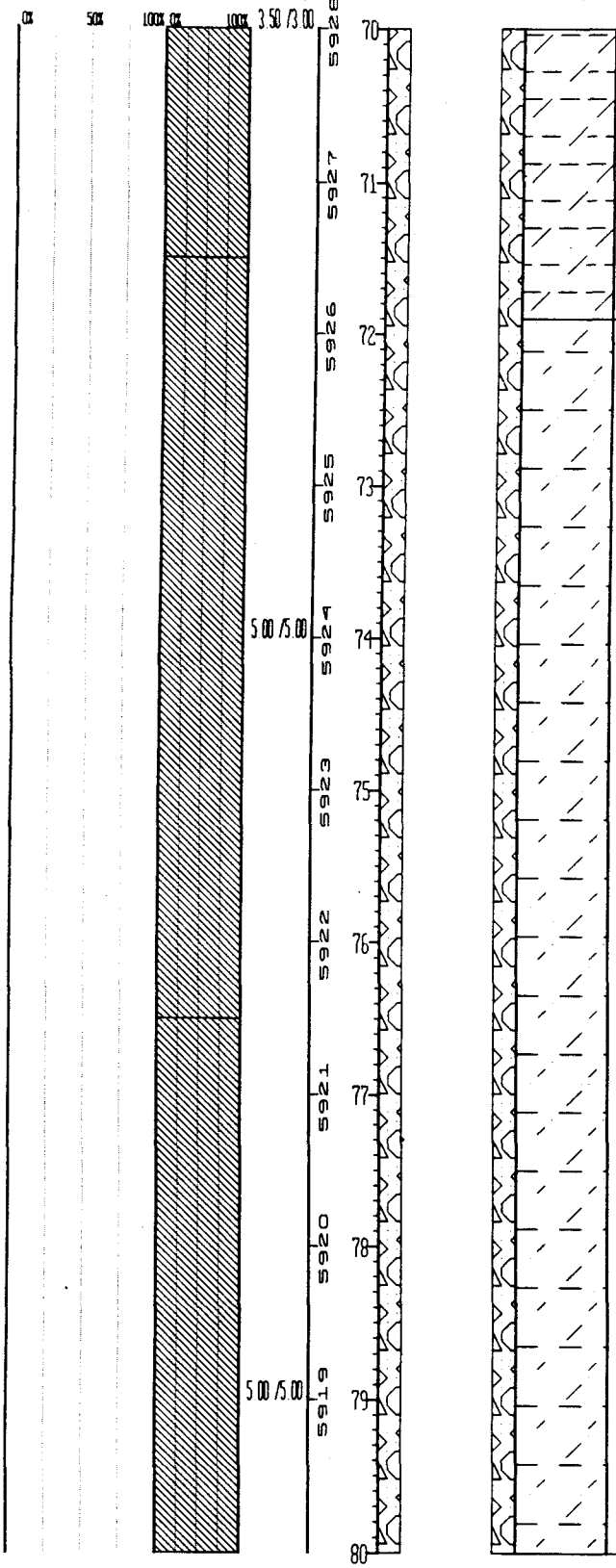
SILTY CLAYSTONE See description below 70 0'-71 9'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH:	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0'. 2' SUMP 136.0'-138.0'. DEPTH TO BEDROCK 22.0'. ROTARY DRILLED 56.6'-151.5'

CHEMICAL SAMPLE
GEOTECHNICAL SAMPLE
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 Silty Claystone Very dark gray (5 Y 3/1) Occasional hard siltstone nodules (silica cemented), trace of carbonaceous material, porosity=5%-10% Argillaceous cement and scattered traces of calcareous cement Slightly to non-friable Vague wavy laminations, grain size distribution varies, siltier at 70.6'-71.0' and more clay 71.2'-71.5'. Moist. 55% Clay, 42% silt, and 3% carbonaceous material

CLAYEY SILTSTONE Clayey Siltstone to Silty Claystone Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1) Varies from silt-rich to clay-rich intervals Hard silicified siltstone nodules thinly scattered throughout Porosity ranges from 0%-15% and corresponds with grain size variation Argillaceous cement with trace of calcareous cement in some portions moderately to non-friable, mostly slightly friable Trace carbonaceous material (some zones richer than others) Not bedded to laminated (subhorizontal, parallel to wavy) Moist
Hard calcareous lenses and limestone present at 96.3'-97.3' (sand sized to 1/4" laminae) 50% Clay, 40% silt, and 10% carbonaceous material
Darker color 87.0'-93.0' and 96.5'-99.5'
Siltstone nodules present, but most notable 88.0'-96.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151 5	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57. HSA. SAMPLED 0 0'-65 1'. CEMENT GROUT 0 0'-118 2', BENTONITE SEAL 118 2'-120 6', SAND 120 6'-137 2', NATURAL BACKFILL 137 2'-151 5', CENTRALIZERS PLACED AT 17 0', 37 0', 57 0', 77 0', 97 0', 117 0', 137 0'. 2' SUMP 136 0'-138 0'. DEPTH TO BEDROCK 22 0'. ROTARY DRILLED 56 6'-151 5'

CHEMICAL SAMPLE DEPTH / 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%	100% 0% 100%	2 50 /2 00 5 00 /5 00	5918 5917 5916 5915 5914 5913 5912 5911 5910 5909	80 81 82 83 84 85 86 87 88 89 90			CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1) Varies from silt-rich to clay-rich intervals Hard silicified siltstone nodules thinly scattered throughout Porosity ranges from 0%-15% and corresponds with grain size variation Argillaceous cement with trace of calcareous cement in some portions moderately to non-friable, mostly slightly friable Trace carbonaceous material (some zones richer than others) Not bedded to laminated (subhorizontal, parallel to wavy) Moist Hard calcareous lenses and limestone present at 96 3'-97 3' (sand sized to 1/4" laminae) 50% Clay, 40% silt, and 10% carbonaceous material Darker color 87 0'-93 0' and 96 5'-99 5' Siltstone nodules present, but most notable 88 0'-96 0'
71 9'-104 3'										

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%	5.00/4.80	5908	90			CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone. Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1). Varies from silt-rich to clay-rich intervals. Hard silicified siltstone nodules thinly scattered throughout. Porosity ranges from 0%-15% and corresponds with grain size variation. Argillaceous cement with trace of calcareous cement in some portions, moderately to non-friable, mostly slightly friable. Trace carbonaceous material (some zones richer than others). Not bedded to laminated (subhorizontal, parallel to wavy). Moist. Hard calcareous lenses and limestone present at 96.3'-97.3' (sand sized to 1/4" laminae). 50% Clay, 40% silt, and 10% carbonaceous material. Darker color 87.0'-93.0' and 96.5'-99.5'. Siltstone nodules present, but most notable 88.0'-96.0'
					5907	91				
					5906	92				
					5905	93				
					5904	94				
					5903	95				
				5.00/4.80	5902	96				
					5901	97				
					5900	98				
					5899	99				
						100				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT)	5998.00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7.0	DATE DRILLED	01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%	5.00/5.00	5898	100			CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone. Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1). Varies from silt-rich to clay-rich intervals. Hard silicified siltstone nodules thinly scattered throughout. Porosity ranges from 0%-15% and corresponds with grain size variation. Argillaceous cement with trace of calcareous cement in some portions, moderately to non-friable, mostly slightly friable. Trace carbonaceous material (some zones richer than others). Not bedded to laminated (subhorizontal, parallel to wavy). Moist. Hard calcareous lenses and limestone present at 96.3'-97.3' (sand sized to 1/4" laminae). 50% Clay, 40% silt, and 10% carbonaceous material. Darker color 87.0'-93.0' and 96.5'-99.5'. Siltstone nodules present, but most notable 88.0'-96.0'
					5897	101				
					5896	102				
					5895	103				
					5894	104				
104.3'-105.9'					5893	105			SILTSTONE	Siltstone with some clay to Clayey Siltstone. Gray (5 Y 5/1). Porosity=10%-20%, argillaceous cement with trace of calcareous cement, slightly to moderately friable, trace of scattered carbonaceous material of silt to very fine sand size. No apparent bedding. Moist. 75% Silt and 25% clay.
				5.00/5.40	5892	106			SILTY CLAYSTONE	Silty Claystone. Very dark gray (5 Y 3/1) to black (5 Y 2.5/1). Some zones siltier to Clayey Siltstone. Porosity=5%-10%, argillaceous cement with trace of calcareous cement throughout, slightly to non-friable. Trace to some carbonaceous material (clay to silt sized). Massive to wavy and contorted laminations. Moist. 75% Clay, 20% silt, and 5% carbonaceous material.
					5891	107				
					5890	108				
					5889	109				
						110				

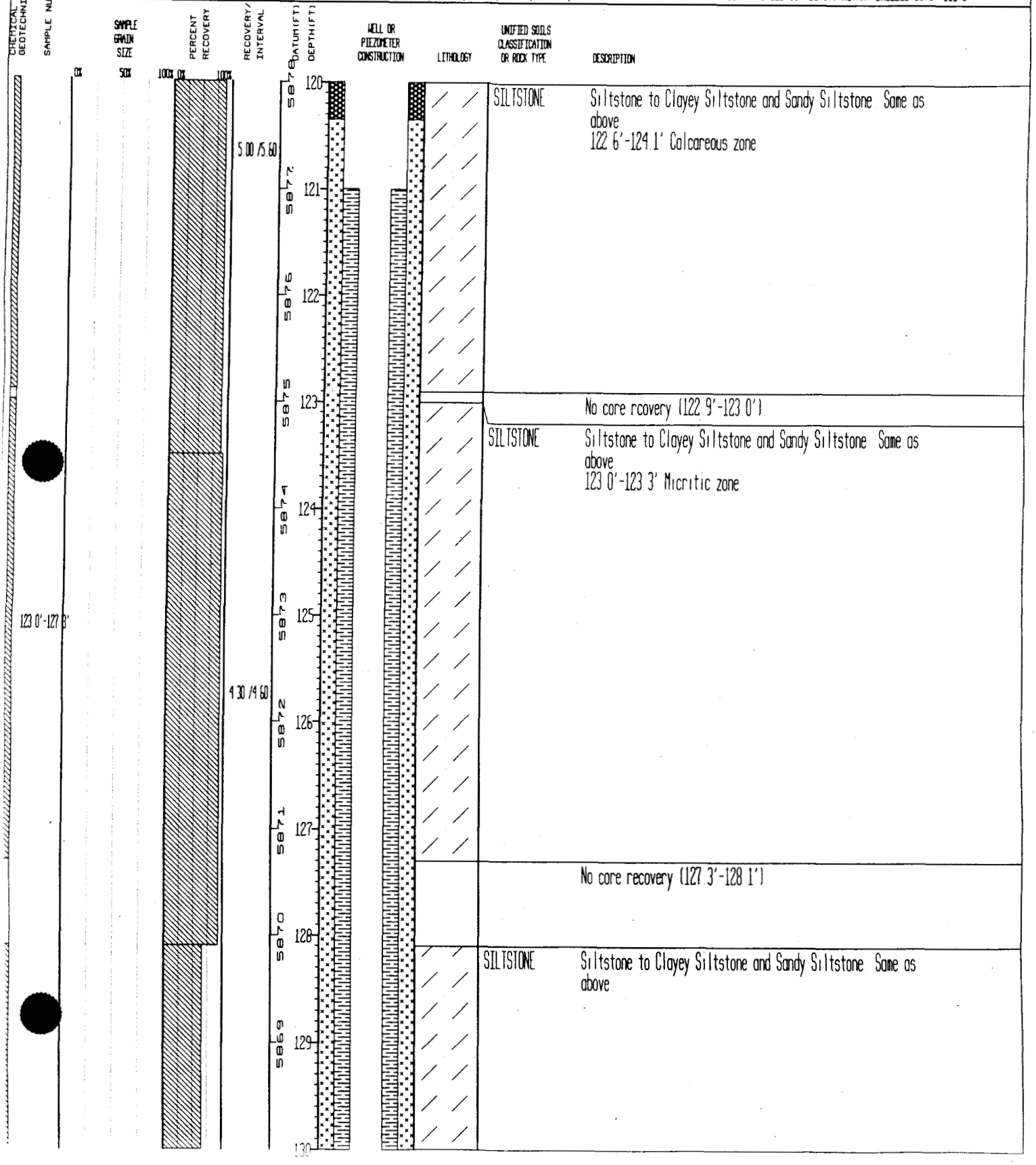
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151 5	GROUND ELEVATION (FT) 5998 00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 0U7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-65 1', CEMENT GROUT 0 0'-118 2', BENTONITE SEAL 118.2'-120 6', SAND 120 6'-137 2', NATURAL BACKFILL 137 2'-151 5', CENTRALIZERS PLACED AT 17 0', 37 0', 57 0', 77 0', 97 0', 117 0', 137 0', 2' SUMP 136 0'-138 0', DEPTH TO BEDROCK 22 0', ROTARY DRILLED 56 6'-151 5'

CHEMICAL SAMPLE / GEOTECHNICAL 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
	105 7'-115 2'			5.00 /4.40	5888	110			SILTY CLAYSTONE	Silty Claystone Same as above
					5887	111				
					5886	112				
					5885	113				
					5884	114				
					5883	115				
				5.00 /5.00					SILTSTONE	Siltstone to Clayey Siltstone and Sandy Siltstone Gray (5 Y 5/1) to black (5 Y 2 5/1) and dark grayish brown (2 5 Y 4/2) Mainly silts, trace to some clay, trace to some very fine to fine, subangular to rounded, quartz sand, well sorted Porosity=5%-10% in clay-rich layers, 15%-20% in silt-rich layers, and 30% in sandy zones. Mostly argillaceous cement, some zones with trace of calcareous cement, and few zones are micritic (123 0'-123.3') or very calcareous (122.6'-124.1') Slightly to moderately friable. Trace to some carbonaceous material (137.6'-138.1', 140 1'-140 5'). Mostly laminated - parallel to cross-bedded Moist 70% Silt, 20% clay, and 10% sand
					5882	116				
					5881	117				
					5880	118				
	115 2'-122 8'				5879	119				
						120				

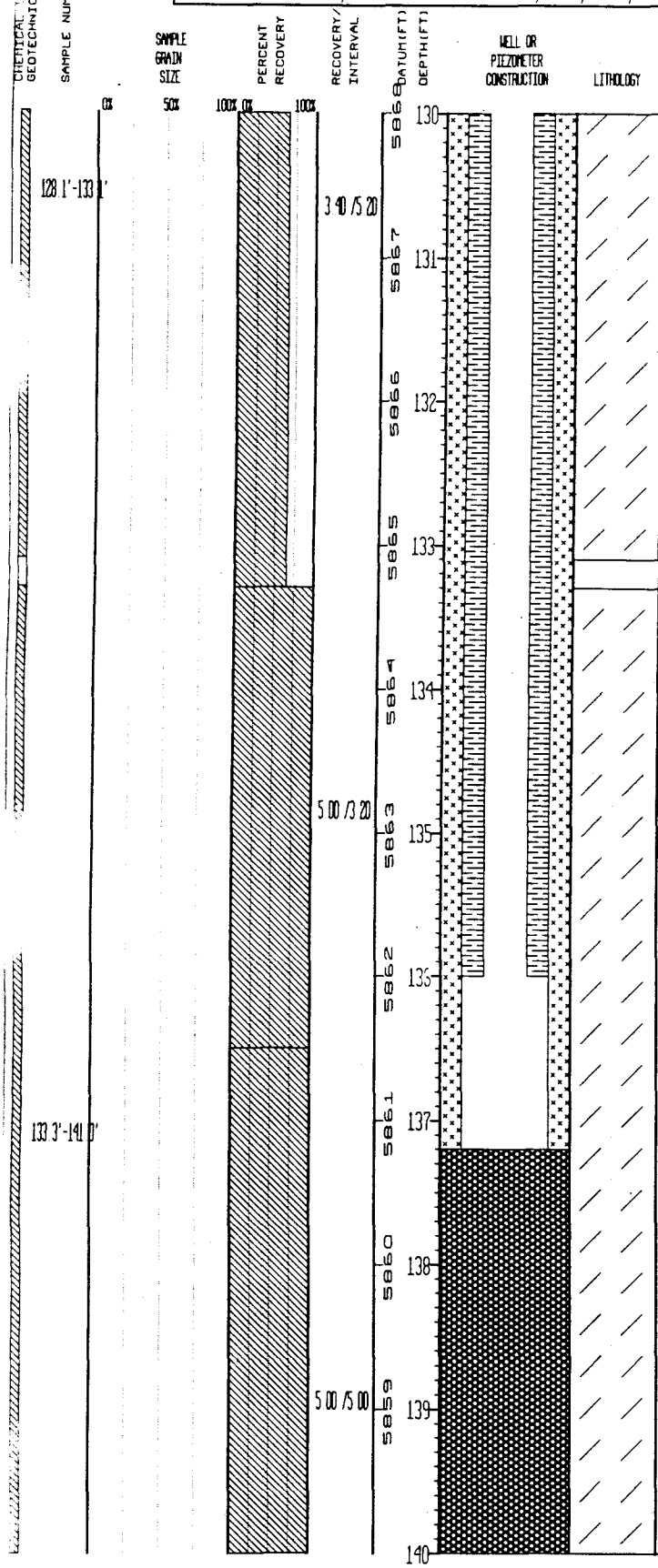
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT)	5998.00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752100	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7.0	DATE DRILLED	01/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-65.1', CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CENTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0', 2' SUMP 136.0'-138.0', DEPTH TO BEDROCK 22.0', ROTARY DRILLED 56.6'-151.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTSTONE	Siltstone to Clayey Siltstone and Sandy Siltstone. Same as above
	No core recovery (133.1'-133.3')
SILTSTONE	Siltstone to Clayey Siltstone and Sandy Siltstone. Same as above 137.6'-138.1' concentration of carbonaceous material

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151.5	GROUND ELEVATION (FT) 5998.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752100	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 01/18/93	

REMARKS MOBIL DRILL B-57. HSA. SAMPLED 0.0'-65.1'. CEMENT GROUT 0.0'-118.2', BENTONITE SEAL 118.2'-120.6', SAND 120.6'-137.2', NATURAL BACKFILL 137.2'-151.5', CONTRALIZERS PLACED AT 17.0', 37.0', 57.0', 77.0', 97.0', 117.0', 137.0'. 2' SUMP 136.0'-138.0'. DEPTH TO BEDROCK 22.0'. ROTARY DRILLED 56.6'-151.5'

CHEMICAL SAMPLE DEPTH / 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%	100% 0% 100%		5858	140			SILTSTONE	Siltstone to Clayey Siltstone and Sandy Siltstone Same as above. 140.1'-140.5' concentration of carbonaceous material
					5857	141			CLAYSTONE	Claystone with some silt and carbonaceous material. Very dark gray (5 Y 3/1) to black (5 Y 5/1). Porosity=5%-15%, no cement, slightly to moderately friable, variable percentage of carbonaceous material, most organic rich between 148'-149.0' and below 150.0' where carbonaceous material makes up 10%-15% of claystone. Trace of $CaCO_3$ dispersed throughout, not fractured, but broken during drilling. Core surfaces marked by dessication cracks at time of logging due to drying since core recovery. No apparent bedding. Carbonaceous material occurs along subhorizontal thin beds below 148.0'. Moist. 90% Clay, 8% silt, and 2% carbonaceous material
					5856	142				
					5855	143				
				5.00/5.00	5854	144				
					5853	145				
141.0'-151.5'					5852	146				
					5851	147				
					5850	148				
				5.00/5.00	5849	149				
						150				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 151 5	GROUND ELEVATION (FT)	5998 00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752100	AREA G17 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70593
EAST	2082390	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7 0	DATE DRILLED	01/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-65 1', CEMENT GROUT 0 0'-118.2', BENTONITE SEAL 118 2'-120 6', SAND 120 6'-137 2', NATURAL BACKFILL 137 2'-151.5', CENTRALIZERS PLACED AT 17 0', 37 0', 57 0', 77 0', 97 0', 117 0', 137 0', 2' SUMP 136 0'-138 0', DEPTH TO BEDROCK 22 0', ROTARY DRILLED 56 6'-151 5'

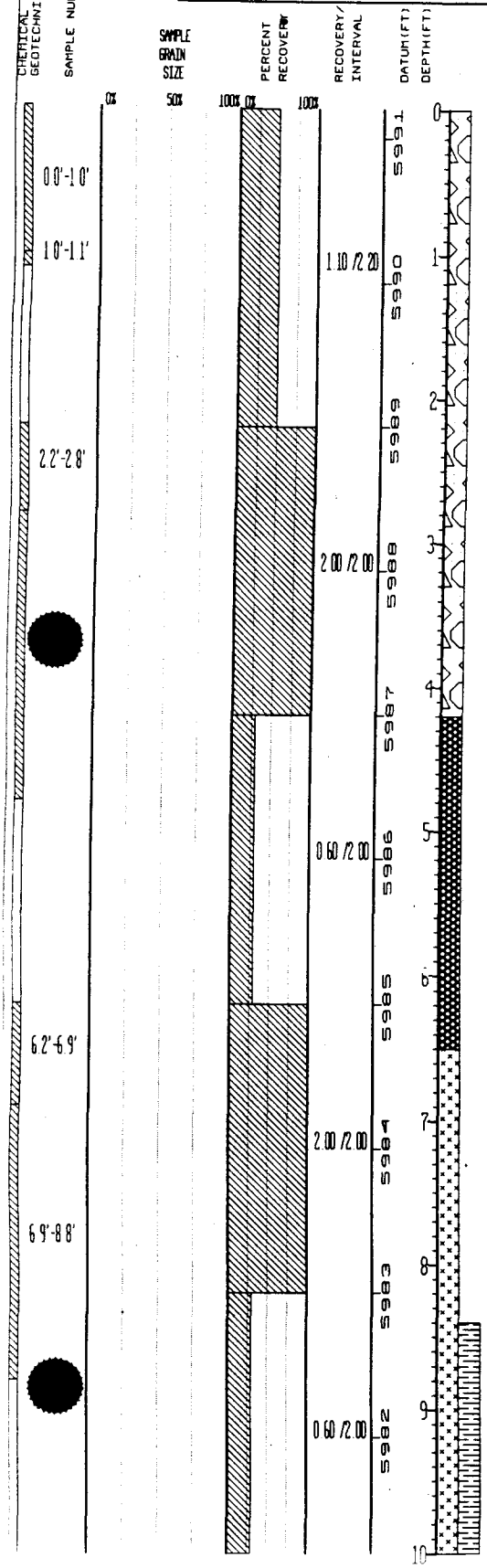
CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER

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
5848	150			CLAYSTONE	Same as above
5847	151				
					Total Depth 151 5'
5846	152				
5845	153				
5844	154				
5843	155				
5842	156				
5841	157				
5840	158				
5839	159				
	160				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 3	GROUND ELEVATION (FT) 5991 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70693
EAST	2082799	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 10 25	DATE DRILLED 12/04/92	

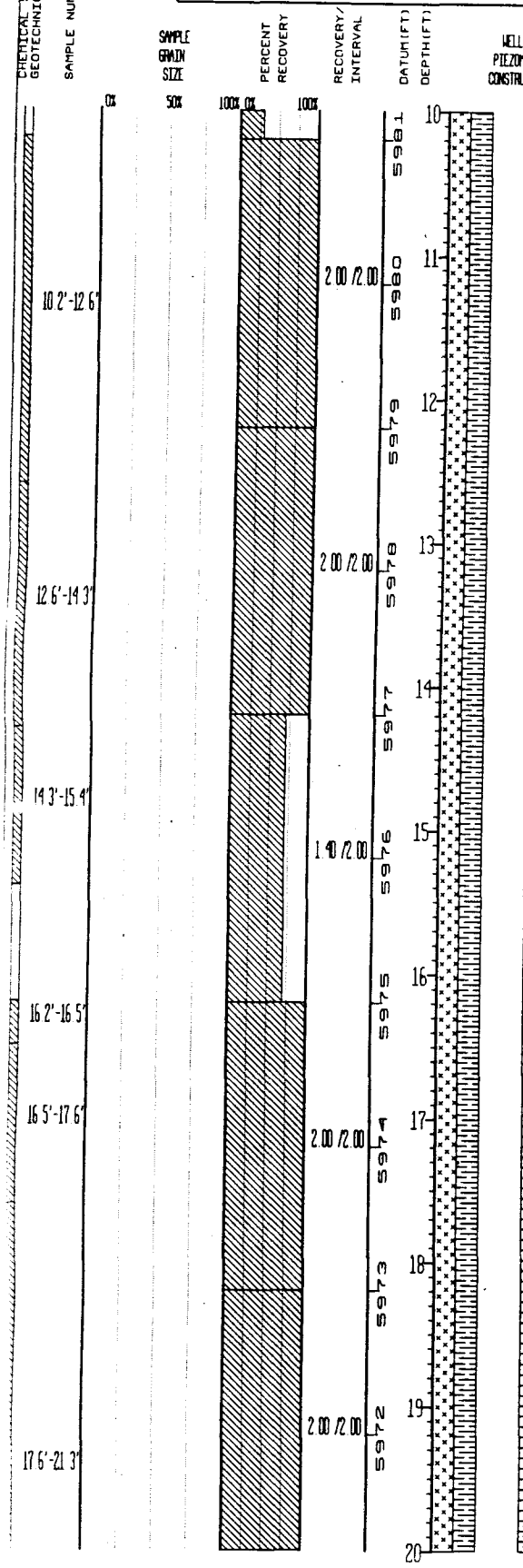
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-4 2', BENTONITE SEAL 4 2'-6 5', SAND 6 5'-30 5', NO BACKFILL, NO CENTRALIZERS PLACED, BOREHOLE DIAMETER 10 25" 0'-28.5' AND 3" 28 5'-30', 2 1' SUMP 28 4'- 30.5', DEPTH TO BEDROCK 28 5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
GC	Clayey Gravel with some Silt and Sand Dark brown (7 5 YR 3/2) well graded coarse to fine gravel (max=1 5" diam) and fine to coarse sand in silty clay matrix Subangular to angular sand and gravel composed of quartz and feldspar frags Moist 70% Gravel, 10% clay, 10% sand, and 5% silt
GC	See description below Same as 2 2'-2 8'
	No core recovery (1 1'-2.2')
GC	Sandy Clayey Gravel Dark red (2 5 YR 3/6) well graded fine to coarse gravel and sand in silty clay matrix Subangular sand and gravel, slightly moist 45% Gravel, 30% sand, 25% clay, and 5% silt
SC	Gravelly Clayey Sand with some silt Dark brown (7 5 YR 4/4) fine to coarse gravel (max=3" diam) and fine to coarse sand in silty clay matrix Well graded, angular to subangular gravel composed of weathered rock frags (igneous and metamorphic), quartz, and feldspar Sand composed of quartz and feldspar Gravel and sand strongly weathered with some secondary clay Slightly moist 30% Gravel, 35% sand, 20% clay, and 15% silt
	No core recovery (4 8'-6.2')
SM	Sandy Gravel with some silt Light olive brown (2 5 Y 5/6) to black (N2) Poorly graded medium to fine gravel in fine to coarse sand and silt matrix with a trace of clay Gravel and sand subangular to subrounded Matrix contains tarry substance (creosote?) Moist 40% Gravel, 50% sand, 8% silt, and 2% clay
SC	Gravelly Sand with trace of clay Brown (7 5 YR 5/4) to strong brown (7 5 YR 5/6) Well graded, coarse to fine gravel (max=2"diam) and sand (mean=coarse) in silty clay matrix Angular to subangular gravel (broken) and subangular sand Gravel composed of rock frags and quartz Sand composed of rock frags, quartz, feldspar, and micas Moist 27% Gravel, 65% sand, 5% clay, and 3% silt
	No core recovery (8 8'-10.2')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30.3	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70693
EAST	2082799	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 12/04/92	

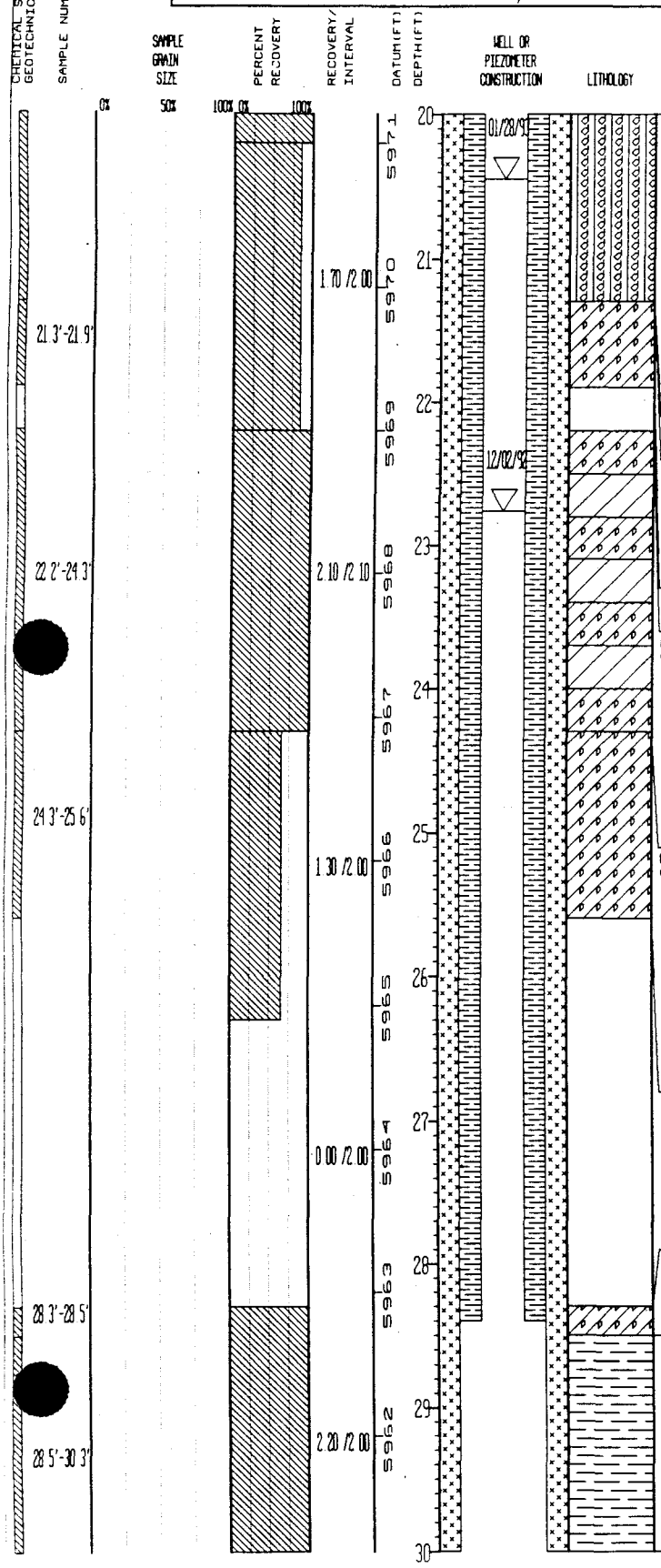
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-4.2', BENTONITE SEAL 4.2'-6.5', SAND 6.5'-30.5', NO BACKFILL, NO CENTRALIZERS PLACED, BOREHOLE DIAMETER 10.25" 0'-28.5' AND 3" 28.5'-30', 2.1' SUMP 28.4'-30.5', DEPTH TO BEDROCK 28.5'.



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (8.8'-10.2')
SC	Same as above
ML	Sandy Silt with some clay. Reddish yellow (7.5 YR 6/8). Very fine to fine sand in clayey silt matrix. Low plasticity. Poorly graded. Subangular to subrounded sand, composed of quartz, micas - including biotite, rock frags, trace of black stained material throughout (not identified). Moist. 50% Silt, 30% sand, and 15% clay
SC	Gravelly Sand. Reddish yellow (7.5 YR 6/6) fine to medium gravel and very fine to coarse sand (mean=coarse) in clay and silt matrix. Well graded. Subangular to angular sand and gravel composed of rock frags and quartz. Moist. 23% Gravel, 56% sand, 11% clay, and 10% silt.
	No core recovery (15.4'-16.2')
SC	Same as above
SC	Clayey Sand with some silt. Light brownish gray (2.5 Y 6/2) to reddish yellow (7.5 YR 6/8). Very fine to fine sand in silty clay matrix. Subangular to subrounded sand composed of quartz, micas, rock frags, and feldspar. Moist. 50% Sand, 40% clay, and 10% silt
SM	Silty Sand with some gravel and trace of clay. Light brownish gray (2.5 Y 6/2) to reddish yellow (7.5 Y 6/8). Heterogeneous mix of gravelly clayey sand, silty sand, and clayey silty sand. Gravel concentrated between 18.0'-18.5' (damaged core). Fine to medium gravel (max=0.5" diam) and very fine to fine sand in silty clay matrix. Well graded, sub-angular to subrounded gravel and sand composed of rock frags and quartz with some feldspar, micas, and clays. Moist to wet. Grades into underlying clay. 7% Gravel, 50% Sand, 30% silt, and 13% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 3	GROUND ELEVATION (FT) 5991 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70693
EAST	2082799	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 10 25	DATE DRILLED 12/04/92	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-4 2', BENTONITE SEAL 4 2'-6 5', SAND 6 5'-30 5', NO BACKFILL, NO CENTRALIZERS PLACED, BOREHOLE DIAMETER 10 25" 0'-28 5' AND 3" 28 5'-30', 2 1' SUMP 28 4'- 30 5', DEPTH TO BEDROCK 28 5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Silty Sand with some gravel and trace of clay Light brownish gray (2 5 Y 6/2) to reddish yellow (7 5 Y 6/8) Heterogeneous mix of gravelly clayey sand, silty sand, and clayey silty sand Gravel concentrated between 18 0'-18 5' (damaged core) Fine to medium gravel (max=0 5" diam) and very fine to fine sand in silty clay matrix Well graded, sub-angular to subrounded gravel and sand composed of rock frags and quartz with some feldspar, micas, and clays Moist to wet Grades into underlying clay 7% Gravel, 50% Sand, 30% silt, and 13% clay
SM	Same as above
SC	Clayey Sand with some gravel Strong brown (7 5 Y 5/8) Fine gravel and fine to coarse sand in silty clay matrix Sub-rounded sand and gravel Moist to wet 5% Gravel, 60% sand, 20% clay, and 15% silt
	No core recovery (21 9'-22 2')
SC	Clayey Sand to Sandy Clay Light olive brown (2 5 Y 5/3) to light brownish gray (2 5 Y 6/2) Interbedded sand and clay layers (thick) Very fine to medium sand in clay and silt matrix Subangular to subrounded sand composed of quartz, felspar, micas, rock frags, and trace of carbonaceous material Some Fe-oxide stains within clay and sand Wet 50% Sand, 38% clay, and 12% silt, to 72% clay, 10% silt, and 18% sand
SC	Gravelly Silty Sand Strong brown (7 5 Y 5/6) Coarse to fine gravel (max=1 3/4" diam) and fine to coarse sand in clayey silt matrix Subangular gravel but angular where broken with angular to subrounded sand Well graded Gravel composed mainly of quartz, quartzite, and rock frags with some meta-morphic rocks Sand composed of quartz, rock frags, mafic minerals, and feldspar Wet/saturated 25% Gravel, 59% sand, 10% silt, and 6% clay
	No core recovery (25 6'-28 3')
SC	Same as above Top of bedrock 28 5'
CLAYSTONE	Claystone with trace of silt Grayish brown (2 5 Y 5/2) to light olive brown (2 5 Y 5/6) Clay with trace of silt (4%) Well sorted, porosity=10%, no cement, slightly friable, slightly weathered, mottled gray appearance with some ir-regular patches of Fe-oxide stains, massive, not fractured Moist 96% Clay and 4% silt

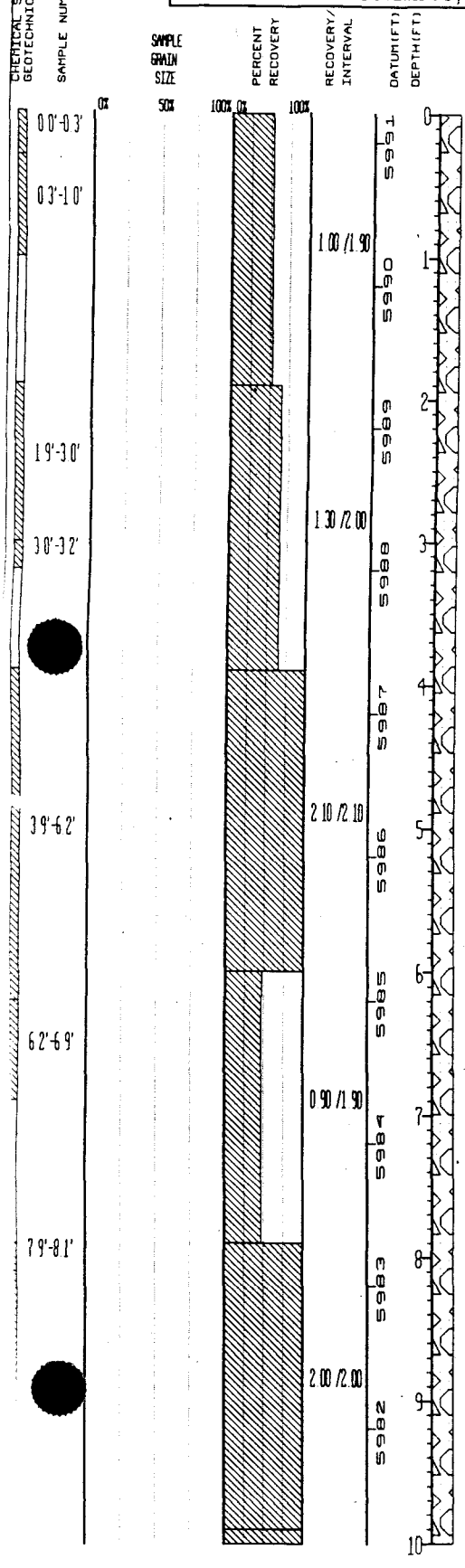
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 3	GROUND ELEVATION (FT) 5991 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70693
EAST	2082799	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 10 25	DATE DRILLED 12/04/92	

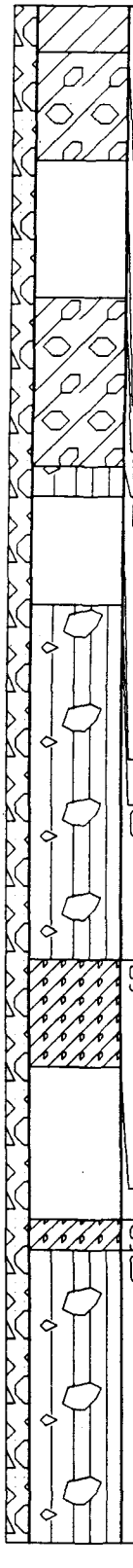
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-4 2', BENTONITE SEAL 4 2'-6 5', SAND 6 5'-30 5', NO BACKFILL, NO CENTRALIZERS PLACED, BOREHOLE DIAMETER 10 25" 0'-28 5' AND 3" 28 5'-30', 2 1' SUMP 28 4'- 30 5', DEPTH TO BEDROCK 28 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%		5961	30			CLAYSTONE	Same as above Total Depth 30 3'
					5960	31				
					5959	32				
					5958	33				
					5957	34				
					5956	35				
					5955	36				
					5954	37				
					5953	38				
					5952	39				
						40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'





UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CL	Sandy Gravelly Clay. Very dark grayish brown (2.5 Y 3/2). Fine gravel (mean=1" diam), angular to subrounded. Very fine to coarse (mean=very fine - medium) sand, subangular. Silty clay matrix, some organic content. Moist. 15% Silt, 14% gravel, 37% clay, and 40% sand.
GC	Sandy Clayey Gravel. Dark red (2.5 YR 5/6) to red (2.5 YR 4/1). Coarse to fine gravel (max=3" diam) and very fine to coarse sand in silty clay matrix. Well graded. Subrounded to angular gravel (broken from drilling). Gravel and sand composed of mainly quartzite and quartz with metamorphic rock fragments, feldspar, mafic minerals. Moist. 40% Gravel, 31% sand, 20% clay, and 9% silt.
	No core recovery (1.0'-1.9')
GC	Same as above
GM	Sandy Silty Gravel. Light yellowish brown (2.5 Y 6/3) to pink (7.5 YR 7/6). Very coarse to fine gravel (max=3" diam) and coarse to very fine sand in clayey silt matrix. Well graded. Subangular to subrounded gravel - angular where broken. Angular to subrounded sand composed mainly of weathered granitic material. Gravel composed of quartzite, quartz, granite, metamorphic rocks. Slightly moist. 46% Gravel, 37% sand, 11% silt, and 6% clay.
	No core recovery (3.2'-3.9')
GM	Same as above
SC	Gravelly Clayey Sand. Strong brown (7.5 YR 5/8). Coarse to fine gravel (max=1" diam) and very fine to coarse sand in silty clay matrix. Well graded. Angular to subrounded gravel and sand. Gravel mainly quartz and quartzite with some metamorphic rock, and granite. Sand mainly quartz with some feldspar and granite. Fe-stained matrix, moist. 36% Gravel, 40% sand, 18% clay, and 6% silt.
	No core recovery (6.9'-7.9')
SC	Same as above
GM	Sandy Gravel. Stong brown (7.5 YR 5/8). Coarse to fine gravel (max=4" diam) and very fine to coarse sand in clayey silt matrix. Well graded. Angular to subrounded gravel and subangular to subrounded sand. Gravel composed of quartzite, granite, and metamorphic rocks. Sand mainly quartz, mafic minerals, weathered feldspar, rock frags of schist and granite. Trace of $CaCO_3$. Slightly moist. 55% Gravel, 26% sand, 11% clay, and 8% silt.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATION NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

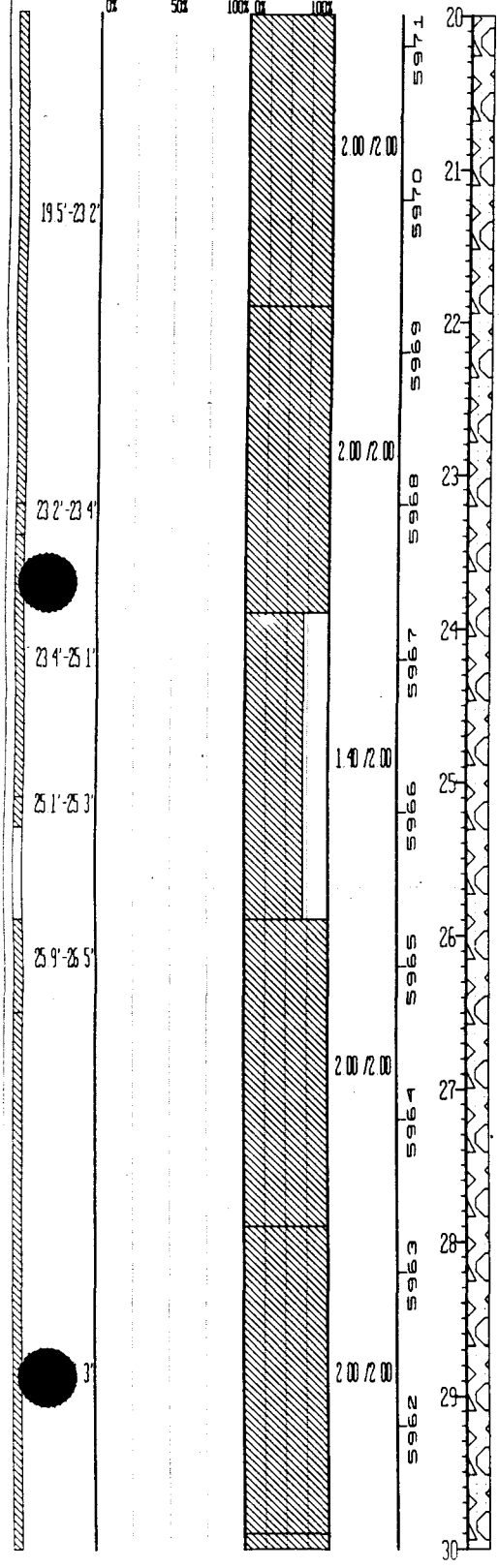
REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

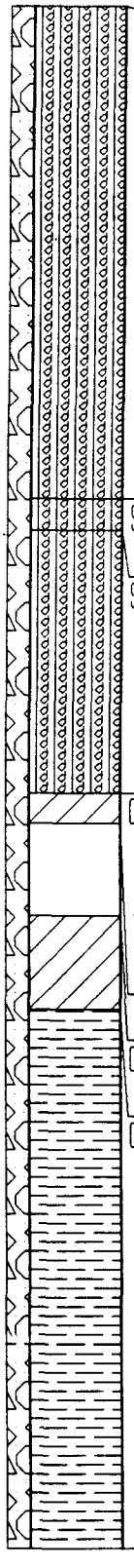
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% 50% 100%)	PERCENT RECOVERY (0% 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
8.1'-12.9'				2.00/2.00	5981	10			GM	Sandy Gravel. Stong brown (7.5 YR 5/8). Coarse to fine gravel (max=4" diam) and very fine to coarse sand in clayey silt matrix. Well graded. Angular to subrounded gravel and subangular to subrounded sand. Gravel composed of quartzite, granite, and metamorphic rocks. Sand mainly quartz, mafic minerals, weathered feldspar, rock frags of schist and granite. Trace of CaCO3. Slightly moist. 55% Gravel, 26% sand, 11% clay, and 8% silt
					5980	11				
					5979	12				
				1.00/2.00	5978	13				No core recovery (12.9'-13.9')
13.9'-14.0'					5977	14			GM	Same as above
14.0'-15.6'				2.00/2.00	5976	15			CL	Sandy Clay with some silt and trace of gravel. Light olive gray (5 Y 6/2) to reddish yellow (7.5 YR 6/1). Medium to fine gravel and fine to coarse sand, poorly graded in silty clay matrix. Subangular gravel and sand. Low plasticity matrix. Sand and gravel composed of quartz and feldspar, and rock fragments of weathered granite and quartzite with some metamorphic schist. Trace of CaCO3. Moist. 5% Gravel, 20% sand, 60% clay, and 15% silt
15.6'-15.9'									GM	Same as interval (8.1'-12.9')
15.9'-18.0'				2.00/2.00	5975	16			CL	Sandy Clay with some silt. Light yellowish brown (2.5 Y 6/3) to olive yellow (2.5 Y 6/8). Medium to very fine sand in silty clay matrix, poorly graded, subangular to subrounded sand. Low plasticity matrix. Sand composed of quartz, feldspar, and micas. Slightly moist. 12% Sand, 70% clay, and 18% silt
					5974	17				
18.0'-19.5'				2.00/2.00	5973	18	01/06/93		SC	Sandy Clay to Clayey Sand with some gravel. Light yellowish brown (2.5 Y 6/3) to olive yellow (2.5 Y 6/8). Fine to medium gravel (max=1/2" diam) and very fine to coarse sand (mean=fine-medium) in silty clay matrix, moderately graded. Low plasticity matrix. Sand composed of quartz, feldspar, micas. Slightly moist. 5% Gravel, 45% sand, 30% clay, and 20% silt.
					5972	19			SM	See description next page.
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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

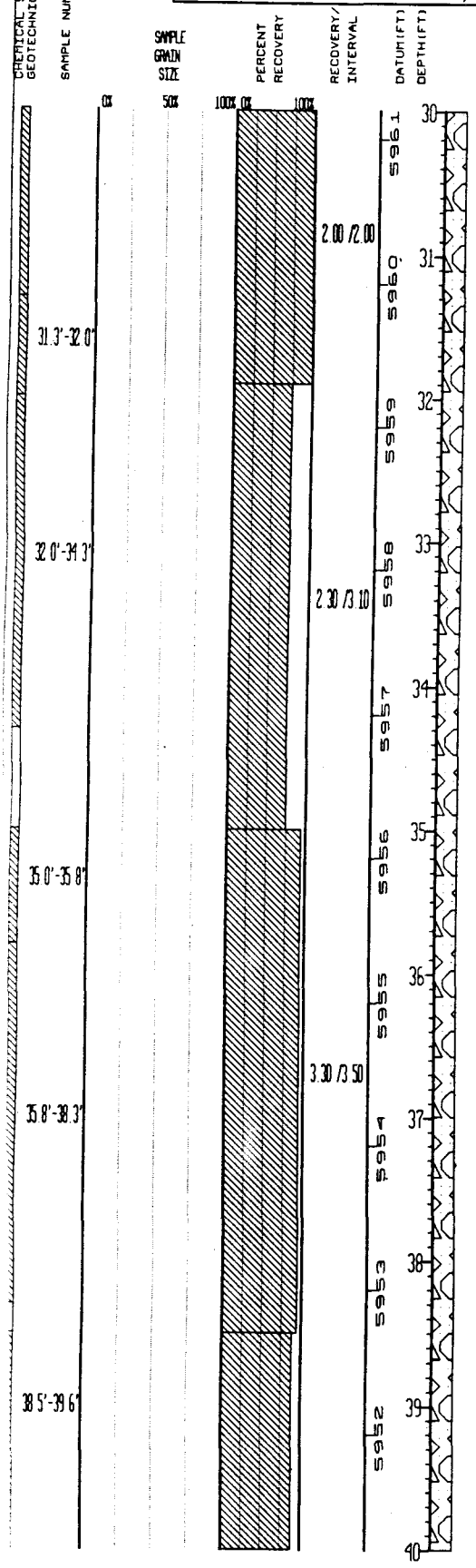


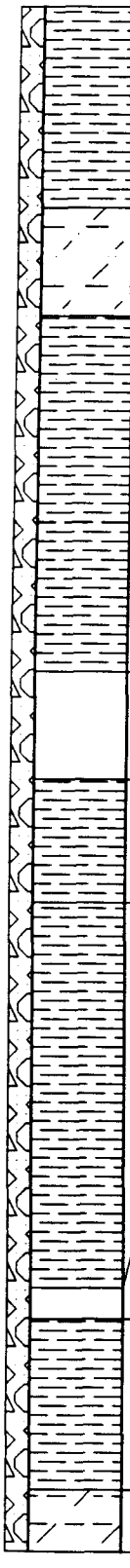


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Silty Sand with some clay and trace of gravel. Strong brown (7.5 YR 5/8) to (7.5 YR 4/6) with increasing depth. Medium to fine gravel (mean=1" diam) and very fine to coarse sand in clayey silt matrix. Well to moderately graded. Subangular gravel and subangular to subrounded sand. Gravel and sand composed of quartzite, quartz, granite, and schist. Sand also composed of feldspar, biotite, muscovite, and mafic minerals (mean=fine). Not bedded, moist above 22.0', wet below. 10% Gravel, 65% sand, 20% silt, and 5% clay.
SM	Sandy Clay (same as interval 14.0'-15.6') interbedded with Silty Sand (same as interval 19.5'-23.2'), thin bedded.
SM	Silty Sand with some clay and trace of gravel. Same as 19.5'-23.2'. Wet to saturated.
CL	Sandy Gravelly Clay. Strong brown (7.5 YR 5/8) to light yellowish brown (2.5 Y 6/4). Heterogeneous mixture of gravelly clay, sand, and sandy clay. Coarse to fine gravel (max=1.5" diam) and very fine to coarse sand (mean=medium-coarse). Well graded, subangular clasts. Low plasticity. Wet. 16% Gravel, 30% sand, 45% clay, and 9% silt.
	No core recovery (25.3'-25.9')
CL	Same as above Top of Bedrock 26.5'
CLAYSTONE	Claystone. Gray (N5), grayish brown and light olive brown (2.5 Y 5/2 to 2.5 Y 5/6). Clay with trace of silt. Porosity= 10% due to weathered voids, no cement, non-friable to slightly-friable where weathered. No apparent bedding, mottled appearance due to Fe-oxide staining in irregular patches. Slightly moist. 96% Clay and 4% silt.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'





UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone. Gray (N5), grayish brown and light olive brown (2.5 Y 5/2 to 2.5 Y 5/6). Clay with trace of silt. Porosity=10% due to weathered voids, no cement, non-friable to slightly-friable where weathered. No apparent bedding, mottled appearance due to Fe-oxide staining in irregular patches. Slightly moist. 96% Clay and 4% silt.
CLAYEY SILTSTONE	Clayey Siltstone with trace of sand. Light brownish gray to light yellowish brown (2.5 Y 6/2-6/3) with olive yellow patchy stains (2.5 Y 6/8). 60% Silt and 5% clay.
CLAYSTONE	Claystone. Black (N 2.0 5/0), with carbonaceous material (upper 0.3' of interval consists of claystone slough (remnant of previous drilling with augers), porosity=10%, no cement, slightly friable, clay with some very fine organic (carbonaceous) material. No apparent bedding, not weathered or fractured. Color change 35.3'-35.8' to very dark gray (5 Y 3/1). Moist. 95% Clay and 5% organic content.
	No core recovery (34.3'-35.0')
CLAYSTONE	Same as above.
CLAYSTONE	Claystone with some silt and carbonaceous material. Black (N 2.5/0) to very dark gray (5 Y 3/1), porosity=5%-10%, trace of $CaCO_3$ cement, localized, patchy carbonaceous frags (of fine to medium sand size) throughout interval, slightly to moderately friable. No apparent bedding, not fractured. Moist. 85% Clay and 15% silt.
	No core recovery (38.3'-38.5')
CLAYSTONE	Same as above.
SILTY CLAYSTONE	See description next page

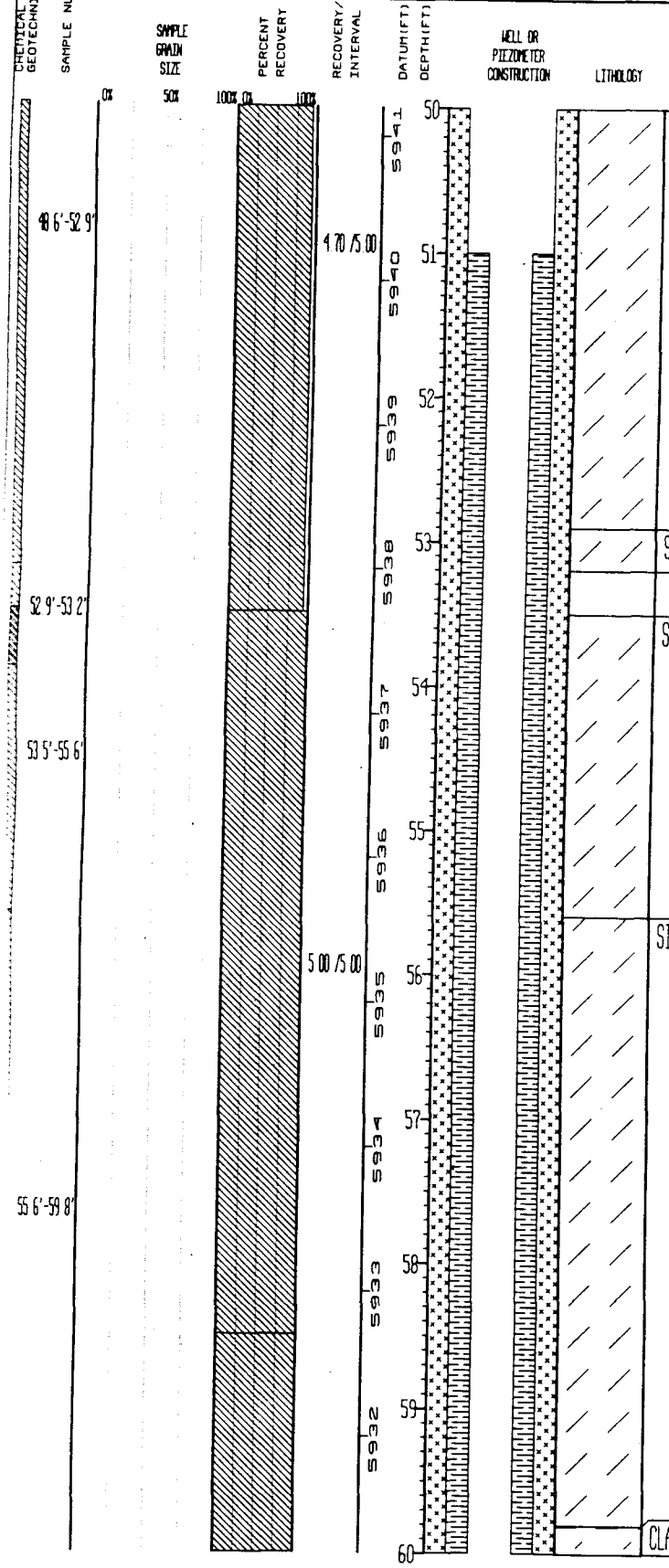
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153 5	GROUND ELEVATION (FT)	5991 20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-47 1', BENTONITE SEAL 47 1'-49 6', SAND 49 6'-67 8', BENTONITE/NATURAL/GROUT BACKFILL 67 8' - 153 5', CENTRALIZERS PLACED 9 2', 26 0', AND 46 8', ROTARY DRILLED 32'-153 5', 2' SUMP 66 0'-68 0', DEPTH TO BEDROCK 26 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
39 6'-42 9'		0% 50%	100% 0% 100%	4.40 /5.00	5951 5950 5949 5948	40 41 42 43			SILTY CLAYSTONE	Silty Claystone Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1), porosity=<5%, trace of CaCO3 cement, slightly friable Trace of fine (fine-medium sand size) carbonaceous material (fragments) throughout - most abundant and coarsest between 42 0'-43 0' No apparent bedding, not weathered, not fractured Moist 20% Silt and 80% clay
										No core recovery (42 9'-43 5')
43 5'-48 4'				4.90 /5.00	5947 5946 5945 5944 5943	44 45 46 47 48	02/26/93		SILTY CLAYSTONE	Same as above
48 5'-48 6'										No core recovery (48 4'-48 5')
					5942	49			SILTY CLAYSTONE	Same as above
						50			SILTSTONE	See description below Same as 50 0'-52 3'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

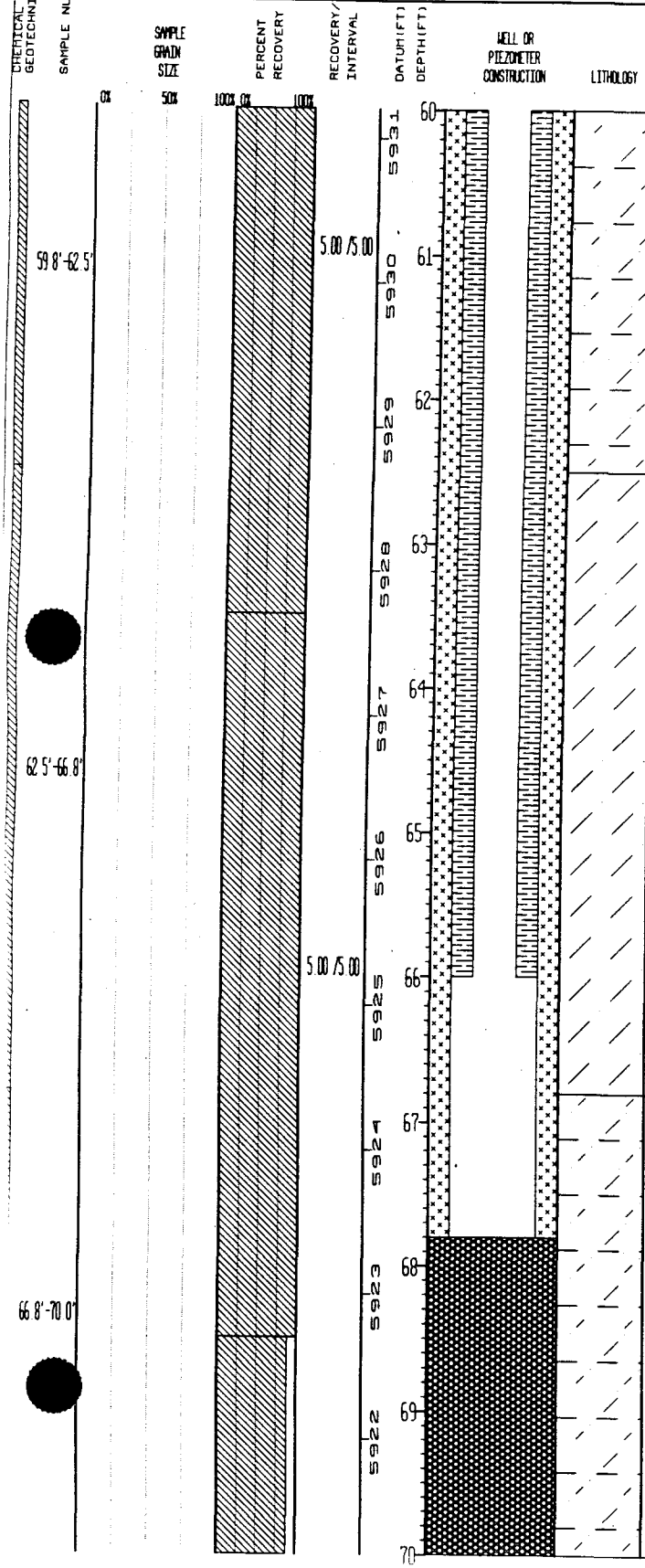
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8'-153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTSTONE	Siltstone with some clay and trace of sand. Very dark gray (5 Y 3/1). Trace of very fine sand below 51.0'. Porosity=5%-12%, strongly CaCO3 cemented 48.6'-49.0', trace of CaCO3 throughout, moderately friable. Trace of silt-size carbonaceous material. Sand composed of quartz and mafic oxides. Massive to very finely laminated between 52.0'-53.0'. Not fractured, not weathered. Moist. 85% Silt, 10% clay, and <5% sand
SILTSTONE	See description below. Same as (53.5'-55.6')
	No core recovery (53.2'-53.5')
SILTSTONE	Siltstone with trace of clay, very fine sand and some carbonaceous material. Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1), porosity=5%-15% where sandy, trace of CaCO3 cement, moderately friable. Laminated. Bedding laminae marked by sandier beds and black carbonaceous material on silty bedding surfaces, low angle planar to wavy cross laminations present. Not fractured. Moist. 5% Sand, 7% clay, and 88% silt
SILTSTONE	Siltstone with trace of carbonaceous material. Very dark gray (5 Y 3/1), porosity=5%, trace of CaCO3 cement. No apparent bedding (massive). Some fine to coarse sand size carbonaceous material disseminated throughout. Moist. 95% Silt and 5% clay
CLAYEY SILTSTONE	See description next page

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYEY SILTSTONE	Clayey Siltstone with CaCO3 deposits and trace of very fine sand. Very dark gray (5 Y 3/1) Sand composed mainly of quartz and mafic oxides, porosity=5%-15%, CaCO3 cement throughout interval (may be secondary deposit not cement), moderately friable. Carbonaceous material present as fine fragments. Not fractured but damaged during drilling. Moist. 5% Sand, 75% silt, and 20% clay.
SILTSTONE	Siltstone with trace of very fine sand, clay, and carbonaceous material. Very dark gray (5 Y 3/1), sand composed mainly of quartz and mafic oxides, porosity=7%-10%, no cement, moderately friable, trace of carbonaceous material. Massive to wavy laminated, not fractured but damaged during drilling. CaCO3 present in top 1.0' of interval. Moist. 90% Silt, 5% sand, 3% clay, and 2% carbonaceous material
CLAYEY SILTSTONE	Clayey Siltstone with trace of very fine sand. Dark gray (5 Y 4/1), sand composed mainly of quartz, porosity=10%-18% depending on clay/sand content, moderately friable. Trace of organic material/carbonaceous throughout. Cross-laminated, low angle planar to wedge-shaped cross laminae marked by black carbonaceous material on bedding surfaces. Not fractured. Trace of CaCO3 deposits. Moist. 2% Sand, 78% silt, and 20% clay.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153 5	GROUND ELEVATION (FT) 5991 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-47 1', BENTONITE SEAL 47 1'-49 6', SAND 49 6'-67 8', BENTONITE/NATURAL/GROUT BACKFILL 67 8' - 153 5', CENTRALIZERS PLACED 9 2', 26 0', AND 46 8', ROTARY DRILLED 32'-153 5', 2' SUMP 66 0'-68 0', DEPTH TO BEDROCK 26 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%	4 30 /4 90	5921 5920 5919	70 71 72			SILTSTONE	Siltstone Dark gray (5 Y 3/1) with trace of very fine sand Sand mainly quartz, porosity=5%-8%, trace to some CaCO3 cement, moderately to slightly friable Massive to finely laminated, trace of carbonaceous material, laminae are low angle, planar to wavy surfaces, sometimes coated with carbonaceous material Not fractured, not weathered. Moist 3% Sand, 95% silt, and 2% clay.
70 0'-72 8'										
					5918	73				No core recovery (72 8'-73 4')
73 4'-74 5'					5917	74			SILTSTONE	Same as above
				4 90 /4 70	5916 5915	75 76			CLAYEY SILTSTONE	Clayey Siltstone Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1) Variable proportions of clay and silt present throughout interval 76 3'- 76 5' 40% clay, 60% silt, 20-30% clay elsewhere in interval, porosity=10%, trace of CaCO3, moderately to slightly friable, some carbonaceous material of medium to coarse sand size, no apparent bedding, moist 70% Silt and 30% clay 78 7'-78 9' Clayey siltstone (40% clay, 60% silt) 79 2'-79 5' Siltstone with trace of clay (95% silt, 5% clay), laminated
74 5'-80 7'					5914 5913	77 78				
				2 60 /3 30	5912	79 80				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153 5	GROUND ELEVATION (FT)	5991 20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-47 1', BENTONITE SEAL 47.1'-49 6', SAND 49 6'-67 8', BENTONITE/NATURAL/GROUT BACKFILL 67 8' - 153 5', CENTRALIZERS PLACED 9 2', 26.0', AND 46 8', ROTARY DRILLED 32'-153 5', 2' SUMP 66 0'-68 0', DEPTH TO BEDROCK 26 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
					5911	80			CLAYEY SILTSTONE	Clayey Siltstone Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1) Variable proportions of clay and silt present throughout interval 76.3'- 76 5' 40% clay, 60% silt, 20-30% clay elsewhere in interval, porosity=10%, trace of CaCO3, moderately to slightly friable, some carbonaceous material of medium to coarse sand size, no apparent bedding, moist 70% Silt and 30% clay 78 7'-78 9' Clayey siltstone (40% clay, 60% silt) 79 2'-79 5' Siltstone with trace of clay (95% silt, 5% clay), laminated
					5910	81				
81 4'-83 0'				1 90 /2 10	5909	82				No core recovery (80 7'- 81 4')
83 0'-83 3'					5908	83			CLAYEY SILTSTONE	Clayey Siltstone with some large carbonaceous frags Dark gray (5 Y 4/1), porosity=5%-10%, no cement, slightly friable Carbonaceous frags of various shapes (stems, elongate, angular) and sizes (max=3" long) within massive siltstone matrix, carbonaceous material appears to fill tube-shaped void 81 4'-82 4' Moist 35% Silt and 65% clay
					5907	84			SILTY CLAYSTONE	See description below Same as 83 5'-85 8'
										No core recovery (83 3'-83 5')
83 5'-85 8'					5906	85			SILTY CLAYSTONE	Silty Claystone with some carbonaceous material Very dark gray (5 Y 3/1) with oily sheen (similar to lignite) to dark gray (5 Y 4/1) where less organic rich, porosity<5%-8% where siltier, slightly to non-friable, organic rich No bedding apparent, not fractured Moist 20% Silt and 80% clay
				5 00 /5.00	5905	86			CLAYEY SILTSTONE	Clayey Siltstone Very dark gray (5 Y 3/1), porosity=10%, trace of CaCO3 cement, moderately friable Massive, not fractured, not weathered or stained Moist 65% Silt and 35% clay
85 8'-88 3'					5904	87				
					5903	88				
					5902	89			SILTY CLAYSTONE	See description next page Same as (90 0'-96')
						90				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153 5	GROUND ELEVATION (FT) 5991 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 0U7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-47 1', BENTONITE SEAL 47 1'-49 6', SAND 49 6'-67 8', BENTONITE/NATURAL/GROUT BACKFILL 67 8' - 153 5', CENTRALIZERS PLACED 9 2', 26 0', AND 46 8', ROTARY DRILLED 32'-153 5', 2' SUMP 66 0'-68 0', DEPTH TO BEDROCK 26 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%

88 3'-96 0'

96 0'-98 1'

5 00 /5 00

5 00 /5 00

5901 5900 5899 5898 5897 5896 5895 5894 5893 5892

90 91 92 93 94 95 96 97 98 99 100

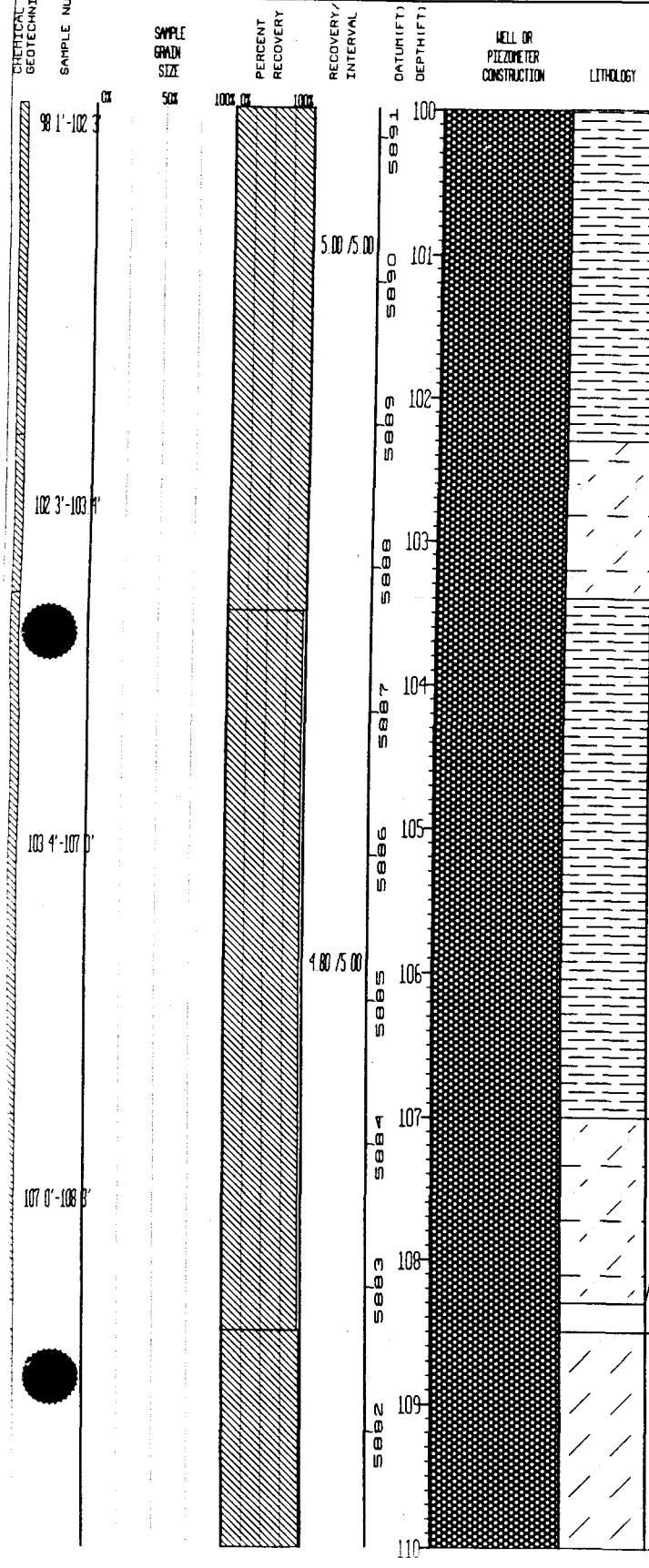
SILTY CLAYSTONE Silty Claystone with some clayey siltstone interbedded (very finely intermixed zone of silty claystone and clayey siltstone). Very dark gray (5 Y 3/1) to dark gray (5 Y 4/1), poorly sorted, trace of CaO3 cement, moderately to slightly friable (clayey siltstone is moderately friable). Bedding surfaces appear discontinuous, wavy, possibly disturbed above 94.0'; below 94.0' bedding apparent - subhorizontal, nearly planar. Siltstone beds of irregular thickness (max= 1/4 "). Not fractured, some carbonaceous material on bedding surfaces where bedding present. Moist. 60% Clay and 40% silt to 85% silt and 15% clay.
Distinct Siltstone beds 94 5', 95 5'

CLAYEY SILTSTONE Clayey Siltstone. Very dark gray (5 Y 3/1), porosity=10%-15%, trace of CaCO3 present, moderately friable, with some very fine grained carbonaceous material. No apparent bedding, not fractured. Moist. 80% Silt and 20% clay

CLAYSTONE Claystone with some silt and carbonaceous material. Black (5 Y 2.5/1), porosity=10%, slightly friable, claystone contains very fine grained carbonaceous material with some coarser (sand size), elongate frags of carbonaceous material. Massive, no bedding, not fractured. Moist. 90% Clay and 10% silt

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153 5	GROUND ELEVATION (FT)	5991 20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-47 1', BENTONITE SEAL 47 1'-49 6', SAND 49 6'-67 8', BENTONITE/NATURAL/GROUT BACKFILL 67 8' - 153 5', CENTRALIZERS PLACED 9 2', 26 0', AND 46 8', ROTARY DRILLED 32'-153 5', 2' SUMP 66 0'-68 0', DEPTH TO BEDROCK 26 5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone with some silt and carbonaceous material Black (5 Y 2 5/1), porosity=10%, slightly friable, claystone contains very fine grained carbonaceous material with some coarser (sand size), elongate frags of carbonaceous material Massive, no bedding, not fractured Moist 90% Clay and 10% silt
CLAYEY SILTSTONE	Clayey Siltstone Dark gray (5 Y 4/1), porosity=15%, no cement, moderately friable, trace of carbonaceous material, silt-filled cast or trace fossil at 103 1' No bedding structures apparent Moist 20% Clay and 80% silt
CLAYSTONE	Claystone with some silt Dark gray (5 Y 4/1), porosity=10%, no cement, slightly friable Appears massive, not bedded Moist 90% Clay and 10% silt Possible fracture surface at 106 5' with 50 degree angle Clayey surface appears smeared - possible slickensides
CLAYEY SILTSTONE	Clayey Siltstone Dark gray (5 Y 4/1), porosity=15%, no cement, moderately to highly friable Appears laminated to massive, not fractured 75% Silt and 25% clay
	No core recovery (108 3'-108 5')
SILTSTONE	Siltstone with trace of (2%-3%) black carbonaceous material Fine sand-sized frags of irregular shape, some elongate frags up to 1/2" long Planar, very thin laminae 112 0'-113 0' Moist

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 047 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CONTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	108.5'-113.4'			4.90/5.00	5981	110			SILTSTONE	Siltstone with trace of (2%-3%) black carbonaceous material. Fine sand-sized frags of irregular shape, some elongate frags up to 1/2" long. Planar, very thin laminae 112.0'-113.0'. Moist.
					5980	111				
					5979	112				
					5978	113				
										No core recovery (113.4'-113.5')
					5977	114			SILTSTONE	Siltstone with some clay and trace of very fine sand and carbonaceous material (2%-3% total). Dark gray (5 Y 4/1), moderately sorted, porosity=15%- 20%, no carbonate cement, some silica cement possible 115.0'-123.0', moderately to slightly friable, trace of carbonaceous material of variable grain size (mean=medium-coarse) larger organic remains up to 1" long. Minor Fe-oxide stains along void edges, massive to finely laminated, some bedding may be obscured by clay along sides of core. 87% Silt, 10% clay, and 3% carbonaceous material.
				3.50/3.50	5976	115				
	113.5'-119.0'				5975	116				
					5974	117				
					5973	118				
					5972	119				
				2.30/5.00						No core recovery (119.3'-122.0')
						120				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT)	5991.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752070	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN)	3	DATE DRILLED	01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	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
					5871	120				No core recovery (119.3'-122.0')
					5870	121				
					5869	122			SILTSTONE	Same as above
	122.0'-122.8'									
	122.8'-123.0'			1.00/1.50					CLAYSTONE	See description below (123.5'-128.5')
					5868	123				No core recovery 123.0'-123.5'
					5867	124			CLAYSTONE	Claystone with some silt. Very dark gray (5 Y 3/1), porosity <10% - where clay >95%, 10%-15% - where clay <95%, silt content varies slightly 3%-10%, no cement, slightly to moderately friable. Massive, not fractured in general, one low angle planar fracture surface present at approximately 127.7' fracture surfaces not stained or weathered - may be product of drilling
					5866	125				
	123.5'-128.5'			5.00/5.00	5865	126				
					5864	127				
					5863	128				
					5862	129				No core recovery (128.5'-133.5')
						130				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER L1J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

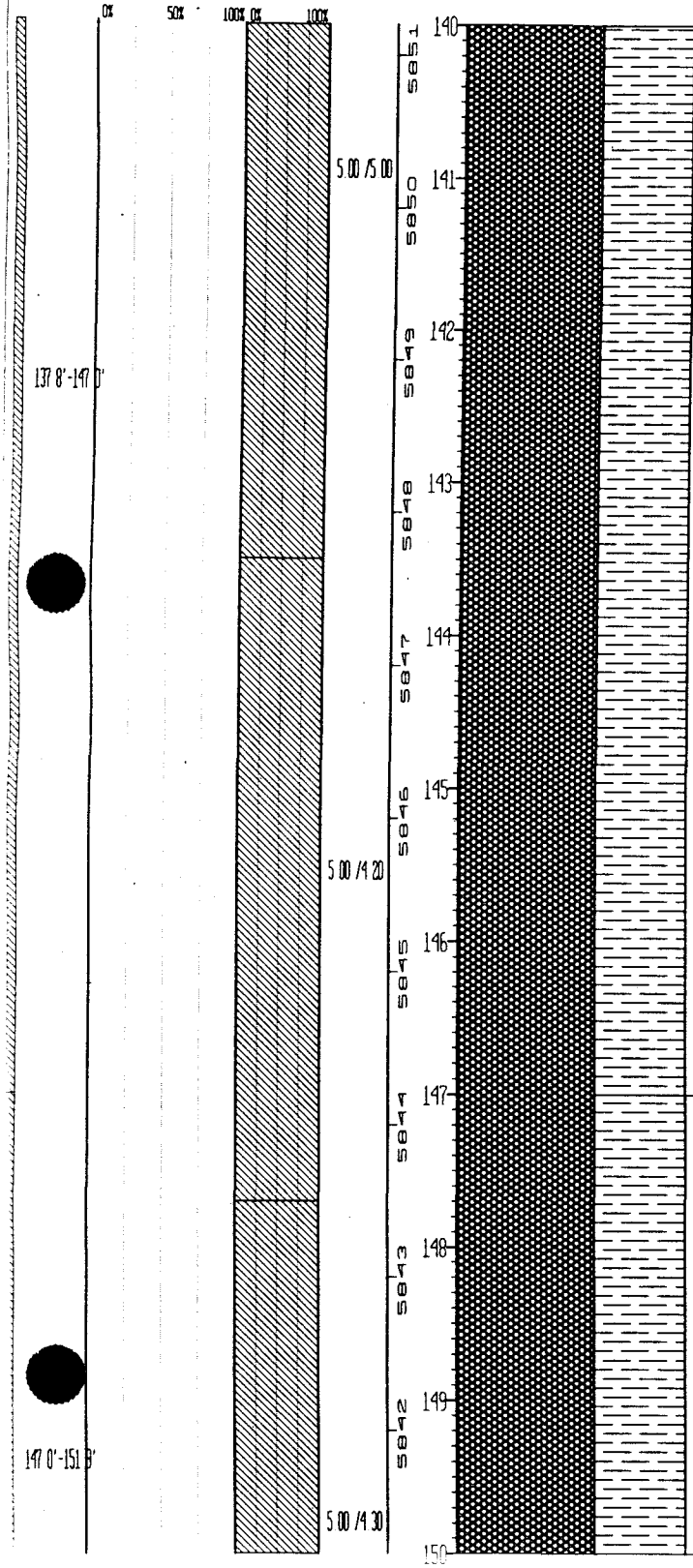
REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

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
					5861	130				No core recovery (128.5'-133.5')
				0.00/5.00	5860	131				
					5859	132				
					5858	133				
133.5'-136.0'					5857	134			CLAYSTONE	Description continued from 123.5'-128.5'. Subangular fragments of quartzite present at 133.6' lodged within core, 1 1/2" in diam (coarse gravel) appears out of place, pushed down by core barrel? Claystone surrounding gravel fragments appears disturbed. Moist. 92% Clay and 8% silt
					5856	135				
				5.00/5.00	5855	136				
136.3'-137.8'					5854	137			SILTY CLAYSTONE	Silty Claystone. Very dark gray (5 Y 3/1), porosity=10%-15%, no cement, slightly friable. No apparent bedding, appears massive to thinly bedded with variable organic content. Moist. 28% Silt and 72% clay
					5853	138			CLAYSTONE	Claystone with some silt and trace of carbonaceous material. Very dark gray (5 Y 3/1), porosity=10%, no cement, slightly to non-friable, contains trace of very fine carbonaceous material. Massive to irregular bedded due to variable silt content. Moist. Decreasing silt content with depth to less than 8% below 147.0'. 90% Clay and 10% silt
					5852	139				
						140				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'

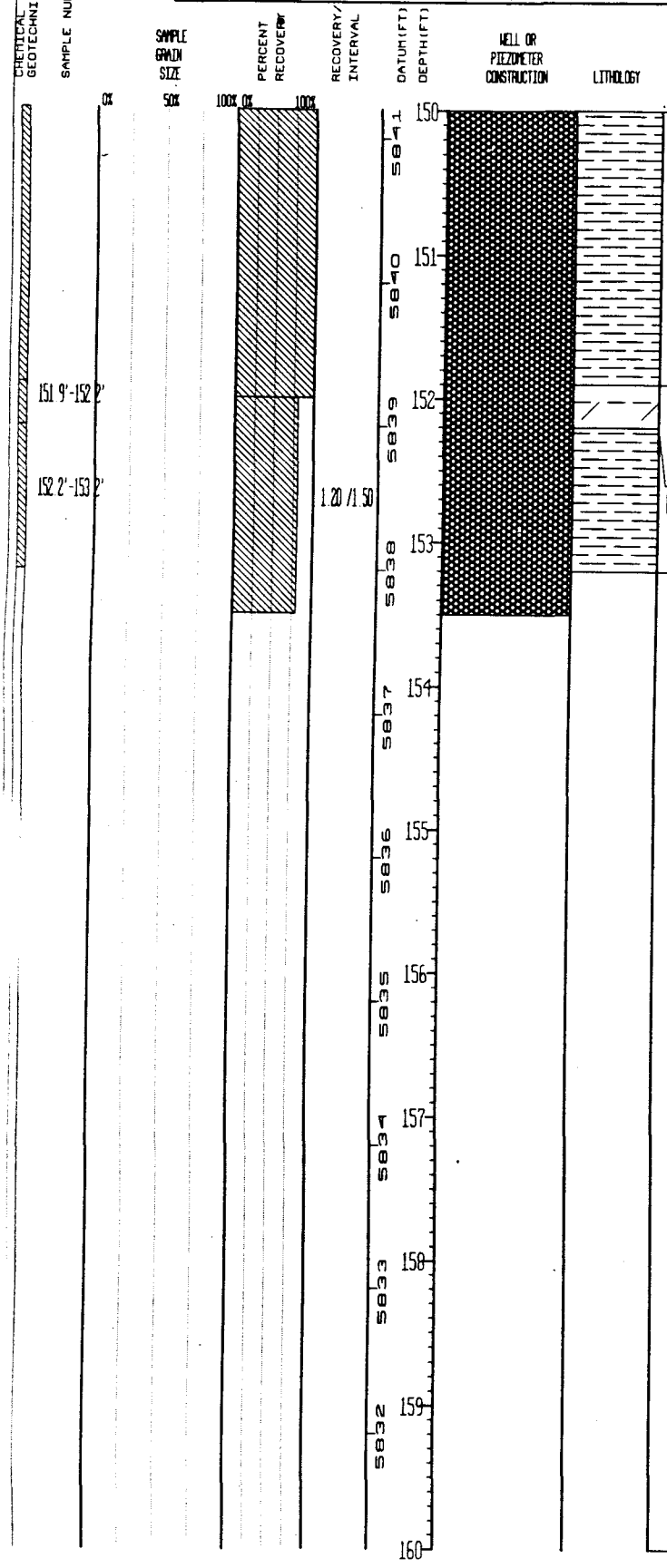
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone with some silt and trace of carbonaceous material. Very dark gray (5 Y 3/1), porosity=10%, no cement, slightly to non-friable, contains trace of very fine carbonaceous material. Massive to irregular bedded due to variable silt content. Moist. Decreasing silt content with depth to less than 8% below 147.0'. 90% Clay and 10% silt.
CLAYSTONE	Claystone with some to trace of silt. Very dark gray (5 Y 3/1), porosity<10%, no cement, slightly to non-friable. Massive, apparent fracture planes are related to drilling, not true structural fractures. Moist. 97% Clay and 3% silt.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 153.5	GROUND ELEVATION (FT) 5991.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752070	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	70893
EAST	2082810	LOCATOR NUMBER 11J	BOREHOLE DIAMETER (IN) 3	DATE DRILLED 01/06/93	

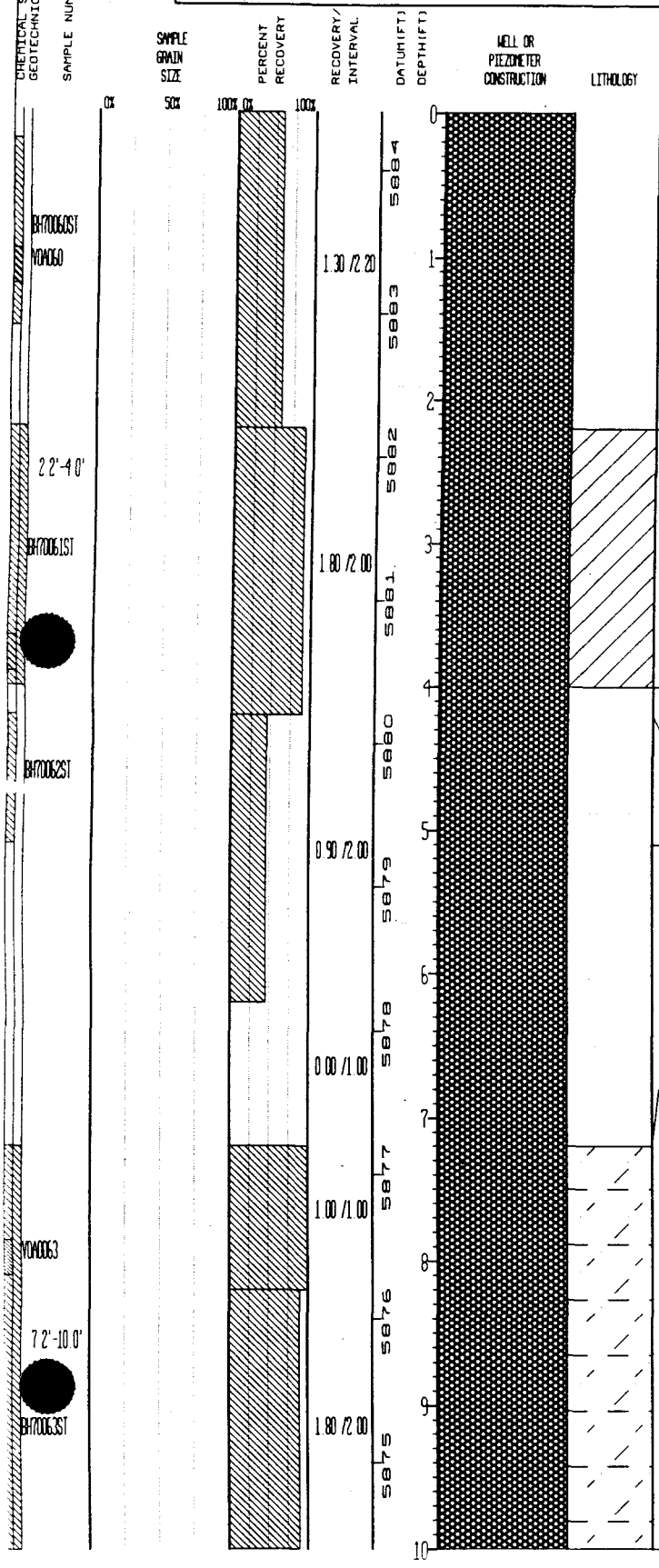
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-47.1', BENTONITE SEAL 47.1'-49.6', SAND 49.6'-67.8', BENTONITE/NATURAL/GROUT BACKFILL 67.8' - 153.5', CENTRALIZERS PLACED 9.2', 26.0', AND 46.8', ROTARY DRILLED 32'-153.5', 2' SUMP 66.0'-68.0', DEPTH TO BEDROCK 26.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
CLAYSTONE	Claystone with some to trace of silt. Very dark gray (5 Y 3/1), porosity<10%, no cement, slightly to non-friable. Massive, apparent fracture planes are related to drilling, not true structural fractures. Moist. 97% Clay and 3% silt
SILTY CLAYSTONE	Silty Claystone. Dark gray (5 Y 4/1), porosity=10%, No cement to trace of $CaCO_3$. Slightly to moderately friable. Bedding not apparent. Moist. 20% Silt and 80% clay
CLAYSTONE	Claystone - Same as interval above (147.0'-151.9')
	No core recovery (153.2'-153.5')
	Total Depth 153.5'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 3	GROUND ELEVATION (FT) 5884 40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	753138	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	70993
EAST	2084790	LOCATOR NUMBER 12L	BOREHOLE DIAMETER (IN) 6 25	DATE DRILLED 02/03/93	

REMARKS MOBIL DRILL B-57; HSA, NO WELL INSTALLED, SAMPLED 0 0'-31 3'; NATURAL AND BENTONITE GROUT BACKFILL 0 0'-31 3', DPETH TO BEDROCK 7 2'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (0 0'-0 2')
	No core remaining after sampling Field description - Clay with a trace of scattered gravel Brown, rooted, and coarser at top and below, friable, no apparent bedding, slightly moist
	No core recovery (1 3'-2 2')
CL	Clay with some silt, and trace of sand and gravel Very dark gray (10 YR 3/1) to black (10 YR 2/1) Very fine to coarse sand, gravel to 1" diam Poorly graded Clasts subangular to sub-rounded Low to moderate plasticity Trace to some carbonaceous material, trace Fe-oxides No bedding Slightly moist 0-5% Gravel, 1-6% sand, 15-25% silt, and 75-84% clay
	No core recovery (4 0'-4 2')
	No core remaining after sampling Field description - Same as interval above with scattered clasts of gravel to 1 5" diam throughout (no clay with gravel)
	No core recovery (5 1'-7 2') Top of Bedrock 7 2'
CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone Brown (10 YR 5/3) to light olive brown (2.5 Y 5/3) to dark grayish brown (10 YR 4/2, 2 5 Y 4/2), below 28 0' very dark gray (10 YR 3/1) Scattered traces of very fine grained, subangular to sub-rounded, quartz sand (with minor heavy minerals, trace to some Fe-oxide grains and trace of mica) Porosity=5%-20% Cement dominantly argillaceous, trace to some Fe-oxides in some portions above 27 5', occasional traces of calcareous content accompanying Fe-oxides Slightly to moderately friable Scattered carbonaceous fragments and coally chips Most of core is heavily damaged, no bedding apparent, and presence/orientation of fractures generally is obscured although planar Fe-oxide deposits abound in some areas Slightly moist to saturated 0-7% Sand, 20-70% silt, and 30-80% clay overall and 0-7% sand, 40-70% silt, and 30-60% clay

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 3	GROUND ELEVATION (FT) 5884 40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	753138	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	70993
EAST	2084790	LOCATOR NUMBER 12L	BOREHOLE DIAMETER (IN) 6 25	DATE DRILLED 02/03/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-31 3', NATURAL AND BENTONITE GROUT BACKFILL 0 0'-31 3', DPETH TO BEDROCK 7 2'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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				(Duplicate sample taken 7 2'-11 2' -BH70064ST)
				1.10 /1.00	5874					No core recovery (10.0'-10 2')
10 2'-12 1'						11				CLAYEY SILTSTONE Same as interval above See description 7 2'-10 0'
	70065				5873					
				0 90 /2.00		12				
	BH70065ST				5872					No core recovery (12.1'-13 2')
						13				
					5871					CLAYEY SILTSTONE Same as above See description 7 2'-10 0' Fe-oxide deposits abound 13 2'-14 9'
13 2'-14 9'				1.70 /2.00		14				
					5870					
						15				No core recovery (14 9'-15 2')
					5869					CLAYEY SILTSTONE Same as above See description 7 2'-10 0'
15 2'-16 5'										
	66			1 30 /2.00		16				
					5868					
	BH70066ST									No core recovery (16.5'-17 2')
						17				
					5867					CLAYEY SILTSTONE Clayey Siltstone to Silty Claystone cont See description 7 2'-10.0' Contains carbonaceous material from 18 0'-19 0' and caliche from 19 5'-21 0' 0-3% Sand, 35-70% silt, and 30-65% clay
				2.00 /2.00		18				
					5866					
						19				
					5865					
17 2'-22 7'						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31.3	GROUND ELEVATION (FT) 5884.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	753138	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	70993
EAST	2084790	LOCATOR NUMBER 12L	BOREHOLE DIAMETER (IN) 6.25	DATE DRILLED 02/03/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0.0'-31.3', NATURAL AND BENTONITE GROUT BACKFILL 0.0'-31.3', DPETH TO BEDROCK 7.2'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	BH7006751			2.00/2.00	5864	20			CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone cont. See description 7.2'-10.0'. Contains carbonaceous material from 18.0'-19.0' and caliche from 19.5'-21.0'. 0-3% Sand, 35-70% silt, and 30-65% clay
	NOA0067				5863	21				
				1.50/2.00	5862	22				
						23				No core recovery (22.7'-23.2')
					5861				CLAYEY SILTSTONE	Same as above. See description 7.2'-10.0'
	NOA0068			1.30/2.00	5860	24				
	BH7006851									No core recovery (24.5'-25.2')
					5859	25			CLAYEY SILTSTONE	Same as above. See description 7.2'-10.0'
25.2'-26.9'				1.70/2.00	5858	26				
						27				No core recovery (26.9'-27.2')
					5857				CLAYEY SILTSTONE	Same as above. See description 7.2'-10.0'. Very dark gray (10 YR 3/1) below 28.0'. Cement argillaceous (no Fe-oxides traces) below 27.5'. 20-55% Silt and 45-80% clay
27.2'-29.0'				1.80/2.00	5856	28				
	NOA[illegible]									
	BH7006951					29				No core recovery (29.0'-29.2')
					5855				CLAYEY SILTSTONE	Clayey Siltstone to Silty Claystone cont'd. See description 7.2'-10.0'
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 31 3	GROUND ELEVATION (FT) 5884 40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	753138	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	70993
EAST	2084790	LOCATOR NUMBER 12L	BOREHOLE DIAMETER (IN) 6 25	DATE DRILLED 02/03/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-31 3', NATURAL AND BENTONITE GROUT BACKFILL 0 0'-31 3', DPETH TO BEDROCK 7 2'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
29 2'-31 3'		CK 50%	100% CK 100%	2.00 /2.10	5854 5853 5852 5851 5850 5849 5848 5847 5846 5845	30 31 32 33 34 35 36 37 38 39 40				Same as above See description - 7 2'-10 0' Total Depth 31 3'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36 1	GROUND ELEVATION (FT) 5908 40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752828	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST SML/JAB	71093
EAST	2084842	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 6 25	DATE DRILLED 02/04/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-36 1', NO WELL INSTALLED, NATURAL AND BENTONITE GROUT BACKFILLED 0 0'-36 1', DEPTH TO BEDROCK 8 4'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE / 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
0 0'-1 6' BH70071ST VOA0071	1.60 /2.10	5908 5907	CL	Clay Dark grayish brown (2 5 Y 4/2) to very dark grayish brown (2.5 Y 3/2) Trace of sand and gravel, trace to some silt Poorly graded Medium plasticity Occasional trace of calcareous content Trace to some organics No bedding apparent Moist <1% Gravel, 0-1% sand, 2-15% silt, and 85-98% clay
				No core recovery (1.6'-2 1')
BH70072ST VOA0072	2 00 /2 00	5906 5905	CL	Same as above See description 0 0'-1 6'
BH70073ST VOA0073	1.20 /2 00	5904 5903		
				No core recovery (5 3'-6 1')
6 1'-8 1' BH70074ST	2 00 /2 00	5902 5901	CL	Same as above See description 0 0'-1 6'
	0.00 /0.30	5900		No core recovery (8 1'-8.4') Top of bedrock between 8 1'-8 4'
VOA0075	1.50 /1.70	5899	SILTY CLAYSTONE	See description below 12 1'-17 4'

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

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36.1	GROUND ELEVATION (FT) 5908.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752828	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST SML/JAB	71093
EAST	2084842	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 6.25	DATE DRILLED 02/04/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-36.1', NO WELL INSTALLED, NATURAL AND BENTONITE GROUT BACKFILLED 0.0'-36.1', DEPTH TO BEDROCK 8.4'

CHEMICAL SAMPLE / GEOTECHNICAL 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
8.4'-11.9'	BH70075ST	0% 50%	100% 0% 100%	1.80/2.00	5898 5897	10 11			SILTY CLAYSTONE	See description below 12.1'-17.4'
						12				No core recovery (11.9'-12.1')
12.1'-17.4'	WDA0077 BH70077ST			2.00/2.00 2.00/2.00 1.30/2.00	5896 5895 5894 5893 5892 5891	13 14 15 16 17			SILTY CLAYSTONE	Silty Claystone to Clayey Siltstone. Yellowish brown (10 YR 5/4, 5/6) to dark brown (10 YR 3/3, 4/3), very dark grayish brown (10 YR 3/2), dark gray (10 YR 4/1) and very dark gray (10 YR 3/1). Scattered traces of very fine grained, sub-angular to subrounded, dominantly quartz sand (mainly at 27.7'-34.5'). Porosity=5%-15%. Cement mostly argillaceous with some to abundant Fe-oxides in some zones above 33.0' (especially rich at 12.1'-15.5') and calcareous cement present (trace to abundant) above 24.0' (rare below 24.0' and especially rich at 12.1'-14.3' and somewhat less at 20.3'-23.6'). Slightly to moderately friable. Sand mainly quartz with trace to some heavy minerals, mica, and Fe-oxide grains. Carbonaceous material scattered throughout, with plant frags common in some zones and occasional coally chips and thin (<0.1" wide) seams. Fe-/Mn- oxide nodules present 15.0', 24.0', and 26.4'-26.6', elsewhere oxides are disseminated or heal fractures. Parallel to wavy laminations common above 15.0', but below 15.0' unit is massive with only occasional vague laminations. Moderate to high angle (approx. 60-90 degree) fractures scattered between 16.9' and 32.5'. Slightly to very slightly moist. 0-6% Sand, 30-60% silt, and 40-70% clay overall. Field note on weathering profile at 27.4' to 28.0': not very noteable due to core damage and drying.
	BH70078ST					18				No core recovery (17.4'-18.1')
18.1'-20.0'				1.90/2.00	5890 5889	19 20			SILTY CLAYSTONE	Same as above. See description 12.1'-17.4'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36.1	GROUND ELEVATION (FT) 5908.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752828	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST SML/JAB	71093
EAST	2084842	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 6.25	DATE DRILLED 02/04/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-36.1'; NO WELL INSTALLED; NATURAL AND BENTONITE GROUT BACKFILLED 0.0'-36.1', DEPTH TO BEDROCK 8.4'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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)	Description
		20	No core recovery (20.0'-20.1')
			SILTY CLAYSTONE Same as above. See description 12.1'-17.4'
	2.00/2.00	21	
20.1'-33.75'			
VOA0079 BH70079ST		22	
	2.00/2.00	23	
		24	
	2.00/2.00	25	
VOA0080 BH70080ST		26	
	2.00/2.00	27	
		28	
	2.00/2.00	29	
VOA0081		30	

Datum (FT): 5888, 5887, 5886, 5885, 5884, 5883, 5882, 5881, 5880, 5879

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36.1	GROUND ELEVATION (FT) 5908.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752828	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST SML/JAB	71093
EAST	2084842	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 6.25	DATE DRILLED 02/04/93	

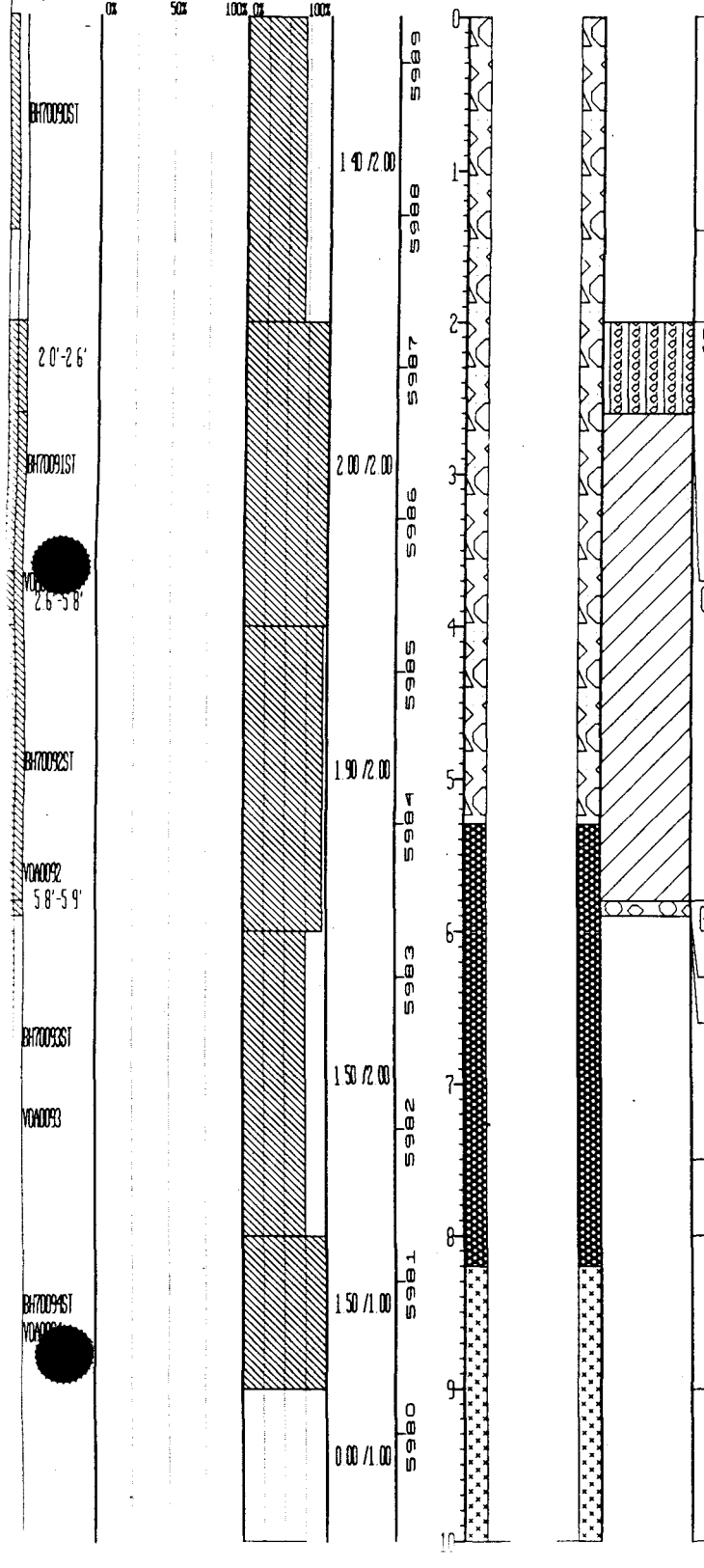
REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-36.1', NO WELL INSTALLED, NATURAL AND BENTONITE GROUT BACKFILLED 0.0'-36.1', DEPTH TO BEDROCK 8.4'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	BH70081ST	0% 50%	100% 0% 100%			30			SILTY CLAYSTONE	Same as above. See description 12.1'-17.4'
				2.00/2.00	5878	31				
					5877	32				
				1.75/2.00	5876	33				
					5875					No core recovery (33.75'-34.0')
					5874	34			SILTY CLAYSTONE	Same as above. See description 12.1'-17.4'. Total Depth 36.1'
	34.0'-36.1'			2.00/2.00	5873	35				
					5872	36				
					5871	37				
					5870	38				
					5869	39				
						40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36 0	GROUND ELEVATION (FT)	5989 30	PROJECT NUMBER	986073	LOG OF BORING NUMBER
NORTH	752566	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	2 0	GEOLOGIST	S LYNN/KJT	71193
EAST	2082717	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7 0	DATE DRILLED	02/18/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0' - 66 0', CEMENT GROUT 0 0'-5 5', BENTONITE SEAL 5 5'-8 2', SAND 8 2'-21 1', NATURAL AND BENTONITE BACKFILL 21 1'-36 0', CENTRALIZERS PLACED AT 5 0' AND 20 2', 2' SUMP 20 0'-22 0', DEPTH TO BEDROCK 20 2'

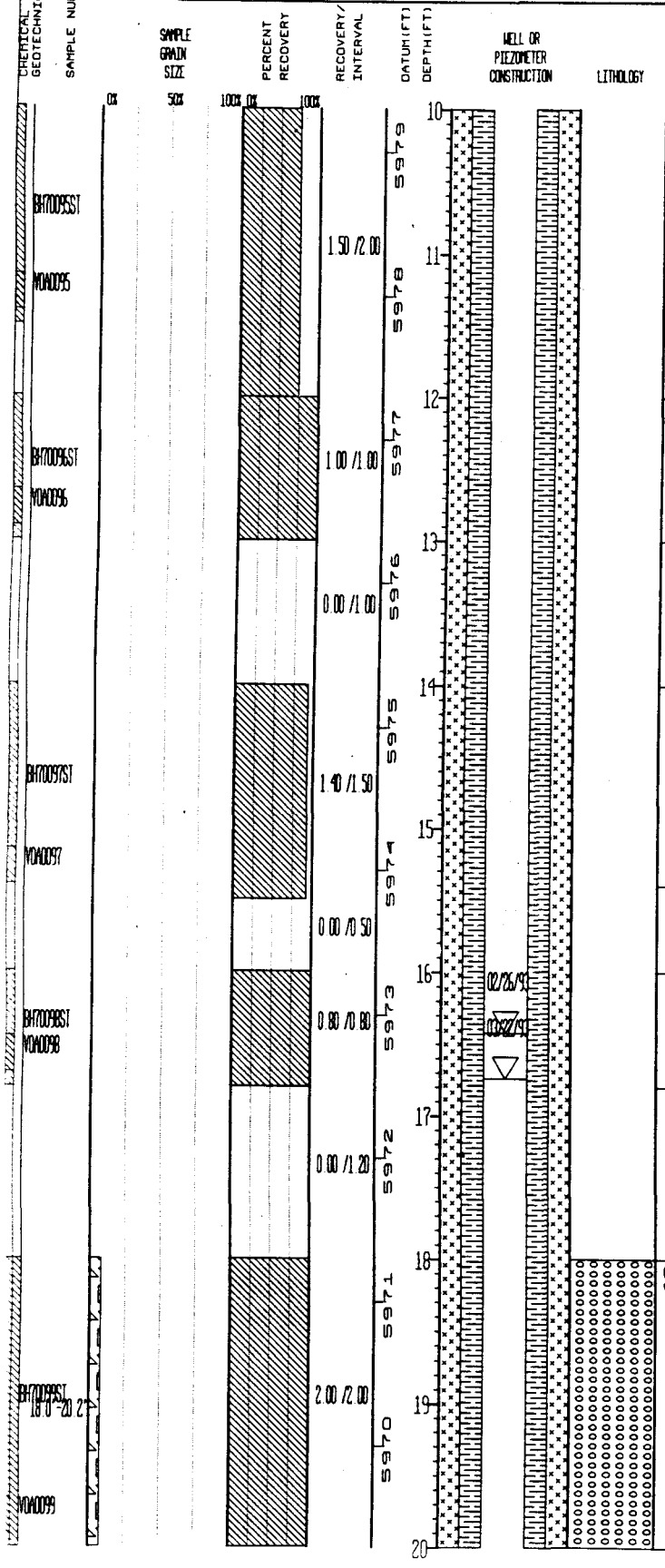
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH / SAMPLE NUMBER / SAMPLE GRAIN SIZE (0% 50% 100%) / PERCENT RECOVERY (0% 100%) / RECOVERY/INTERVAL / DATUM (FT) / DEPTH (FT) / WELL OR PIEZOMETER CONSTRUCTION / LITHOLOGY / UNIFIED SOILS CLASSIFICATION OR ROCK TYPE / DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core remaining after sampling Field description - Sandy Clay with coarse gravel, brown to yellow brown, moist, not bedded
	No core recovery (1 4'-2 0')
SM	Silty Sand with some gravel Grayish brown (2 5 Y 5/2) Coarse to fine gravel (max=2 5", mean=0 5" diam) and coarse to very fine sand (mean=fine) in silty clay matrix, low plasticity Well graded Gravel is subangular to subrounded composed of quartzite and schist; sand is angular to subrounded composed of quartz, rock fragments, micas, and feldspar Caliche present, moist 20% Gravel, 50% sand, 25% silt, and 5% clay
CL	Sandy Clay with some silt and trace of gravel Olive yellow (2 5 Y 6/6) to dark grayish brown (2 5 Y 4/2) Moderately graded Medium to fine gravel (mean=0 5" max=1" diam) and very fine to medium sand (mean=fine) in silty clay matrix, low plasticity Subangular gravel composed of quartzite and rock frags; sand composed of quartz, feldspar, and micas Not bedded, moist 5% Gravel, 25% sand, 20% silt, and 50% clay
GW	Poorly graded Gravel Medium (1"-2" diam), rounded to subangular, composed of granite and quartzite 100% Gravel
	No core recovery (5 9'-6 0')
	No core remaining after sampling Field description - Silty Sand with coarse gravel, olive gray to light brown, dry to slightly moist Not bedded
	No core recovery (7 5'-8 0') (center bit used)
	No core remaining after sampling Field description - Slough, Sandy Silt with gravel, some broken-up, with carbonaceous material
	No core recovery (9 0'-10 0') (center bit used)

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36.0	GROUND ELEVATION (FT) 5989.30	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH	752566	AREA C/7 PRESENT LANDFILL	CASING DIAMETER (IN) 2.0	GEOLOGIST S LYNN/KJT	71193
EAST	2082717	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 02/18/93	

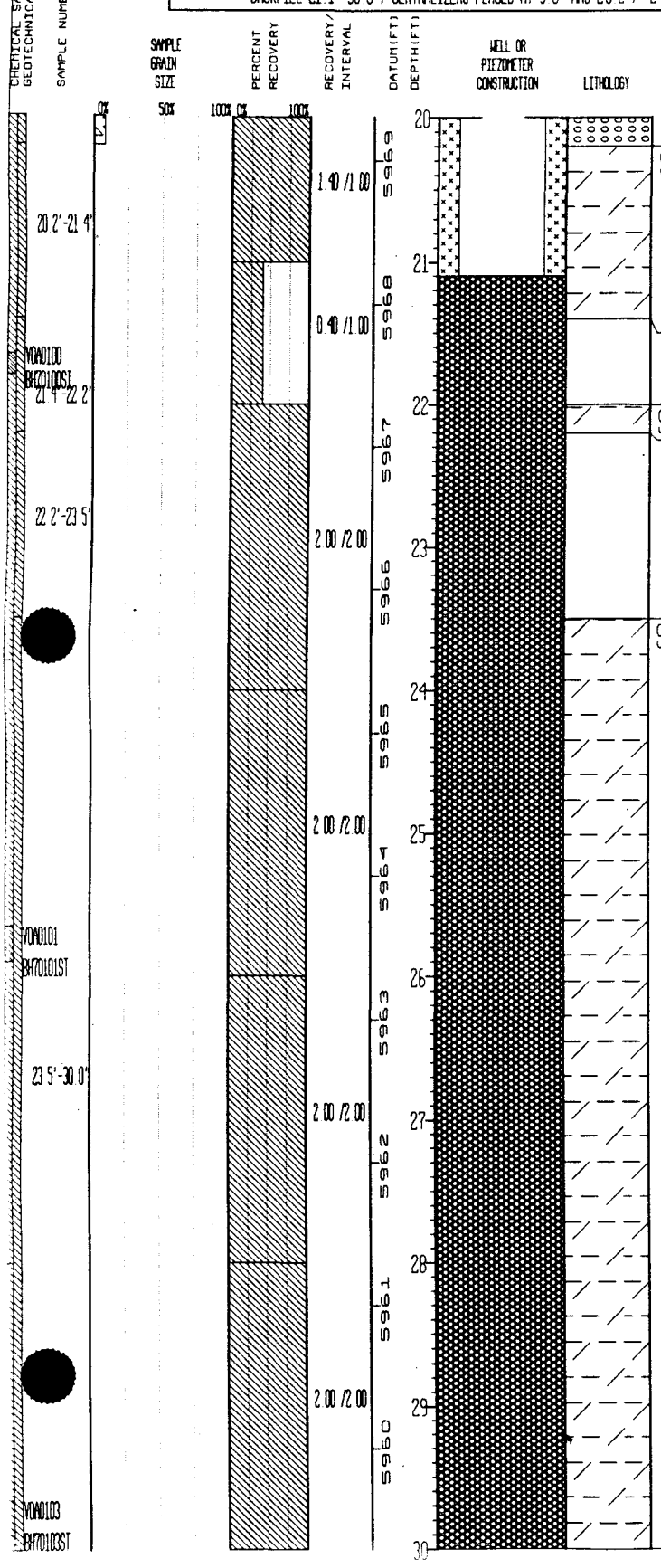
REMARKS MOBIL DRILL B-57, HSA. SAMPLED 0.0' - 66.0', CEMENT GROUT 0.0'-5.5', BENTONITE SEAL 5.5'-8.2', SAND 8.2'-21.1', NATURAL AND BENTONITE BACKFILL 21.1'-36.0', CENTRALIZERS PLACED AT 5.0' AND 20.2', 2' SUMP 20.0'-22.0', DEPTH TO BEDROCK 20.2'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core remaining after sampling. Field description - Sandy Silt with coarse gravel, olive gray and brown to yellow brown, slightly moist, not bedded.
	No core recovery (11.5'-12.0').
	No core remaining after sampling. Field description - Sandy Silt with gravel, olive gray and brown to yellow brown, with Fe-oxide stains, slightly moist, not bedded.
	No core recovery (13.0'-14.0') (used center bit)
	No core remaining after sampling. Field description - Silty Sand with gravel and broken rock frags/rock flour, olive gray to reddish orange, slightly moist, drier at bottom of interval, not bedded.
	No core recovery (15.4'-16.0') (used center bit 15.5'-16.0')
	No core remaining after sampling. Field description - Same as interval 14.0'-15.4'. Slightly moist to dry.
	No core recovery (16.8'-18.0') (used center bit)
SW	Sand with some gravel and silt (sw/sm). Strong brown (7.5 YR 4/6). Medium to fine gravel (max=1.5", mean=0.75"-0.5" diam) and very fine to coarse sand (mean=coarse) in clayey silt matrix. Well graded. Subangular to subrounded gravel and sand. Gravel composed of rock frags, mainly quartzite, sand composed of quartzite, granite, weathered feldspar, and metamophic rock frags. Not bedded. Moist. Black organic material (tarry) present in patches at 19.5'. 8% Gravel, 81% sand, 8% silt, and 3% clay.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36 0	GROUND ELEVATION (FT)	5989 30	PROJECT NUMBER	986073	LOG OF BORING NUMBER
NORTH	752566	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2 0	GEOLOGIST	S LYNN/KJT	71193
EAST	2082717	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7 0	DATE DRILLED	02/18/93	

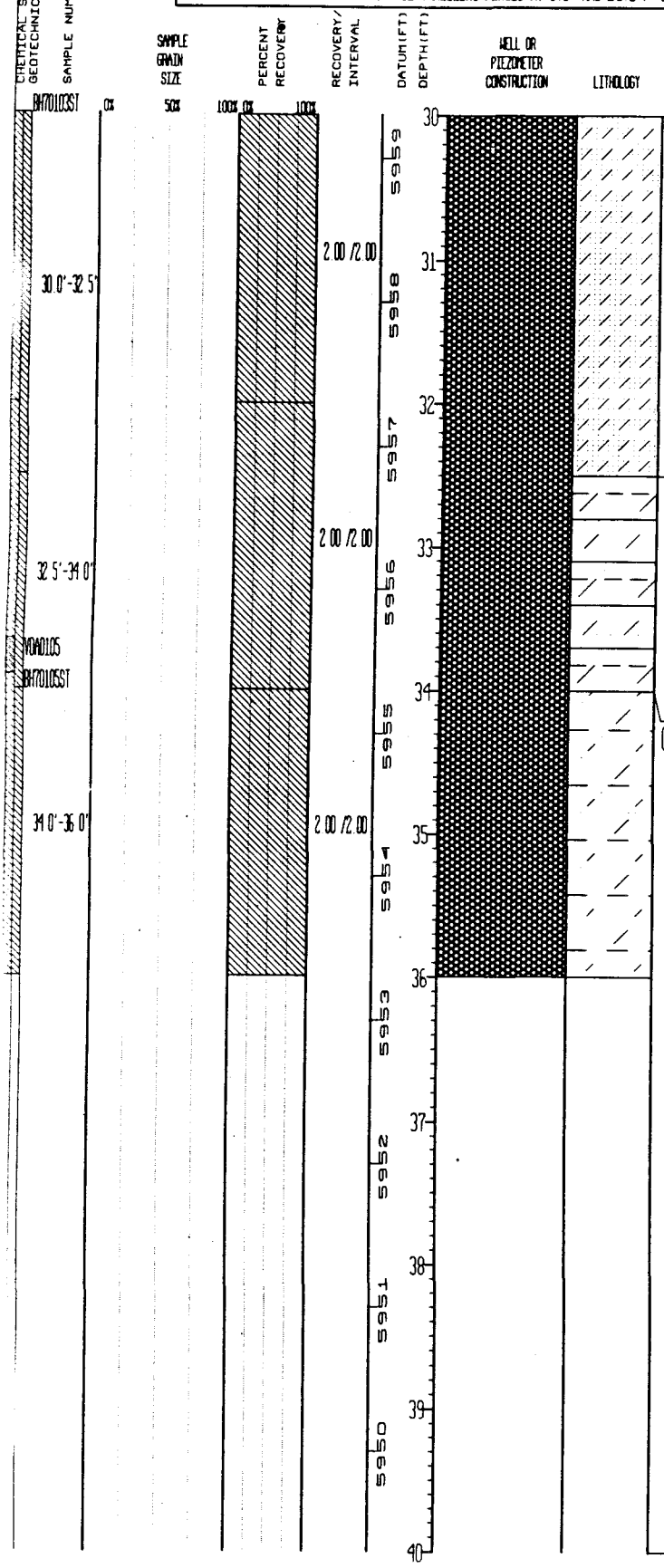
REMARKS MOBIL DRILL B-57, HSA. SAMPLED 0 0' - 66 0'. CEMENT GROUT 0 0'-5 5'. BENTONITE SEAL 5 5'-8 2', SAND 8 2'-21.1', NATURAL AND BENTONITE BACKFILL 21.1'-36 0'. CENTRALIZERS PLACED AT 5 0' AND 20 2'. 2' SUMP 20 0'-22 0'. DEPTH TO BEDROCK 20 2'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	Top of bedrock 20 2'
SILTY CLAYSTONE	Silty Claystone with some sand Light olive gray (5 Y 6/2) with mottled stains of yellowish brown (10 YR 5/8) Sand is fine to very fine, subrounded, quartz Porosity=15% No cement Slightly friable Contains carbonaceous material from 20 2'-21 0', along subhorizontal planes Becomes sandier with depth Moist 8% Sand, 30% silt, and 62% clay
	No core recovery (21 4'-22 0')
SILTY CLAYSTONE	Same as above See description 20 2'-21 4'
	Disturbed slough composed of silty claystone bedrock, fine sand, some gravel Probably disturbed during construction of intercept system around the landfill Well sorted, fine, quartz sand does not appear natural - occurs in patches, not consistent with bedding Gravel is fine to medium, composed of granite, quartzite 10% Gravel, 20% sand, 12% silt and 58% clay
SILTY CLAYSTONE	Silty Claystone Light gray (10 YR 7/1), light yellowish brown (10 YR 6/4), with brownish yellow (10 YR 6/6) Coloring varies in irregular patches Porosity=20% to <20% where clay content higher No cement Moderately to highly friable Appears massive, with mildly disturbed bedding at interval 26 0'-28 0' Not fractured Slightly moist to dry 32% Silt and 68% clay (Duplicate sample taken 24 0'-28 0', BH70102ST)

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 36.0	GROUND ELEVATION (FT) 5989.30	PROJECT NUMBER 986073	LOG OF BORING NUMBER
NORTH	752566	AREA: CU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2.0	GEOLOGIST S LYNN/KJT	71193
EAST	2082717	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 02/18/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0' - 66.0', CEMENT GROUT 0.0'-5.5', BENTONITE SEAL 5.5'-8.2', SAND 8.2'-21.1', NATURAL AND BENTONITE BACKFILL 21.1'-36.0', CENTRALIZERS PLACED AT 5.0' AND 20.2', 2' SUMP 20.0'-22.0', DEPTH TO BEDROCK 20.2'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SANDY SILTSTONE	Sandy Siltstone with some clay. Light gray (2.5 Y 7/2) to brownish yellow (10 YR 6/6). Core highly disturbed. Sand is very fine quartz. Siltstone is moderately sorted, porosity=25%-30%, highly friable. Bedding not apparent in disturbed core, but thin irregular beds apparent in larger chunks of core. Mottled appearance. Not fractured. Slightly moist to dry. 28% Sand, 60% silt, and 12% clay
SILTY CLAYSTONE	Interbedded Silty Claystone and Silty Sandstone (Silty Claystone 40% silt, 60% clay, Silty Sandstone 40% sand, 40% silt, 20% clay). Browninsh yellow (10 YR 6/8) to olive brown (2.5 Y 4/3). Moderately to poorly sorted. Sand is very fine to fine, subangular, slightly to moderately friable, composed mainly of quartz. Medium to thin, irregular beds, some small sandy lenses. Fe-oxide stains around sand lenses. Slightly moist to dry. 40% Silt and 60% clay to 45% sand, 40% silt, and 15% clay
CLAYEY SILTSTONE	Clayey Siltstone with carbonaceous material. Very dark gray (5 Y 3/1) to grayish brown (2.5 Y 5/2). Well sorted, porosity=15%-25%, no cement. Slightly to moderately friable. Bedding is massive to bedding of irregular thickness (wavy). Core is broken-up above 35.0'. Not fractured. Dry to slightly moist. 63% Silt and 27% clay. Total depth 36.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 40 0	GROUND ELEVATION (FT)	5989 90	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752520	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)		GEOLOGIST	S LYNN/KJT	71393
EAST	2082745	LOCATOR NUMBER 12H	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/12/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-40 0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0 0'-40 0', DEPTH TO BEDROCK 22 0'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH

SAMPLE NUMBER: 0 0'-1 6'; BH70107ST; VOA107; 1 6'-3 8'; BH70108ST; BH70109ST; VOA109

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 2.00 /2.00; 1.90 /2.00; 0.70 /2.00; 0.00 /2.00; 0.00 /2.00

DATUM (FT): 5989, 5988, 5987, 5986, 5985, 5984, 5983, 5982, 5981, 5980

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
SM	Silty Sand with some gravel Olive brown (2 5 Y 4/3) to dark grayish brown (10 YR 4/2) Fine to medium gravel and very fine to coarse sand (mean= fine-medium) in silty clay matrix Gravel is subangular, comprised of granite and quartzite Sand is subrounded to angular, comprised of quartz, rock frags, feldspar, and micas Not bedded Caliche present, especially at 1 5' 12% Gravel, 58% sand, 23% silt, and 7% clay
	Sandy fill containing asphalt and gravel Black (N2) Gravel is medium to coarse, angular to subangular Sand is fine to coarse (mean=medium) Asphalt and residues coat gravel and sand grains Very little core remaining after sampling
	No core remaining after sampling Field description - Mostly trash (wood) with sandy silt and gravel, black to dark brown, not bedded Moist
	No core recovery (4 7'-10 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 40 0	GROUND ELEVATION (FT) 5989 90	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752520	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S LYNN/KJT	71393
EAST	2082745	LOCATOR NUMBER 12H	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/12/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0.0'-40.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0 0'-40 0', DEPTH TO BEDROCK 22 0'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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				No core remaining after sampling Field description - Trash (wood and plastic)
	BH70110ST			0.10 /1.80	5979	11				No core recovery (10 1'-14 0') Center bit used from 11 8'-14.0'
					5978	12				
				0 00 /2 20	5977	13				
	BH70111ST+VOA				5976	14				No core remaining after sampling Field description - Trash
				0.30 /2 00	5975	15				No core recovery (14.3'-16 0')
					5974	16				No core remaining after sampling Field description - Trash 16'-16 5' 16.5'-17.5' Trash mixed with sandy silt and some gravel, dark brown to olive gray Not bedded Slightly Moist
	BH70112ST			1.50 /2.00	5973	17				
	VOA0112									
					5972	18				No core recovery (17 5'-18 0')
	BH70113ST			2 00 /2 00	5971	19			SM	Gravelly Sand with some silt Strong brown (7 5 YR 5/6) with very dark brown (7 5 YR 3/2) patches Gravel is coarse to fine (max=1.5", mean= .75"- .5" diam); sand is very fine to coarse (mean=medium) Well graded Gravel and sand subangular to rounded Gravel composed of quartzite with some granite and schist Sand composed of quartz, rock frags, micas, feldspar, and some mafic minerals Some rock frags are strongly weathered Very dark gray clay present at 19'5' (looks like soil) Not bedded Gravelly Sand mixed with underlying bedrock between 21.8'-21.9' 16% Gravel, 63% sand, 8% silt, and 3% clay
	VOA0113 18'-21 8'				5970	20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 40.0	GROUND ELEVATION (FT) 5989.90	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752520	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S. LYNN/KJT	71393
EAST	2082745	LOCATOR NUMBER 12H	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/12/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-40.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-40.0', DEPTH TO BEDROCK 22.0'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
18'-21.8'	0% 50%	100% 0% 100%			20				
BH70114ST			1.90 /2.00	5969	21				
WQA0114				5968	22				No core recovery (21.9'-22.0'). Top of Bedrock (21.9-22.0')
BH70115ST 22.0'-24.0'			2.00 /2.00	5967	23				CLAYEY SILTSTONE Clayey Siltstone. Light yellowish brown (2.5 Y 6/4), light olive gray (5 Y 6/2). Well sorted. Porosity= 20%. No cement. Slightly to moderately friable. No bedding apparent. Core appears damaged. Not fractured. Slightly moist. Weathered, Fe-oxide stained. 63% Silt and 37% clay.
				5966	24				No core recovery (24.0'-26.0'). Center bit used.
			0.00 /2.00	5965	25				
				5964	26				CLAYEY SILTSTONE Same as above 22.0'-24.0'. Pieces of wood plug present with core (plug used to set surface casing above 24'). Core has mottled appearance due to Fe-oxide stains. Core composed of mixture of clayey siltstone (as above) and claystone. Core appears disturbed or reworked. (Duplicate sample taken 26.0'-30.0' - BH70130ST)
26.0'-27.2' WQA0129			1.20 /2.00	5963	27				
									No core recovery (27.2'-28.0').
BH70129ST				5962	28				CLAYEY SILTSTONE Same as above. See description 26.0'-27.2'
BH70129ST CONT			2.00 /2.00	5961	29				
28.0'-30.7'				5960	30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 40.0	GROUND ELEVATION (FT) 5989.90	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752520	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S. LYNN/KJT	71393
EAST	2082745	LOCATOR NUMBER 12H	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/12/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-40.0'; NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-40.0', DEPTH TO BEDROCK 22.0'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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

Sample Number	Recovery/Interval	Unified Soils Classification or Rock Type	Description
		CLAYEY SILTSTONE	Same as above. See description 26.0'-27.2'
30.7'-31.3'	2.00/2.00	SILTY CLAYSTONE	Silty Claystone with some sand and organic material. Disturbed slough or reworked bedrock. Light olive brown (2.5 Y 5/6) to light brownish gray (2.5 Y 6/2). Sand is very fine. Moderately sorted. Porosity=20%. No cement. Broken frags of core - some appear thinly bedded. Sand content of bed is variable. Not fractured. Slightly moist. 8% Sand, 30% silt, 62% clay.
VOA0131 BH70131ST			
31.3'-33.8'	2.00/2.00	SILTY CLAYSTONE	Silty Claystone with thin beds of Clayey Sandstone (60% sand, 32% clay, 8% silt). Light olive brown (2.5 Y 5/3) and yellowish brown (10 YR 5/8). Sand is very fine. Porosity varies from 10% to 25%. No cement. Slightly to moderately friable. Sand composed of quartz, black mafic minerals. The two rock types are completely intermixed as if bedding is disturbed. Not fractured. Slightly moist. Mottled Fe-oxide stains especially below 33.0'. 68% Clay and 32% silt and 60% sand, 32% clay, and 8% silt.
33.8'-35.3' BH70133ST	2.00/2.00	SILTY CLAYSTONE	Silty Claystone. Very dark gray (5 Y 3/1) with yellowish brown (10 YR 5/8) Fe-oxide stains. Well sorted. Porosity=15%. No cement. Slightly friable. Bedding not apparent. Not fractured. Slightly moist. 22% Silt and 78% clay.
35.3'-36.0' VOA0133		SILTY CLAYSTONE	Silty Claystone with thin beds of clayey sandstone. Same as interval 31.3'-33.8' above. Sandstone occurs along high angle planar surfaces (disturbed bedding).
	0.00/2.00		No core recovery 36.0'-38.0'. Center bit used.
BH70184SM0.0' VOA0134	2.00/2.00	CLAYSTONE	Claystone. Organic-rich with some silt. Dark olive gray (5 Y 3/2) to black (5 Y 2.5/1). Well sorted. Porosity=10%. No cement. Slightly- to non-frible. Very organic rich 38.3'-38.6' & 38.9'-39.4'. Not bedded. Not fractured. Slightly moist. 78% Clay and 22% silt. Total Depth 40.0'

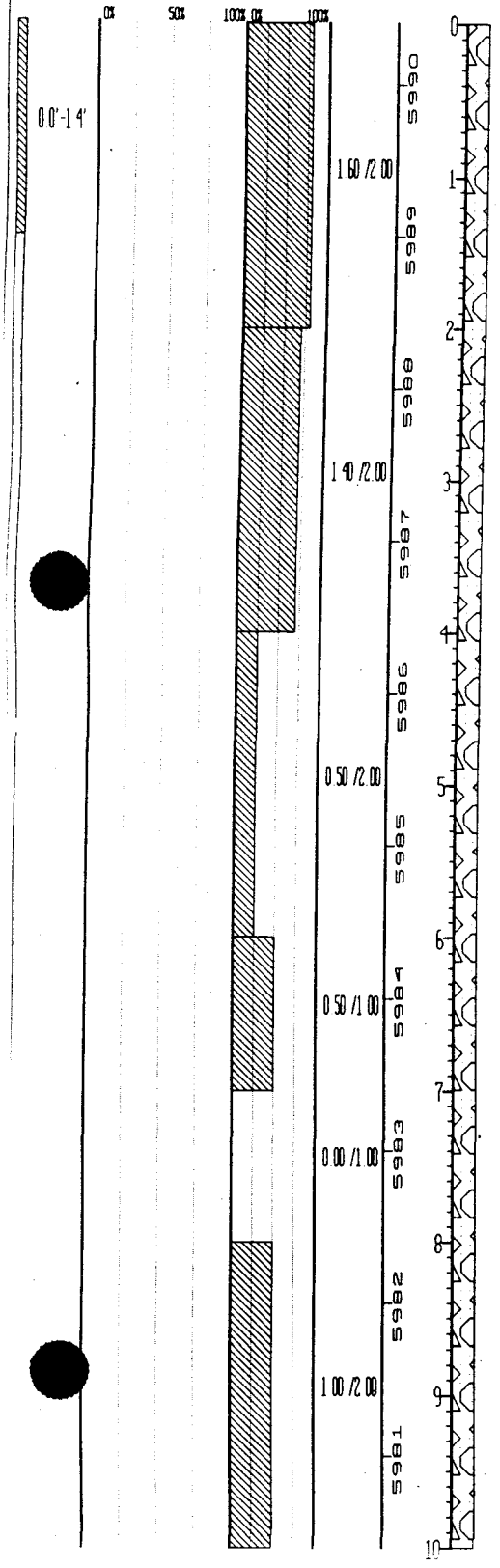
Depth scale: 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

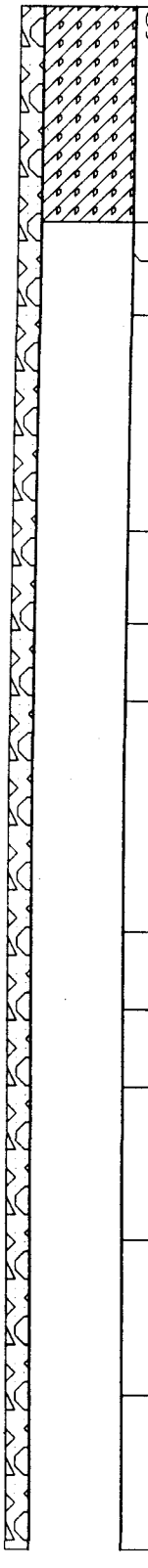
Datum (FT): 5959, 5958, 5957, 5956, 5955, 5954, 5953, 5952, 5951, 5950

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26.0	GROUND ELEVATION (FT) 5990.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752517	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST S LYNN/KJT	71493
EAST	2082741	LOCATOR NUMBER 12I	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/20/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-13.6', BENTONITE SEAL 13.6'-16.8', SAND 16.8'-24.8', NATURAL AND BENTONITE BACKFILL 24.8'-26.0', 2.0' SUMP 22.8'-24.8', DEPTH TO BEDROCK 24.0'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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	Clayey Sand with some silt and gravel. Dark olive brown (2.5 Y 3/2). Fine gravel and very fine to coarse sand (mean=medium). Moderately graded. Sand and gravel composed mainly of rock frags and quartz. Not bedded. Some plant and root material present. Moist. 10% Gravel, 5% sand, 35% clay, and 5% silt.
	Same as below. See description 2.0'-3.4' below
	No core recovery (1.6'-2.0')
	Gravelly fill with asphalt matrix. Black (N2) to dark olive brown (2.5 Y 3/2). Artificial fill composed of fine to coarse gravel in asphalt and sandy clay. Gravel to >3" diameter. Sand and gravel both coated with asphalt above 6.0'. 90% Trash and gravel, 8% clay, 2% silt
	No core recovery (3.4'-4.0')
	Same as above. See description 2.0'-3.4'
	No core recovery (4.5'-6.0')
	Same as above. See description 2.0'-3.4'
	No core recovery (6.5'-7.0')
	No core recovery (7.0'-8.0'), center bit used
	Same as above. See description 2.0'-3.4'
	No core recovery (9.0'-10.0')

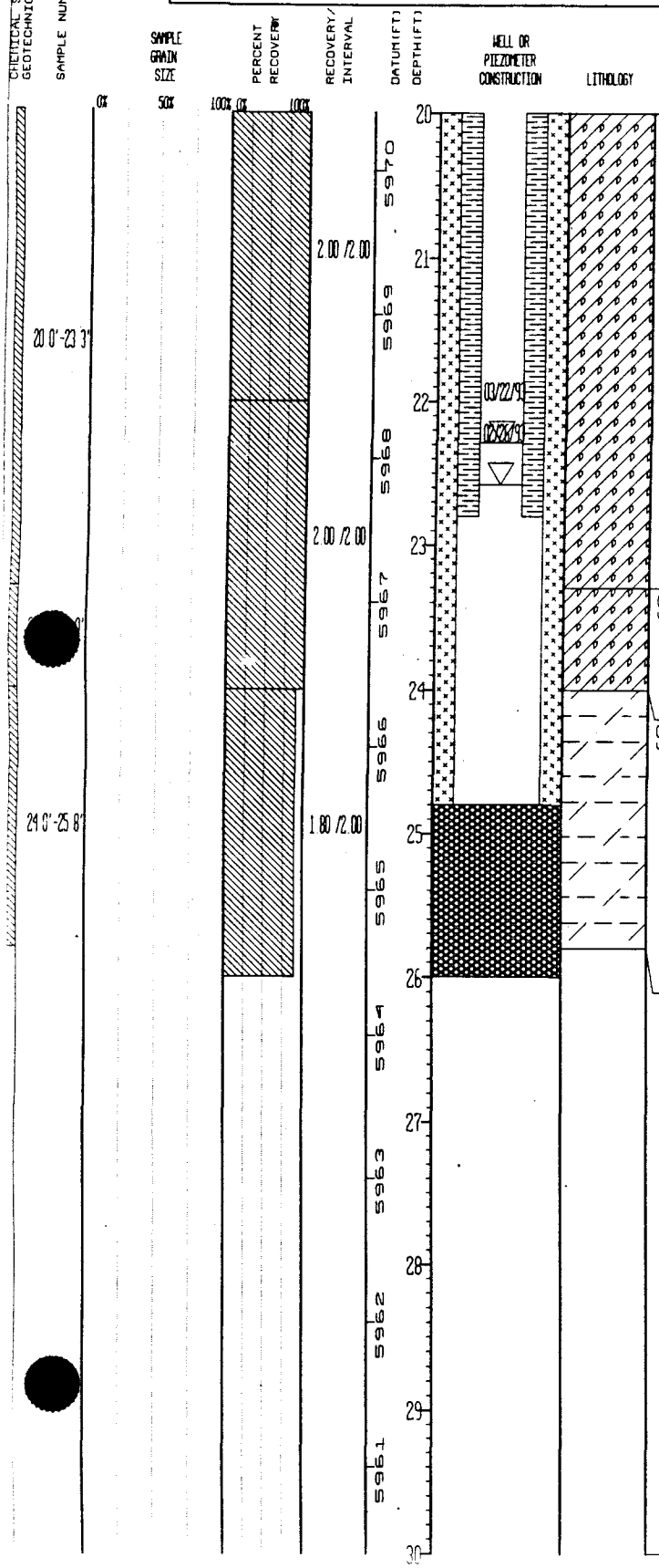
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26 0	GROUND ELEVATION (FT) 5990 40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752517	AREA 307 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST S LYNN/KJT	71493
EAST	2082741	LOCATOR NUMBER 12I	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/20/93	

REMARKS MOBIL DRILL B-57. HSA. CEMENT GROUT 0 0'-13 6', BENTONITE SEAL 13 6'- 16 8', SAND 16 8'-24 8', NATURAL AND BENTONITE BACKFILL 24 8'-26 0' , 2 0' SUMP 22 8'-24 8', DEPTH TO BEDROCK 24 0'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
					5980	10				Assorted trash in a clayey (cl) matrix (90% trash) Clay is dark grayish brown (10 YR 4/2)
				0 20 /2 00	5975	11				No core recovery (10 2'-12 0')
					5970	12				Same as above See description 10 0'-10 2' Trash - includes wood, plastic
				0 30 /2 00	5965	13				No core recovery (12 3'-14 0')
				0 30 /1 00	5960	14				Same as above See description 10 0'-10 2 Trash - includes plastic, foam, metal, gravel
										No core recovery (14 3'-15 0')
				0 30 /1 00	5955	15				Same as above See description 10 0'-10 2' Trash
										No core recovery (15 3'-16 0')
					5950	16				Same as above See description 10 0'-10 2' Trash
16 7'-17 0'				1 00 /2 00		17			SC	See description below Same as 18 0'-19 8'
					5945					No core recovery (17 0'-18 0')
18 0'-19 8'				1 80 /2 00	5940	18			SC	Gravelly Clayey Sand and landfill material Strong brown (7 5 YR 5/6) Coarse to fine gravel (max=3", mean=1 5" diam) and coarse to very fine sand in clay/silt matrix Mixed with trash from above 17 0' Well graded Subrounded to angular gravel and subrounded to subangular sand (See description continued 20 0'-23 3')
						19				No core recovery (19 8'-20 0')
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 26.0	GROUND ELEVATION (FT) 5990.40	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752517	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST S. LYNN/KJT	71493
EAST	2082741	LOCATOR NUMBER 12I	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/20/93	

REMARKS: MOBIL DRILL B-57, HSA; CEMENT GROUT 0.0'-13.6', BENTONITE SEAL 13.6'-16.8', SAND 16.8'-24.8', NATURAL AND BENTONITE BACKFILL 24.8'-26.0', 2.0' SUMP 22.8'-24.8', DEPTH TO BEDROCK 24.0'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	(Continued from 18.0'-19.8') Gravel composed mainly of granite, quartzite, sandstone, and schist. Sand composed of rock frags and quartz and feldspar. Matrix is variably stained - black, ochre, and dark reddish brown. Black material is organic material or organic-rich clay. No bedding apparent. Interval appears reworked or highly disturbed. Slightly moist. 42% Gravel, 45% sand, 10% clay, and 3% silt
SC	Mixture of sand, gravel, silty clay with silty claystone of underlying bedrock. See descriptions of 16.7'-23.3' and 24.0'-25.8' intervals. Mixture is approximately 60% bedrock origin. 7% Gravel, 20% sand, 48% clay, and 25% silt. Top of Bedrock 24.0'
SILTY CLAYSTONE	Silty Claystone with some sand. Olive yellow (2.5 Y 6/4) and light brownish gray (2.5 Y 6/2) with olive yellow Fe-oxide stains. Sand is very fine to fine and concentrated along subhorizontal beds below 25.5'. Moderately sorted. Sand subrounded and composed mainly of quartz, and mafic minerals. Porosity=20%-25%. No cement. Moderately friable. Remnants of original bedding appear disturbed. Mn-oxide stains along high angle surface. Does not appear fractured. Slightly moist. 40% Silt, 50% clay, and 10% sand.
	No core recovery (25.8'-26.0') Total Depth 26.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 41.0	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752242	AREA 907 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	71593
EAST	2082926	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/01/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-41.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-41.0', DEPTH TO BEDROCK 27.0'-27.9'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	BH70157ST WDA0157				5988	0				No core remaining after sampling. Field description - gravel-sand-silt mixture with some asphalt (gm/sm). Brown, lightly rooted, no bedding. Moist.
				0.80 /1.90	5987	1				No core recovery (0.8'-1.9')
	BH70158ST WDA0158			1.20 /2.00	5986	2				No core remaining after sampling. Field description - Same as above (0.0'-0.8'), but dark brown to very dark brown. At base is lens of clay and silt mixture with gravel. Moist throughout
					5985	3				No core recovery (3.1'-3.9')
3.9'-5.5'	BH70159ST WDA0159			1.60 /2.00	5984	4			SC	Sandy clay with some gravel. Light olive brown (2.5 Y 5/4). Well graded mixture of medium to fine gravel (mean=fine) and very fine to coarse sand (mean=medium-coarse) in silty clay, low plasticity, matrix. Gravel and sand are sub-angular, composed of weathered rock frags and quartz. No bedding. Moist. 15% Gravel, 38% sand, 40% clay, and 7% silt
					5983	5				No core recovery (5.5'-5.9')
5.9'-6.2'				0.30 /2.00	5982	6				Mixed trash and sandy clay (sandy clay described above 3.9'-5.5'). Light olive brown matrix. Saturated. No bedding. Trash includes wood, plastic, paper, metal, wood-fiber board. Color is variable to very dark gray
					5981	7				No core recovery (6.2'-7.9')
7.9'-8.2'					5980	8				Same as above. See description 5.9'-6.2'
				0.30 /2.00						No core recovery (8.2'-9.9')
					5979	9				
						10				Same as above. See description 5.9'-6.2'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 41.0	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752242	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	71593
EAST	2082926	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/01/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-41.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-41.0', DEPTH TO BEDROCK 27.0'-27.9'.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
				0.20 /2.00	5978	10				No core recovery (10.1'-11.9')
					5977	11				
	BH7016GST			1.50 /2.00	5976	12				No core remaining after sampling. Field description - Consists of silt-clay mixture with sand and trash. Olive gray to olive brown with black staining. Moist. Black areas appear organic-rich.
	MOA0160				5975	13				
	13.9'-15.7'									No core recovery (13.4'-13.9')
					5974	14				Mixed trash and sandy clay as described above (3.9'-5.5')
	BH7016IST			1.80 /2.00						
	MOA0161				5973	15				
					5972	16				No core recovery (15.7'-23.9') (recovery attempts made in 2.0' intervals).
				0.00 /2.00	5971	17				
					5970	18				
				0.00 /2.00	5969	19				
						20				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 41.0	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752242	AREA (U7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	71593
EAST	2082926	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/01/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-41.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-41.0', DEPTH TO BEDROCK 27.0'-27.9'

CHEMICAL SAMPLE / GEOTECHNICAL SAMPLE	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
					5968	20				No core recovery (15.7'-23.9') (recovery attempts made in 2.0' intervals)
				0.00 /2.00	5967	21				
					5966	22				
				0.00 /2.00	5965	23				
	BH70162ST/VOA162				5964	24				No core remaining after sampling. Field description - Gravel-sand-silt-clay-trash mixture. Grayish brown. Fragmented gravel and rock flour present. No bedding. Slightly moist to moist.
				0.50 /2.00	5963	25				No core recovery (24.9'-25.9')
25.9'-27.0'	BH70163ST VOA0163			1.10 /2.00	5962	26			CLAYEY SAND	Clayey Sand with some gravel and trace of trash material. Dark grayish brown (2.5 Y 4/2). Fine gravel and very fine to coarse sand (mean=coarse) in silty clay matrix. Small pieces of metal, wood also present. Sand and gravel composed mainly of quartzite, quartz, granite, feldspar, and rock. No bedding. Moist. 10% Gravel, 2% trash, 63% sand, 20% clay, and 5% silt. Top of Bedrock 27.0'-27.9'
					5961	27				No core recovery (27.0'-27.9')
27.9'-28.9'	BH70164ST VOA0164			2.00 /1.00	5960	28			SILTY CLAYSTONE	Silty Claystone with some sand. Light olive brown (2.5 Y 5/4) with dark yellowish brown (10 YR 4/6) Fe-oxide stains. Sand is fine and decreases in abundance to 0% at 30'. Porosity=20%. No cement. Slightly friable. Core heavily damaged during drilling or sampling, no bedding apparent. Not fractured. Moist. 40% Silt, 45% clay, and 15% sand
				0.00 /0.10	5959	29				No core recovery (28.9'-29.0')
				1.00 /2.00		30			SILTY CLAYSTONE	Same as above. See description 27.9'-28.9'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 41.0	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752242	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	71593
EAST	2082926	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/01/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-41.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-41.0', DEPTH TO BEDROCK 27.0'-27.9'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH

SAMPLE NUMBER: 29.0'-32.2' BH70168ST; 32.2'-32.9'; 32.9'-36.0' BH70169ST; 36.0'-37.2' MOA0169; 37.2'-41.0' BH

SAMPLE GRAIN SIZE: 0% 50%

PERCENT RECOVERY: 100% 0% 100%

RECOVERY/INTERVAL: 1.00/2.00; 2.00/2.00; 2.00/2.00; 2.00/2.00; 1.80/2.00; 2.00/2.00

DATUM (FT): 5958, 5957, 5956, 5955, 5954, 5953, 5952, 5951, 5950, 5949

DEPTH (FT): 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SILTY CLAYSTONE	Same as above. See description 27.9'-28.9'
CLAYEY SILTSTONE	Clayey Siltstone. Light olive brown (2.5 Y 5/4) to gray (5 Y 5/1). Porosity=25%. No cement. Moderately to highly friable. No bedding apparent. Irregular Fe-oxide stains present. Dry. 72% Silt and 28% clay
CLAYSTONE	Claystone with some silt. Light olive brown (2.5 Y 5/6) to dark yellowish brown (10 YR 4/6) where Fe-oxide/ Fe-hydroxides present. Porosity=15%-20%. No cement. Moderately friable. Thin, more silt-rich intervals present at 34.9', 35.5' and 35.6'-36.0'. Core damaged below 35.6'. No bedding apparent. Slightly moist to dry. 88% Clay and 12% silt
SILTSTONE	Siltstone with some clay. Dark gray (5 Y 4/1) to light olive brown (2.5 Y 5/6). Porosity=30%. No cement. Highly friable. Interval 36.9'-37.0' laminated with more clay-rich layers. Slightly moist to dry. 90% Silt and 10% clay. (Duplicate sample taken 33.0'-37.0' BH70170ST)
CLAYSTONE	Claystone with some silt. Very dark grayish brown (10 YR 3/2) above 38.7' and dark gray (5 Y 4/1) below 38.7'. Porosity=10%->25%. No cement. Unweathered. Moderately friable. Contains trace of carbonaceous, organic material, as very fine fragments. Subhorizontal laminae visable at 38.8', most of core too broken up to observe bedding features. Not fractured. Dry. 80% Clay and 20% silt. Total Depth 41.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 41.0	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752242	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	71593
EAST	2082925	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/01/93	

REMARKS: MOBIL DRILL B-57, HSA, SAMPLED 0.0'-41.0', NO WELL INSTALLED, NATURAL AND BENTONITE BACKFILL 0.0'-41.0', DEPTH TO BEDROCK 27.0'-27.9'.

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	MWA0171	0% 50% 100%	0% 100%	2.00/2.00	5948 5947 5946 5945 5944 5943 5942 5941 5940 5939	40 41 42 43 44 45 46 47 48 49 50			CLAYSTONE	Claystone with some silt. Very dark grayish brown (10 YR 3/2) above 38.7' and dark gray (5 Y 4/1) below 38.7'. Porosity=10%->25%. No cement. Unweathered. Moderately friable. Contains trace of carbonaceous, organic material, as very fine fragments. Subhorizontal laminae visable at 38.8', most of core too broken up to observe bedding features. Not fractured. Dry. 80% Clay and 20% silt. Total Depth 41.0'.

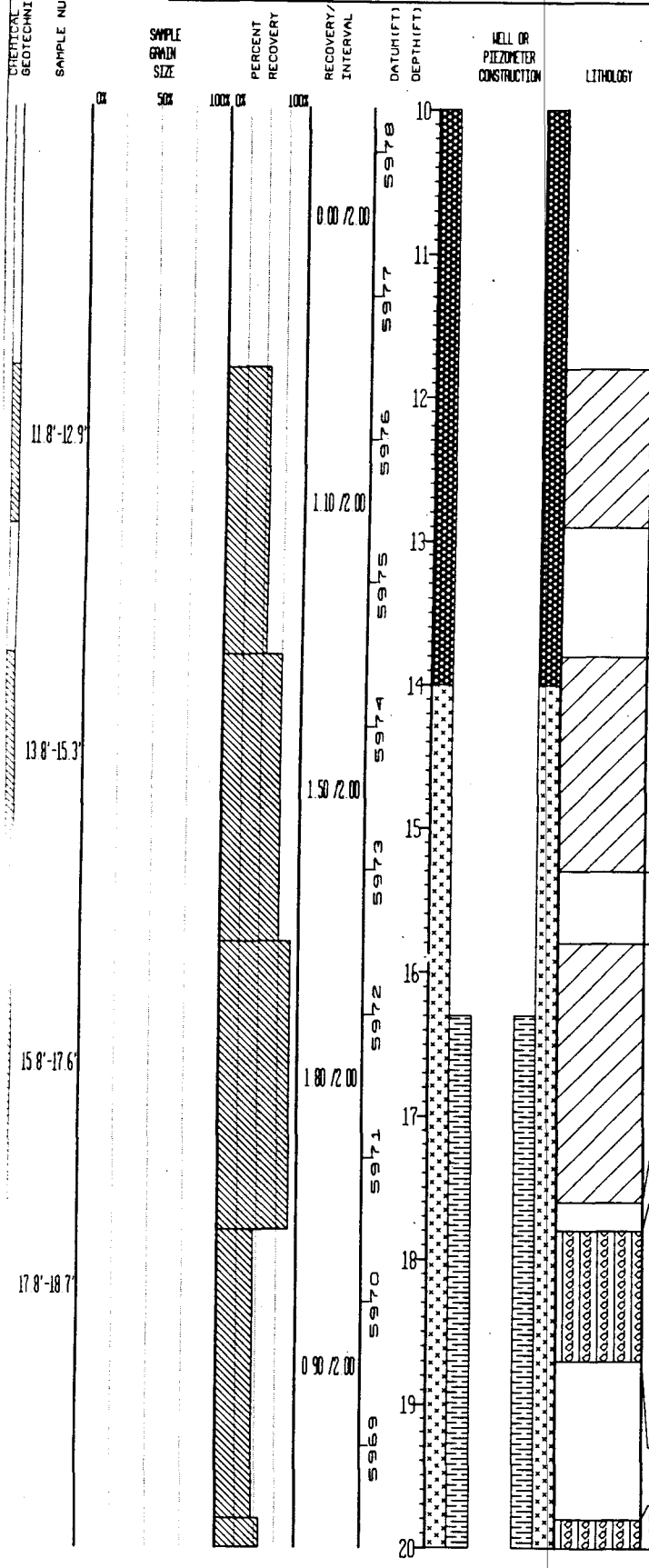
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28.3	GROUND ELEVATION (FT)	5988.30	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752237	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN/KJT	71693
EAST	2082923	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	03/02/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-9.65', BENTONITE SEAL 9.65'-14.0', SAND 14.0'-28.3', NO BACKFILL, CENTRALIZERS PLACED 5.0' AND 27.0', 2.0' SUMP 26.3'-28.3', DEPTH TO BEDROCK 26.5'

CHEMICAL SAMPLE DEPTH / 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
0.0'-1.6'		0% / 50%	100% 0% / 100%	1.60/1.80	5988	0			SC	Clayey Sand with some silt and gravel. Olive brown (2.5 Y 4/3) to black (N 2/0). Moderately graded, very fine to coarse sand and fine to medium gravel in silty clay matrix, with some asphalt and other trash. Sand and gravel are angular to subrounded. Matrix is low plasticity (cl). Gravel composed of quartzite with minor metamorphic and granite fragments. Sand composed mainly of quartz, rock fragments. Not bedded. Moist. Asphalt and concrete present at 1.2'. 8% Gravel, 52% sand, 18% silt, and 22% clay
1.8'-2.9'				1.10/2.00	5987	1				No core recovery (1.6'-1.8')
					5986	2			SC	Same as above. See description 0.0'-1.6'
					5985	3				No core recovery (2.9'-3.8')
3.8'-4.9'				1.10/2.00	5984	4			CL	Sandy Clay with some silt, makes up matrix containing assorted trash and fill materials. Olive brown (2.5 Y 4/4) to very dark grayish brown (2.5 Y 3/2), and gray (2.5 Y 5/0). Sand is very fine grained to coarse (mean=medium), moderately sorted, angular to subrounded. Low plasticity matrix. Sand composed mainly of quartz and rock fragments. Clay matrix also contains landfill materials of wood, plastic, and paper products. Volume of fill for interval is approximately 25%. Not bedded. Moist throughout. 30% Sand, 60% clay, and 10% silt
					5983	5				
5.8'-6.3'					5982	6				No core recovery (4.9'-5.8')
									CL	Same as above. See description 3.8'-4.9'
				0.50/2.00	5981	7				No core recovery (6.3'-11.8')
					5980	8				
				0.00/2.00	5979	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28.3	GROUND ELEVATION (FT) 5988.30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752237	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN/KJT	71693
EAST	2082923	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/02/93	

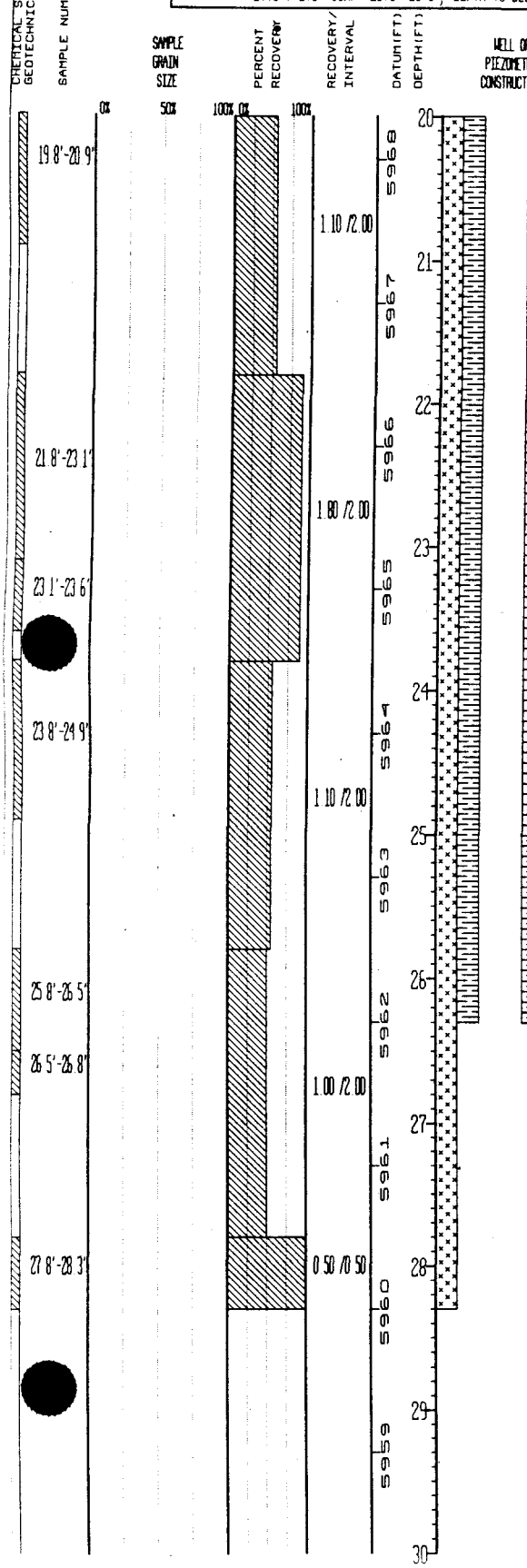
REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-9.65', BENTONITE SEAL 9.65'-14.0', SAND 14.0'-28.3', NO BACKFILL, CENTRALIZERS PLACED 5.0' AND 27.0', 2.0' SUMP 26.3'-28.3', DEPTH TO BEDROCK 26.5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (6.3'-11.8')
CL	Same as above. See description 3.8'-4.9'
	No core recovery (12.9'-13.8')
CL	Same as above. See description 3.8'-4.9'
	No core recovery (15.3'-15.8')
CL	Same as above. See description 3.8'-4.9'
	No core recovery (17.6'-17.8')
SM	Mixed Silty Sand with some clay and landfill trash. Trash makes up approx. 60% of interval. Very dark grayish brown (2.5 Y 3/2). Sand is very fine to coarse (mean=medium) grained. Moderate grading. Sand is angular to subrounded composed of quartz and rock fragments. Low plasticity clayey silt matrix. Interval from 22.0'-23.1' contains mainly trash of wood, plastic, and paper. Not bedded. Moist to wet. 45% Sand, 35% silt, and 20% clay
	No core recovery (18.7'-19.8')
SM	Same as above. See description 17.8'-18.7'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 3	GROUND ELEVATION (FT) 5988 30	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752237	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J BOYLAN/KJT	71693
EAST	2082923	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 03/02/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-9 65', BENTONITE SEAL 9 65'-14 0', SAND 14 0'-28 3', NO BACKFILL, CENTRALIZERS PLACED 5 0' AND 27.0', 2 0' SUMP 26 3'-28 3', DEPTH TO BEDROCK 26 5'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (20.9'-21.8')
SM	Same as above. See description 17.8'-18.7'
GW	Mixed Gravel (gw) and Sandy Gravelly Clay (sc) zones. Gravel is gray quartzite, angular to subangular, poorly graded (road gravel). Sandy gravelly clay is composed of sand and gravel in low plasticity clay matrix, yellowish brown (10 YR 5/6), with mottled appearance. Moist. Increasing silt content with depth. Mixed with bedrock below 25.3' 100% Gravel and 20% Gravel, 35% sand, 40% clay and 5% silt,
	No core recovery (23.6'-23.8')
GW	Same as above. See description 23.1'-23.6'
	No core recovery (24.9'-25.8')
GW	Same as above. See description 23.1'-23.6'
CLAYEY SILTSTONE	Clayey Siltstone with trace of sand. Light brownish gray (2.5 Y 6/2) to light olive brown (2.5 Y 5/6), with olive yellow Fe-hydroxide stains at 28'. Sand is very fine grained, composed of quartz. Porosity=10%-25%. No cement. Moderately friable. Sand occurs along wavy laminae surfaces. Bedding irregular. Not fractured. Slightly moist to dry. 25% Clay, 70% silt, and 5% sand.
	No core recovery (26.8'-27.8')
CLAYEY SILTSTONE	Same as above. See description 26.5'-26.8'. Total Depth =28.3'.

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34.0	GROUND ELEVATION (FT) 5987.27	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752182	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST DCR/JAB	71793
EAST	2082961	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

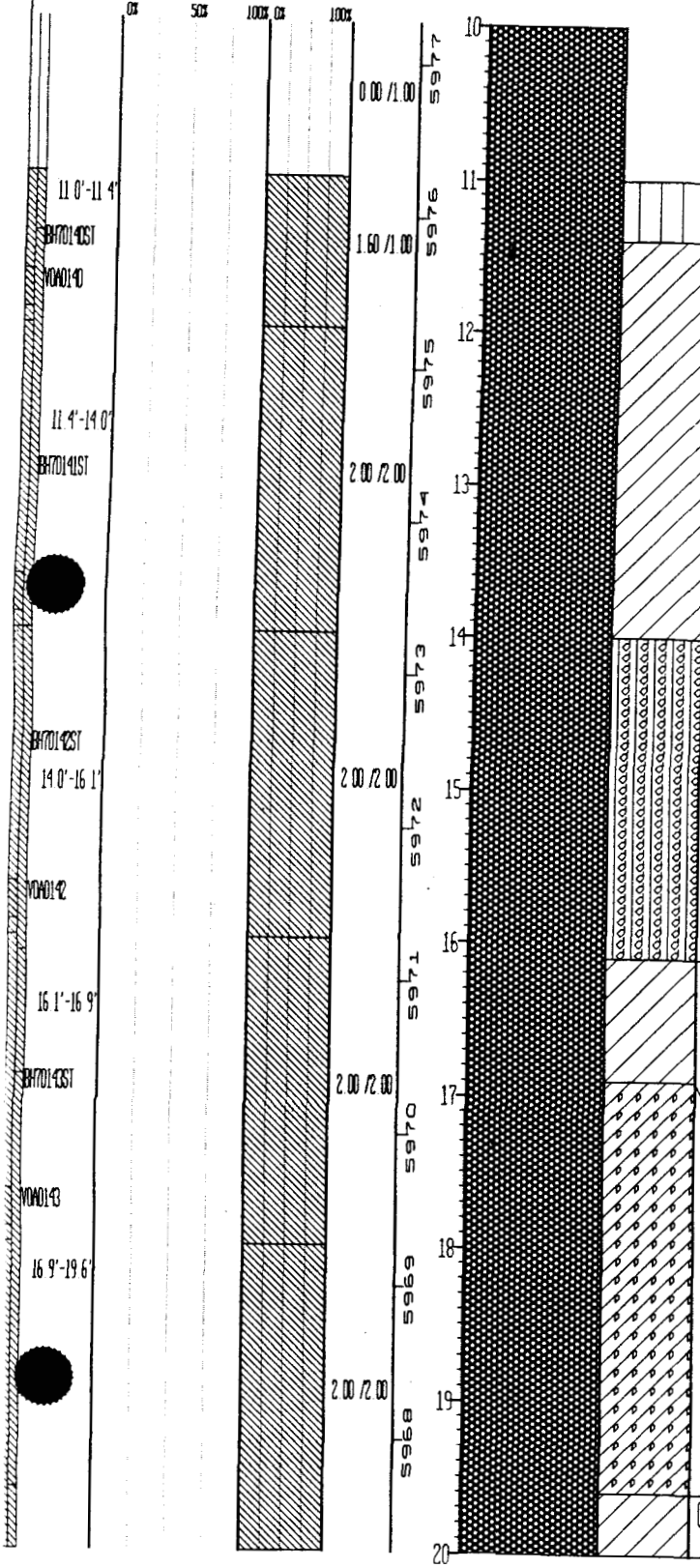
REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0.0'-34.0', NO WELL INSTALLED, NATURAL AND BENTONITE CEMENT GROUT BACKFILL 0.0' - 34.0', DEPTH TO BEDROCK 25.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	BH70136ST	0% 50%	100% 0%		5987	0				No core remaining after sampling. Field description - Clayey Gravel with some silt, brown, no bedding, slightly moist
	WOA0136			1.60 /2.00	5986	1				
										No core recovery (1.6'-2.0')
	BH70137ST				5985	2				No core remaining after sampling. Field description - Clay with some sand and gravel, light gray to grayish brown, abundant Fe-staining, no bedding apparent, slightly moist
	WOA0137			1.20 /2.00	5984	3				
										No core recovery (3.2'-4.0')
	BH70138ST				5983	4				No core remaining after sampling. Field description - Clayey Sandy Gravel with some silt, brown, no bedding apparent, slightly moist
	WOA0138			0.90 /2.00	5982	5				
										No core recovery (4.9'-6.7')
				0.00 /0.70	5981	6				
	BH70139ST				5980	7				No core remaining after sampling. Field description - Silty Gravel with some clay, light brown, no bedding apparent, slightly moist.
	WOA0139			1.10 /1.30						
					5979	8				No core recovery (7.8'-11.0')
				0.00 /2.00	5978	9				
						10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 0	GROUND ELEVATION (FT)	5987 27	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752182	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN)		GEOLOGIST	DCR/JAB	71793
EAST	2082961	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/25/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-34 0', NO WELL INSTALLED, NATURAL AND BENTONITE CEMENT GROUT BACKFILL 0 0' - 34 0', DEPTH TO BEDROCK 25 5'

CHEMICAL SAMPLE DEPTH
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



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (7.8'-11 0')
ML	Silty Sand with some clay Strong brown (7 5 YR 5/6) Trace of gravel (<2%) Very fine to coarse sand (mean=v fine to fine) Poorly graded Angular to subrounded, low plasticity, composed of quartz with some rock fragments and a trace of mica No bedding Lower contact is approximate 1% Gravel, 46% sand, 37% silt, and 16% clay
CL	Silty Clay with trace of sand Strong brown (7 5 YR 5/6) to light yellowish brown (2 5 YR 6/3) Trace of very fine to fine sand, dominantly made up of quartz Poorly graded Low to medium plasticity Abundant Fe-oxide staining No bedding apparent 5% Sand, 30% silt, and 65% clay
SM	Sand with silt and a trace of clay Strong brown (7 5 YR 5/6, 4/6) with light gray (2 5 Y 7/2) pocket Very fine to coarse sand (mean=v fine to fine) Poorly graded Angular to subrounded Low plasticity Sand is quartz with some rock fragments and traces of mica, mafic minerals, and Fe-oxides No bedding apparent 81% Sand, 13% silt, and 6% clay
CL	Clay with some silt Yellowish brown (2 5 YR 6/3) to light olive brown (2 5 Y 5/3) with brown pockets (7 5 YR 5/4) Trace to some silt Poorly graded Low to medium plasticity No bedding apparent 80% Clay and 20% silt
SC	Clayey Sand with some silt Yellowish brown (10 YR 5/6, 5/8) to light yellowish brown (2 5 Y 6/3) to light gray (2 5 Y 7/2) with increasing depth Very fine to coarse sand (mean=v fine to fine) Poorly graded Angular to subrounded Low plasticity Sand is composed of quartz with some rock fragments, trace of mafics mad micas No bedding Gravel clasts very rare, but present below 18 0' (Gravel is < 1% of bulk grains) 65% Sand, 25% clay, and 10% silt
CL	Same as below See description directly below

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34.0	GROUND ELEVATION (FT) 5987.27	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752182	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST DCR/JAB	71793
EAST	2082961	LOCATION NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0.0'-34.0', NO WELL INSTALLED, NATURAL AND BENTONITE CEMENT GROUT BACKFILL 0.0' - 34.0', DEPTH TO BEDROCK 25.5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
	BH70145ST			2.00/2.00	5967	20			CL	Sandy Silty Clay to Silty Clay to Clay with gravel and silt. Above 22.0' color is dominantly light gray (2.5 Y 7/2) to light olive brown (2.5 YR 5/3) with scattered pockets of yellowish brown (10 YR 5/8) and brown (7.5 YR 5/4), below 22.0' color is dominantly yellowish brown (10 YR 5/4, 5/6) to dark yellowish brown (10 YR 4/4, 4/6) with pockets of light olive brown (2.5 Y 5/3). Gravels mainly present at 19.6' to 20.3', 23.6', 23.9'-24.0' (cemented within ironstone), 24.2', and 25.4'; (max=2", mean=0.5"), rare or absent at other depths in this interval. Sand is mainly present 20.2'-20.4', 20.7'-20.9', 24.0'-24.2', 24.6'-24.9', and 25.1'-25.5', and very fine to coarse (mean=v. fine to fine). All other depths in this interval consist of silty clay with trace to no sand or gravel. Poorly graded. Subangular to subrounded gravel and angular to subrounded sand. Low to medium plasticity. Gravels are igneous, metamorphic, and silicic. Sand composed of quartz with some rock fragments, and trace to some Fe-oxides, traces of micas and mafic minerals. Fe-stone present at 23.6'-24.1' and 25.1'-25.5'. No bedding. NOTE: Core from 11.0'-25.5' consists of variegated clayey to sandy lenses with varying amounts of silt and gravel, contacts are generally transitional. Only gross change has been noted. 5% Gravel, 25% sand, 20% silt, and 50% clay. Top of Bedrock 25.5'.
	WOA0145				5966	21				
19.6'-25.5'					5965	22				
	BH70146ST			2.00/2.00	5964	23				
	WOA0146				5963	24				
	BH70147ST			2.00/2.00	5962	25				
	WOA0147				5961	26			CLAYEY SILTSTONE	Siltstone with clay to Clayey Siltstone. Pale brown (10 YR 6/3) to yellowish brown (10 YR 5/6). Trace (0%-3%) very fine-grained sand (quartz with traces of rock fragments, Fe-oxide grains, mafics, and micas; angular to subrounded), 25%-40% clay, 60%-75% silt. Porosity=10%-20%. Cement is argillaceous with trace of Fe-oxide cement. Slightly to moderately friable. Scattered traces of carbonaceous material. Scattered, subplanar, thin deposits of Fe-/Mn-oxides are present (orange/black), most notably 26.9'-27.4', lining small fractures. Portion from 26.2'-26.5' is clay-rich, to claystone with silt, with sharp upper contact and transitional lower contact, some zones laminated (especially 28.0'-30.0'). Color is more yellowish brown at 26.5'-27.5', more pale brown elsewhere. Increasing clay content below 30.0' and color more yellowish brown over transition to underlying unit. Dry to slightly moist. 30% Clay, 69% silt, and 1% sand. (Duplicate sample BH70166ST taken 28.0'-32.0')
	BH70148ST			2.00/2.00	5960	27				
	WOA0148				5959	28				
25.5'-30.5'				2.00/2.00	5958	29				
	WOA0165									
	BH70165ST					30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 0	GROUND ELEVATION (FT) 5987 27	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752182	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST DCR/JAB	71793
EAST	2082961	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS MOBIL DRILL B-57, HSA, SAMPLED 0 0'-34 0', NO WELL INSTALLED, NATURAL AND BENTONITE CEMENT GROUT BACKFILL 0 0' - 34 0', DEPTH TO BEDROCK 25 5'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE

SAMPLE NUMBER: BH70165ST; 30 5'-34 0'; BH70167ST

SAMPLE GRAIN SIZE: 0% 50% 100%

PERCENT RECOVERY: 0% 100%

RECOVERY/INTERVAL: 2 00 /2 00; 2 00 /2 00

DATUM (FT): 5957, 5956, 5955, 5954, 5953, 5952, 5951, 5950, 5949, 5948

DEPTH (FT): 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

WELL OR PIEZOMETER CONSTRUCTION

LITHOLOGY

UNIFIED SOILS CLASSIFICATION OR ROCK TYPE

DESCRIPTION

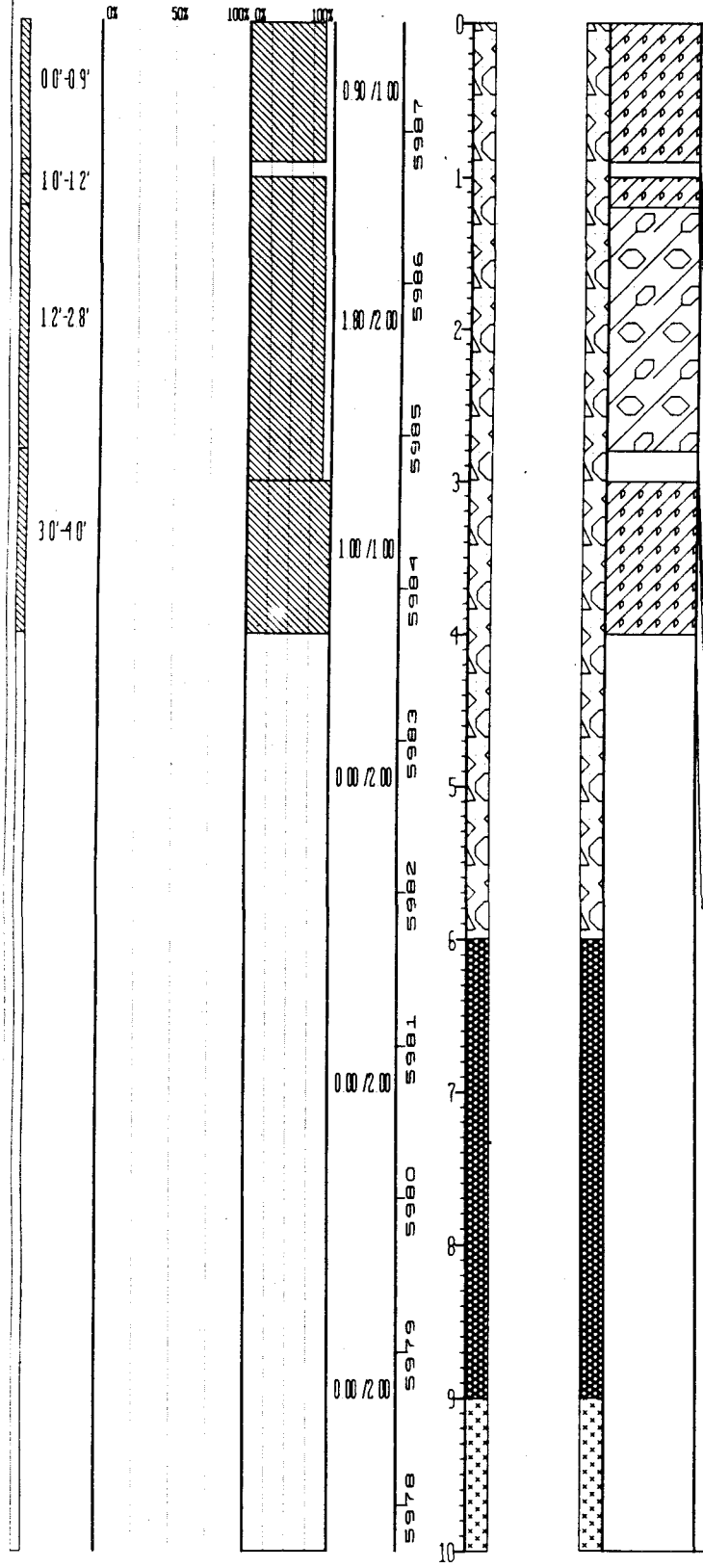
CLAYEY SILTSTONE Same as above See description directly above

CLAYSTONE Claystone with some to trace of silt Yellowish brown (10 YR 5/6) to olive yellow (2 5 Y 6/6) to dark grayish brown (2 5 Y 4/2) above 31 8', below material is less weathered and is dark gray (10 YR 4/1) to black (10 YR 2/1) Silt content varies from 5%-30%, with most silt at top, transitional contact Porosity=0%-10% Cement is argillaceous Non- to slightly friable Fe-oxides present in weathered portion (above 31 8'), trace of carbonaceous content is also present, including coally chips at 33 1' Massive to contorted laminations above 31 8', laminated with occasional massive zones below 31 8' to base Dry to slightly moist 30% Silt and 70% clay
Total Depth 34 0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 0	GROUND ELEVATION (FT) 5987 70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752174	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST D REEDER/KJT	71893
EAST	2082951	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/27/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-6 0', BENTONITESEAL 6 0'-9 0', SAND 9 0'-28 0', NO BACKFILL , 2 3' SUM25 7'-28 0', DEPTH TO BEDROCK 26 0'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY

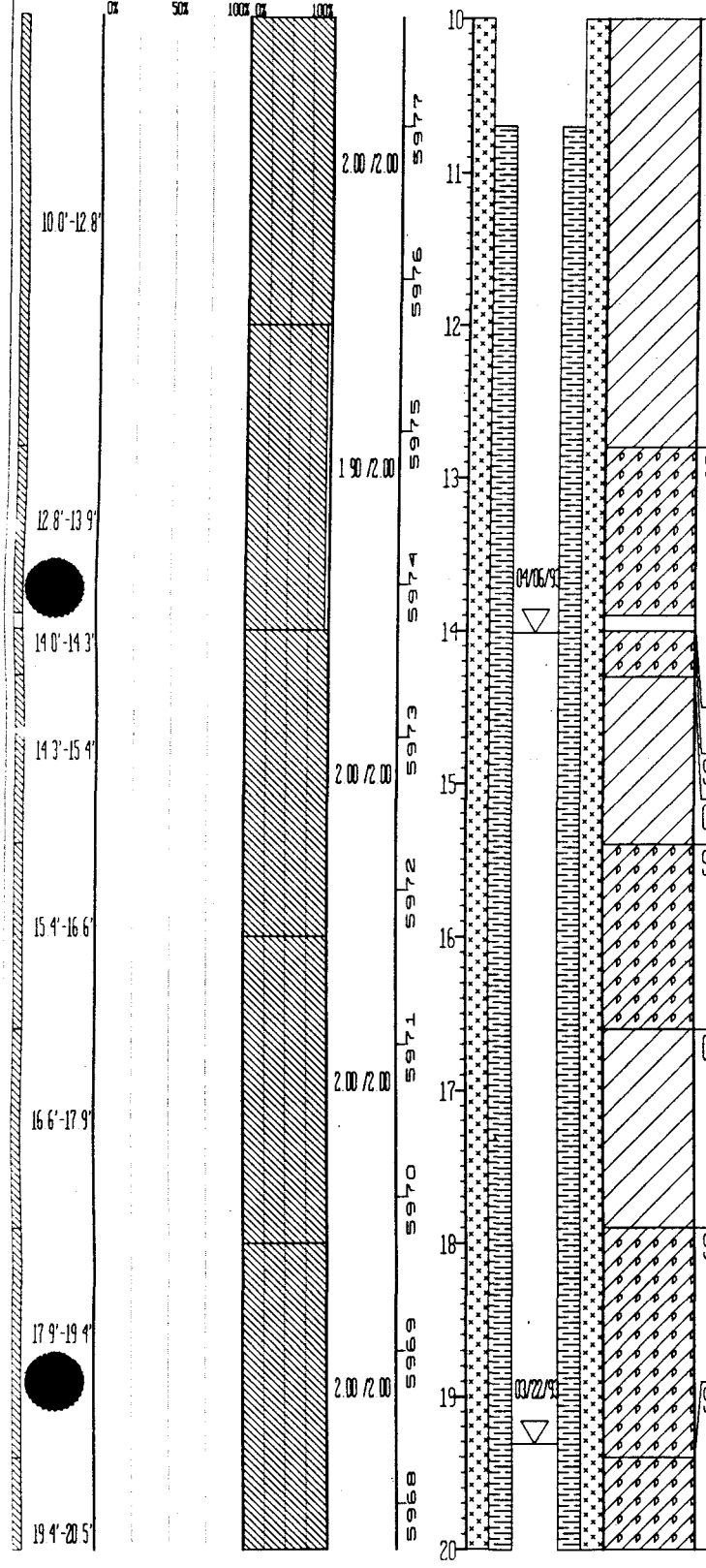


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SC	Clayey Sand with some silt and gravel Dark brown (10 YR 3/3) to black (N 2/0) Fine gravel and very fine to coarse sand (mean = medium) in silty clay (cl) matrix Moderately graded Subangular to subrounded sand and gravel composed of quartz, rock fragments, feldspar, sandstone, also contains tarry substance like asphalt in top 6" No bedding Moist 32% Clay, 21% silt, 40% sand, and 7% gravel
	No core recovery (0 9'-1 0')
SC	Same as above See description 0 0'-0 9'
GC	Sandy Gravel with some clay Reddish brown (5 YR 4/4) to strong brown (7 5 YR 4/6) Coarse gravel (max=2" diam) and very fine to coarse sand (mean=medium - coarse) in clay (low plasticity) matrix Well graded Gravel is angular to subangular, composed mainly of quartzite with some sandstone and granite Sand is subangular to subrounded, quartz, feldspar, rock fragments Not bedded 50% Gravel, 28% sand, 20% clay, and 2% silt
	No core recovery (2 8'-3 0')
SC	Gravelly Sand with some clay and silt Olive yellow (2 5 Y 6/4) Fine to coarse gravel (mean=coarse 2"), angular to subrounded and composed mainly of quartzite, with some granite and schist; sand is very fine to coarse (mean=medium), subangular to subrounded, composed of quartz, rock fragments, feldspar, micas Not bedded Moist 42% Sand 30% gravel, 32% clay, and 6% silt
	No core recovery (4 0'-10 0') Center bit used

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28 0	GROUND ELEVATION (FT)	5987 70	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752174	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	D REEDER/KJT	71893
EAST	2082951	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/27/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-6 0', BENTONITESEAL 6 0'-9 0', SAND 9 0'-28 0', NO BACKFILL , 2 3' SUMP25 7'-28 0', DEPTH TO BED-ROCK 26 0'

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL 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
CL	Sandy Clay with some silt Yellowish brown (10 YR 5/4) Very fine to coarse sand (mean=fine - medium) and trace of fine gravel in silty clay matrix (cl) Sand is subangular to subrounded, composed mainly of quartz with some rock fragments, mafic minerals Not bedded Sand content increases with depth to maximum of approximately 35% Core deformed by large gravel clast pushed through clay during drilling Moist 58% Clay, 21% sand, 19% silt, and 2% gravel
SC	Clayey Sand with some gravel and silt Strong brown (7 5 YR 5/8) Fine to medium gravel and very fine to coarse sand (mean=coarse) in silty clay (cl) matrix Sand and gravel are angular to subrounded, composed of quartzite, quartz, schist, granite, feldspar Heavily stained by Fe-oxides, Fe-hydroxides, some carbonaceous material also present Not bedded Moist 58% Sand, 20% clay, 20% gravel, and 12% silt
	No core recovery (13 9'-14 0')
SC	Same as above See 12 8'-13 9'
CL	Same as above See 10 0'-12 8'
SC	Same as above See 12 8'-14 3' Gravel more abundant 16 3'-16 5' 58% Sand, 20% clay, 25% gravel, and 7% silt
CL	Same as above See 10 0'-12 8'
SC	Same as above See 12 8'-14 3'
SC	Clayey Sand with some silt Yellowish brown (10 YR 5/4) Poorly graded sand in silty clay matrix (cl) Sand is fine to medium, subangular, composed of quartz, feldspar, rock fragments, mica pyroxene, and other mafic minerals Not bedded Wet 72% Sand, 20% clay, and 8% silt

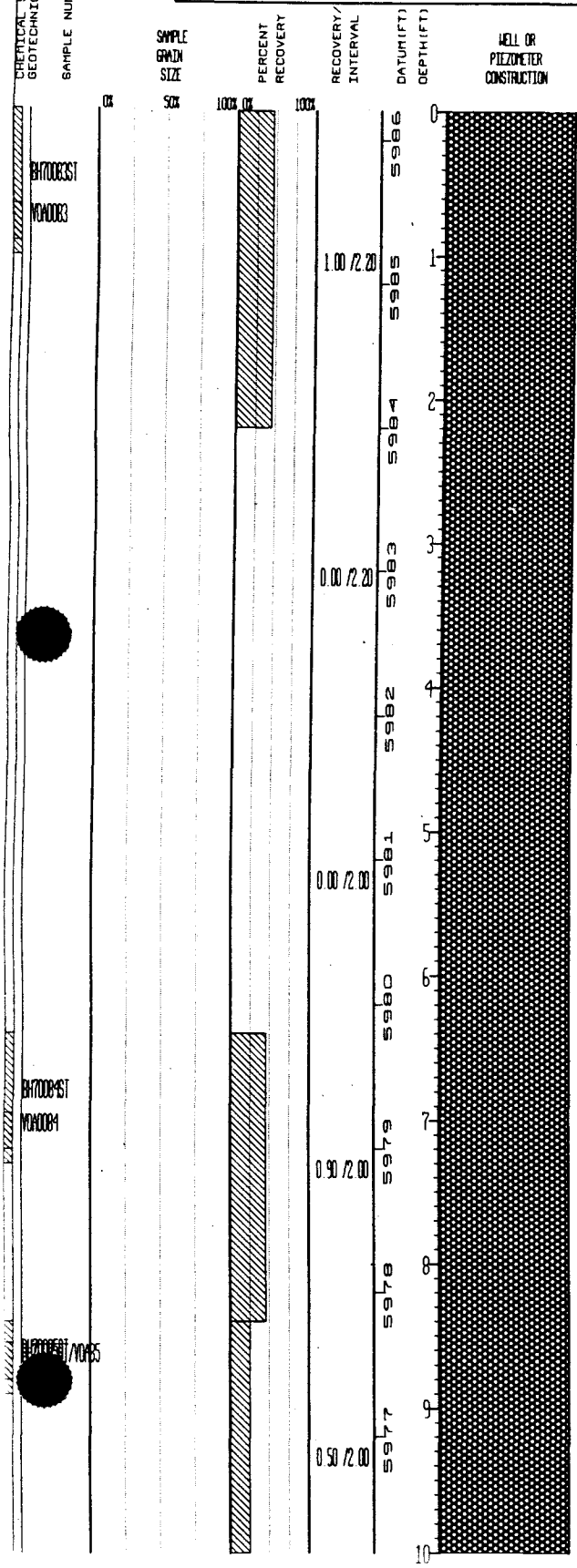
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 28.0	GROUND ELEVATION (FT)	5987.70	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752174	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	D. REEDER/KJT	71893
EAST	2082951	LOCATOR NUMBER 12J	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/27/93	

REMARKS: MOBIL DRILL B-57, HSA. CEMENT GROUT 0.0'-6.0', BENTONITE SEAL 6.0'-9.0', SAND 9.0'-28.0', NO BACKFILL. 2.3' SUM25.7'-28.0'. DEPTH TO BEDROCK 26.0'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
20.5'-22.0'		0% 50% 100%	0% 100%	2.00/2.00	5967	20, 21			CL	Sandy Clay. Pale olive (5 Y 6/3) to olive gray (5 Y 5/2) with yellowish brown (10 YR 5/8) stained areas. Sand is very fine to medium (mean=fine), subangular, composed of quartz, feldspar, quartzite, mafic minerals, micas. Appears massive, probably reworked bedrock. Moist. 28% Sand, 63% clay, and 9% silt.
				0.00/1.00	5966	22				No core recovery (22.0'-23.0')
23.0'-25.1'				1.00/1.00	5965	23			CL	Same as above. See 20.5'-22.0'. Sand content increases with depth to maximum of 40%.
				2.00/2.00	5964	24, 25				
25.1'-26.0'					5963	26			CL	Sandy Silty Clay with trace of gravel. Yellowish brown (10 YR 5/8) moderately graded, coarse to very fine sand (mean=coarse) with trace of fine gravel in silty clay matrix. Sand and gravel angular to subrounded, composed of quartz, rock fragments (of quartzite, granite), feldspar, variety of mafic minerals. A few voids filled with powdery Fe-oxides. Wet. 48% Sand, 40% clay, 15% silt, and 5% gravel. Top of bedrock = 26.0'
26.0'-28.0'				2.00/2.00	5962, 5961, 5960, 5959, 5958	27, 28, 29, 30			SILTY CLAYSTONE	Silty Claystone with trace of very fine sand. Olive yellow (2.5 Y 6/6) to light brownish gray (2.5 Y 6/2) with olive yellow (2.5 Y 6/8) stains. Porosity=20%. No cement. Moderately friable. Sand composed mainly of quartz and black mafic minerals (oxides?). Sand occurs along laminae surfaces at limited lateral extent. Not fractured. Moist. 30% Silt, 65% clay, and 5% sand. Total depth = 28.0'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46.5	GROUND ELEVATION (FT) 5986.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752549	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S LYNN/KJT	71993
EAST	2083211	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 02/08/93	

REMARKS: MOBIL DRILL B-57; HSA; NO WELL INSTALLED; SAMPLED 0.0'-46.5'; NATURAL AND BENTONITE BACKFILL 0.0'-46.5'; NO RECOVERY FOR MAJORITY OF HOLE; DEPTH TO BEDROCK 36.4'(?)

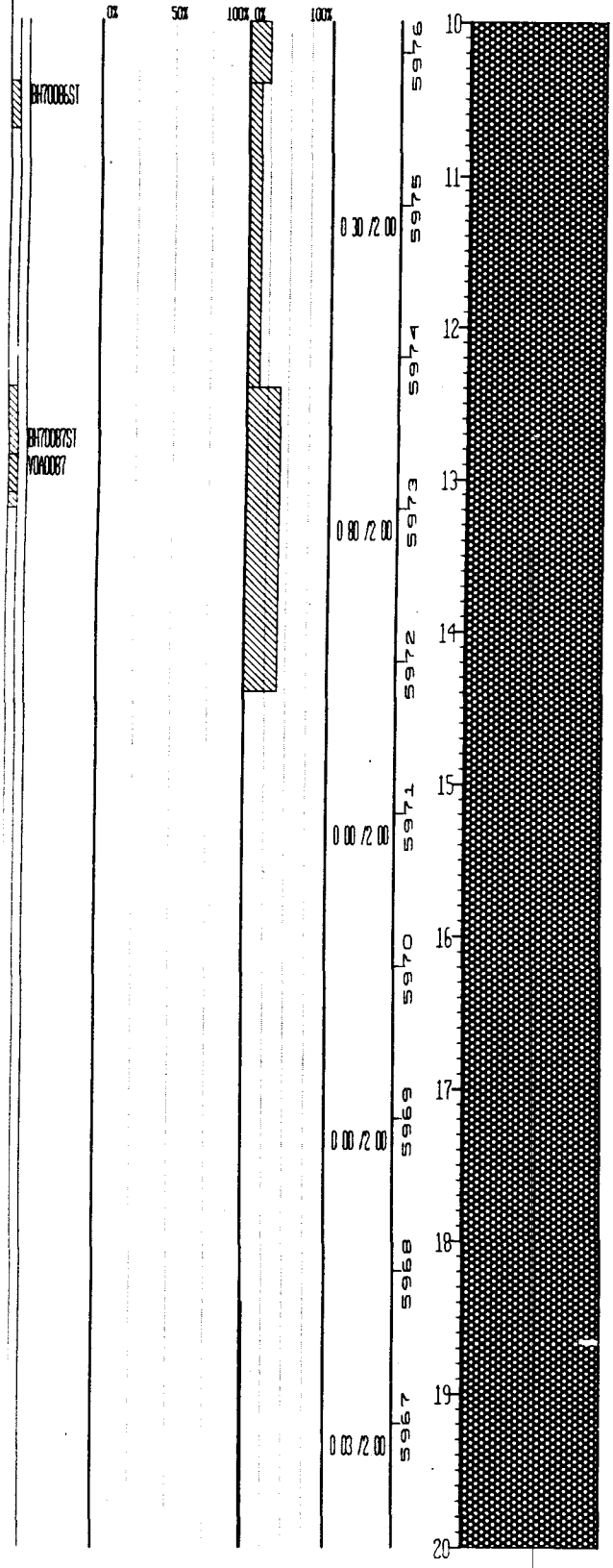


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core remaining after sampling. Field description - Silty clay with some gravel (>12%), dark brown fill. No bedding. Moist
	No core recovery for following intervals 1.0'-2.2' 2.2'-4.4' 4.4'-4.9' (center bit used) 4.9'-6.4'
	No core remaining after sampling. Field description - Silty sandy clay with gravel and trash. Light brown and black fill. No bedding. Slightly moist
	No core recovery (7.3'-8.4')
	No core remaining after sampling. Field description - Clayey sand and sandy clay. Dark gray to black fill. Moist
	No core recovery (8.9'-10.4')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46 5	GROUND ELEVATION (FT)	5986 20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752549	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)		GEOLOGIST	S LYNN/KJT	71993
EAST	2083211	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN)	7 0	DATE DRILLED	02/08/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-46 5', NATURAL AND BENTONITE BACKFILL 0 0'-46 5', NO RECOVERY FOR MAJORITY OF HOLE, DEPTH TO BEDROCK 36 4'(?)

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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



No core recovery (8 9'-10 4')

No core remaining after sampling Field description - Silty clay with some gravel and trash Olive brown to dark gray fill No bedding Moist

No core recovery (10.7'-12 4')

No core remaining after sampling Field description - Silty clay with some gravel and trash Olive brown fill No bedding lowest 2 inches contain roots Moist

No core recovery (13 2'-36 4') in the following intervals
13 2'-14 4'
14 4'-16 4'
16 4'-18 4'
18 4'-18 9' (center bit used)
18 9'-20 4'
20 4'-22 4'
22 4'-24 4'
24 4'-26 4'
26 4'-28 4'
28 4'-30 4'
30 4'-32 4'
32 4'-32 7' (center bit used)
32 7'-34 4'
34 4'-36 4'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46 5	GROUND ELEVATION (FT) 5986 20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752549	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S LYNN/KJT	71993
EAST	2083211	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7 0	DATE DRILLED 02/08/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED. SAMPLED 0 0'-46 5', NATURAL AND BENTONITE BACKFILL 0 0'-46 5', NO RECOVERY FOR MAJORITY OF HOLE. DEPTH TO BEDROCK 36 4'(?)

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	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
					5966	20				No core recovery (13 2'-36 4') in the following intervals 13 2'-14 4' 14 4'-16 4' 16 4'-18 4' 18 4'-18 9' (center bit used) 18 9'-20 4' 20 4'-22 4' 22 4'-24 4' 24 4'-26 4' 26 4'-28 4' 28 4'-30 4' 30 4'-32 4' 32 4'-32 7' (center bit used) 32 7'-34 4' 34 4'-36 4'
				0 00 /2 00	5965	21				
					5964	22				
				0 00 /2 00	5963	23				
					5962	24				
				0 00 /2 00	5961	25				
					5960	26				
				0 00 /2 00	5959	27				
					5958	28				
				0 00 /2 00	5957	29				
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46.5	GROUND ELEVATION (FT) 5986.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752549	AREA OUT PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S. LYNN/KJT	71993
EAST	2083211	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 02/08/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0.0'-46.5', NATURAL AND BENTONITE BACKFILL 0.0'-46.5', NO RECOVERY FOR MAJORITY OF HOLE, DEPTH TO BEDROCK 36.4'(?)

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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	5956	30				No core recovery (13.2'-36.4') in the following intervals: 13.2'-14.4' 14.4'-16.4' 16.4'-18.4' 18.4'-18.9' (center bit used) 18.9'-20.4' 20.4'-22.4' 22.4'-24.4' 24.4'-26.4' 26.4'-28.4' 28.4'-30.4' 30.4'-32.4' 32.4'-32.7' (center bit used) 32.7'-34.4' 34.4'-36.4'
				0.00/2.00	5955	31				
				0.00/2.00	5954	32				
				0.00/2.00	5953	33				
				0.00/2.00	5952	34				
				0.00/2.00	5951	35				
				0.00/2.00	5950	36				
				2.00/2.00	5949	37				No core remaining after sampling. Field description - Silty claystone, olive gray to olive brown, with Fe-oxide stains and carbonaceous material and caliche. Some scraps of wood present in core.
				0.00/2.00	5948	38				
				0.00/2.10	5947	39				No core recovery (38.4'-40.5')
						40				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 46.5	GROUND ELEVATION (FT) 5986.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH:	752549	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST S. LYNN/KJT	71993
EAST:	2083211	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7.0	DATE DRILLED 02/08/93	

REMARKS: MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0.0'-46.5', NATURAL AND BENTONITE BACKFILL 0.0'-46.5', NO RECOVERY FOR MAJORITY OF HOLE, DEPTH TO BEDROCK 36.4'(?)

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	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
					5946	40				No core recovery (38.4'-40.5')
40.5'-42.5'	BH70116ST / VOA0116			2.00/2.00	5945	41			CLAYSTONE	Claystone with some silt. Light olive brown (2.5 Y 5/3). Porosity=10%-20%. No cement. Moderately friable. Contains trace of very fine organic material. Bedding not apparent. Not fractured. Moist to slightly moist. (Duplicate sample taken 40.5'-44.4' BH70117ST)
					5944	42				
42.5'-46.15'				2.00/2.00	5943	43			CLAYSTONE	Organic-rich Claystone with trace of silt. Very dark grayish brown (2.5 Y 3/2). Porosity=15%-20%. No cement. Moderately friable. Contains organic material between 42.5'-44.5', very dark gray to black across this interval. Very fine-grained organic fragments present throughout the rest of interval. No bedding apparent. Not fractured. Moist. Increasing silt content with depth to maximum of 20% silt below 45.5'
					5942	44				
				1.75/2.00	5941	45				
					5940	46				
										No core recovery (46.15'-46.4')
									CLAYSTONE	Same as above. See description 42.5'-46.15'. Total Depth 46.5'
					5939	47				
					5938	48				
					5937	49				
						50				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 37.6	GROUND ELEVATION (FT)	5986.00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752550	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN	72093
EAST	2083206	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/10/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-27.3', BENTONITE SEAL 27.3'-29.5', SAND 29.5'-35.6', NATURAL BACKFILL 35.6'-37.6', 2.0' SUMP 35.4'-37.4', DEPTH TO BEDROCK 35.4'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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'-0.3'									SM	Silty Sand with traces of gravel, clay, and asphalt. Dark brown (7.5 YR 3/3, 3/4). Fine gravel and very fine to very coarse sand (mean=fine - medium). Well graded. Subangular to subrounded. Low plasticity. Gravels and sand are siliceous. Fine-grained caliche clasts and disseminated calcareous cement also present. No bedding. Moist. 3% Gravel, 76% sand, 15% silt, and 6% clay
				0.30/2.30	5985	1				No core recovery (0.3'-4.8')
					5984	2				
				0.00/2.00	5983	3				
					5982	4				
				0.00/0.50	5981	5			CL	Clay-Silt mixture with a trace of sand. Light olive brown (2.5 YR 5/4). Poorly graded. Low to medium plasticity. Trace to some Fe-oxide cement. No bedding. 15-35% Silt, 65-85% clay, and 0-3% gravel and sand. Moist
4.8'-5.9'				2.00/1.50	5980	6			SC	Gravelly Sand with some clay and silt and scattered traces of trash. Yellowish brown (10 YR 5/4) to brown/dark brown (10 YR 4/3, 3/3) to very dark brown (10 YR 2/2). Fine - coarse gravel (max>3", mean=0.3"-0.7"), gravel richest between 7.0'-7.6'. Very fine to very coarse sand (mean=fine to medium). Well graded. Clasts are subangular to subrounded except for angular gravel fragments from 7.0'-7.6', broken during drilling. Low to medium plasticity. Portions from 8.3'-8.5' strongly moderately hydrophobic. Clay-rich lens present at 9.5'-9.9'. Trace to some Fe-oxides scattered throughout, calcareous traces also present. Scattered bits of trash - wood, plastic, sand-sized fragments of black glass from 8.3'-8.5'. No bedding apparent other than lenses noted. Dry to slightly moist above 7.6', moist to wet below 8.3'. Trash content increases below 12.3'. 30% Gravel, 34% sand, 24% clay, and 12% silt
5.9'-7.6'				1.30/2.00	5979	7				
					5978	8				
					5977	9				No core recovery (7.6'-8.3')
8.3'-9.9'				1.60/2.00					SC	Same as above. See description 5.9'-7.6' 8.3'-8.5' strongly to moderately hydrophobic 8.3'-8.5' sand-sized fragments of black glass present Moist to wet below 8.3'
						10				No core recovery (9.9'-10.3')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 37.6	GROUND ELEVATION (FT) 5986.00	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752550	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN	72093
EAST	2083206	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/10/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-27.3', BENTONITE SEAL 27.3'-29.5', SAND 29.5'-35.6', NATURAL BACKFILL 35.6'-37.6', 2.0' SUMP 35.4'-37.4', DEPTH TO BEDROCK 35.4'

CHEMICAL SAMPLE DEPTH / 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
10.3'-11.4'				1.10/2.00	5975	11			SC	Same as above. See description 5.9'-7.6'. Trash content increases below 12.3'.
										No core recovery (11.4'-12.3')
12.3'-12.7'				0.40/2.00	5973	13			SC	Same as above. See description 5.9'-7.6'.
										No core recovery (12.7'-14.3')
14.3'-15.4'				1.10/2.00	5971	15				Trash with clay, silt, sand, and gravel. Multi-colored but averaging dark brown (10 YR 3/3). Geologic materials: clay-rich (to trashy silty clay) at 14.7'-15.4' and gravel/sand-rich (to trashy gravel-sand mixture) at 34.3'-34.9'. Fine to medium gravel (max=2", mean=0.3"-0.6") and very fine to very coarse sand (mean=medium). Poor to moderate grading. Sub-rounded to angular. Low to moderate plasticity. Dominant component is trash: wood, plastic sheeting, with trace to some paper, metal, and glass; geologic materials are dominantly silicic (quartz - dominated sands; silicic, igneous, and metamorphic gravels). Caliche present below 24.6', calcareous materials rare above this 24.6'. No bedding. Moist above 15.4', saturated below 16.3'.
16.3'-16.7'				0.40/2.00	5969	17	04/07/93			
										No core recovery (15.4'-16.3')
										Same as above. See description 14.3'-15.4'. Saturated below 16.3'.
				0.00/2.00	5967	19				No core recovery (16.7'-24.3')

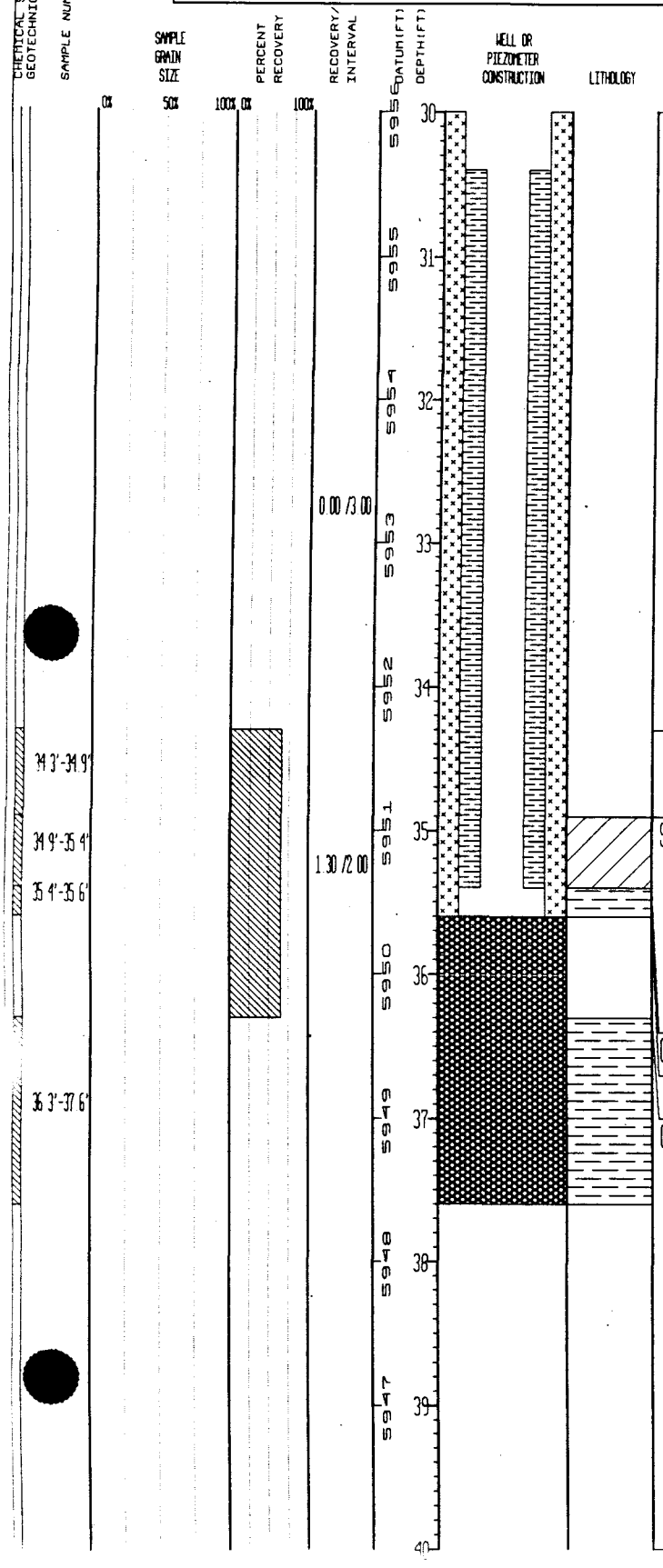
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 37 6	GROUND ELEVATION (FT)	5986 00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752550	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J BOYLAN	72093
EAST	2083206	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/10/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-27 3', BENTONITE SEAL 27 3'-29 5', SAND 29 5'-35 6', NATURAL BACKFILL 35 6'-37 6', 2 0' SUMP 35 4'-37 4', DEPTH TO BEDROCK 35 4'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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%	596	20				No core recovery (16 7'-24 3')
				0 00 /2 00	5965	21				
					5964	22				
				0 00 /2 00	5963	23				
					5962	24				
24 3'-25 2'				0 90 /2 00	5961	25				Same as above See description 14 3'-15 4' 24 3'-24 9' geologic material includes gravel/sand-rich (to trashy gravel -sand mixture) Caliche present below 24 6'
					5960	26				No core recovery (25 2'-34 3')
				0 00 /2 00	5959	27				
					5958	28				
					5957	29				
				0 00 /3 00		30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 37.6	GROUND ELEVATION (FT)	5986.00	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752550	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN	72093
EAST	2083206	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/10/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-27.3', BENTONIE SEAL 27.3'-29.5', SAND 29.5'-35.6', NATURAL BACKFILL 35.6'-37.6', 2.0' SUMP 35.4'-37.4', DEPTH TO BEDROCK 35.4'

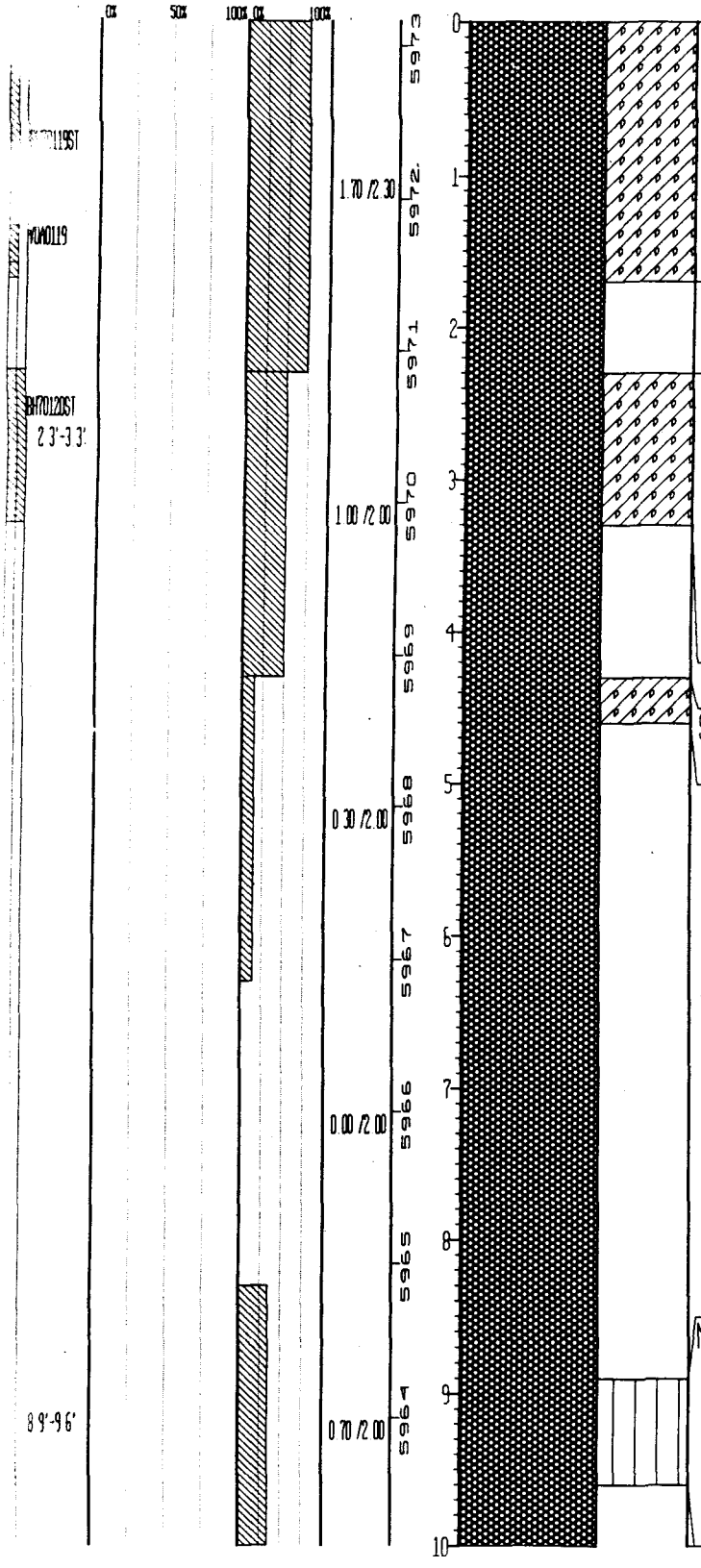


UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (25.2'-34.3')
	Same as above. See description 14.3'-15.4'
SILTY CLAY	Silty Clay. Light yellowish brown (2.5 Y 6/3, 6/4) to yellowish brown (10 YR 5/4) to light olive brown (2.5 Y 5/3) Trace of very fine to very coarse sand. Poorly graded. Medium plasticity. Contains trace to some Fe-oxides, trace of carbonaceous material. No bedding apparent. Resembles weathered, reworked bedrock claystone. Saturated. 2% Sand, 80% clay, and 18% silt. Top of Bedrock 35.4'
CLAYSTONE	Same as below. See description 36.3'-37.6'
	No core recovery (35.6'-36.3')
CLAYSTONE	Claystone with trace to some silt. Grayish brown (2.5 Y 4/2) to light olive brown (2.5 Y 5/4) to dark grayish brown (10 YR 4/2), dark color present below 37.0'. Porosity <10% Trace to some silt. Argillaceous cement plus (where olive in color) trace of Fe-oxides. Non- to slightly friable, pliable. Trace of carbonaceous fragments, most notable below 36.4'. No bedding apparent. Saturated. (Sand and gravel present at top are pushed in from above.) 85-97% Clay and 3-15% silt. Total Depth 37.6'

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60 5	GROUND ELEVATION (FT) 5973 16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-60 5', NATURAL BACKFILL 0 0'-60 5', DEPTH TO BEDROCK 39.3 (?)

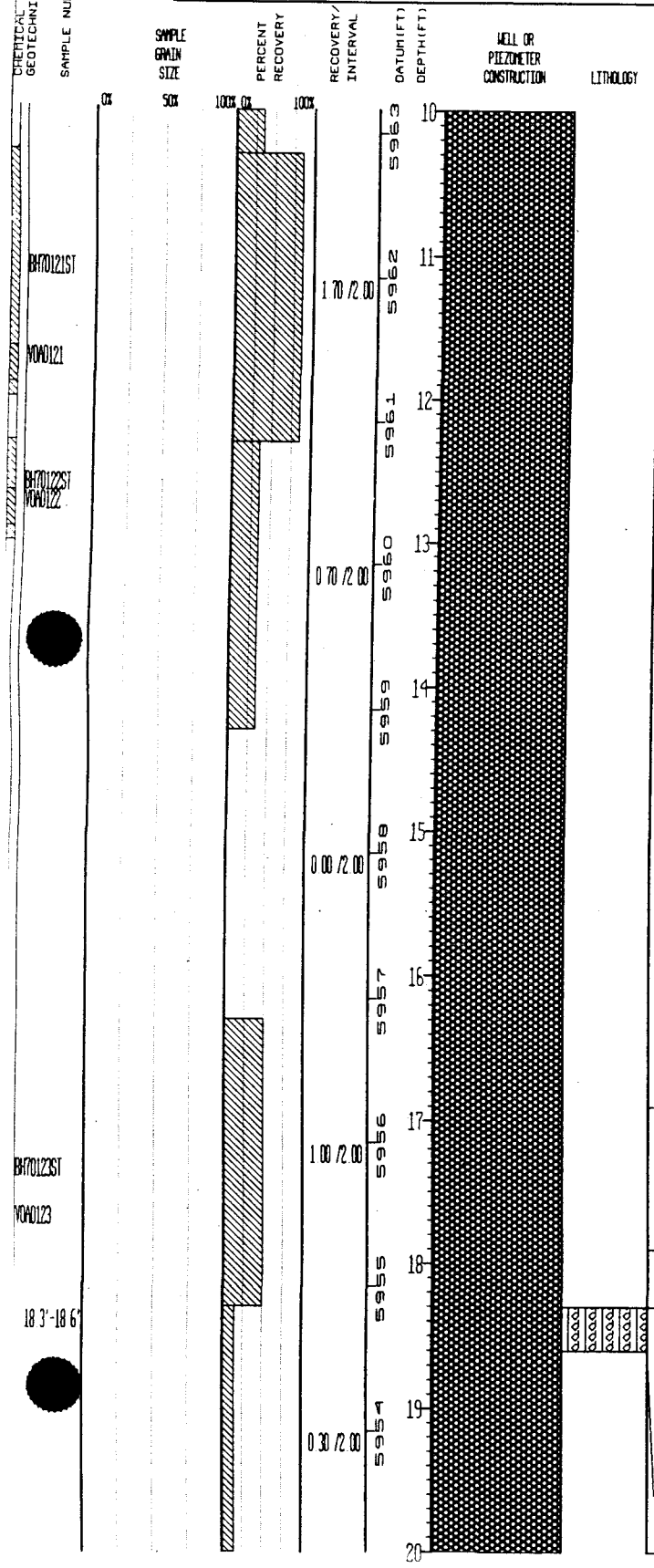
SAMPLE DEPTH
CHEMICAL SAMPLE DEPTH
SAMPLE NUMBER
SAMPLE GRAIN SIZE
PERCENT RECOVERY
RECOVERY/INTERVAL
DATUM (FT)
DEPTH (FT)
WELL OR PIEZOMETER CONSTRUCTION
LITHOLOGY
UNIFIED SOILS CLASSIFICATION OR ROCK TYPE
DESCRIPTION



Depth	Unified Soils Classification	Description
0–1	SC	No core remaining after sampling Field description - Fill gravel, sand, silt, clay mixture, strong brown with 0 1' thick olive gray lens at base, no bedding, slightly moist
1–2		No core recovery (1 7'-2 3')
2–4	SC	Sand with gravel, silt, clay and trash Dark yellowish brown (10 YR 4/4) Fine gravel (mean=0 25"-0 5") and very fine to very coarse sand (mean=fine) Well graded Angular to subrounded Low plasticity Gravel comprised of silica, igneous, and metamorphic fragments Sand composed of quartz with rock fragments, traces of mica and heavy minerals, trace to some trash (paper, sheet plastic, wood) No bedding Slightly moist 16% Gravel, 61% sand, 10% silt, and 13% clay
4–5		No core recovery (3 3'-4 3')
5–6	SC	Trash (wood, plastic sheeting) Less than 1% geologic materials
5–9		No core recovery (4 6'-8 9')
9–10	ML	Trash with trace to some gravelly sand, silt, clay mixture that is dark yellowish brown (10 YR 4/4) Medium gravel of 1 5" in diameter and very fine to very coarse sand (mean=fine) Well graded Subangular to subrounded Low plasticity Gravel and sand silicic Not bedded Slightly moist Trash is wood, paper, plastic with an occasional trace of metal 10-20% Gravel, 45-65% sand, 15-20% silt,

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60 5	GROUND ELEVATION (FT) 5973 16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

REMARKS: MOBIL DRILL B-57, HSA, NO WELL INSTALLED; SAMPLED 0 0'-60 5', NATURAL BACKFILL 0 0'-60 5', DEPTH TO BEDROCK 39 3 (?)



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (9 6'-10 3')
	No core remaining after sampling Field description - gravelly, silty sand with trash and clay, asphalt in top 0 4', dark brown to black, no bedding, slightly moist
	No core recovery (12.0'-12 3')
	No core remaining after sampling Field description - silt, gravel, sand mixture, dark brown, trace trash, no bedding, slightly moist
	No core recovery (13.0'-16 9')
	No core remaining after sampling Field description - gravel, sand, silt mixture with trash, brown to dark brown, no bedding, saturated.
	No core recovery (17 9'-18.3')
SM	70% trash and 30% gravelly, sand, silt, clay mixture Mixture is yellowish brown (10 YR 4/4) with fine gravels, very fine to very coarse sand (mean=medium), moderately to well graded, subangular to subrounded Low plasticity, silicic, not bedded, slightly moist Trash is wood 5-15% Gravel, 40-65% sand, 20-45% silt and clay
	No core recovery (18.6'-20 3')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60 5	GROUND ELEVATION (FT)	5973 16	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752774	AREA C17 PRESENT LANDFILL	CASING DIAMETER (IN)		GEOLOGIST	J BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/22/93	

REMARKS MOBIL DRILL 8-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-60 5', NATURAL BACKFILL 0 0'-60 5', DEPTH TO BEDROCK 39 3 (?)

CHEMICAL SAMPLE / GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% – 50%)	PERCENT RECOVERY (0% – 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	WOA0124 BH70124ST				5953	20				No core recovery (18 6'-20 3')
										No core remaining after sampling Field description - gravelly, silty, trashy, sand Dark brown with black asphalt mixed in. No bedding. Saturated
				0 60 /2 00	5952	21				No core recovery (20.9'-24 3')
					5951	22				
				0 00 /2 00	5950	23				
					5949	24				
				0.00 /0 50						No core recovery (24.3'-24 8') Center bit used
					5948	25				No core remaining after sampling Field description - silty clay with sand, trace of gravel Dark olive brown, caliche pockets and lens of trash present at base No bedding Slightly moist to moist
	BH70125ST			1 50 /1 50						
	WOA0125				5947	26				
	BH70125ST			1 60 /2.00	5946	27				
					5945	28				No core recovery (27 9'-28 3')
	BH70127ST WOA0127									No core remaining after sampling Field description - mixed trash, clay, and caliche lenses Olive brown clay, white caliche No bedding Slightly moist to moist
				0 80 /2 00	5944	29				No core recovery (29 1'-32 8')
						30				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60.5	GROUND ELEVATION (FT) 5973.16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

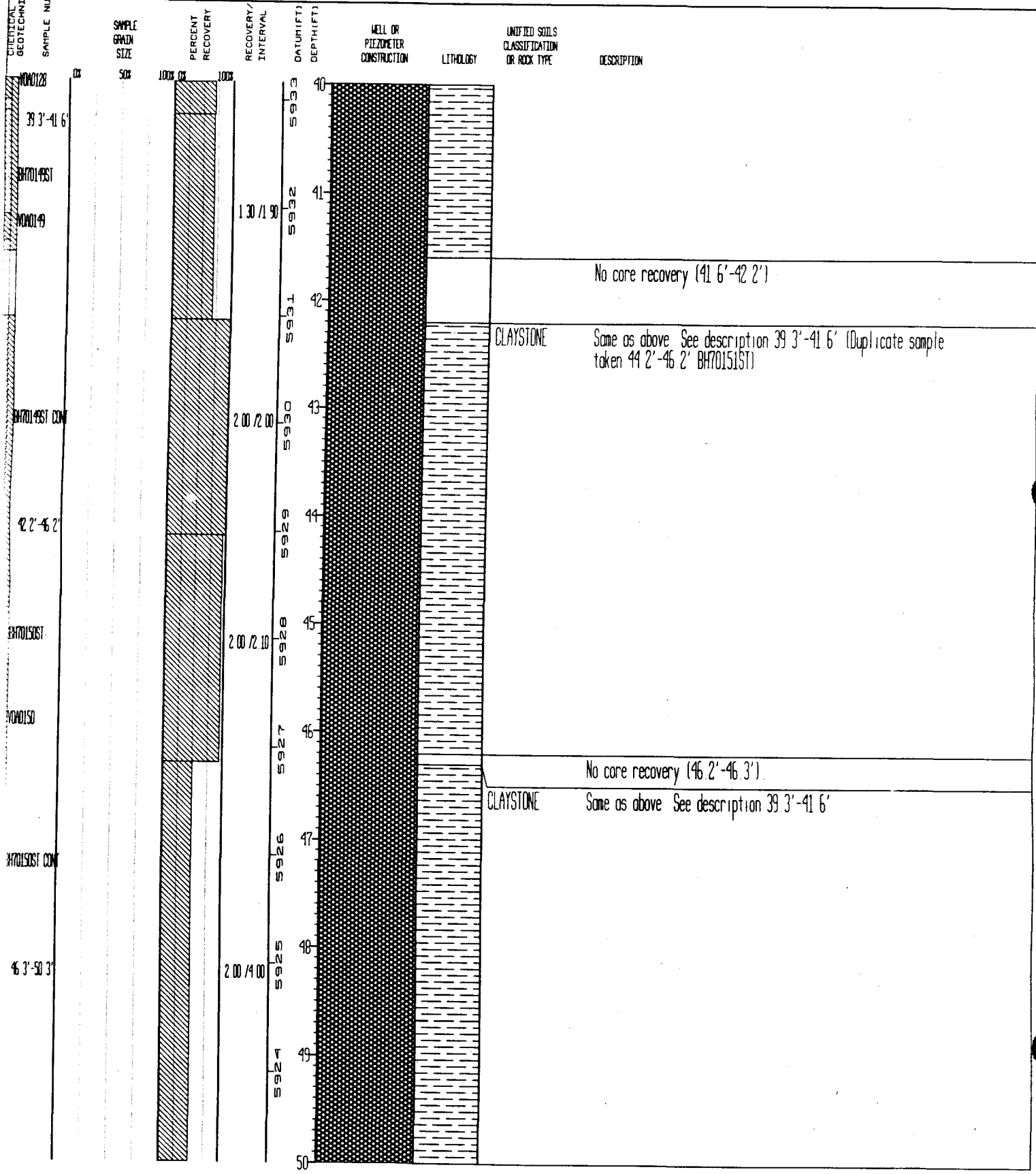
REMARKS: MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0.0'-60.5', NATURAL BACKFILL 0.0'-60.5', DEPTH TO BEDROCK 39.3 (?)

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE	SAMPLE NUMBER	SAMPLE GRAIN SIZE (0% – 50%)	PERCENT RECOVERY (0% – 100%)	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
					5943	30				No core recovery (29.1'-32.8').
				0.00/2.00	5942	31				
					5941	32				
				0.00/0.50						No core recovery (32.3'-32.8') Center bit used
32.8'-33.2'					5940	33			GC	Trash with gravel, sand, silt, clay mixture. Mixture is dark yellowish brown (10 YR 4/4). Medium gravel to 1.5" in diameter and very fine to very coarse sand (mean=fine). Moderately graded. Subangular to rounded. Low plasticity. Silicic. Unbedded. Saturated. Trash is wood and possibly magnetic recording tape. 0-50% Gravel, 10-45% sand, 30-70% silt and clay.
				0.40/1.50						
					5939	34				
										No core recovery (33.2'-39.3') Top of Bedrock between 33.2' - 39.3'.
				0.00/2.00	5938	35				
					5937	36				
				0.00/2.00	5936	37			CLAYSTONE	Claystone with a trace to some silt. Dark grayish brown (10 YR 4/2 to 2.5 Y 4/2) and changing to grayish brown (2.5 Y 5/2) and light olive brown (2.5 Y 5/3) below approximately 42.2'. Porosity=0%-10%. Cement is argillaceous with traces of calcareous cement. Non- to slightly friable. Trace of Fe-oxide present, both disseminated and fine laminae, occasional traces carbonaceous material. Not bedded to parallel laminated (often hard to discern). Fe-oxide stains cross laminae in some areas and may represent healed fractures. Dry to slightly moist. (Scraps of plug and trash present probably pushed from above). Fe-stone nodules (soft, unlithified) occasionally present below 46.1'. Crumbly above 47.0' and below 48.3', most competent at 47.0'-48.3'. Bedding that may be present below 48.3' is obscured by core damage. 90-98% Clay and 2-10% silt.
					5935	38				
				1.40/2.00	5934	39				
						40				

BH70128ST

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60 5	GROUND ELEVATION (FT) 5973 16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-40 5', NATURAL BACKFILL 0 0'-60 5', DEPTH TO BEDROCK 39 3 (?)



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60 5	GROUND ELEVATION (FT) 5973 16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0 0'-40 5', NATURAL BACKFILL 0 0'-60 5', DEPTH TO BEDROCK 39 3 (?)

CHEMICAL SAMPLE DEP / 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
	V0A0152	0% 50%	100% 0% 100%		5923	50			CLAYSTONE	Same as above See description 39 3'-41 6'
	BH70152ST								IRONSTONE NODULES	Ironstone nodules Dark brown (7 5 YR 4/3, 4/4, 3/3, 3/4) to dark reddish brown (5 YR 3/3, 3/4) Fe-stone composed of Fe cemented silt and clay Porosity=5%-15% Fe-oxide cement with traces of calcareous, argillaceous cement Slightly friable, crumbly Some Mn-oxides No bedding apparent Fe content decreases with depth Dry to slightly moist
				2.00 /2.00	5922	51				
	51 1'-52 4'								SILTY CLAYSTONE	Silty Claystone - light yellowish brown (2 5 Y 6/3), to light olive brown (2 5 Y 5/3), with dark reddish brown (5 YR 3/3, 3/4) Fe-stone nodules towards base Porosity=5-15% Cement is argillaceous with traces of Fe-oxide and calcareous cements Slightly friable Fe-oxide streaks scattered throughout No bedding apparent due to core damage Dry to slightly moist (Duplicate sample taken 48 3'-52 3') 15-35% Silt and 65-85% clay
					5921	52				
				2.00 /2.00	5920	53				
	V0A0154								CLAYEY SILTSTONE	Clayey Siltstone to Siltstone with clay - light olive brown (2 5 Y 5/3) to olive brown (2 5 Y 4/3), below approx 58 2', very dark grayish brown (2 5 Y 4/3), and below 60 0', black (10 YR 2/1) Clay ranges from 10-35%, balance is silt Porosity=10-20% Cement is argillaceous, rare traces of calcareous cement Slightly to moderately friable Scattered traces Fe oxides above approx 58 0', increasing carbonaceous content below 58 0' No bedding apparent except for isolated patches showing vague parallel laminations Slightly moist to dry Ironstone nodules at top 65-90% Silt and 10-35% clay
	BH70154ST				5919	54				
				2.00 /2.00	5918	55				
	52 4'-59 9'				5917	56				
				2.00 /2.00	5916	57				
	BH70155ST									
	V0A0155				5915	58				
				1.60 /1.70	5914	59				
						60				No core recovery (59 9' - 60 0')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 60.5	GROUND ELEVATION (FT) 5973.16	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 0U7 PRESENT LANDFILL	CASING DIAMETER (IN)	GEOLOGIST J. BOYLAN	72193
EAST	2083813	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/22/93	

REMARKS MOBIL DRILL B-57, HSA, NO WELL INSTALLED, SAMPLED 0.0'-60.5', NATURAL BACKFILL 0.0'-60.5', DEPTH TO BEDROCK 39.3 (?)

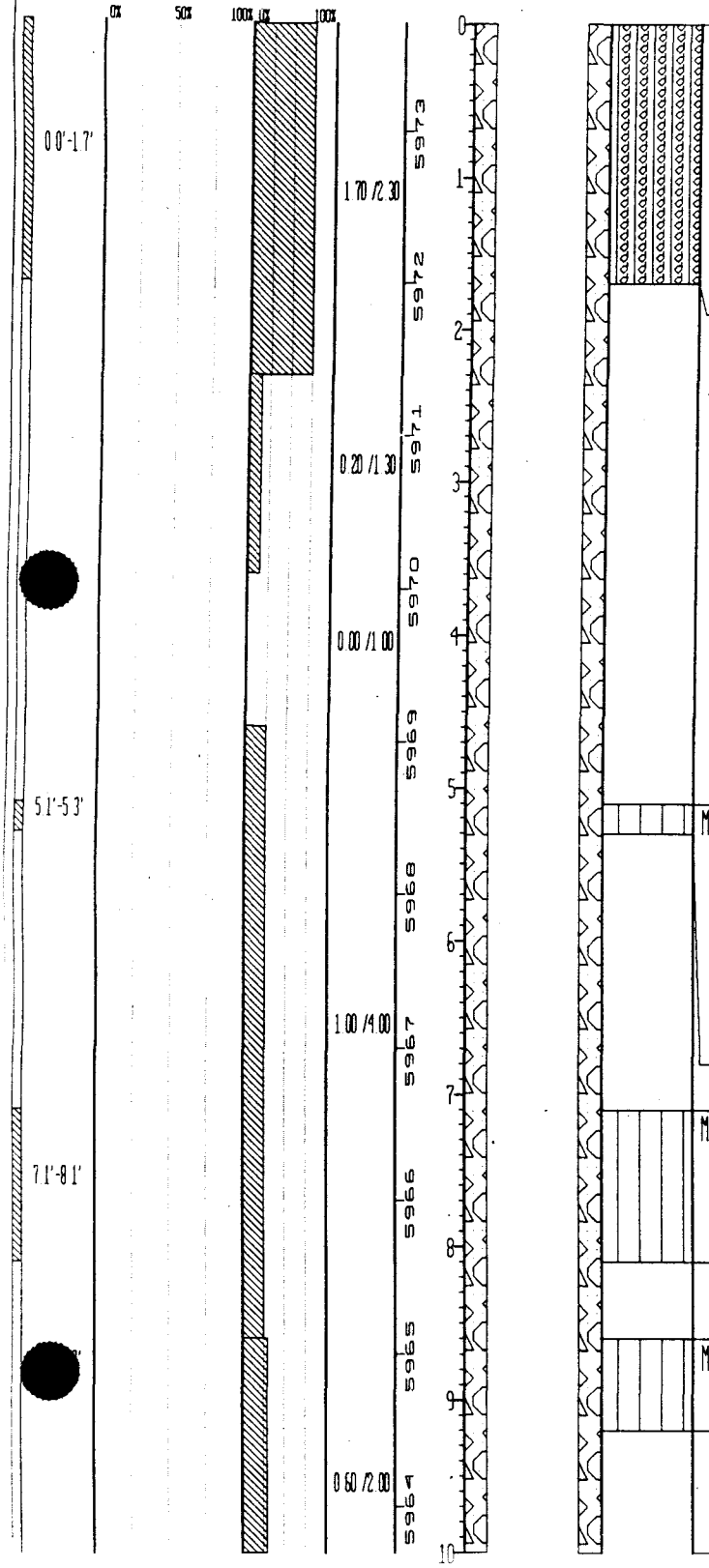
CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE DEPTH	SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	BH7015SST CON 60.0'-60.5'	0% 50%	100% 0% 100%	0.50/0.50	5913	60			CLAYEY SILTSTONE	Same as above. See description 52.4'-59.9'. Total depth = 60.5'
					5912	61				
					5911	62				
					5910	63				
					5909	64				
					5908	65				
					5907	66				
					5906	67				
					5905	68				
					5904	69				
						70				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 6	GROUND ELEVATION (FT) 5973 70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J BOYLAN	72293
EAST	2083808	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/24/93	

REMARKS MOBIL DRILL B-52, HSA, CEMENT GROUT 0 0'-22 3', BENTONITE SEAL 22 3'-26 6', SAND 26 6'-34 5', NATURAL BACKFILL 34.5'-34 6', CENTRALIZERS PLACED 6 2', 21 1', & 34 2', 2 0' SUMP 32 6'-34 6', DEPTH TO BEDROCK 32 7'

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL SAMPLE

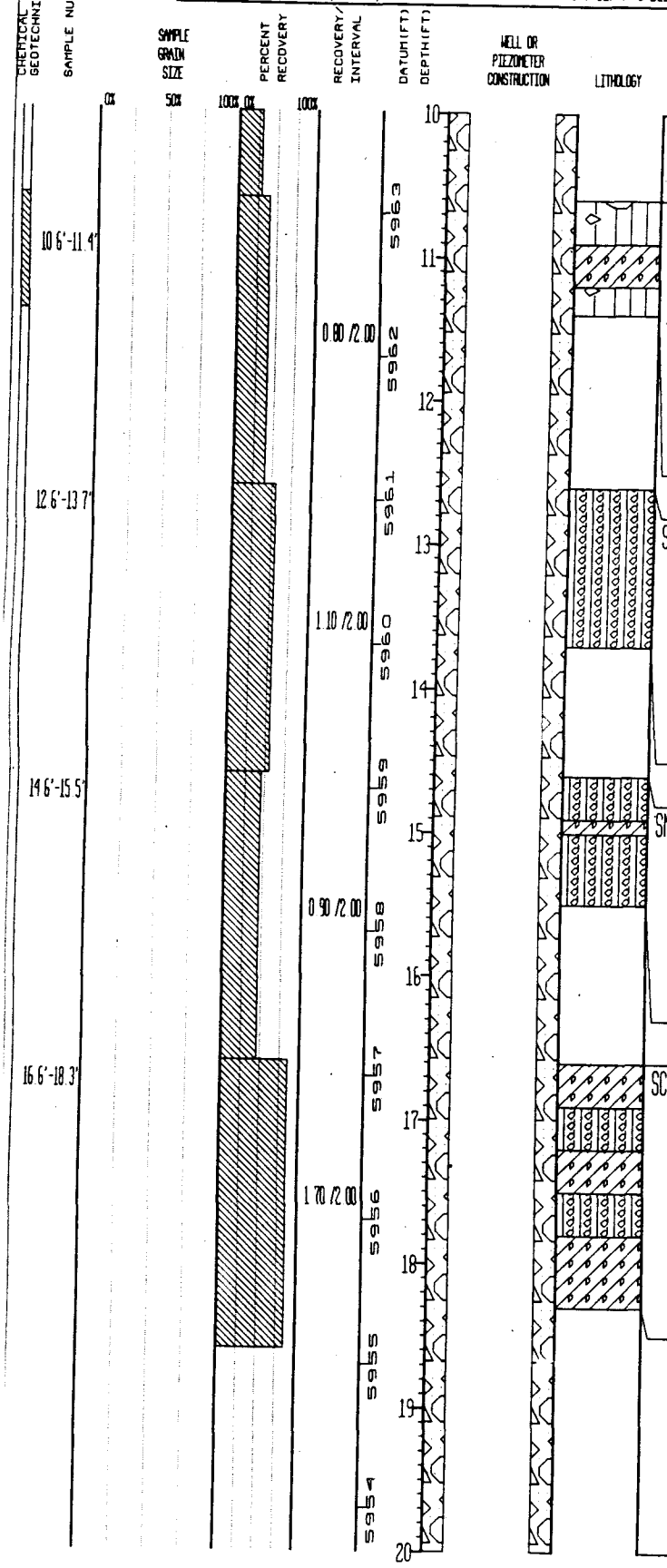
SAMPLE NUMBER | SAMPLE GRAIN SIZE (0% 50% 100%) | PERCENT RECOVERY (0% 100%) | RECOVERY/INTERVAL | DATUM (FT) | DEPTH (FT) | WELL OR PIEZOMETER CONSTRUCTION | LITHOLOGY | UNIFIED SOILS CLASSIFICATION OR ROCK TYPE | DESCRIPTION



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
SM	Artificial Fill Silty Sand with some gravel and clay Dark brown (7 5 YR 3/3, 3/4) with strong brown (7 5 YR 4/6) streaks Gravel fine to coarse (max=2", mean=0 5"), often fractured remnants of larger clasts Sand very fine to very coarse (mean=fine - medium) Well graded Angular to sub-rounded clastics Low plasticity Sand dominantly quartz, gravels are igneous, metamorphic No bedding Slightly moist No trash except traces of asphalt, generally above 1 0' 10-20% Gravel, 40-55% sand, 20-30% silt, and 15-25% clay
	No core recovery (1 7'-5 1')
ML	Artificial Fill Silt-sand-clay mixture with gravel and a trace of trash Brown/dark brown (10 YR 4/3, 3/3) Gravels average 0 3" Sand ranges from very fine to very coarse (mean=fine) Poorly to moderately graded Subangular to sub-rounded Low to medium plasticity Sand composed of mainly quartz Gravel composed of igneous and metamorphic rock frags Trash mostly wood and paper No bedding Slightly moist 5-10% Gravel, 20-40% sand, 20-40% silt, and 20-40% clay
	No core recovery (5 3'-7 1')
ML	Same as above See description 5 1'-5 3'
	No core recovery (8 1'-8 6')
ML	Artificial Fill Approximately 50% is the same as interval 7 1'-8 1', mixed with 50% trash Trash is mainly paper and plastic
	No core recovery (9 2'-10 6')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34.6	GROUND ELEVATION (FT) 5973.70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752774	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN	72293
EAST	2083808	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/24/93	

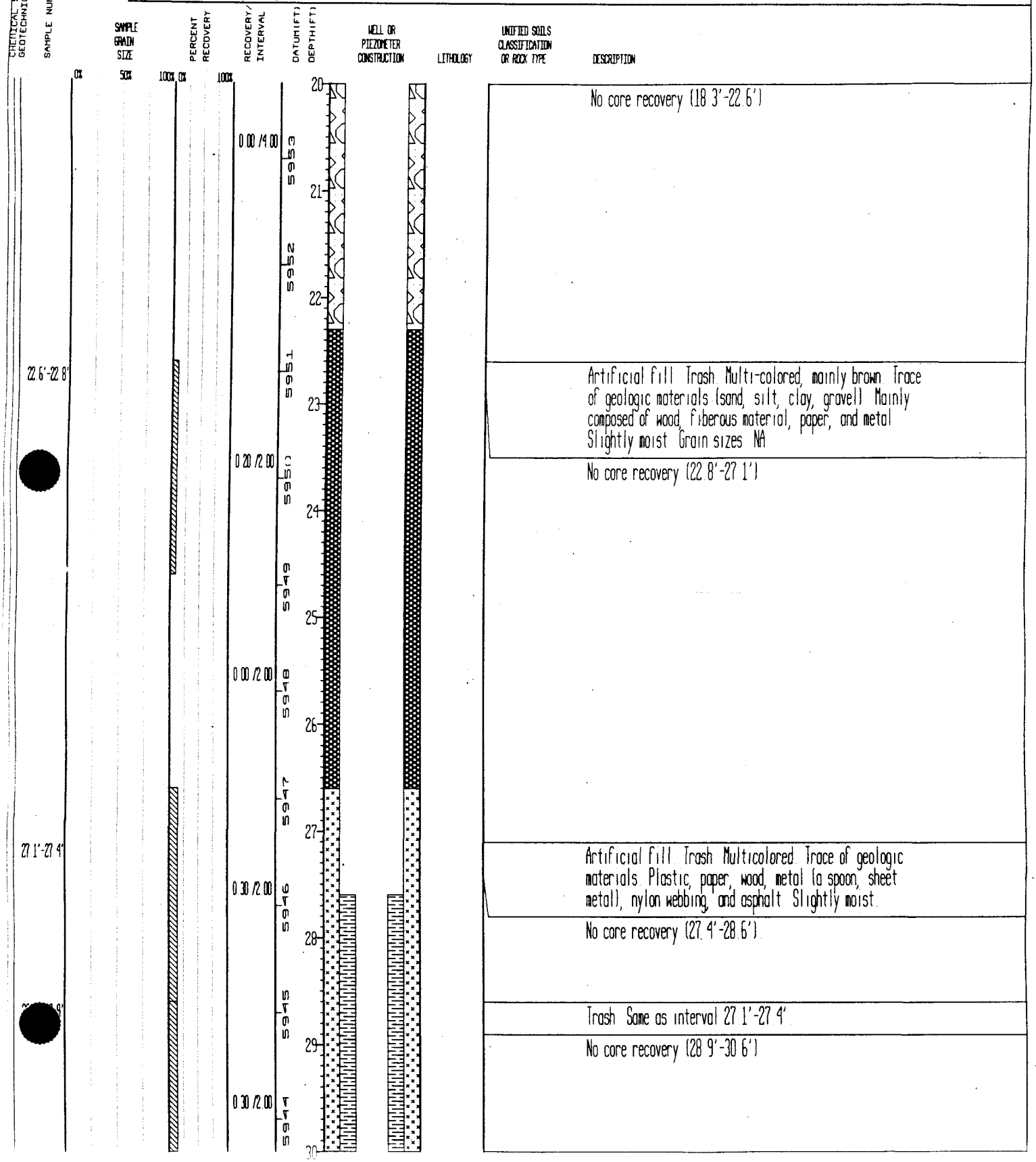
REMARKS: MOBIL DRILL B-52, HSA, CEMENT GROUT 0.0'-22.3', BENTONITE SEAL 22.3'-26.6', SAND 26.6'-34.5', NATURAL BACKFILL 34.5'-34.6', CENTRALIZERS PLACED 6.2', 21.1', & 34.2', 2.0' SUMP 32.6'-34.6', DEPTH TO BEDROCK 32.7'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (9.2'-10.6')
GM	Artificial fill. Gravelly silt-sand-clay mixture with a trace of trash. Brown/dark brown (10 YR 4/3, 3/3). Fine to medium gravel (max=3", mean=0.6") and very fine to very coarse sand (mean=fine - medium). Moderately to well graded. Subangular to subrounded. Low to medium plasticity. Gravel mainly composed of igneous and metamorphic rock fragments. Sand composed mainly of quartz. Trash is paper, plastic, and asphalt. No bedding. Slightly moist. 20-30% Gravel, 25-30% sand, 25-35% silt, and 25-30% clay
	No core recovery (11.4'-12.6')
SM	Artificial fill. Asphalt-sand-silt-clay mixture with gravel. Dark brown (10 YR 3/3) to black (7.5 YR N2). Fine to coarse gravel (max=3", mean=0.3") and very fine to very coarse sand (mean=medium). Moderately graded. Subangular to subrounded. Low to high plasticity. Gravel of igneous and metamorphic rock frags. Sand dominantly composed of quartz. Abundant asphalt with traces of wood, paper, plastic. No bedding. Slightly moist. Grain sizes: NA
	No core recovery (13.7'-14.6')
SM	Artificial fill. Silt-sand clay mixture with trace to some asphalt and trash. Brown/dark brown (10 YR 4/3, 3/3). Trace of fine gravel (mean=0.2") and very fine to very coarse sand (mean=fine). Poorly to moderately graded. Subangular to subrounded. Low to medium plasticity. Sand mainly composed of quartz. Trash is wood, paper, plastic, and glass. No bedding. Slightly moist. Grain sizes: NA
	No core recovery (15.5'-16.6')
SC	Artificial fill. Sandy silt-clay mixture with trash and trace to some gravel. Brown/dark brown (10 YR 4/3, 3/3). Fine to medium gravel (max=1", mean=0.2") and very fine to very coarse sand (mean=fine). Poorly graded. Subangular to subrounded. Medium to low plasticity. Gravel composed mainly of igneous and metamorphic rock frags with some sandstone rock frags. Sand composed mainly of quartz. Trash is wood, PVC type plastic, paper, and asphalt. No bedding. Slightly moist. Grain sizes: NA
	No core recovery (18.3'-22.6')

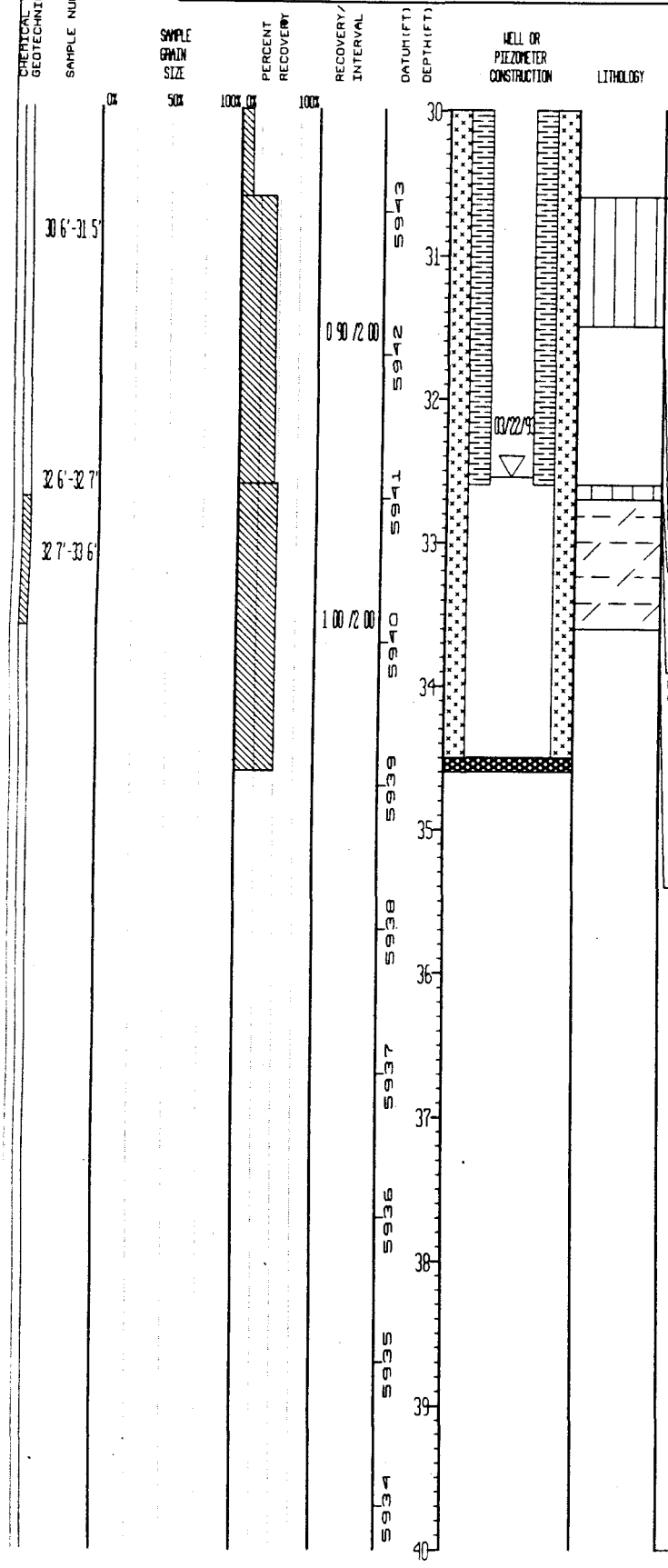
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34.6	GROUND ELEVATION (FT) 5973.70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH 752774		AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN	72293
EAST 2083808		LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/24/93	

REMARKS: MOBIL DRILL B-52. HSA. CEMENT GROUT 0.0'-22.3', BENTONITE SEAL 22.3'-26.6', SAND 26.6'-34.5', NATURAL BACKFILL 34.5'-34.6'. CENTRALIZERS PLACED 6.2', 21.1', & 34.2'. 2.0' SUMP 32.6'-34.6'. DEPTH TO BEDROCK 32.7'



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 34 6	GROUND ELEVATION (FT)	5973 70	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752774	AREA (N7 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J BOYLAN	72293
EAST	2083808	LOCATOR NUMBER 12K	BOREHOLE DIAMETER (IN)	7	DATE DRILLED	02/24/93	

REMARKS MOBIL DRILL B-52, HSA, CEMENT GROUT 0 0'-22 3', BENTONITE SEAL 22 3'-26 6', SAND 26 6'-34 5', NATURAL BACKFILL 34 5'-34 6', CENTRALIZERS PLACED 6 2', 21 1', & 34 2', 2 0' SUMP 32 6'-34 6', DEPTH TO BEDROCK 32 7'



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (28 9'-30 6')
ML	Artificial fill Sandy silt-clay mixture with traces of gravel and trash Dark brown (10 YR 3/3) to very dark grayish brown (10 YR 3/2) Very fine to very coarse sand (mean=fine) and very fine to medium gravel (max=1", mean=0 1"-0 2") Poorly graded Subangular to subrounded Low to medium plasticity Caliche pocket at 31 4' Sand dominantly quartz Trash is paper, wood, plastic, and glass (some trash may have been pushed down from intervals above) Artificial fill and natural material contact may exist within this interval, however it is unclear where this contact occurs No bedding Moist Grain sizes NA
	No core recovery (31 5'-32 6')
ML	Artificial fill Same as interval above 30 6'-31 5' Trash may be pushed down from above Top of Bedrock 32 7'
SILTY CLAYSTONE	Silty Claystone Light brownish gray (2 5 Y 6/2) to grayish brown (2 5 Y 5/2) with yellowish brown (10 YR 5/6) Fe-oxide stained pockets Porosity=5%-10% Cement is argillaceous with Fe-oxides and occasional traces calcareous Slightly friable No apparent bedding Caliche clast at 32 9" Trace of trash in upper 0 2', probably pushed down from above Moist to saturated Weathered 35% Silt and 65% clay
	No core recovery (33 6'-34 6') Total depth 34 6'

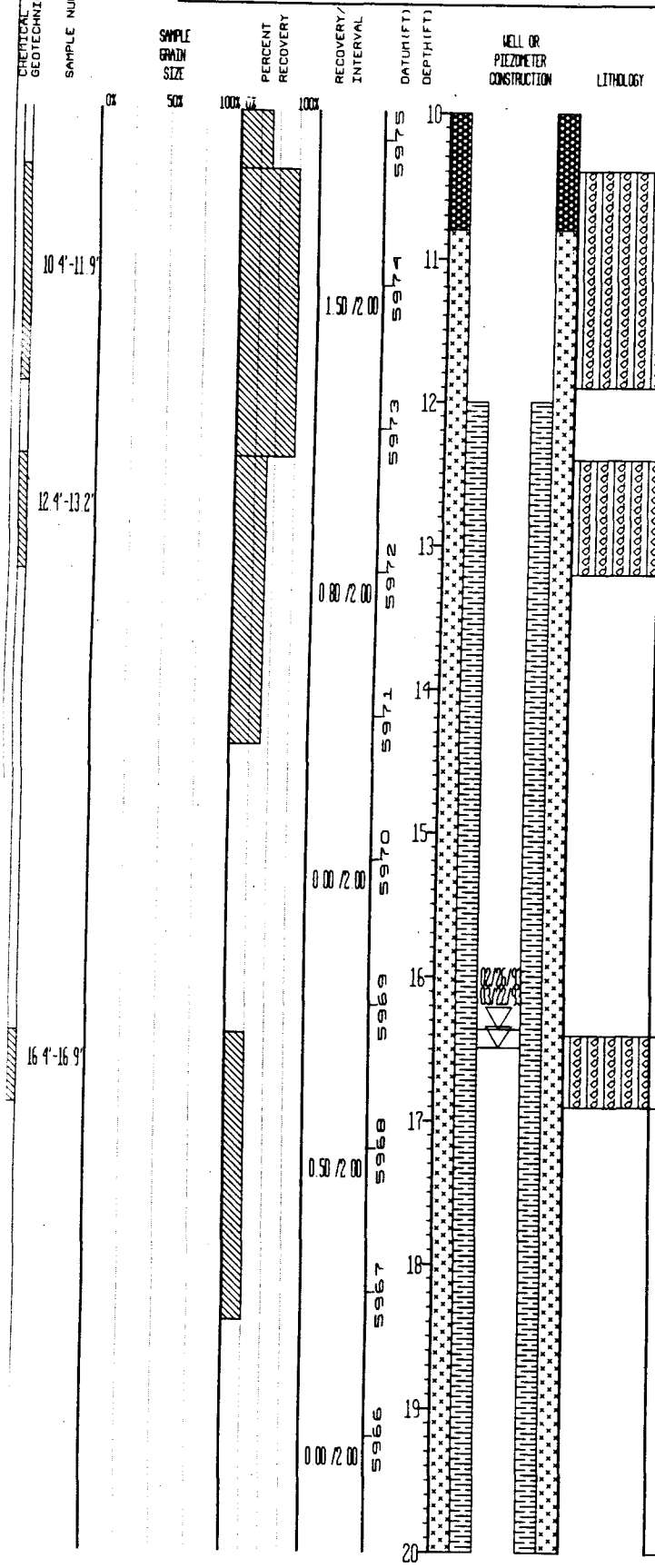
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT)	5985.20	PROJECT NUMBER	989073	LOG OF BORING NUMBER
NORTH	752552	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN)	2	GEOLOGIST	J. BOYLAN	72393
EAST	2083196	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN)	10.25	DATE DRILLED	02/18/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-6.4', BENTONITESEAL 6.4'-10.8', SAND 10.8'-24.0', NATURAL BACKFILL 24.0-24.4', 2.0' SUMP 24.0'-26.0', BEDROCK NOT ENCOUNTERED

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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'-0.3'		0% 50% 100%	0% 100%		5985	0			SM	Gravelly Sand with some silt and clay, trace of trash. Dark yellowish brown (10 YR 4/4). Fine gravel and very fine to very coarse sand (mean=medium). Well graded. Subangular to subrounded. Low plasticity. Gravel mainly igneous, metamorphic gneisses, schists, quartzites with trace to some sandstone. Sand composed mainly of quartz with some rock frags and traces of mafic micas. No bedding. Slightly moist. 0-2% Trash, 23% gravel, 48% sand, 10% clay, and 20% silt
				0.30 /2.20	5984	1				No core recovery (0.3'-2.2')
					5983	2				No core recovery (2.2'-4.4')
				0.00 /2.20	5982	3				
					5981	4				
				0.00 /0.50						No core recovery (4.4'-4.9'). Center bit used
					5980	5			SM	Gravelly, Silty, Clayey Sand with trace of trash. Dark brown (10 YR 3/3) to yellowish brown (10 YR 5/6). Fine to coarse gravel (max=3", mean=0.3"-0.6"), coarsest gravel is present as a lens at 6.4'-6.9'. Very fine to very coarse sand (mean=fine to medium). Well graded. Except for freshly broken angular gravel clasts, angularity is subangular to subrounded. Low plasticity. Gravel composed of igneous and metamorphic gneisses, schists, quartzites, and granitic clasts. Sand composed of quartz with some to abundant rock frags and trace to some Fe-oxide grains and disseminated calcareous cement. Caliche pockets at 11.6'-11.9'. No bedding. Trash is mainly paper, wood, and plastic sheeting. Slightly moist. Classified as sm to sc, but 6.4'-6.9' zone is gp (essentially 100% gravel). 0-4% Trash, 15-30% gravel, 40-50% sand, and 30-40% silt and clay
				1.50 /1.50						
4.9'-7.3'					5979	6				
				0.90 /2.00	5978	7				No core recovery (7.3'-8.4')
					5977	8			SM	Same as above. See description 4.9'-7.3'
					5976	9				No core recovery (9.2'-10.4')
				0.80 /2.00		10				

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT) 5985.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752552	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN	72393
EAST	2083196	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 02/18/93	

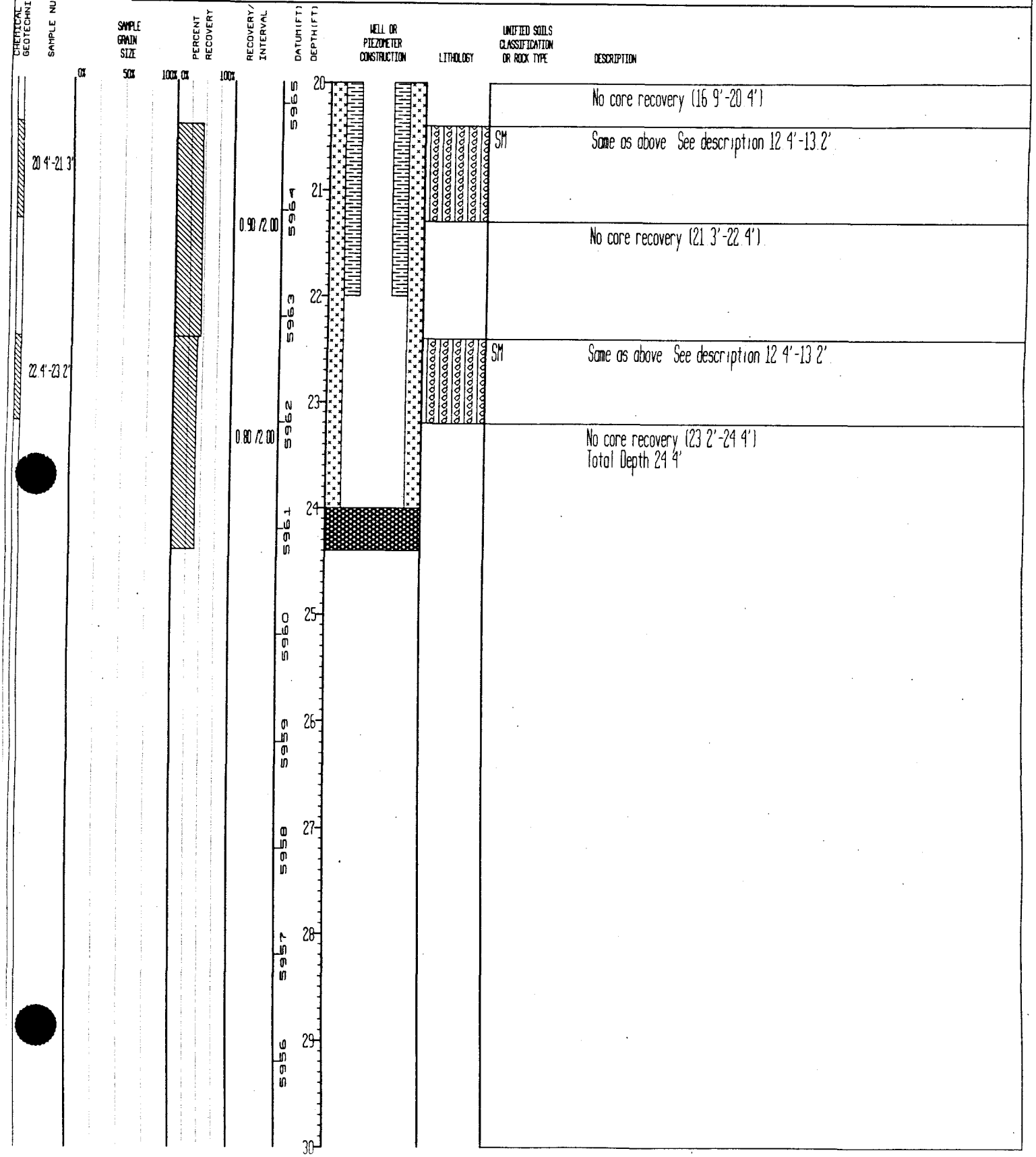
REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-6.4', BENTONITESEAL 6.4'-10.8', SAND 10.8'-24.0', NATURAL BACKFILL 24.0-24.4', 2.0' SUMP 24.0'-26.0', BEDROCK NOT ENCOUNTERED



UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	No core recovery (9.2'-10.4')
SM	Same as above. See description 4.9'-7.3'
	No core recovery (11.9'-12.4')
SM	Trash, gravel, silt, sand mixture. Various colors, dominantly dark grayish brown (10 YR 4/2). Fine to coarse gravel (max=2.5", mean=0.3"-0.5") and very fine to very coarse sand (mean=fine - medium). Low plasticity well graded. Except for freshly broken angular gravels, clasts are subangular to subrounded. Trash mainly paper, wood, metal strips and shavings, and plastic sheeting. Gravel composed of mainly igneous and metamorphic schist, gneiss, quartzite. Sand is composed mainly of quartz with some rock frags, traces of mica mafics. Occasional traces of calcareous content. Moderately to strongly hydrophobic at 20.7'-21.3'. No bedding. Slightly moist at 12.4'-12.7', saturated below 12.7'. 11-35% Gravel, 30-60% sand, 15-40% silt, and 10-30% clay. Overall trash makes up 25-90% of material
	No core recovery (13.2'-16.4')
SM	Same as above. See description 12.4'-13.2'
	No core recovery (16.9'-20.4')

STATE PLANE COORDINATE		TOTAL DEPTH (FT) 24.4	GROUND ELEVATION (FT) 5985.20	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752552	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST J. BOYLAN	72393
EAST	2083196	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 10.25	DATE DRILLED 02/18/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-6.4', BENTONITESEAL 6.4'-10.8', SAND 10.8'-24.0', NATURAL BACKFILL 24.0-24.4', 2.0' SUMP 24.0'-26.0', BEDROCK NOT ENCOUNTERED



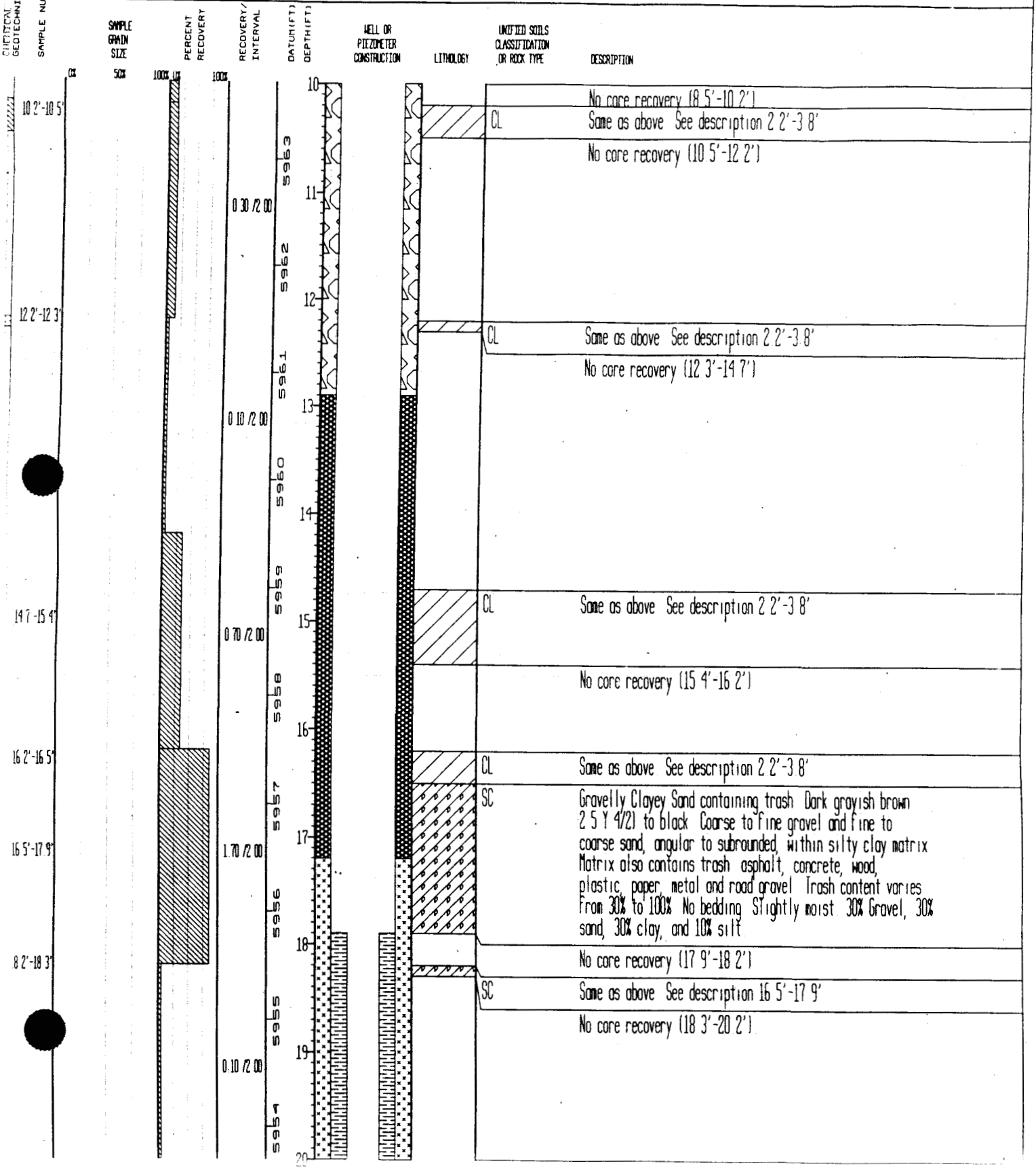
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30.2	GROUND ELEVATION (FT) 5973.70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752770	AREA OU7 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	72493
EAST	2083803	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS: MOBIL DRILL B-57, HSA, CEMENT GROUT 0.0'-12.9', BENTONITE SEAL 12.9'-17.2', SAND 17.2'-29.9', NATURAL BACKFILL 29.9'-30.2', CENTRALIZERS PLACED 11.3' AND 29.5, 2.0' SUMP 27.9'-29.9', BEDROCK NOT ENCOUNTERED

CHEMICAL SAMPLE DEPTH / GEOTECHNICAL 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
0.0'-1.9'				1.90/2.20	5973	0			SC	Clayey Sand with some gravel and silt. Dark brown (7.5 YR 3/4). Well graded, fine to coarse gravel (mean=1.5" diam) and very fine to coarse sand (mean= medium - coarse) in silty clay (cl) matrix. Gravel is subangular to subrounded, composed of quartzite, granite, granitic schist, and quartz. Sand is subangular, composed of quartz, feldspar and rock fragments. Contains asphalt above 1.5' - broken chunks. Not bedded. Slightly moist. 38% sand, 35% clay, 20% gravel, and 37% silt.
					5972	1				No core recovery (1.9'-2.2')
2.2'-3.8'				1.60/2.00	5971	2			CL	Sandy Clay with some silt and gravel matrix containing trash. Matrix is dark brown (10 YR 4/3). Trash content varies between 10%-90% by volume. Fine gravel and very fine to coarse sand in silty clay (cl) matrix. Sand and gravel composed of rock fragments, quartz, and feldspars. Trash consists of wood, plastic, paper, cardboard, metal, and string. 40% Clay, 20% silt, 29% sand, and 11% gravel
					5970	3				No core recovery (3.8'-4.2')
4.2'-5.0'				0.80/2.00	5969	4			CL	Same as above. See description 2.2'-3.8'
					5968	5				No core recovery (5.0'-6.2')
6.2'-6.5'				0.30/2.00	5967	6			CL	Same as above. See description 2.2'-3.8'
					5966	7				No core recovery (6.5'-8.2')
8.2'-8.5'				0.30/2.00	5965	8			CL	Same as above. See description 2.2'-3.8'
					5964	9				No core recovery (8.5'-10.2')
						10				

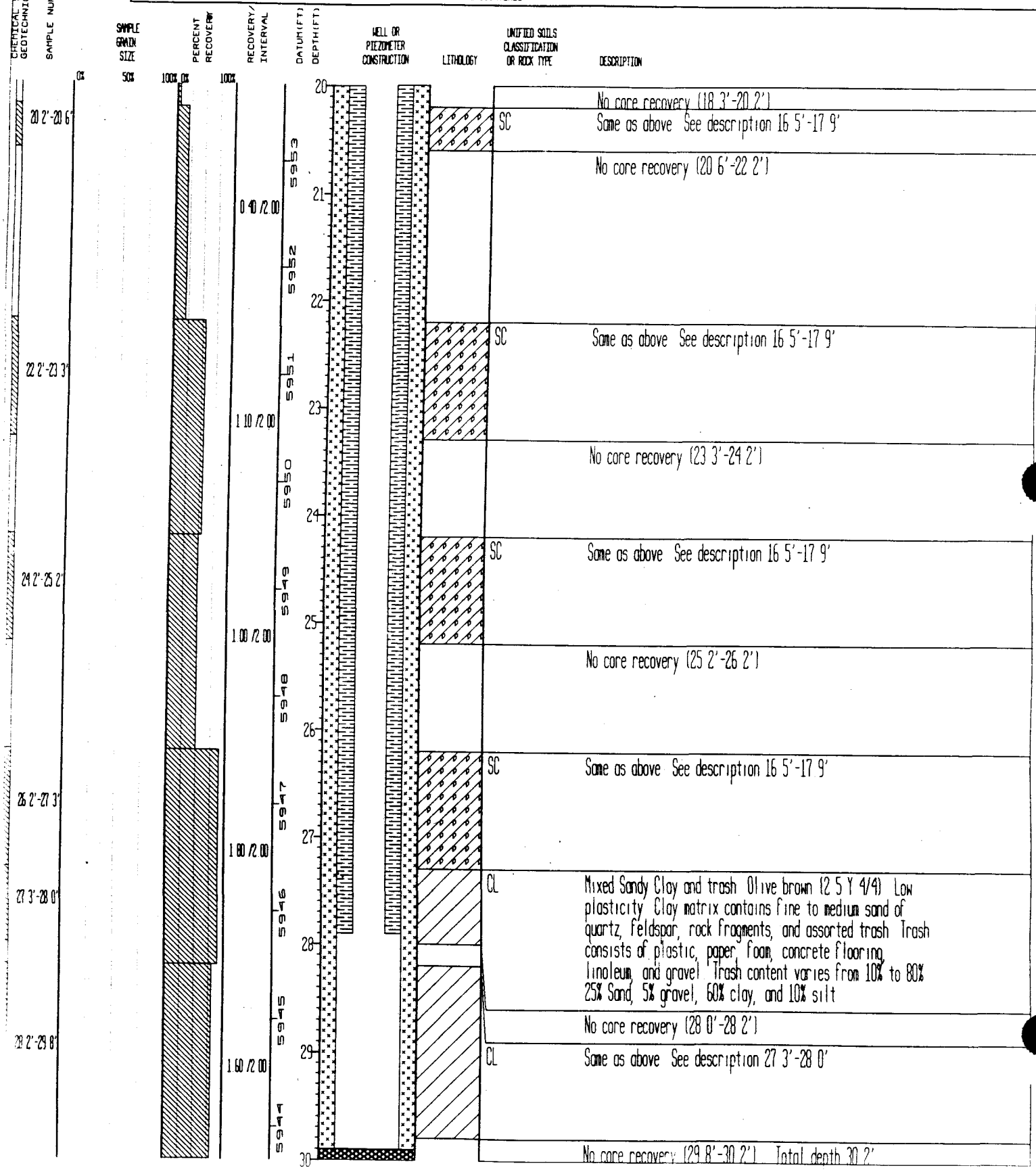
STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 2	GROUND ELEVATION (FT) 5973 70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752770	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	72493
EAST	2083803	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-12 9', BENTONITE SEAL 12 9'-17 2', SAND 17 2'-29 9', NATURAL BACKFILL 29 9'-30 2', CENTRALIZERS PLACED 11 3' AND 29 5, 2 0' SUMP 27 9'-29 9', BEDROCK NOT ENCOUNTERED



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 2	GROUND ELEVATION (FT) 5973 70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752770	AREA 017 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	72493
EAST	2083803	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-12 9', BENTONITE SEAL 12 9'-17 2', SAND 17 2'-29 9', NATURAL BACKFILL 29 9'-30 2', CENTRALIZERS PLACED 11 3' AND 29 5, 2 0' SUMP 27 9'-29 9', BEDROCK NOT ENCOUNTERED



STATE PLANE COORDINATE		TOTAL DEPTH (FT) 30 2	GROUND ELEVATION (FT) 5973 70	PROJECT NUMBER 989073	LOG OF BORING NUMBER
NORTH	752770	AREA 007 PRESENT LANDFILL	CASING DIAMETER (IN) 2	GEOLOGIST JAB/KJT	72493
EAST	2083803	LOCATOR NUMBER J12	BOREHOLE DIAMETER (IN) 7	DATE DRILLED 02/25/93	

REMARKS MOBIL DRILL B-57, HSA, CEMENT GROUT 0 0'-12 9', BENTONITE SEAL 12 9'-17 2', SAND 17 2'-29 9', NATURAL BACKFILL 29 9'-30 2', CENTRALIZERS PLACED 11 3' AND 29 5, 2 0' SUMP 27 9'-29 9', BEDROCK NOT ENCOUNTERED

CHEMICAL SAMPLE DEPTH
GEOTECHNICAL SAMPLE DEPTH
SAMPLE NUMBER

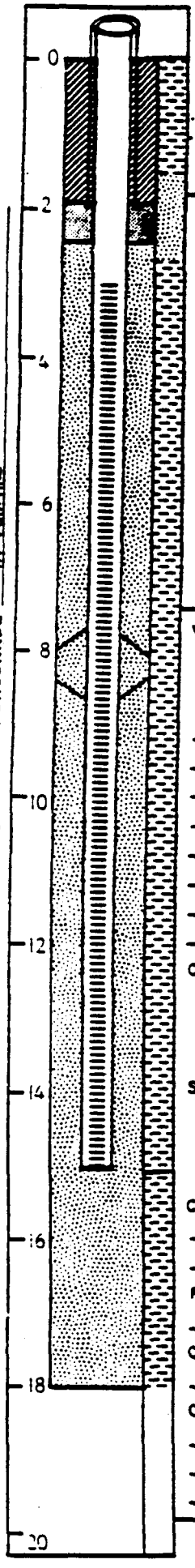
SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
0% 50%	100% 100%		5943 5942 5941 5940 5939 5938 5937 5936 5935 5934	30 31 32 33 34 35 36 37 38 39				No core recovery (29 8'-30 2') Total depth 30 2'

Appendix F

Well Construction Diagrams

WELL 4-86

WELL CONSTRUCTION SUMMARY



LOCATION Golden, CO

PERSONNEL S. Paschke

PROJECT [illegible] Rocky Flats Plant

LOCATION or COORDS: N 40437.1 E 30774.2

ELEVATION: GROUND LEVEL 5636.60'

TOP OF CASING 5637.94'

DRILLING SUMMARY:

TOTAL DEPTH Well: 14.92' Hole: 18.00'

BOREHOLE DIAMETER 7½"

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'	CI
3.52'	14.92'	SI

CASING: CI 2" I.D. Sch. 5 type 316 stainless steel, threaded and flush jointed.

SCREEN: SI 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:				
7½" 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 drilli

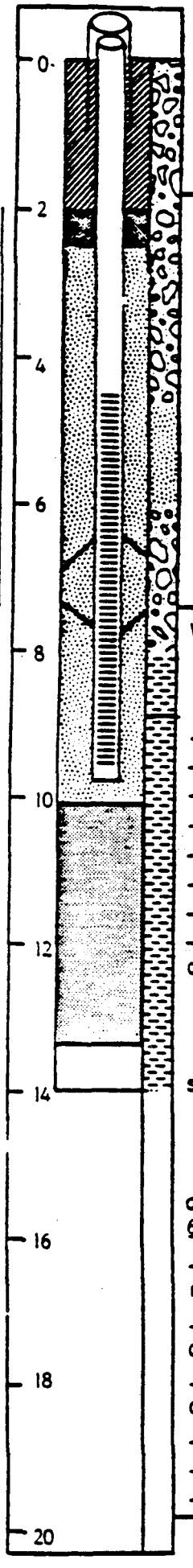
Top of stainless steel casing: 1.34'

HYDRO-SEARCH RENO•DENVER

CONSULTING HYDROLOGISTS-GEOLOGIST

WELL 5-86

WELL CONSTRUCTION SUMMARY



LOCATION Golden, CO

PERSONNEL J. Bergman

PROJECT 106106222 Rocky Flats Plant

LOCATION or COORDS: N 40694.8 E 26699.7

ELEVATION: GROUND LEVEL 5720.07'

TOP OF CASING 5722.61'

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' - 4.40'	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: 2.54'

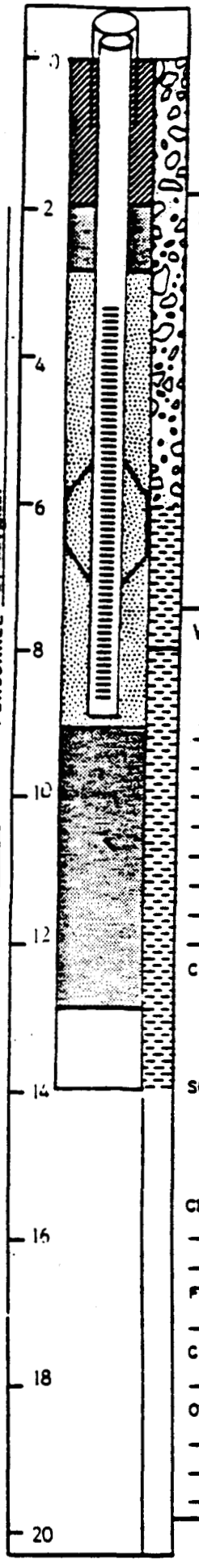
Cave from TD to 13.30'

WELL 5-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 40588.1 E 23577.5

ELEVATION: GROUND LEVEL 5806.10'
TOP OF CASING 5808.58'



DRILLING SUMMARY:

TOTAL DEPTH Well: 8.88' Hole: 14.0'

BOREHOLE DIAMETER 7½"

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:				
7½" 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.

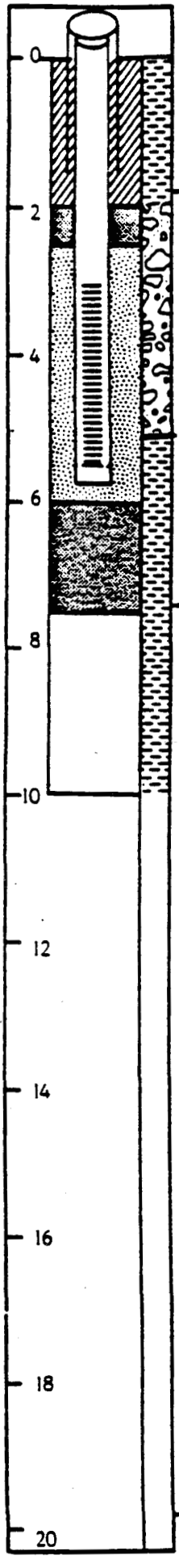
Top of stainless steel casing: 2.48'

Cave from TD to 12.90'

LOCATION Golden, CO
PERSONNEL J. Bergman
PROJECT 106106222 Rocky Flats Plant

WELL 7-86

WELL CONSTRUCTION SUMMARY



LOCATION Golden, CO

PERSONNEL C. Walker

PROJECT 106PK6222 Rocky Flats Plant

LOCATION or COORDS: N 39869.8 E 20892.8

ELEVATION: GROUND LEVEL 5923.40' (est.)
TOP OF CASING 5925.66' (est.)

DRILLING SUMMARY:

TOTAL DEPTH Well: 5.74' Hole: 10.00'

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

0.0'	-	3.0'	C1				
3.0'	-	5.74'	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 None

FILTER MATERIAL 32-42 silica sand
2.50' - 6.00'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.50'
6.00' - 7.51'

CONSTRUCTION TIME LOG:

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING:				
7¼" auger	9/23	0955	9/23	1045
GEOPHYS. LOGGING:	—	—	—	—
CASING:				
2" stainless	9/23	1215	9/23	1220
FILTER PLACEMENT:	9/23	1220	9/23	1225
CEMENTING:	9/23	1230	9/23	1235
DEVELOPMENT:	9/29	1445	9/29	1445
OTHER:				
Bentonite	9/23	1225	9/23	1230
	9/23	1210	9/23	1215

WELL DEVELOPMENT

See Well Development Summary Sheets.

COMMENTS:

No water encountered during drilling.

Top of stainless steel casing: 2.26'

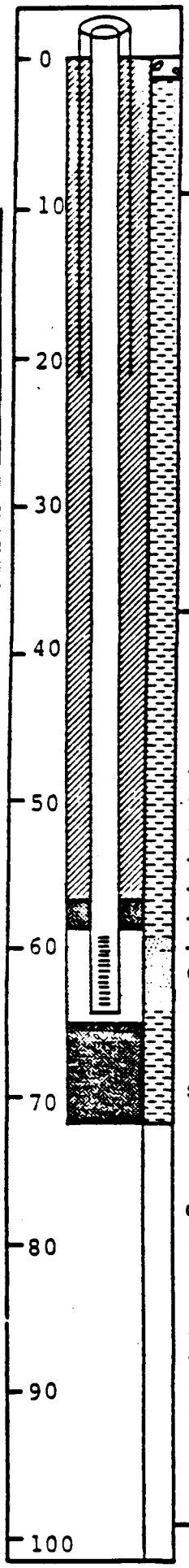
Cave from TD to 7.51'

WELL 8-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 39859.3 E 20916.8

ELEVATION: GROUND LEVEL 5923.81' (est.)
TOP OF CASING 5925.81' (est.)



LOCATION Rocky Flats Plant
PERSONNEL C. Walker/L. Pivonka
PROJECT 106P06222

DRILLING SUMMARY:

TOTAL DEPTH Well: 63.80' Hole: 71.50'

BOREHOLE DIAMETER 0.00' - 18.35': 7½"
18.35' - 71.50: 4 3/4"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Ave., Golden, CO
(Tony Robinson, Jim Horn)

RIG 0.00' - 18.35': Acker; 18.35' - 71.50': Mobile B-37

BIT(S) 0.00' - 18.35': Blade bit;
18.35' - 71.50': Coring bit

DRILLING FLUID None

SURFACE CASING 5" x 20.85' steel w/ locking cap

WELL DESIGN:

BASIS: GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

0.00'	18.35'	C1			
0.00'	59.08'	C2			
59.08'	63.79'	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 wrapped screen, 0.25' welded bottom cap.

CENTRALIZERS None

FILTER MATERIAL 32-42 silica sand
58.00' - 64.30'

CEMENT Portland Type I
0.00' - 56.00'

OTHER 3/8" bentonite pellets
56.00' - 58.00'
64.30' - 71.50'

CONSTRUCTION TIME LOG:

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING:				
7½" auger	9/24	0930	9/24	1135
NC Core	10/20	1049	10/20	1310
Reaming	10/22	1720	10/23	0920
GEOPHYS. LOGGING:	—	—	—	—
CASING:				
5" steel	9/24	1315	9/24	1327
2" stainless	11/3	1243	11/3	1253
FILTER PLACEMENT:	11/3	1207	11/3	1340
CEMENTING:	11/3	1415	11/3	1500
DEVELOPMENT:	11/5	1515	11/13	0930
OTHER:				
Bentonite	11/3	1340	11/3	1410
	11/3	1143	11/3	1207
Packer testing	10/22	0900	10/22	1516
Cementing 5" steel	9/24	1330	9/24	1350

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

No water encountered during drilling.

Top of stainless steel casing: 1.86'

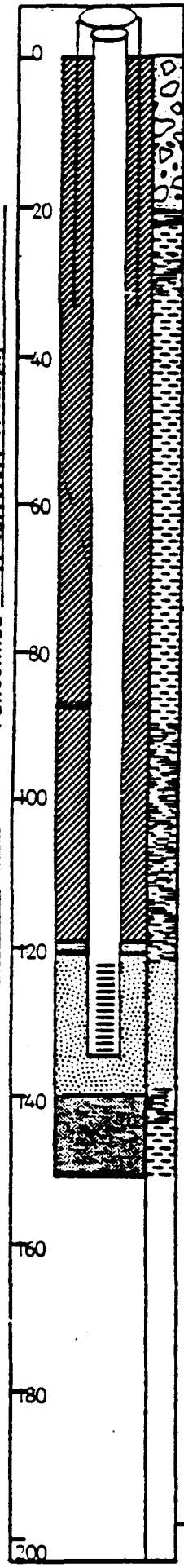
When drilling (with air and water) abundant bubbles surface in the adjacent pond near the rig. When drilling stops, the bubbling stops. Probable cause: (1) fractured bedrock from 20' - 30'.

WELL 9-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 39246.2 E 19382.2

ELEVATION: GROUND LEVEL 5995.23' (est.)
TOP OF CASING 5999.64' (est.)



PROJECT 106P06222 Rocky Flats Plant
PERSONNEL T. Quilliver, T. Murphy
LOCATION Golden, CO

DRILLING SUMMARY:

TOTAL DEPTH Well: 135.35' Hole: 151.00'

BOREHOLE DIAMETER 0.00' - 35.00': 5 5/8"
35.00' - 151.00': 4 3/4"

DRILLER Boyles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Tom High, Robert Roach)

RIG 0.00' - 35.00': casing advancer, 35.00' - 151.00': rotary

BIT(S) 0.00' - 35.00': down hole hammer
35.00' - 151.00': strata back coring bit, reaming

DRILLING FLUID 0.00' - 35.00': None
35.00' - 151.00': air/water mist

SURFACE CASING 5" x 35.0' steel w/ locking cap

WELL DESIGN:

BASIS: GEOLOGIC LOG X GEOPHYSICAL LOG X

CASING STRING(S): C=CASING S=SCREEN

0.00'	- 33.51'	C1		-	
0.00'	- 122.57'	C2		-	
122.57'	- 135.35'	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 None (see comments)

FILTER MATERIAL 32-42 silica sand
121.20' - 140.50'

CEMENT Portland Type I
33.51' - 119.40'

OTHER 3/8" bentonite pellets
119.40' - 121.20'
140.50' - 151.00'

CONSTRUCTION TIME LOG:

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING:				
5 5/8" casing advancer	9/24	0900	9/24	1615
NC Core	10/1	0826	10/2	1200
Reaming	10/6	1000	10/6	1230
GEOPHYS. LOGGING:	10/6	1336	10/7	1627
CASING:				
2" stainless	10/7	1218	10/7	1244
5" steel	9/24	0900	9/24	1615
FILTER PLACEMENT:	10/7	1414	10/7	1700
CEMENTING:	10/8	0900	10/8	1030
DEVELOPMENT:	10/14	0830	10/31	1400
OTHER:				
Bentonite	10/7	1710	10/17	1754
	10/7	0821	10/17	0850
Packer testing	10/2	1200	10/3	1700

WELL DEVELOPMENT

COMMENTS:

Water encountered at 105.37' during drilling on 10/8/86.
Top of stainless steel casing: 1.41'

Built well in NC rod; no centralizers used.

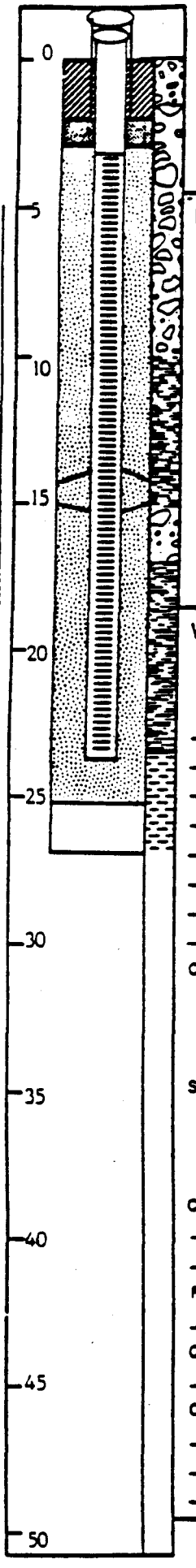
Geophysical logs:
SP - resistivity: 59.00' - 146.00'
Natural gamma: 0.00' - 147.00'

WELL 10-86

WELL CONSTRUCTION SUMMARY

LOCATION or COORDS: N 39223.9 E 19400.6

ELEVATION: GROUND LEVEL 5995.02' (est.)
TOP OF CASING 5996.63' (est.)



LOCATION Golden, CO
PERSONNEL T. Gulliver
PROJECT 106X06222 Rocky Flats Plant

DRILLING SUMMARY:

TOTAL DEPTH Well: 23.78' Hole: 27.00'
BOREHOLE DIAMETER 0.00' - 23.40': 5 5/8"
23.40' - 27.00': 5"
DRILLER Bovles Brothers Drilling Co.
15865 W. 5th Avenue
Golden, CO (Arrow Drilling, Tom High)
RIG Casing advancer
BIT(S) Down hole hammer
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'	23.78'	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
14.08' - 15.33'

FILTER MATERIAL 32-42 silica sand
2.80' - 25.50'

CEMENT Portland Type I
0.00' - 2.00'

OTHER 3/8" bentonite pellets
2.00' - 2.80'

CONSTRUCTION TIME LOG:

TASK	START DATE 1986	START TIME	FINISH DATE 1986	FINISH TIME
DRILLING:				
Casing advancer	9/24	1420	9/24	1600
GEOPHYS. LOGGING:	—	—	—	—
CASING:				
2" stainless	9/25	0900	9/25	0910
FILTER PLACEMENT:	9/25	0910	9/25	1300
CEMENTING:	9/25	1400	9/25	1410
DEVELOPMENT:	9/29	1345	10/16	1515
OTHER:				
Bentonite	9/25	1300	9/25	1305

WELL DEVELOPMENT

See Well Development Summary Sheet.

COMMENTS:

Water encountered at 10' during drilling.

Top of stainless steel casing: 1.61'

Cave from TD to 25.50'

Well No.: 45-86

WELL DEVELOPMENT SUMMARY SHEET

DATE	TIME	METHOD	VOLUME	APPEARANCE	COMMENTS
10-7-86	0915				1 Well Bore Volume = 4.24 gals. 10 Well Bore Volumes = 42.2 gals.
10-7-86	0915	Airlifted	4.2 gals.	Light to medium spray - lots of sand	7' of sand lifted out before reaching T.D.
10-8-86	1540	Bailed	12 gals.	Medium to dark brown, highly turbid, lots of sand	12/42.4 gals. purged to date
10-9-86	0700	Airlifted	4.2 gals.	Medium to dark brown spray	-----
10-9-86	1500	Bailed	16 gals.	Medium brown, clearing slightly	28/42.4 gals. purged to date
10-10-86	1410	Bailed	16 gals.	Bottom 3' - light brown, rest of well med. brown	44/42.4 gals. purged to date
10-14-86	1200	Bailed	12 gals.	Light to medium brown	56/42.4 gals. purged to date
10-15-86	0830	Airlifted	---	Medium brown mist - sandy	-----
10-15-86	1400	Bailed	25 gals.	Medium brown, clearing	81/42.4 gals. purged to date
10-16-86	1200	Bailed	---	Clear	Sampled

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

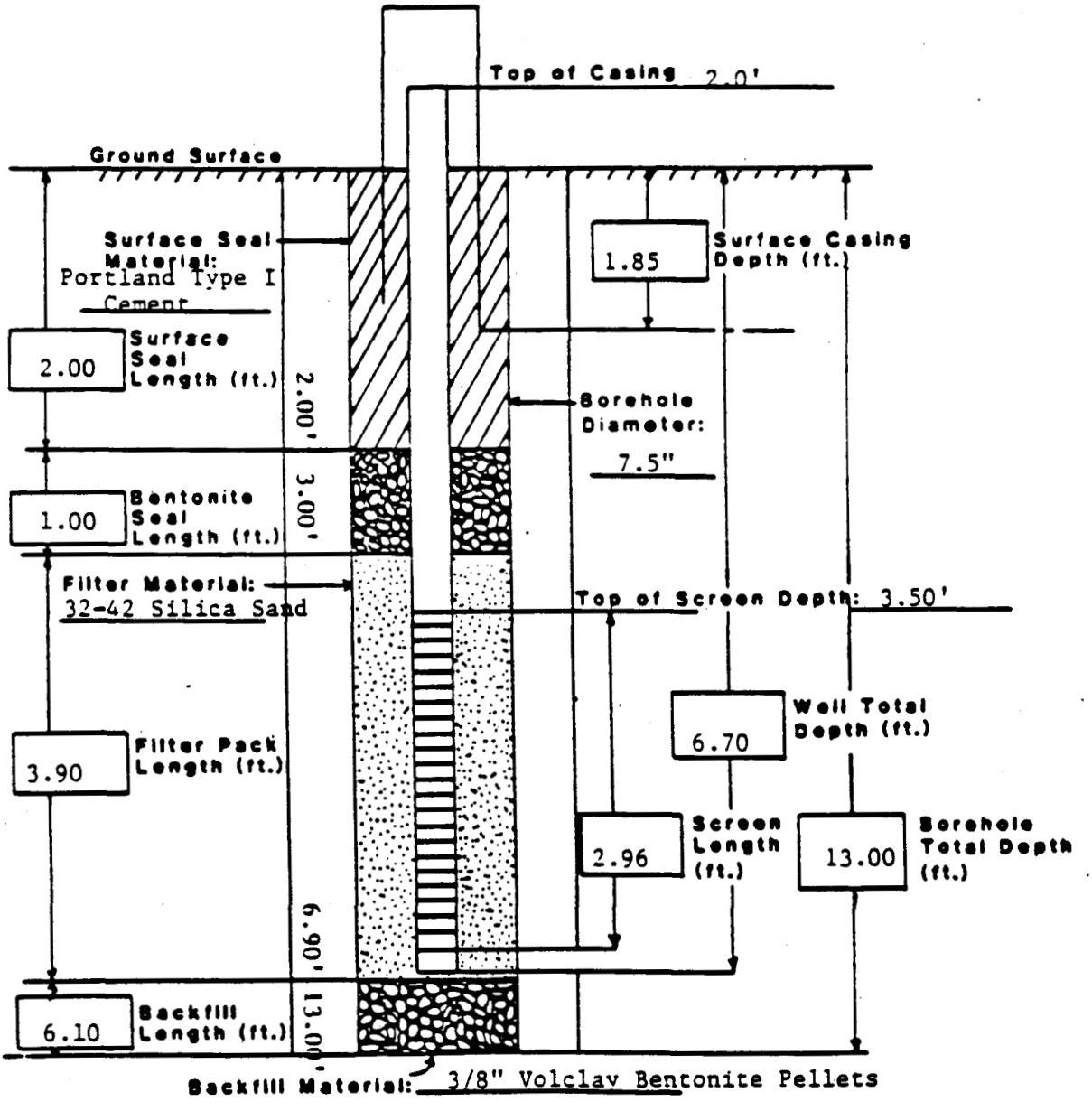
Approved By

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

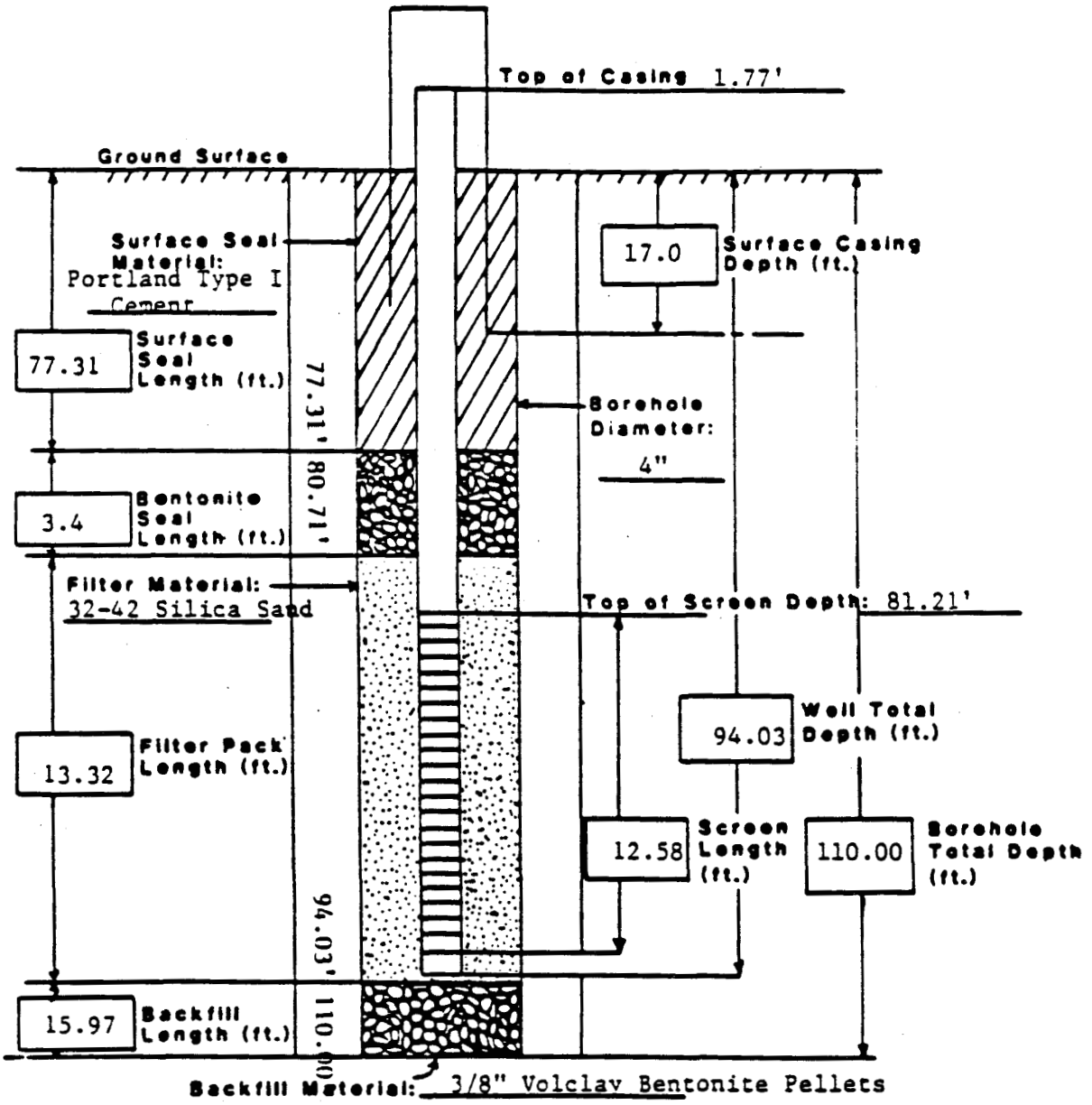
Approved By

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.



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

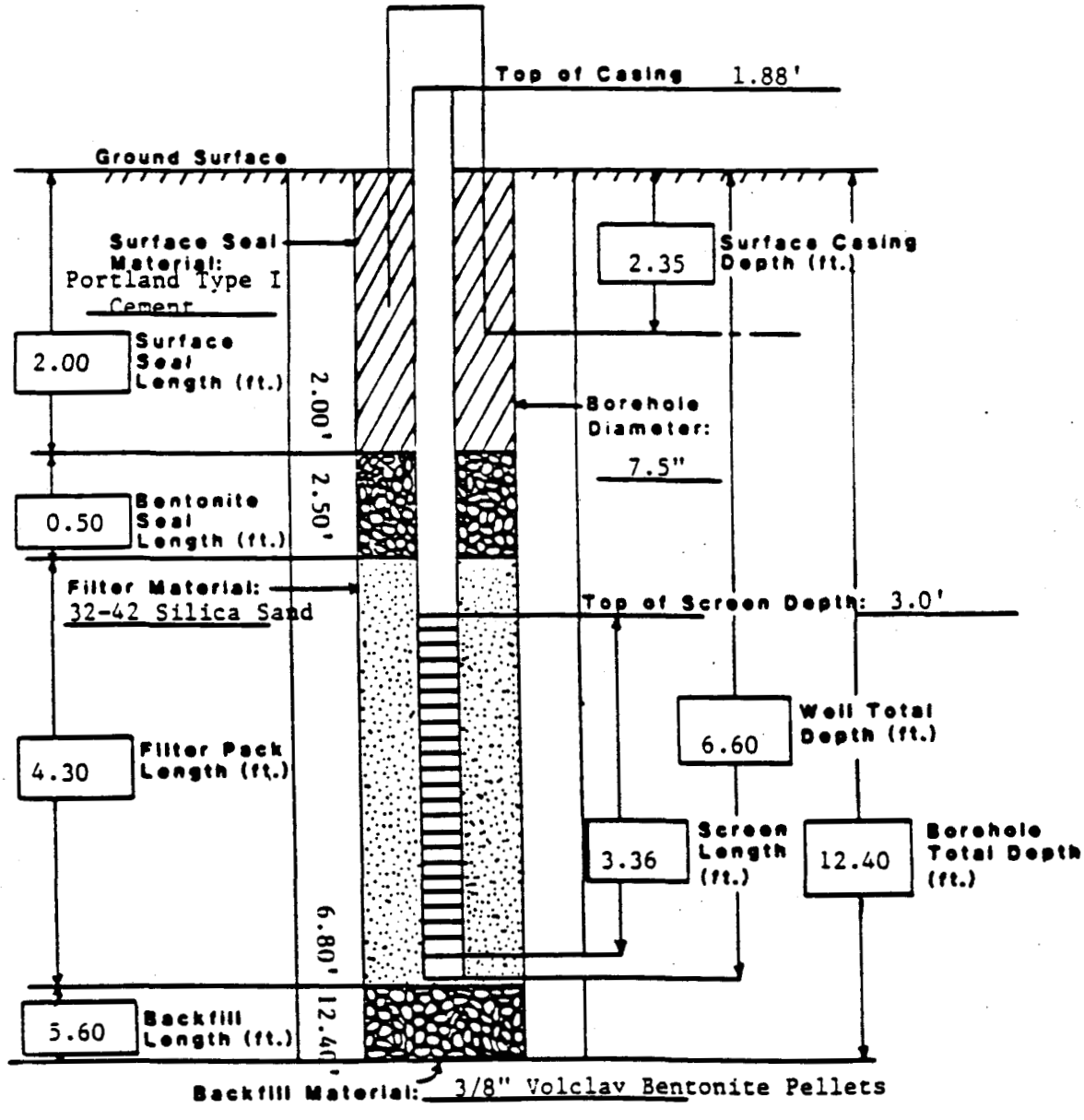
Approved By

Site Manager

Installed By J. Bergman
Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 58-87

Coordinates N 39257.05 E 19431.75

Elevation: Ground Surface 5995.10'

Total Depth: Well 22.5'

Top of Casing 5996.75'

Borehole 32.0'

Formation of Completion Rocky Flats 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 November 18, 1987

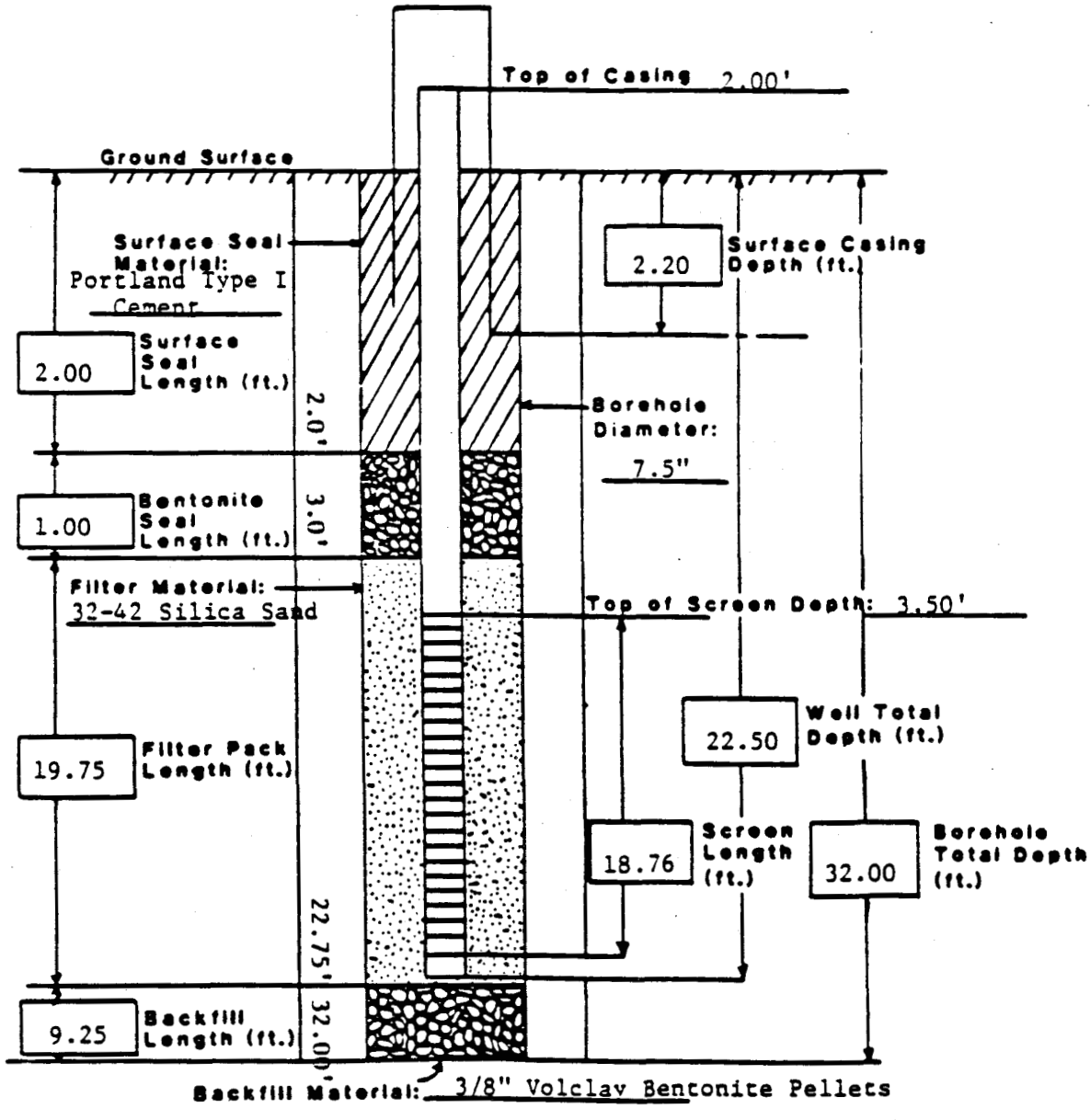
Approved By

Site Manager

Installed By R. Treat
Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 59-87

Coordinates N 39336.25 E 19463.99

Elevation: Ground Surface 5992.90'

Total Depth: Well 21.20'

Top of Casing 5994.67'

Borehole 26.0'

Formation of Completion Rocky Flats 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 November 23, 1987

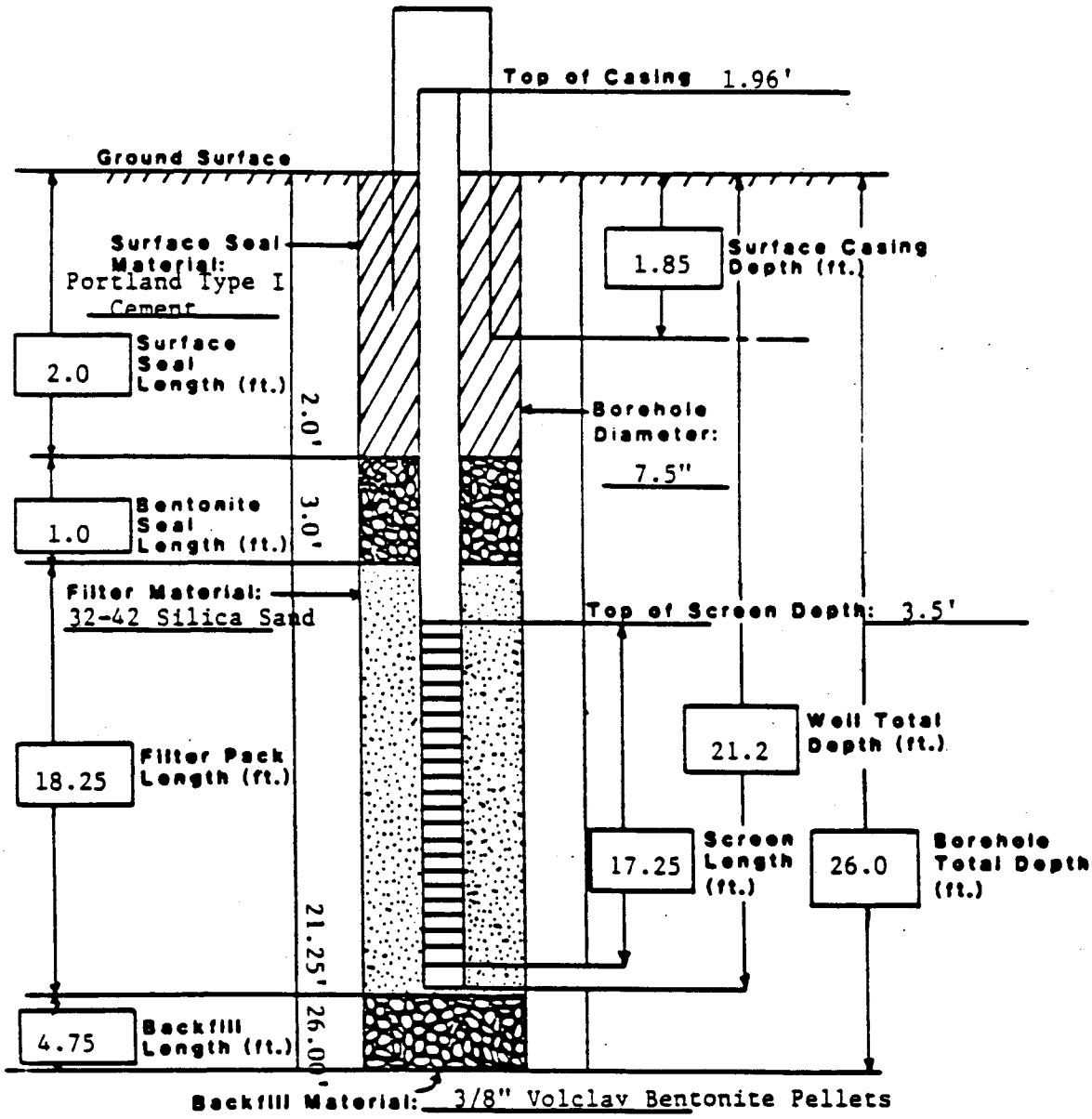
Approved By

Installed By J. Bacchus
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 60-87

Coordinates N 39951.63 E 19938.52

Elevation: Ground Surface 5984.03'

Total Depth: Well 27.7'

Top of Casing 5985.96'

Borehole 32.0'

Formation of Completion Rocky Flats 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 November 20, 1987

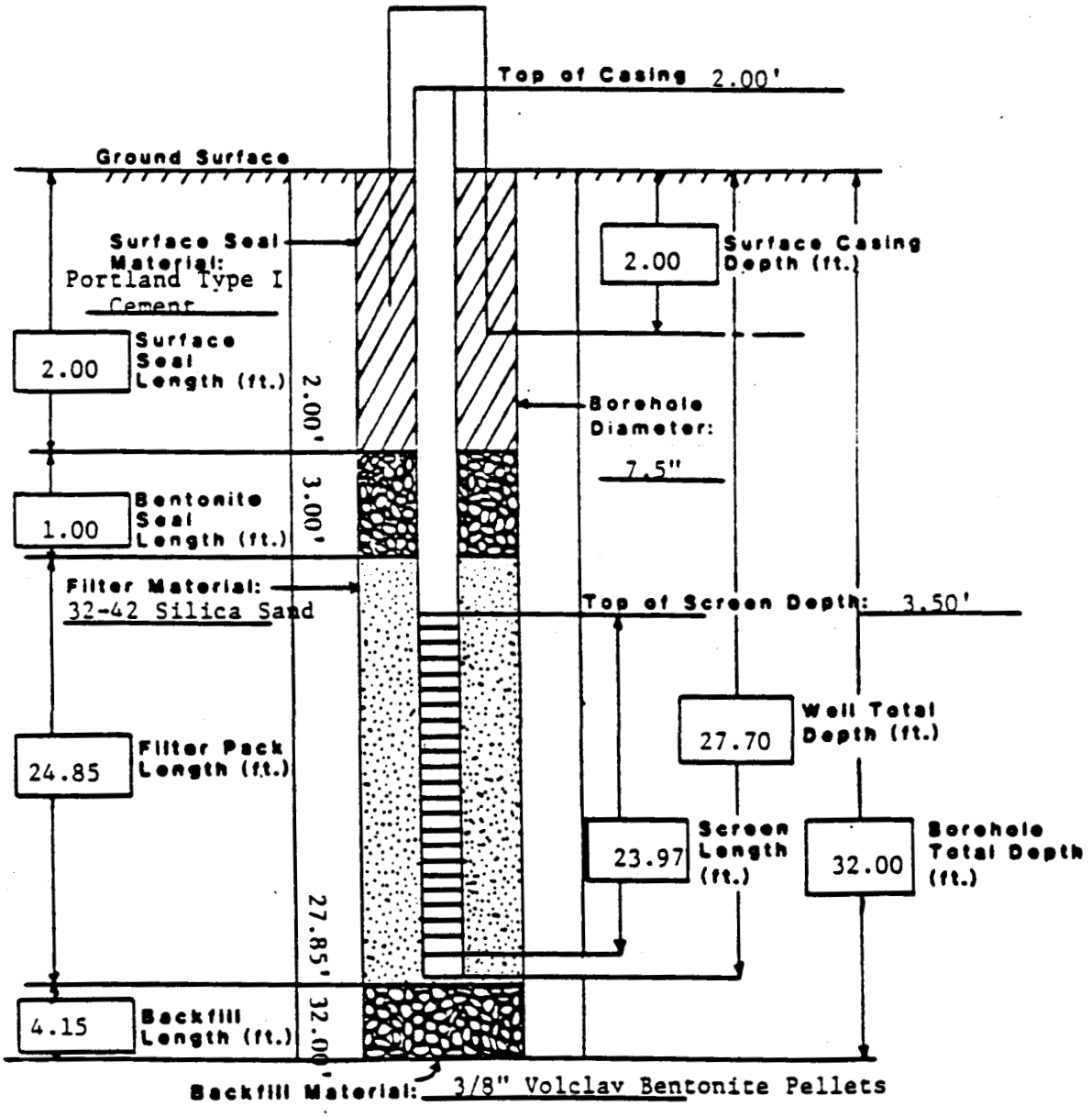
Approved By

Installed By R. Treat
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 61-87

Coordinates N 39881.26 E 19974.80

Elevation: Ground Surface 5984.00'

Total Depth: Well 28.5'

Top of Casing 5985.75'

Borehole 34.0'

Formation of Completion Rocky Flats 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 November 25, 1987

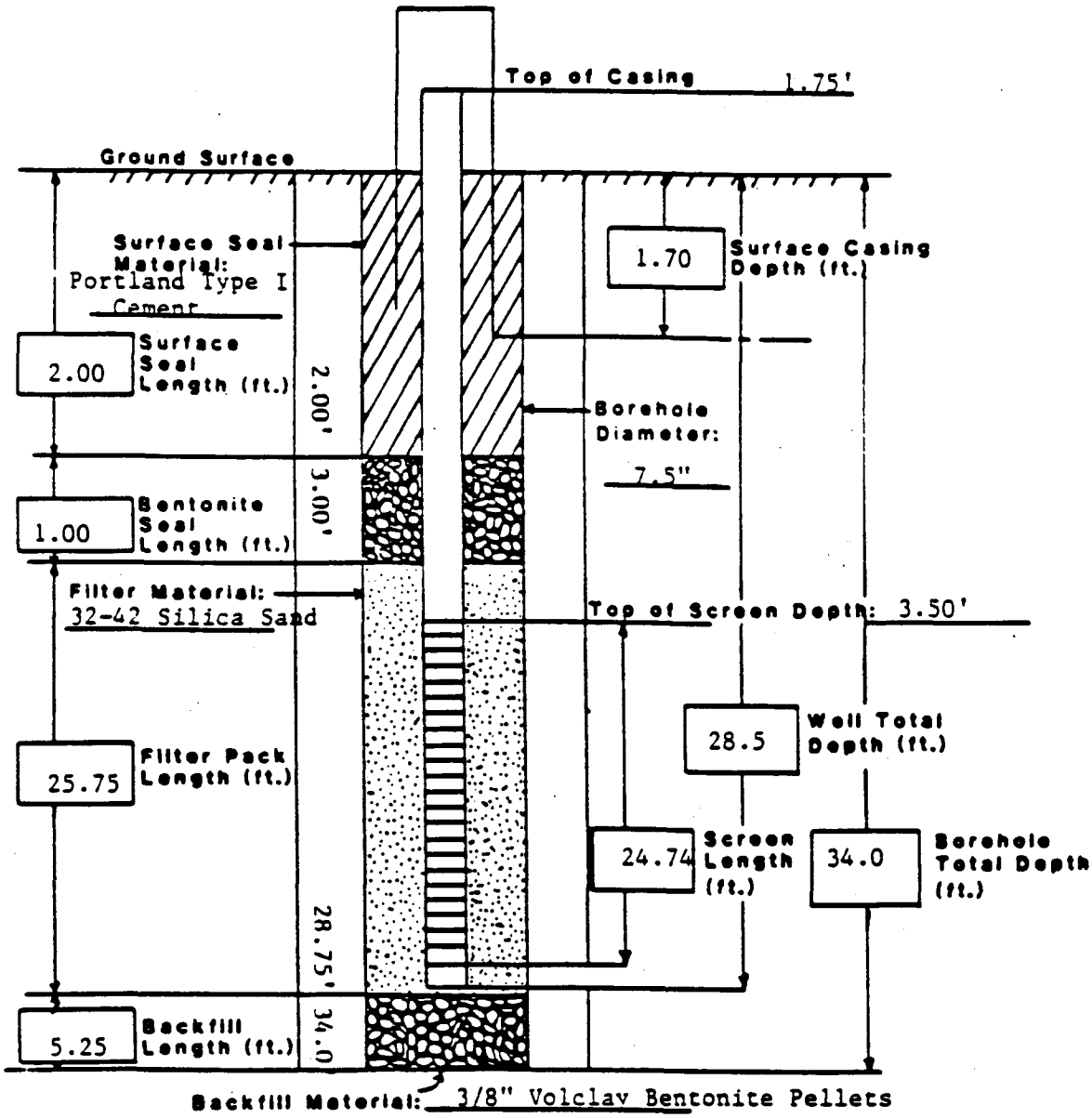
Approved By

Installed By J. Bacchus
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 62-87

Coordinates N 39821.22 E 19999.70

Elevation: Ground Surface 5984.16'

Total Depth: Well 26.80'

Top of Casing 5986.36'

Borehole 30.0'

Formation of Completion Rocky Flats 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 November 25, 1987

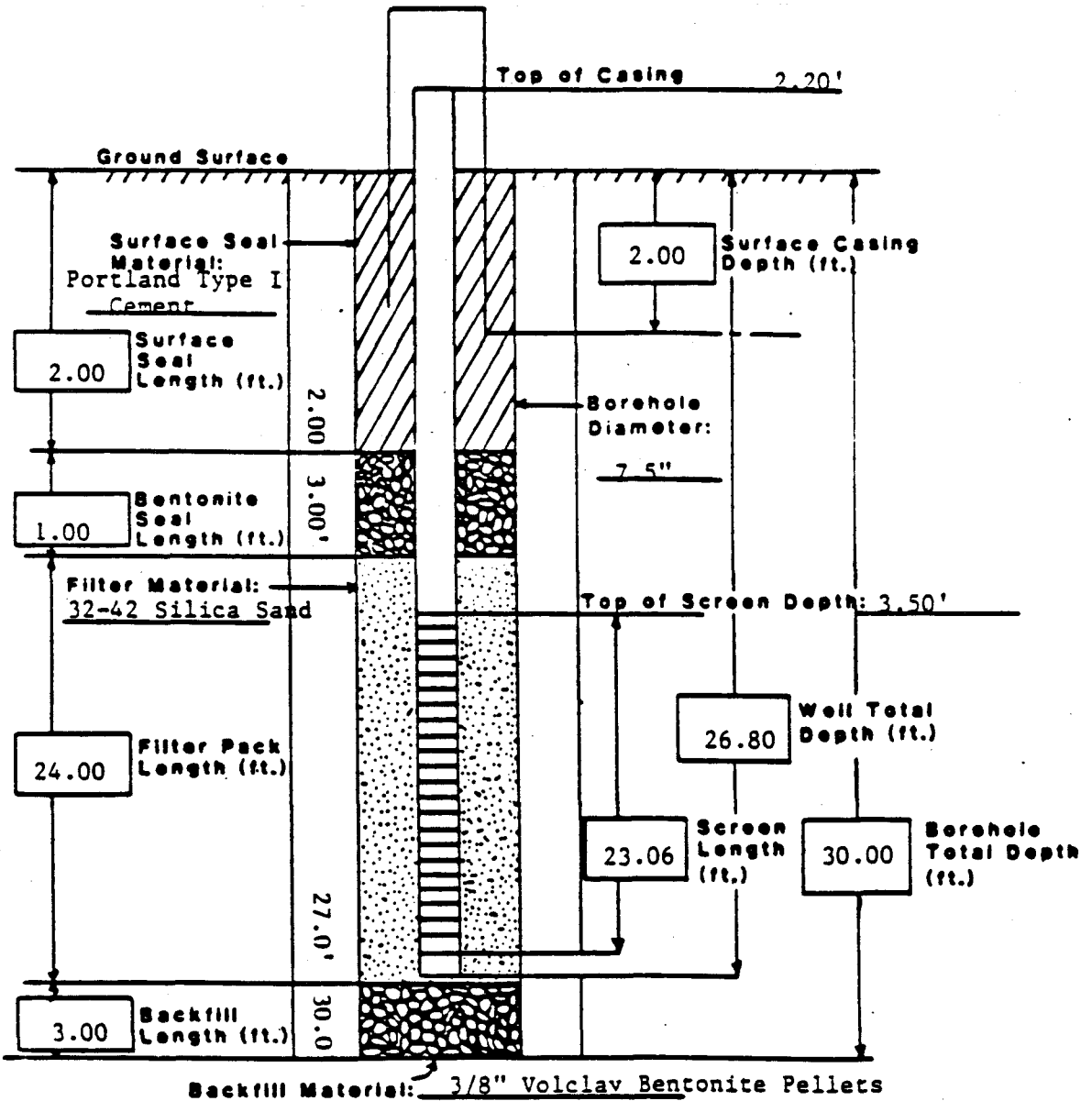
Approved By

Installed By R. Trear
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 63-87

Coordinates N 39738.07 E 20040.50

Elevation: Ground Surface 5985.42'

Total Depth: Well 25.5'

Top of Casing 5987.06'

Borehole 30.0'

Formation of Completion Rocky Flats 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 December 1, 1987

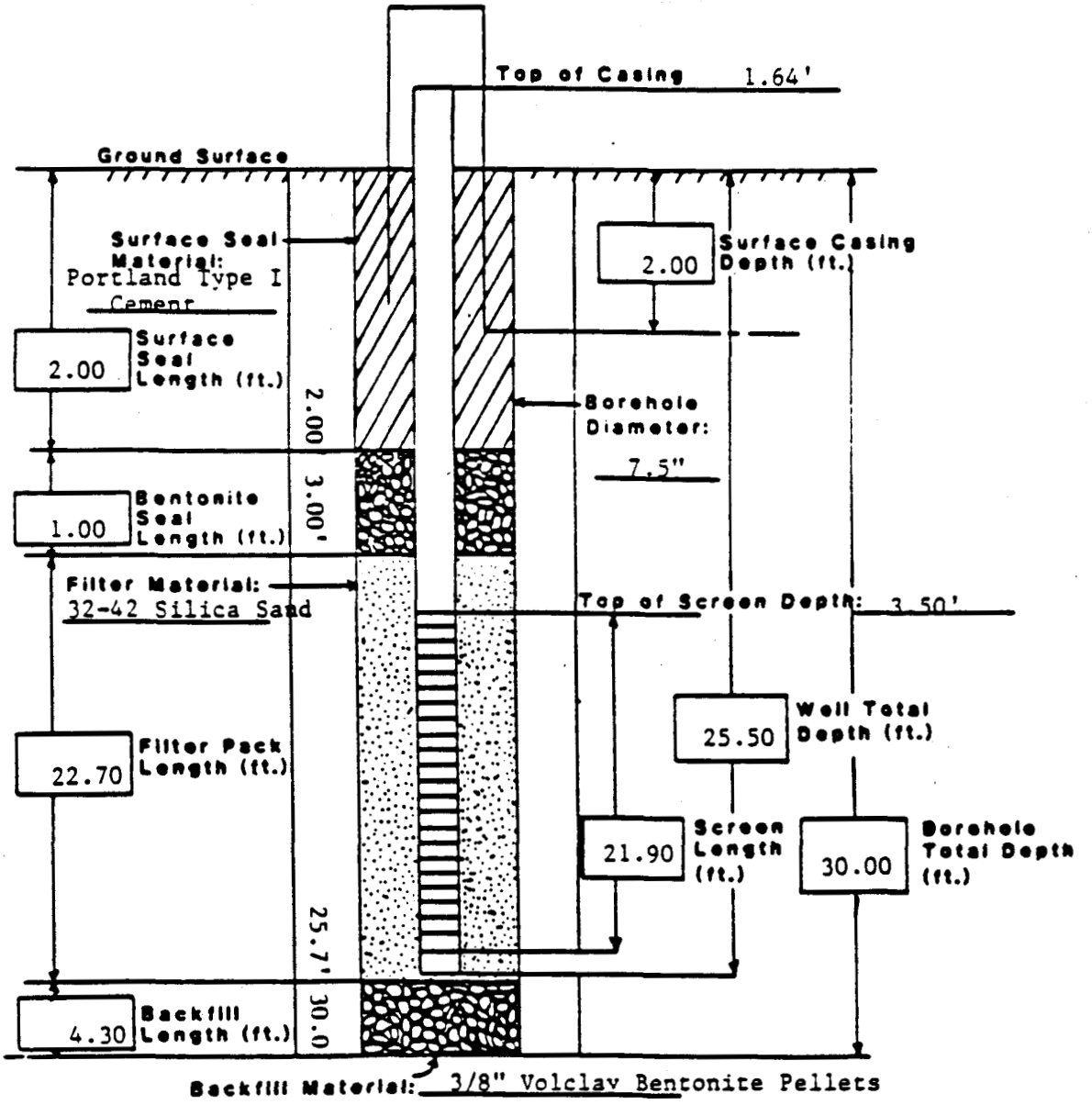
Approved By

Installed By R. Treat
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 64-87

Coordinates N 39349.01 E 20162.23

Elevation: Ground Surface 5985.89'

Total Depth: Well 23.8'

Top of Casing 5987.33'

Borehole 28.0'

Formation of Completion Rocky Flats 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 December 4, 1987

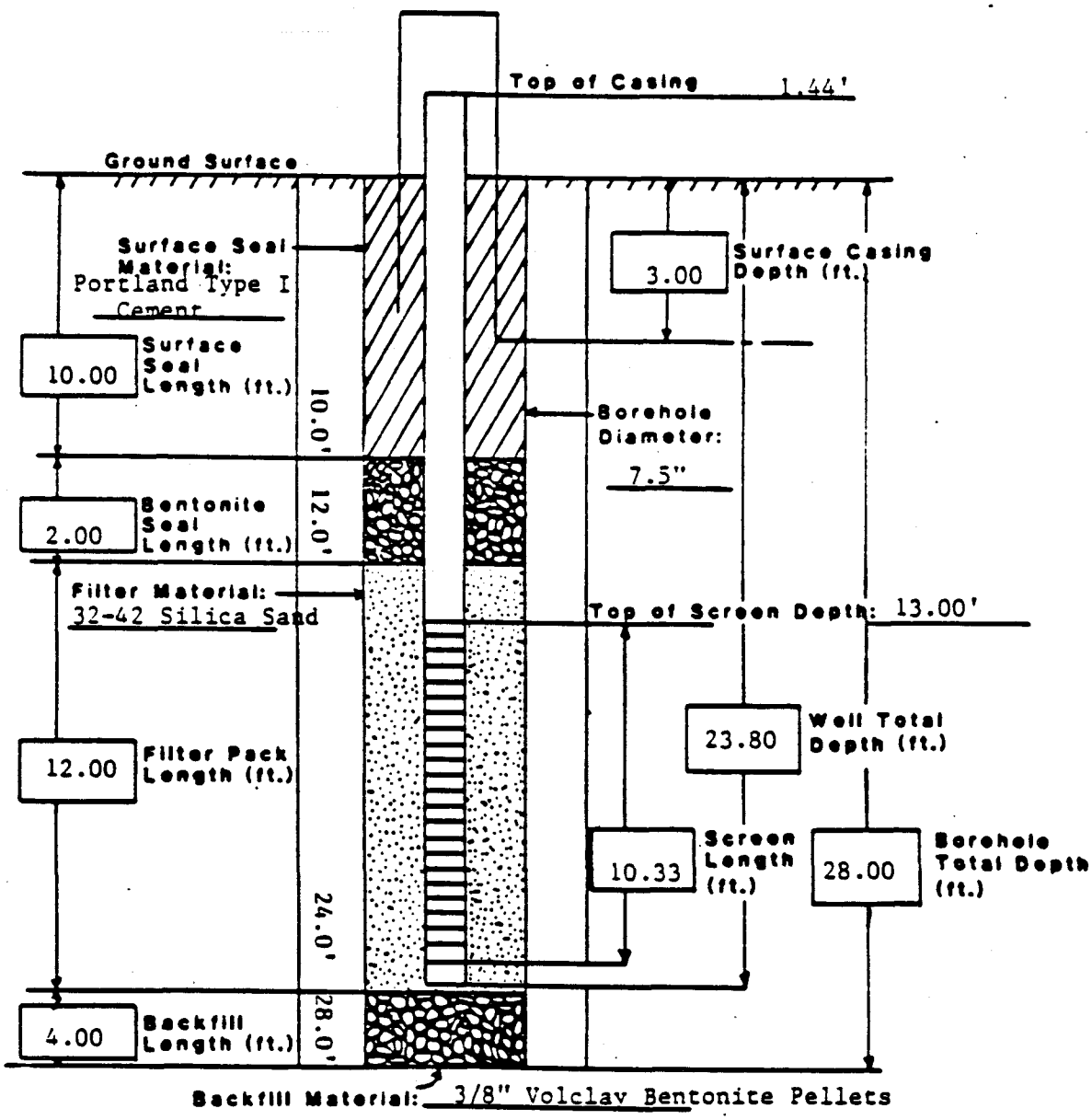
Approved By

Installed By R. Treat
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 65-87

Coordinates N 39250.14 E 20200.22

Elevation: Ground Surface 5983.08'

Total Depth: Well 24.2'

Top of Casing 5985.02'

Borehole 27.0'

Formation of Completion Rocky Flats Alluvium/ Weathered 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 December 9,10, 1987

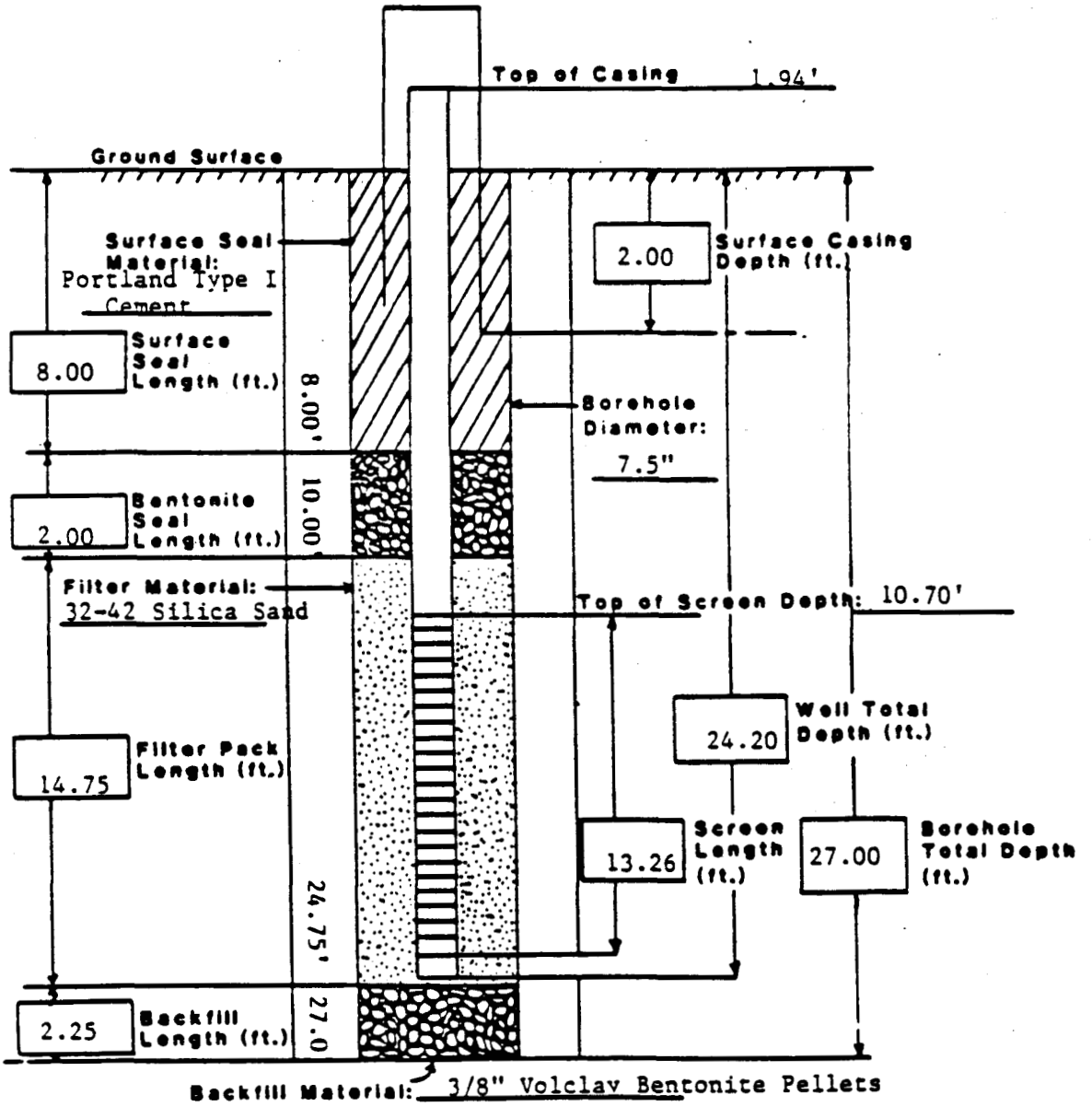
Approved By

Installed By R. Treat
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 66-87

Coordinates N 39170.26 E 20226.01

Elevation: Ground Surface 5981.90'

Total Depth: Well 18.20'

Top of Casing 5983.64'

Borehole 23.00'

Formation of Completion Rocky Flats 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 November 24, 1987

Approved By

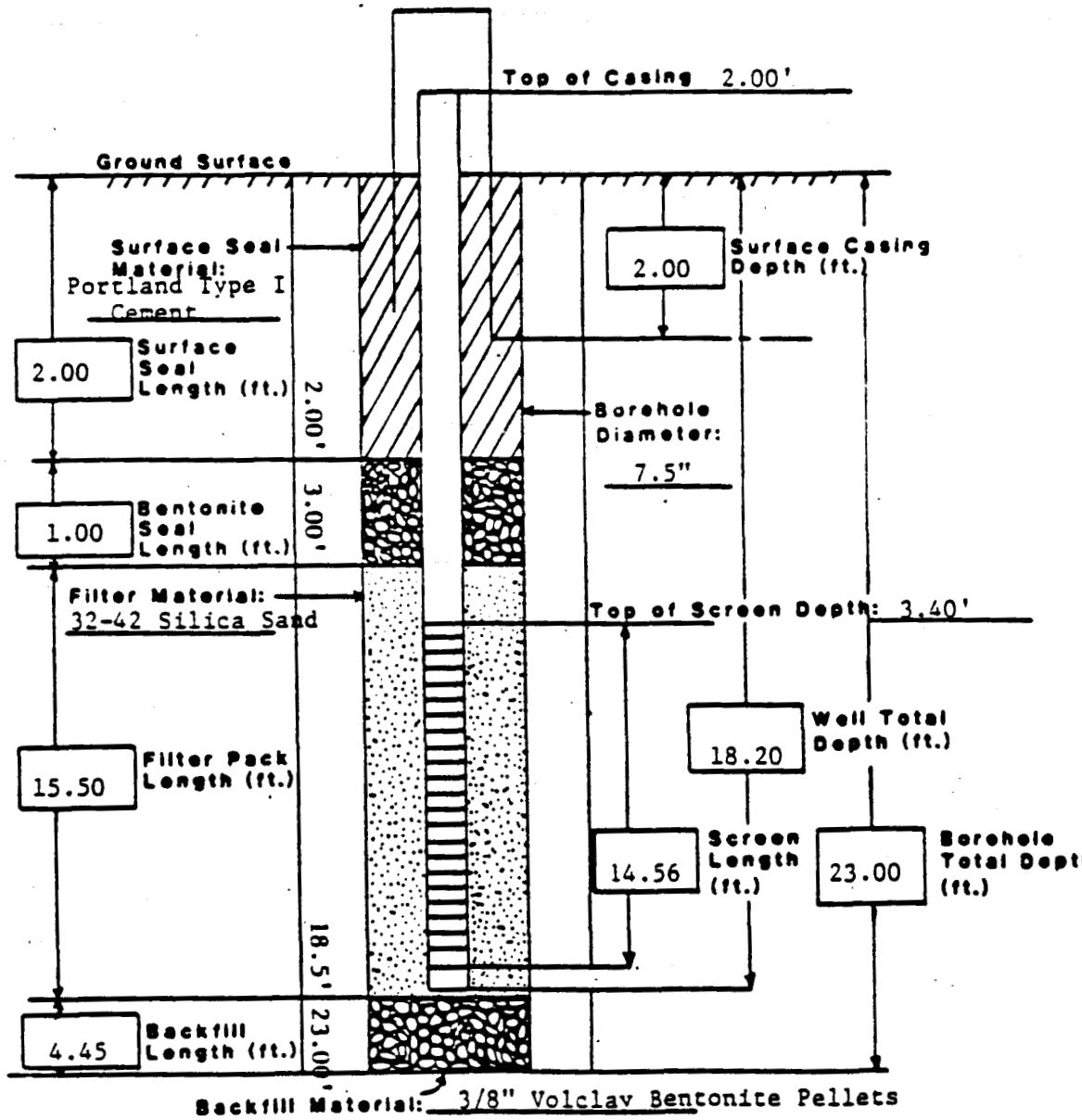
Site Manager

Installed By R. Treat

Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 67-87

Coordinates N 40182.78 E 20678.79

Elevation: Ground Surface 5969.50'

Total Depth: Well 16.8'

Top of Casing 5971.72'

Borehole 21.4'

Formation of Completion Rocky Flats 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 December 4, 1987

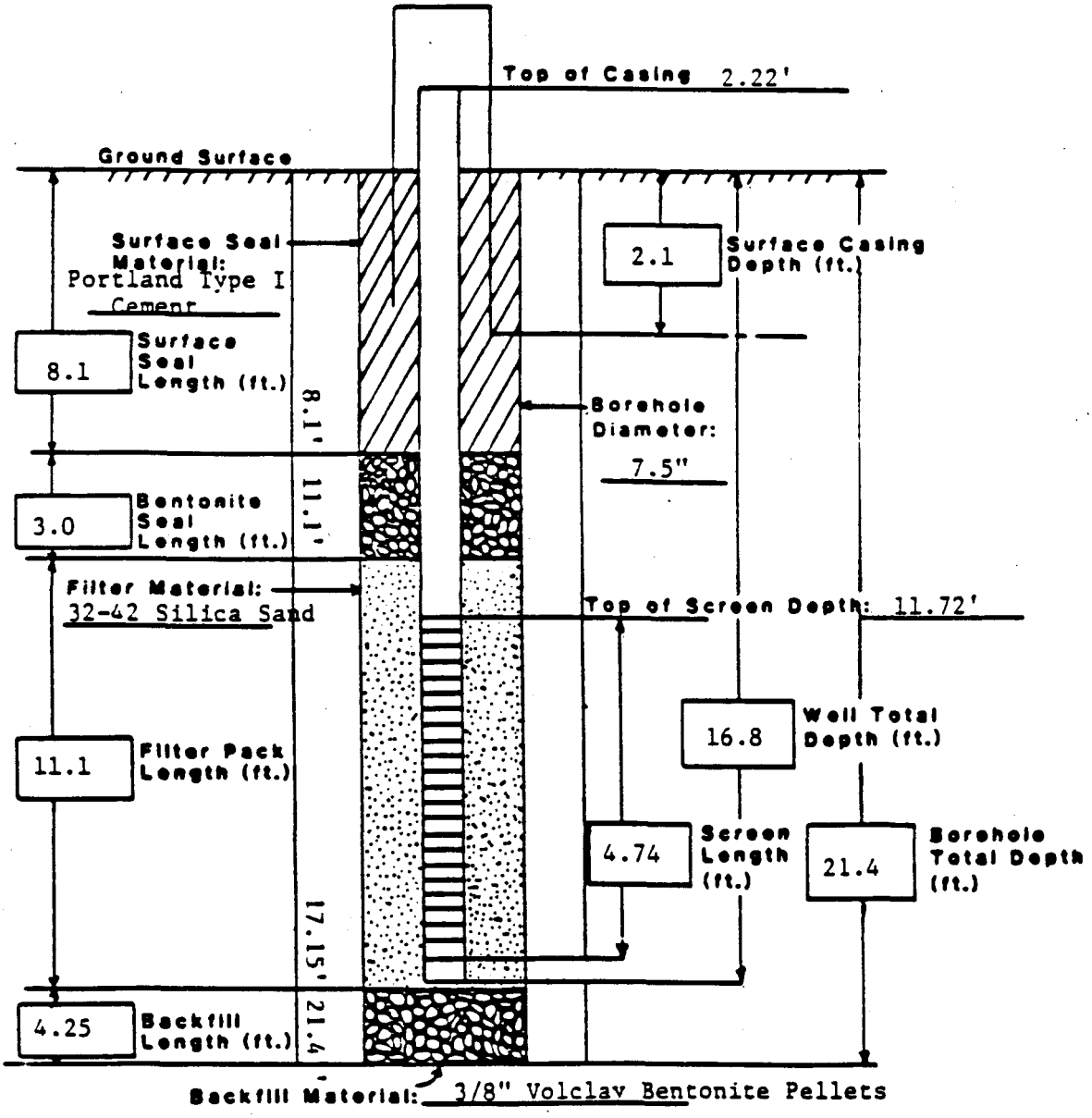
Approved By

Installed By J. Bacchus
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 68-37

Coordinates N 40163.59 E 20680.82

Elevation: Ground Surface 5968.48'

Total Depth: Well 16.0'

Top of Casing 5970.31'

Borehole 20.0'

Formation of Completion Rocky Flats 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 December 4 & 7, 1987

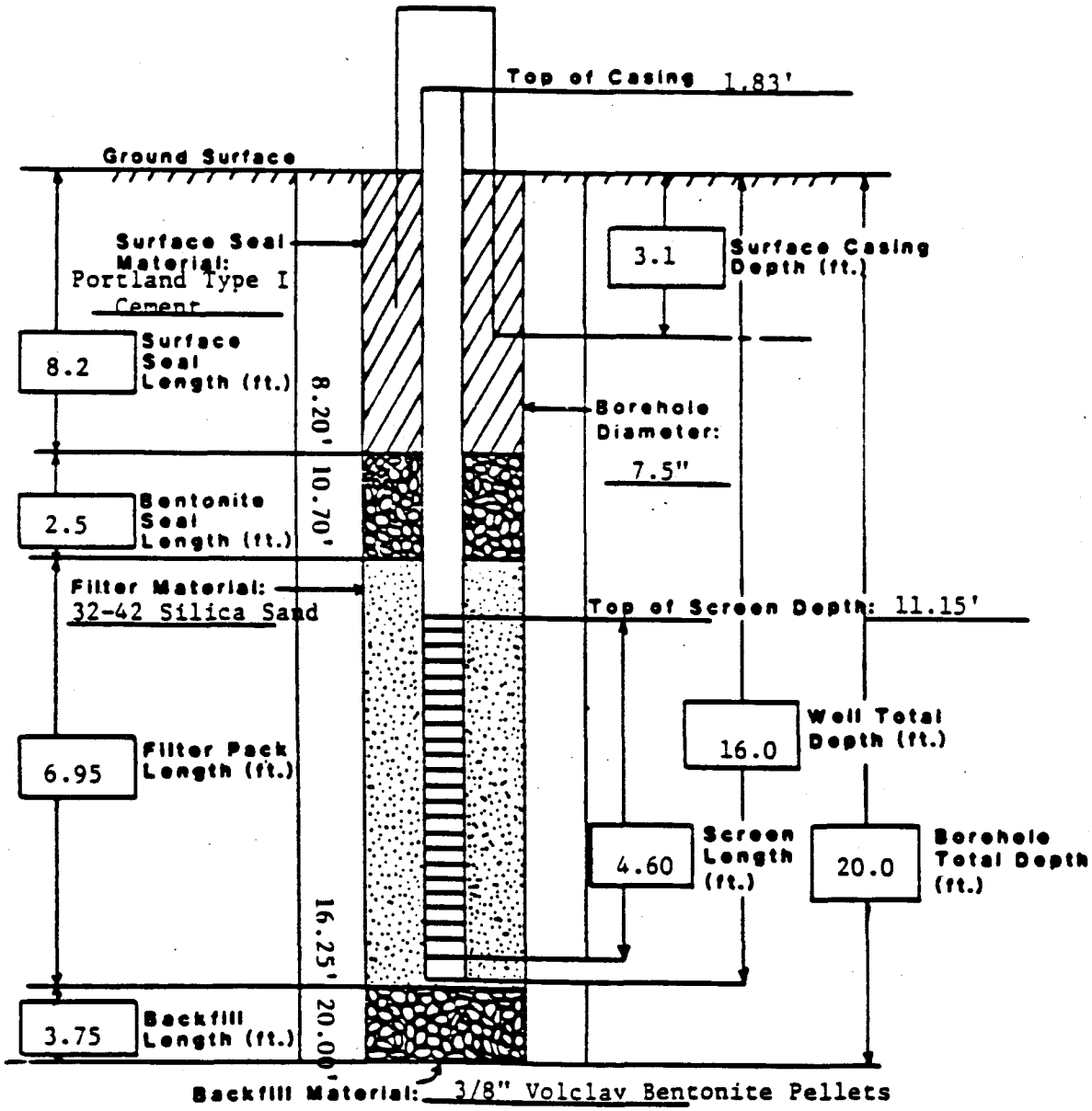
Approved By

Installed By J. Bacchus
Geologist

Site Manager

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 70-87

Coordinates N 39588.09 E 21098.79

Elevation: Ground Surface 5966.30'

Total Depth: Well 16.5'

Top of Casing 5968.35'

Borehole 17.0'

Formation of Completion Rocky Flats Alluvium/ Weathered 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 December 14, 1987

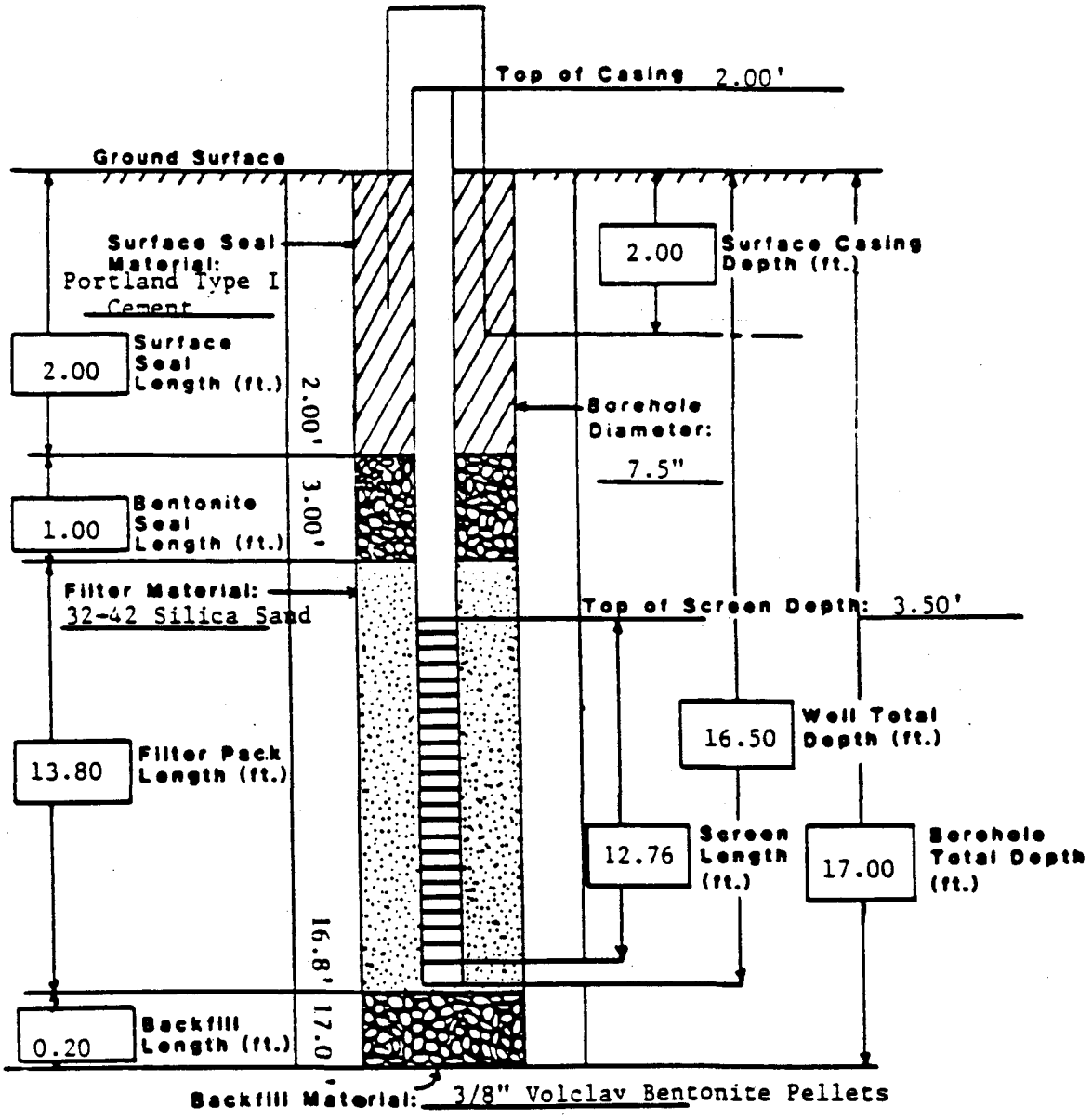
Approved By

Site Manager

Installed By R. Trear
Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 71-87

Coordinates N 40339.90 E 20991.74

Elevation: Ground Surface 5963.39'

Total Depth: Well 13.85'

Top of Casing 5965.47'

Borehole 18.50'

Formation of Completion Rocky Flats 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 December 11, 1987

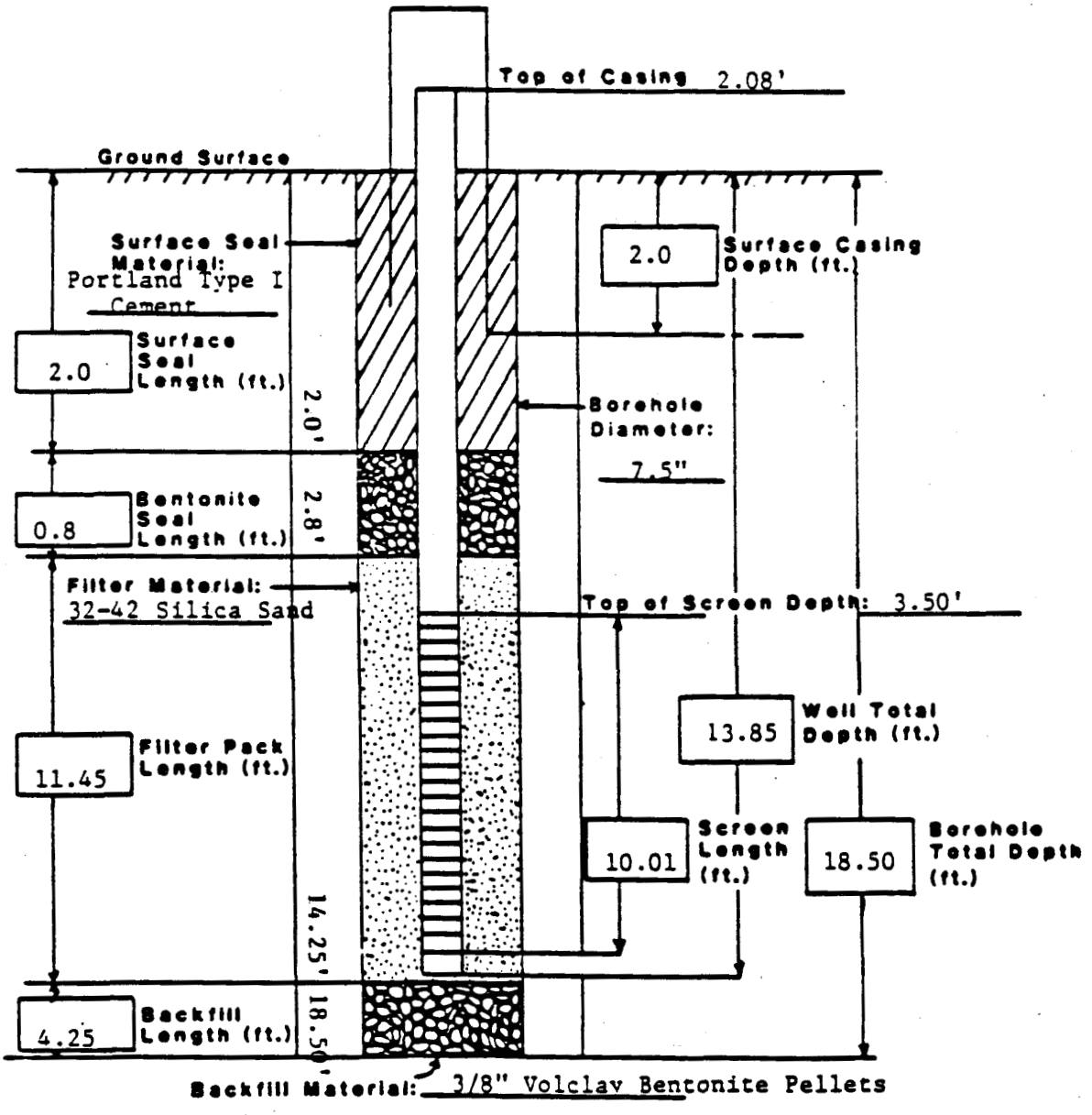
Approved By

Site Manager

Installed By J. Bacchus
Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

Location Rocky Flats Plant; Landfill Area

Well No. 72-87

Coordinates N 39459.12 E 20855.24

Elevation: Ground Surface 5969.11'

Total Depth: Well 7.0'

Top of Casing 5971.18'

Borehole 15.0'

Formation of Completion Rocky Flats 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 December 17, 1987

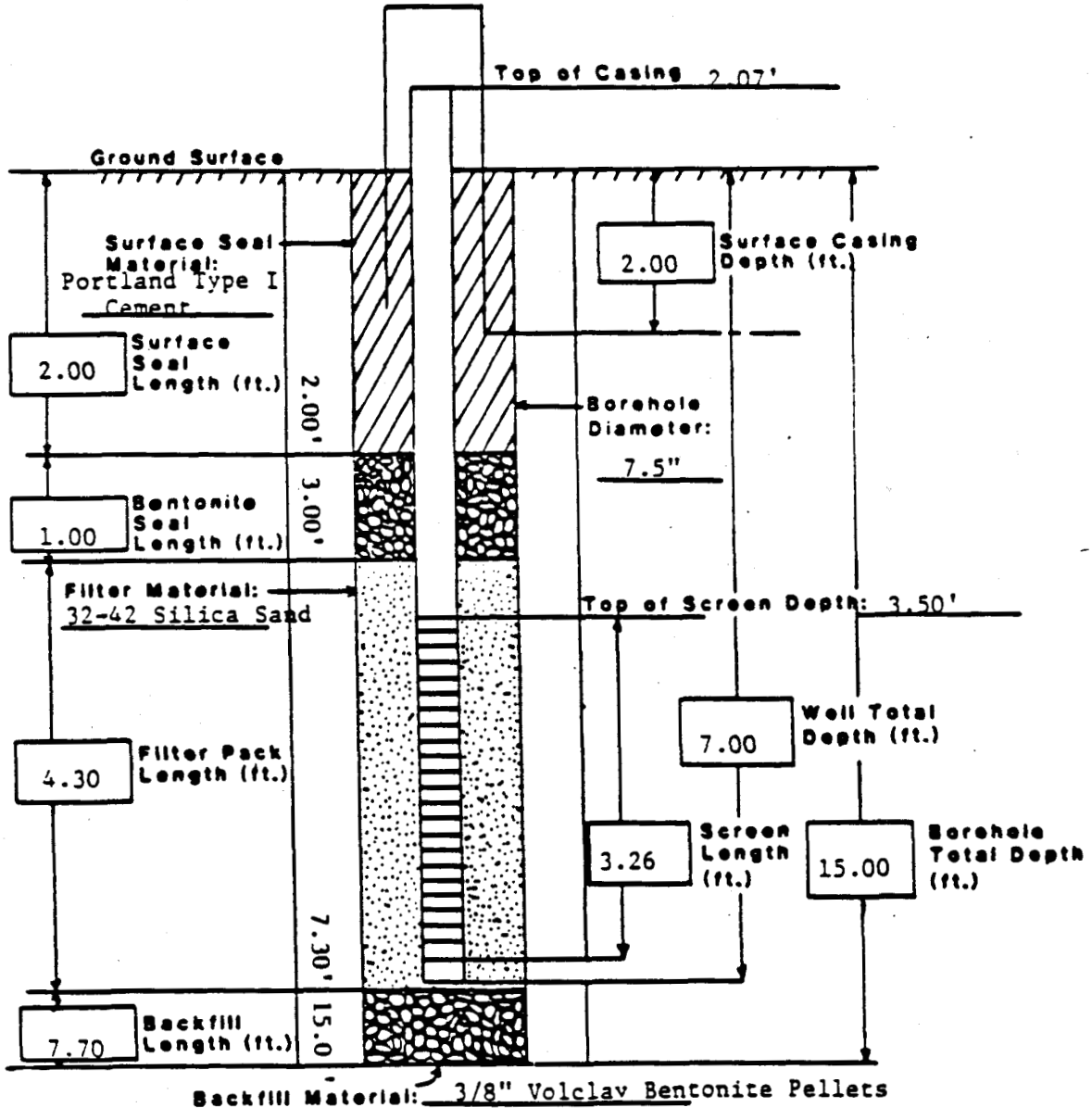
Approved By

Site Manager

Installed By R. Treat
Geologist

CEARP Manager

Comments



WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 15-19-89

Location Rocky Flats Plant: Landfill Area

Well No. B106089

Coordinates N 39332.69 E 19481.76 (RFP)

Elevation: Ground Surface 5993.3'

Top of Casing 5995.35'

Total Depth: Well 24.47'

Borehole 27.50'

Formation of Completion Rocky Flats Alluvium and Landfill

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.

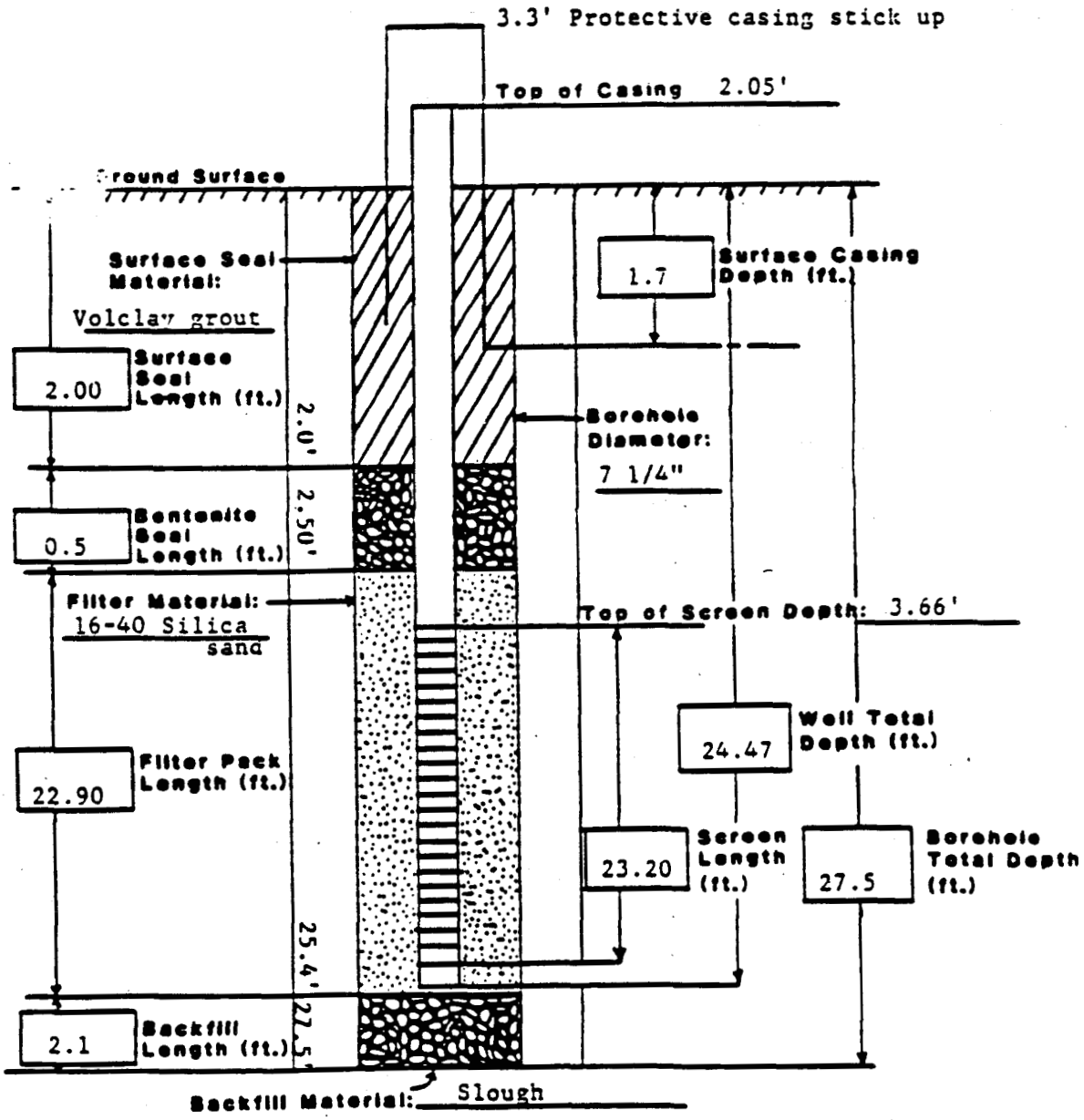
Date Installed 05/18/1989

Approved By Jarell Burman
Site Manager

Installed By R.T. Treat
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 22.93' to 24.14' below ground surface.



WELL COMPLETION INFORMATION

QA By/Date [illegible] 11-2-89

Location Rocky Flats Plant; Landfill Area

Well No. 3206189

Coordinates N 39392.08 E 20202.58 (RFP)

Elevation: Ground Surface 5984.5'

Total Depth: Well 36.61'

Top of Casing 5986.57'

Borehole 45.0'

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.

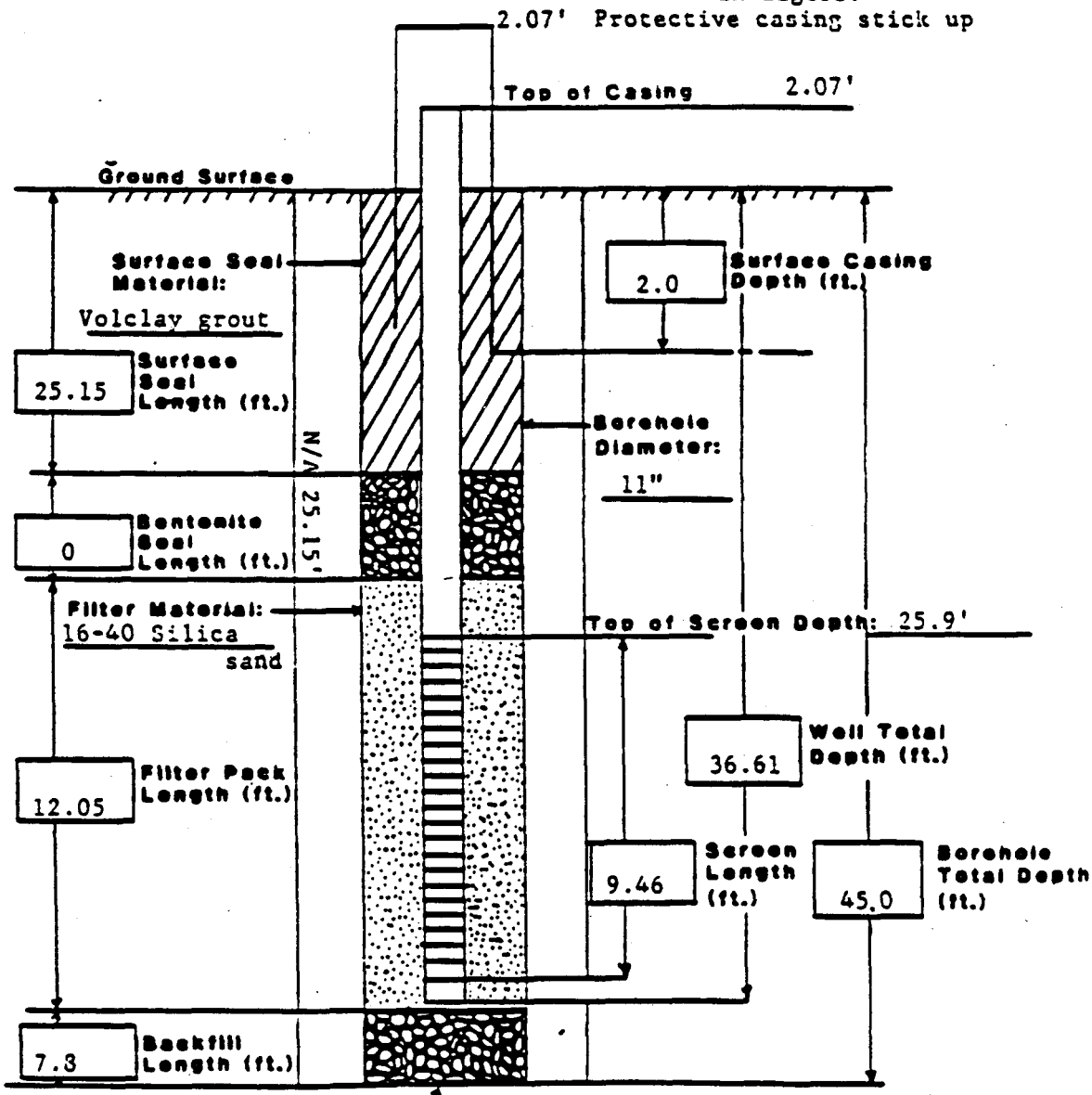
Date Installed 06/01/1989

Approved By [illegible]
Site Manager

Installed By S.P. Carpenter
Geologist

CEARP Manager

Comments Unable to set an upper bentonite pellet seal due to colloidial mixture above sand pack; volclay grout was placed above sand pack. No centralizer used. Well was constructed in augers.



Backfill Material: 1/4" Volclay bentonite pellets and slough

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 15-2-89

Location Rocky Flats Plant; Landfill Area **Well No.** B206289

Coordinates N 39272.29 E 20465.42 (RFP) **Elevation: Ground Surface** 5977.59'

Total Depth: Well 43.05' **Top of Casing** 5979.49'

Borehole 47.5'

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.

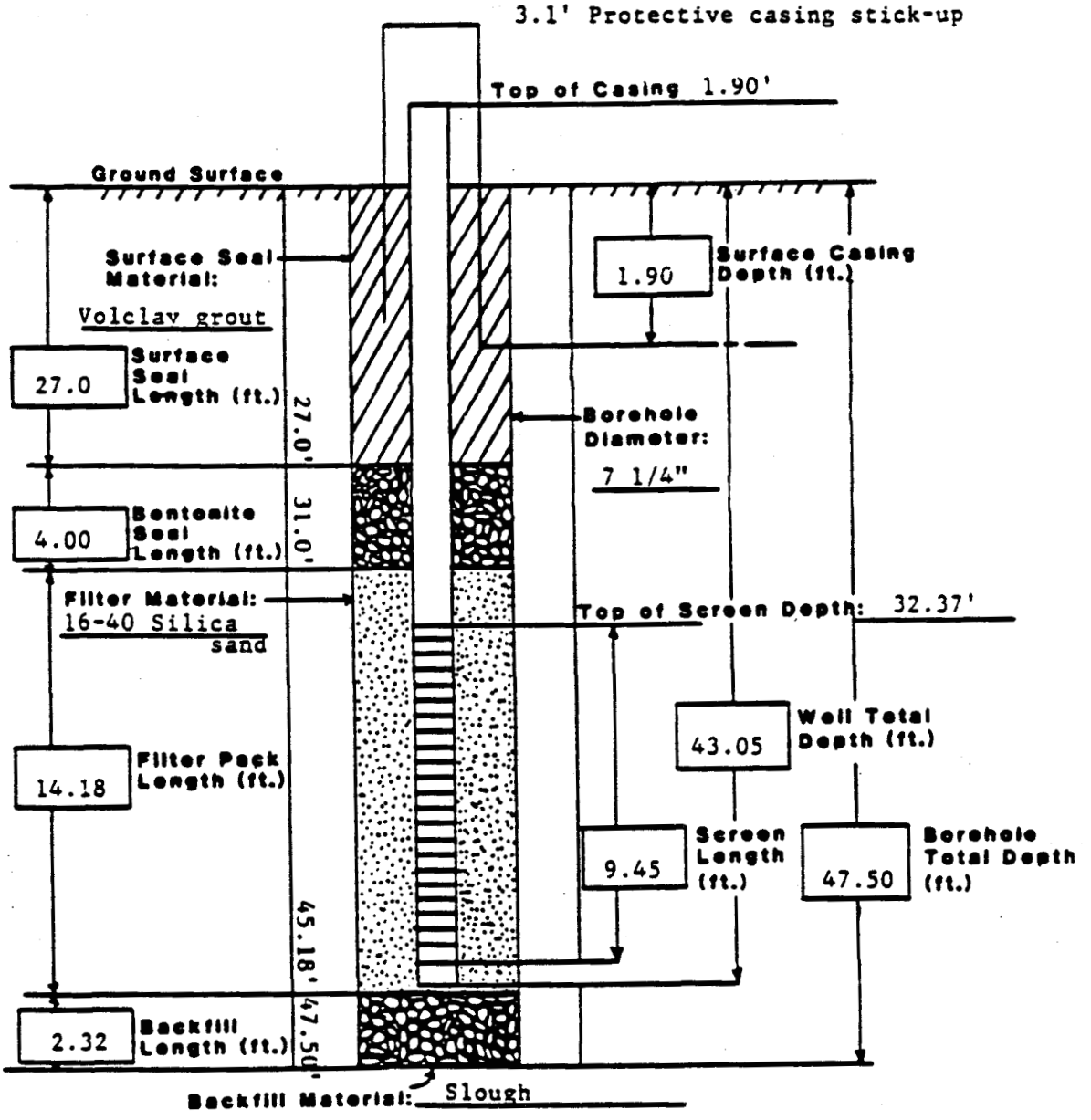
Date Installed 05/02/1989 **Approved By** Jarell Burman

Installed By R.T. Treat **Site Manager**

Geologist

CEARP Manager

Comments Set stainless steel centralizer from 41.45' to 42.65' below ground surface.



WELL COMPLETION INFORMATION

QA By/Date Farell Burman 15-24-89

Location Rocky Flats Plant: Landfill Area **Well No.** B206389

Coordinates N 39566.50 E 20828.68 **Elevation: Ground Surface** 5969.7'

Total Depth: Well 14.74' **Top of Casing** 5971.56'

Borehole 20.0'

Formation of Completion Rocky Flats Alluvium/Artifical Fill

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.

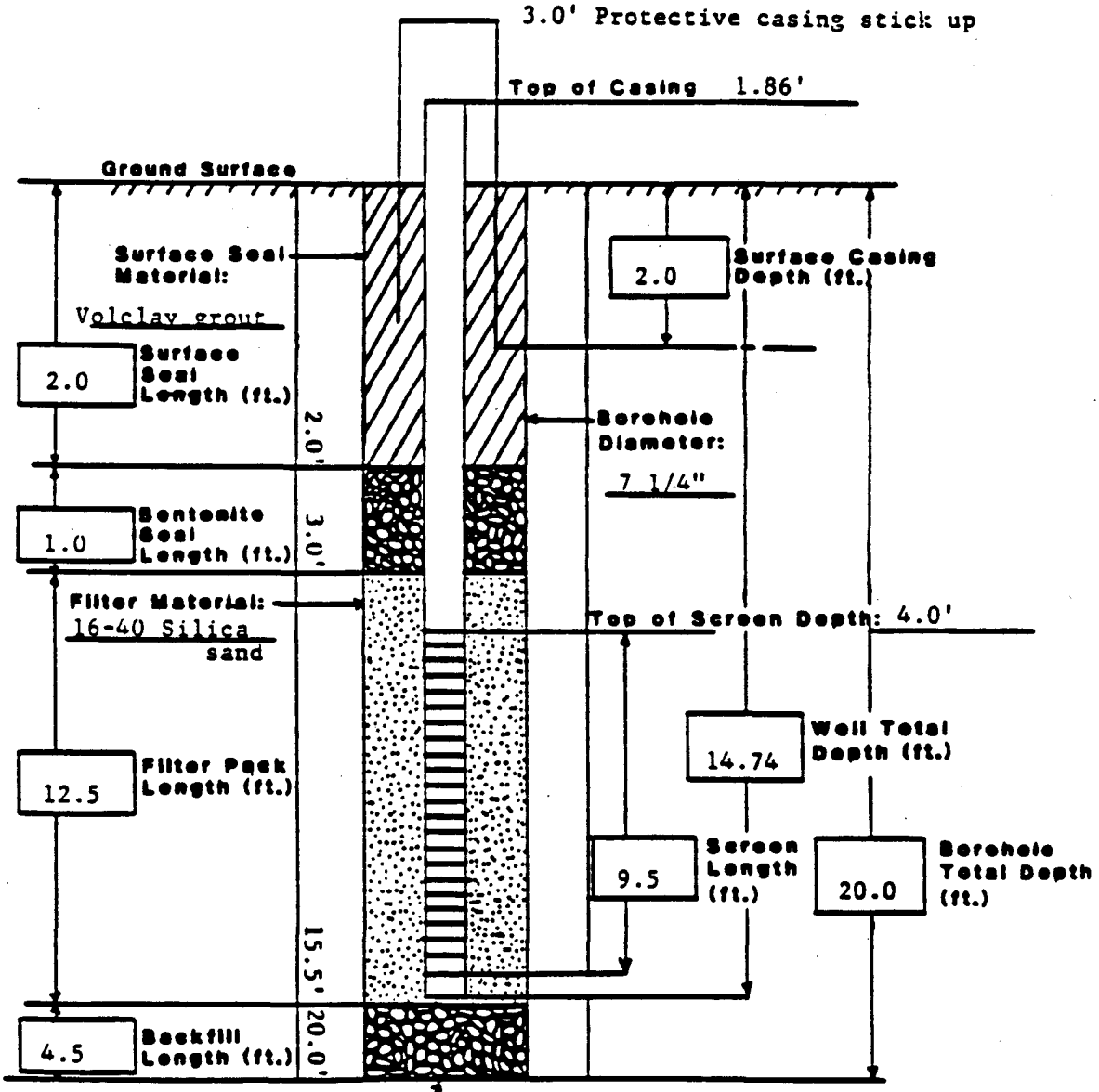
Date Installed 05/22/1989 **Approved By** Farell Burman

Installed By S.P. Carpenter **Site Manager**

Geologist

CEARP Manager

Comments Set stainless steel centralizer from 13.27' to 14.47' below ground surface.



Backfill Material: 1/4" Volclay bentonite pellets and slough

WELL COMPLETION INFORMATION

QA By/Date Janell Burman 5-5-89

Location Rocky Flats Plant; Landfill Area

Well No. B206489

Coordinates N 39445.20 E 20865.79 (RFP)

Elevation: Ground Surface 5969.14'

Total Depth: Well 11.35'

Top of Casing 5971.46'

Borehole 41.50'

Formation of Completion Rocky Flats Alluvium/ Weathered Sandstone

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.

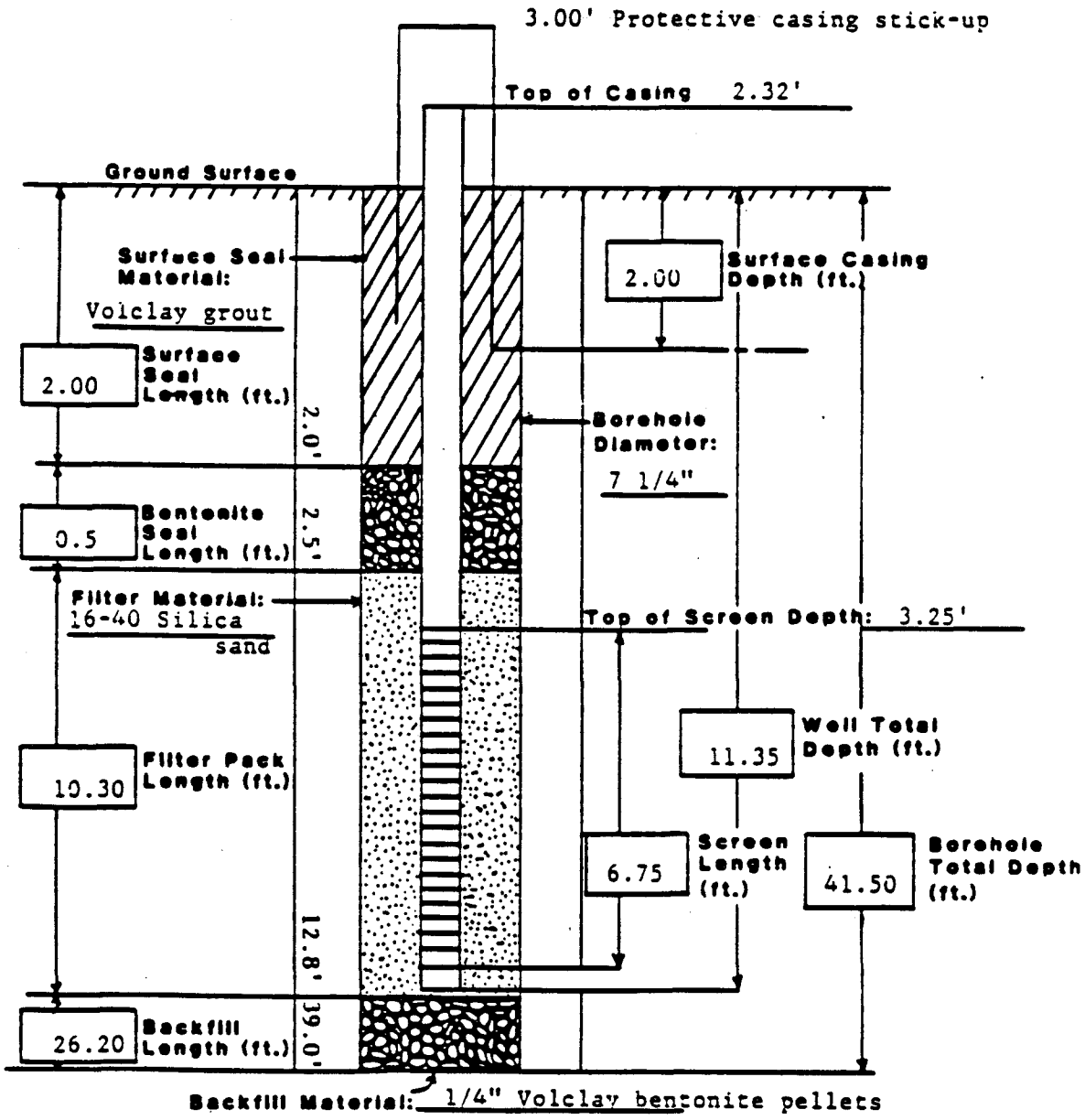
Date Installed 05/04/1989

Approved By Janell Burman
Site Manager

Installed By R.T. Treat
Geologist

CEARP Manager

Comments Ser stainless steel centralizer from 9.85' to 11.05' below ground surface.



WELL COMPLETION INFORMATION

QA By/Date Janell Burman / 5-10-89

Location Rocky Flats Plant; Landfill Area

Well No. B206589

Coordinates N 39475.67 E 21023.37 (RFP)

Elevation: Ground Surface 5967.80'

Total Depth: Well 36.24'

Top of Casing 5969.72'

Borehole 41.50'

Formation of Completion Weathered Sandstone

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.

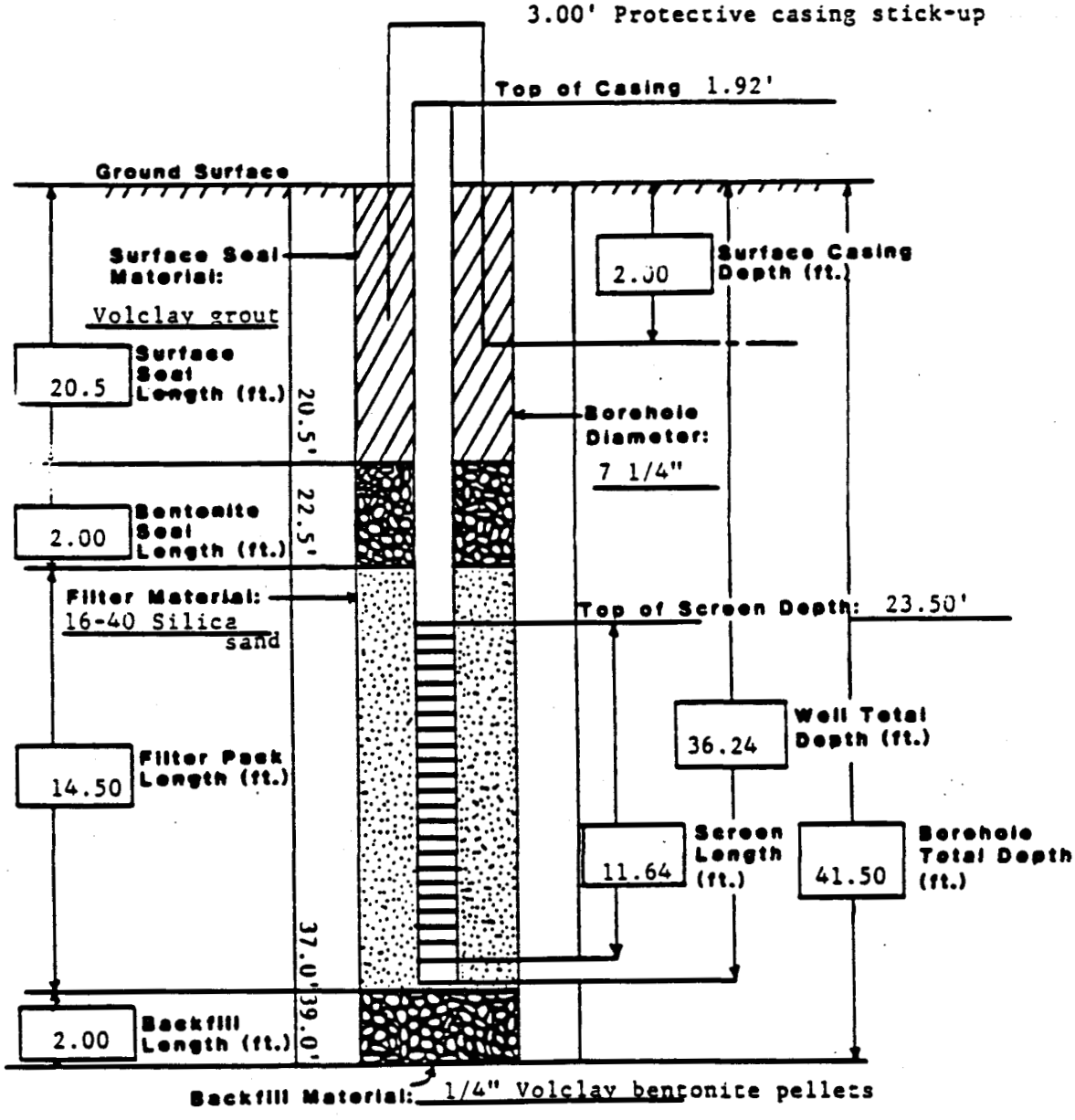
Date Installed 05/05/1989

Approved By Janell Burman
Site Manager

Installed By R.T. Treat
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 34.62' to 35.82' below ground surface.



WELL COMPLETION INFORMATION

QA By/Date Janell Burman 15-2-89

Location Rocky Flats Plant; Landfill Area **Well No.** B206689

Coordinates N 39605.08 E 21263.69 (RFP) **Elevation: Ground Surface** 5959.31'

Total Depth: Well 19.41' **Top of Casing** 5961.20'

Borehole 21.7'

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.

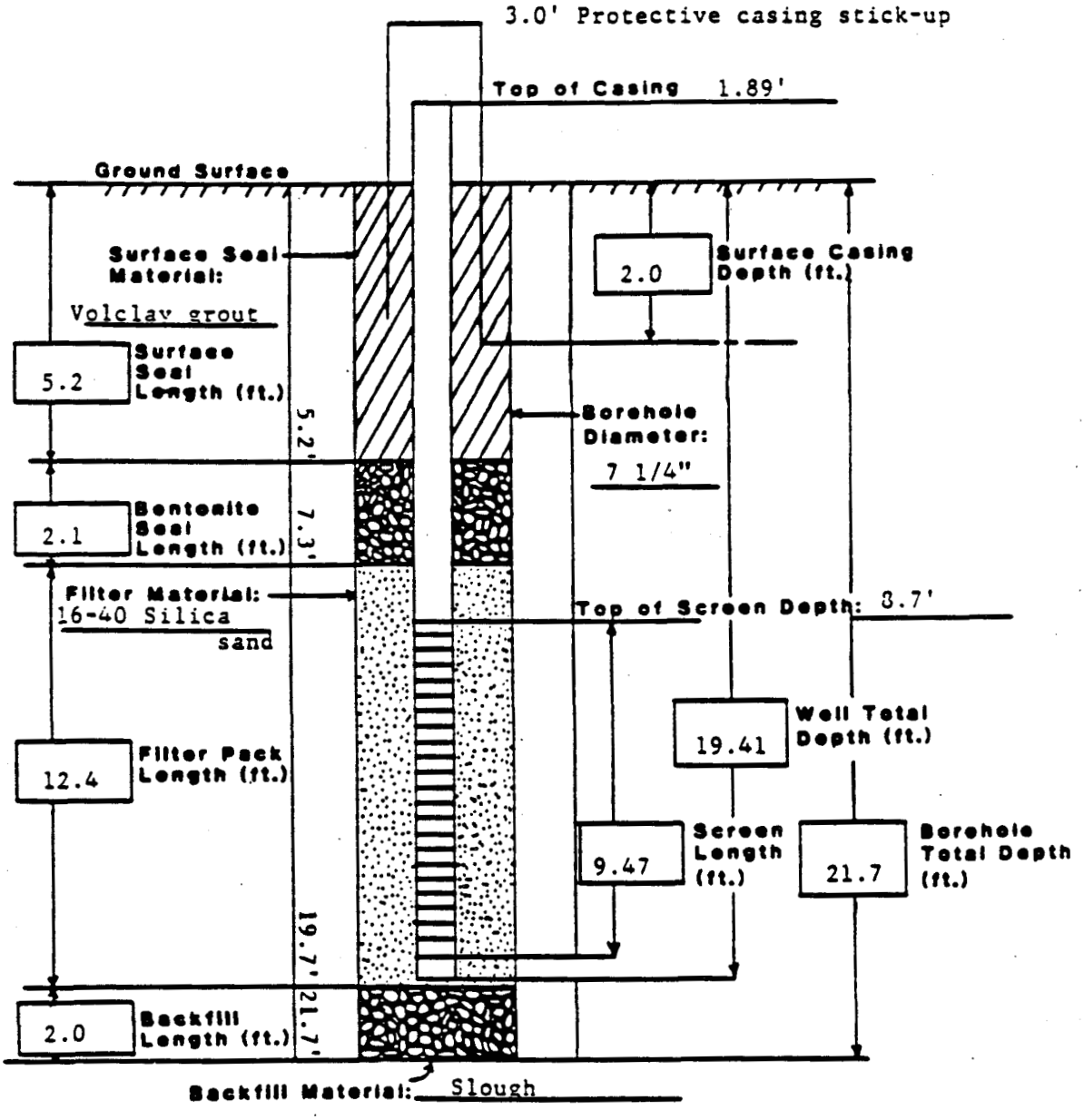
Date Installed 04/28/1989 **Approved By** Janell Burman

Installed By E.M. Hill
Geologist

Site Manager

CEARP Manager

Comments Placed stainless steel centralizer from 18.09' to 19.29' below ground surface.



WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 15-24-89

Location Rocky Flats Plant: Landfill Area

Well No. B206789

Coordinates N 39836.16 E 21064.34 (RFP)

Elevation: Ground Surface 5927.9'

Total Depth: Well 20.52'

Top of Casing 5930.19'

Borehole 30.0'

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.

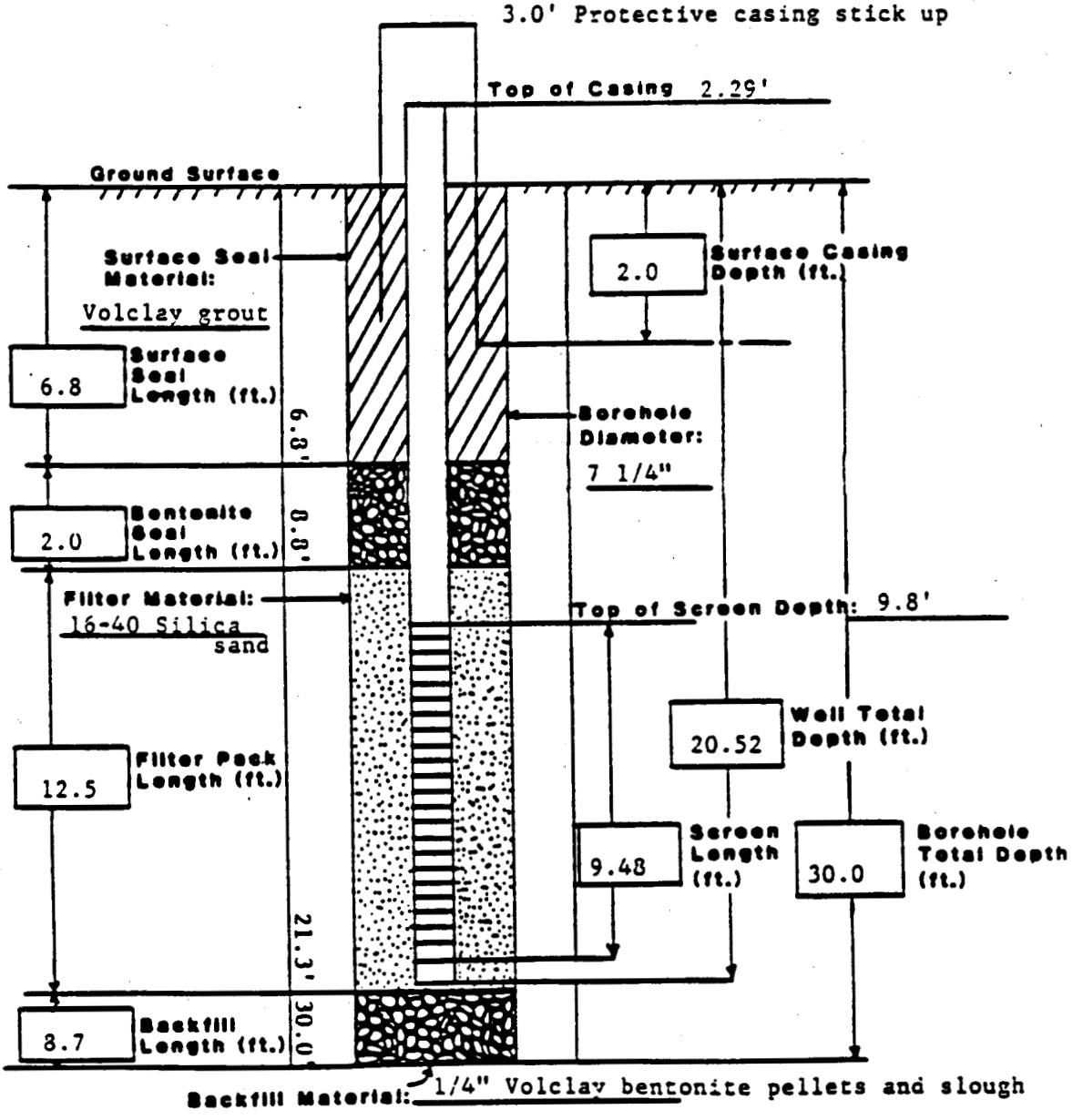
Date Installed 05/23/1989

Approved By Jarell Burman
Site Manager

Installed By S.P. Carpenter
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 19.01' to 20.24' below ground surface.



Backfill Material: 1/4" Volclay bentonite pellets and slough

WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 15-8-89

Location Rocky Flats Plant; Landfill Area

Well No. B206889

Coordinates N 39838.69 E 21684.46 (RFP)

Elevation: Ground Surface 5917.09'

Total Depth: Well 18.2'

Top of Casing 5919.15'

Borehole 19.5'

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.

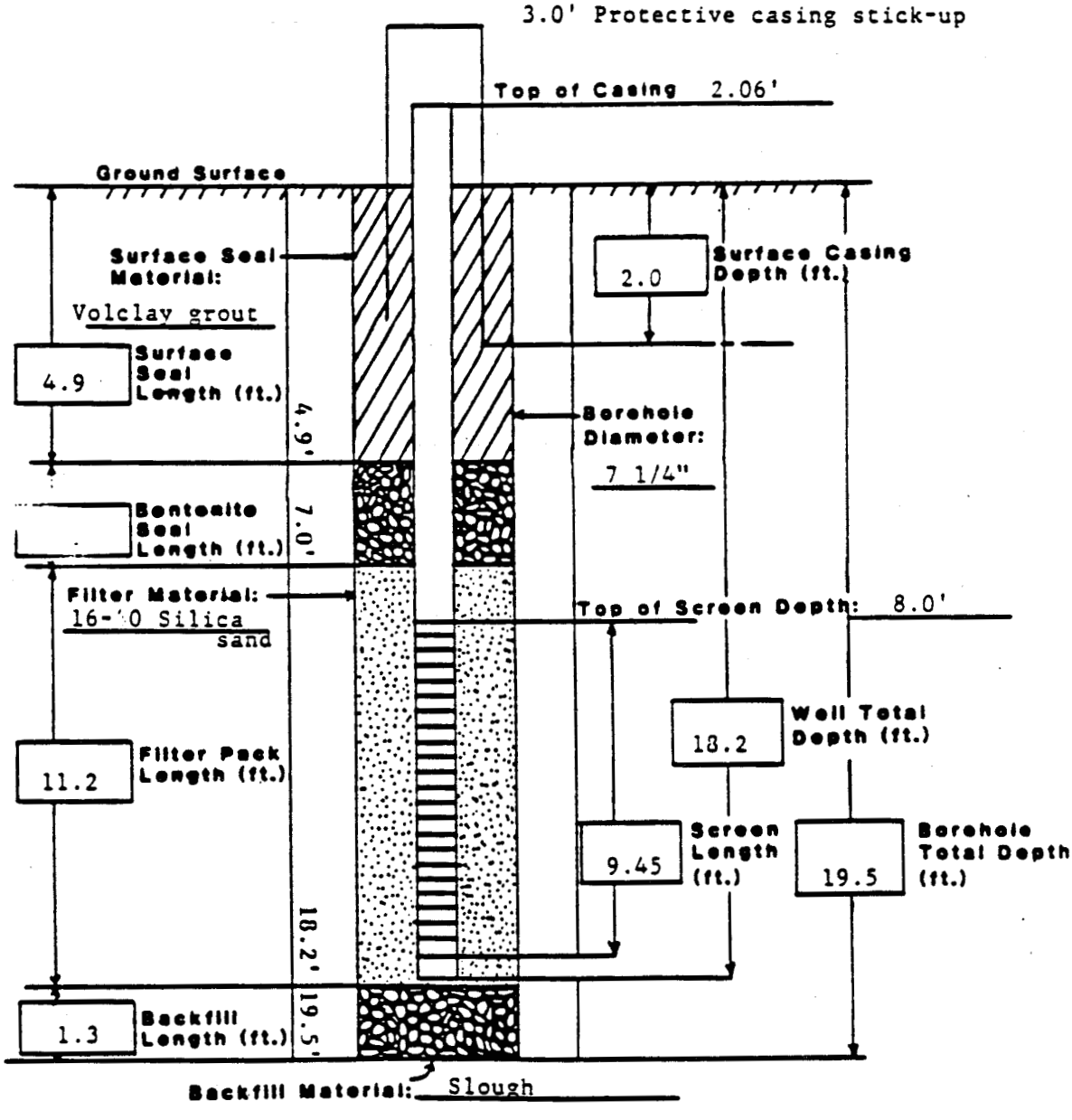
Date Installed 04/27/1989

Approved By Jarell Burman
Site Manager

Installed By E.M. Hill
Geologist

CEARP Manager

Comments Placed stainless steel centralizer from 16.75' to 18.0' below ground surface.



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.

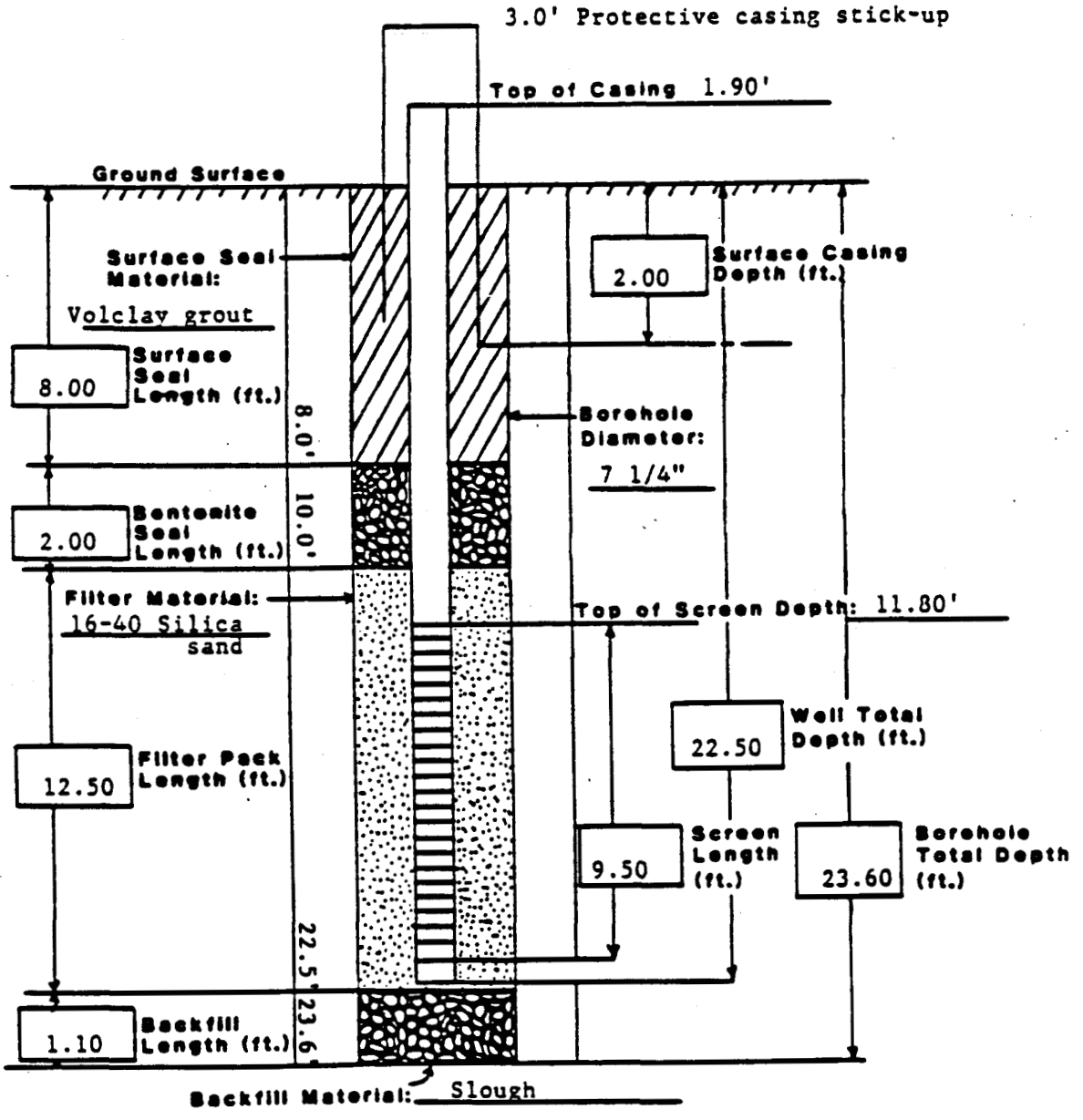
Date Installed 04/20/1989

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



WELL COMPLETION INFORMATION

QA By/Date Jarell Burman 11-26-89

Location Rocky Flats Plant: Land Fill Area

Well No. B207089

Coordinates N 40113.58 E 21741.54 (RFP)

Elevation: Ground Surface 5883.07'

Total Depth: Well 54.0'

Top of Casing 5884.95'

Borehole 60.0'

Formation of Completion Unweathered Sandstone

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.

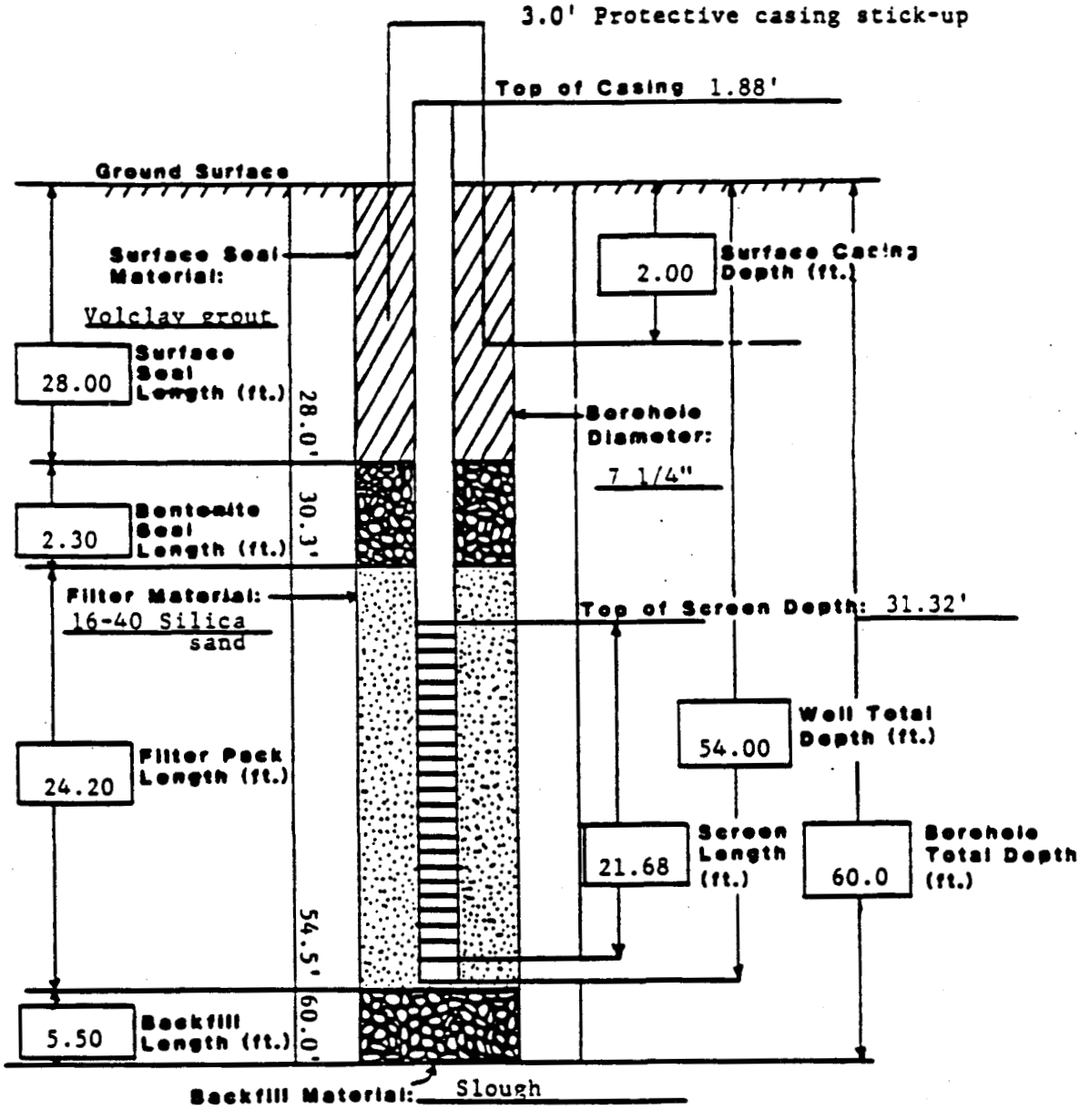
Date Installed 04/25/1989

Approved By Jarell Burman
Site Manager

Installed By R.T. Treat
Geologist

CEARP Manager

Comments Set stainless steel centralizer from 52.6' to 53.8' below ground surface



WELL COMPLETION INFORMATION

QA By/Date Farrell Gorman 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~~ claystone

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 & 06/20/1989

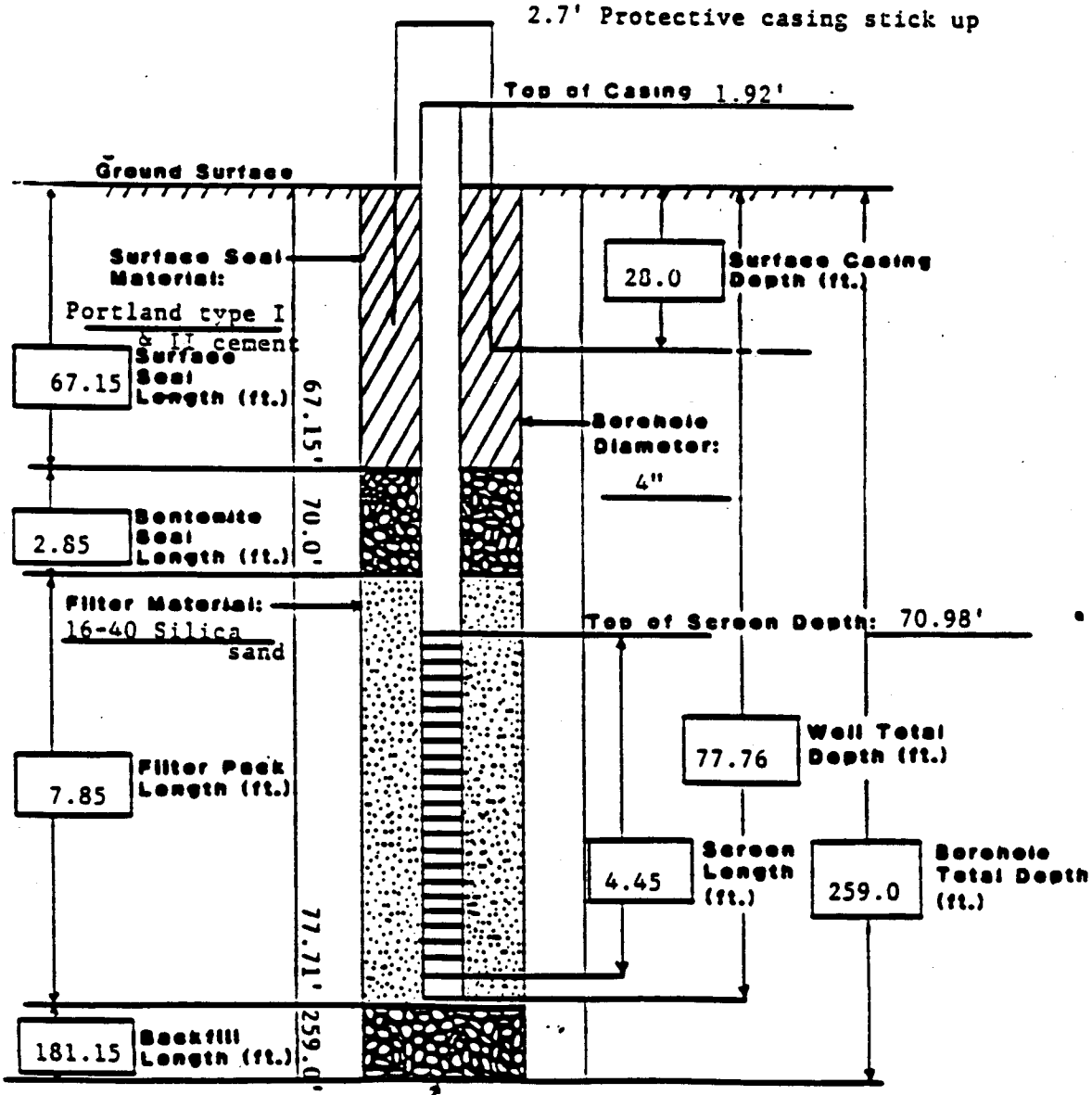
Approved By Farrell Gorman

Installed By H.G. Bienkowski
Geologist

Site Manager

CEARP Manager

Comments No centralizer used. Well was constructed inside drill rods.



Backfill Material: Portland type I & II cement to 86.5';
1/4" Volclay bentonite pellets 86.5' to 77.85'
16-40 Silica sand from 77.85' to well lid

WELL COMPLETION INFORMATION

QA By/Date Farell Bryman 14-28-89

Location Rocky Flats Plant; Landfill Area

Well No. B207289

Coordinates N 40284.53 E 21264.93 (RFP)

Elevation: Ground Surface 5948.27'

Total Depth: Well 15.89'

Top of Casing 5950.49'

Borehole 19.5'

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.

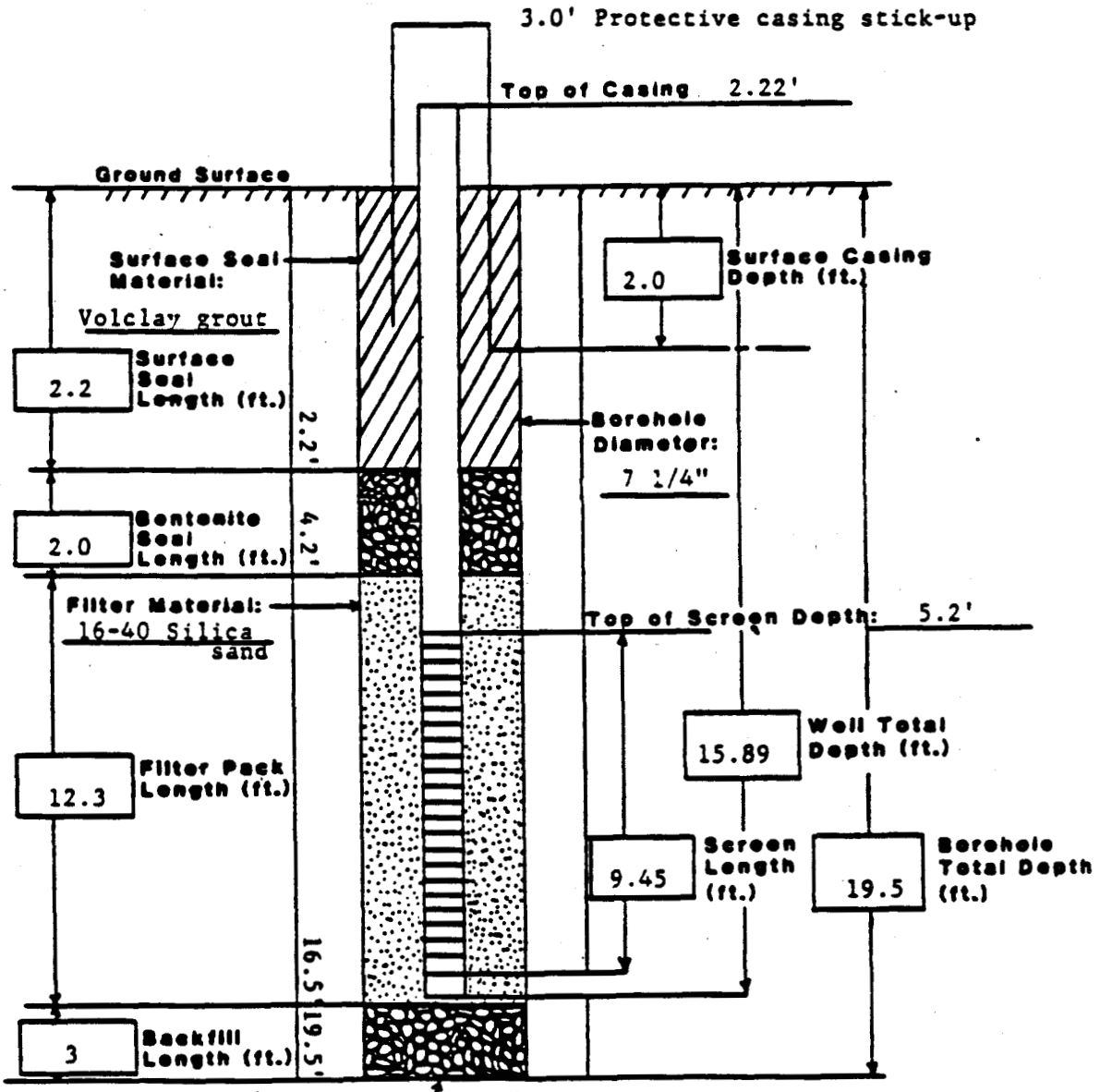
Date Installed 04/28/1989

Approved By Farell Bryman
Site Manager

Installed By E.M. Hill
Geologist

CEARP Manager

Comments Placed stainless steel centralizer from 14.36' to 15.56' below ground surface

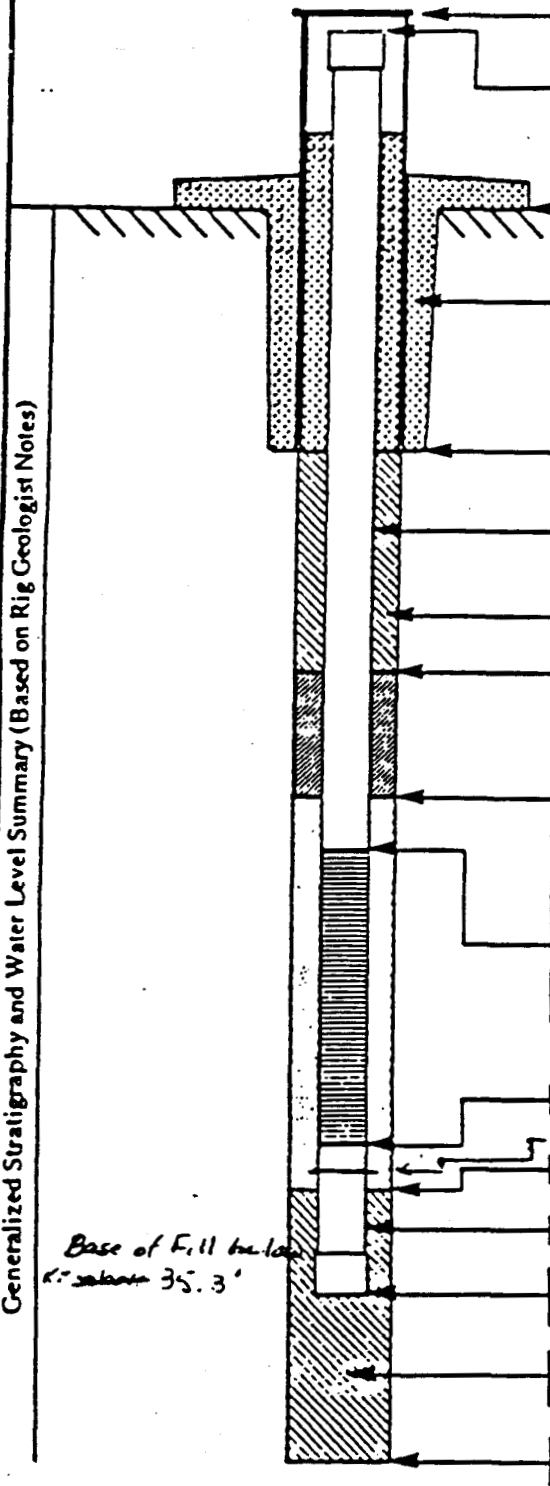


Groundwater Monitoring Well and Piezometer Report

PROJECT NAME Geologic Characterization BA70774EB	WELL NO. 44292
LOCATION Present Landfill	SCREENED INTERVAL
DATE COMPLETED 6/11/92 TOTAL HOLE DEPTH (FT) 56.0' 31.9' reamed	DEPTH (FT) 12.5' to 31.2'
CHECKED BY _____ DATE _____	LITHOLOGY landfill

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 Geologist Notes)

Height of top of protective casing (Ft)	N/A
Height of top of well casing (Ft)	3.8'
Ground Elevation (Ft)	— 5980.58
I.D. of protective casing (In)	N/A
Type of protective casing: N/A	
Depth of protective casing (Ft)	N/A
Depth of surface seal (Ft)	N/A
Type of surface seal: N/A	
I.D. of well casing (In)	4"
Type of well casing: Schedule 40 PVC	
Type of backfill: American Colloid Pure Gold Bentonite Grout	
Depth of top of seal (Ft)	8.2
Type of seal: Bentonite	
Depth of top of filter pack / bottom of seal (Ft)	10.0'
Type of filter pack: 3/8" pea gravel	
Depth of top of screened section (Ft)	12.5'
Type of screened section: 80 slot	
I.D. of screened section (In)	~~.0080~~ 4"
Size of screen openings (In)	.0080"
Depth of bottom of screened section (Ft)	31.2'
Depth of base of casing	31.8'
Depth of bottom of filter pack (Ft)	31.9'
~~Length of plugged blank section - Sump (Ft)~~	N/A
~~Depth of bottom of plugged blank section - Sump (Ft)~~	N/A
Type of backfill below filter pack: Bentonite seal 56.0' - 34.8' in 6" diameter hole	
Diameter of hole (In)	14" where reamed
Depth of hole (Ft)	56.0' total (6" diam) 31.9' reamed (14" diam) 56.0' below 31.9'

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

Modified for Landfill methane vent wells.

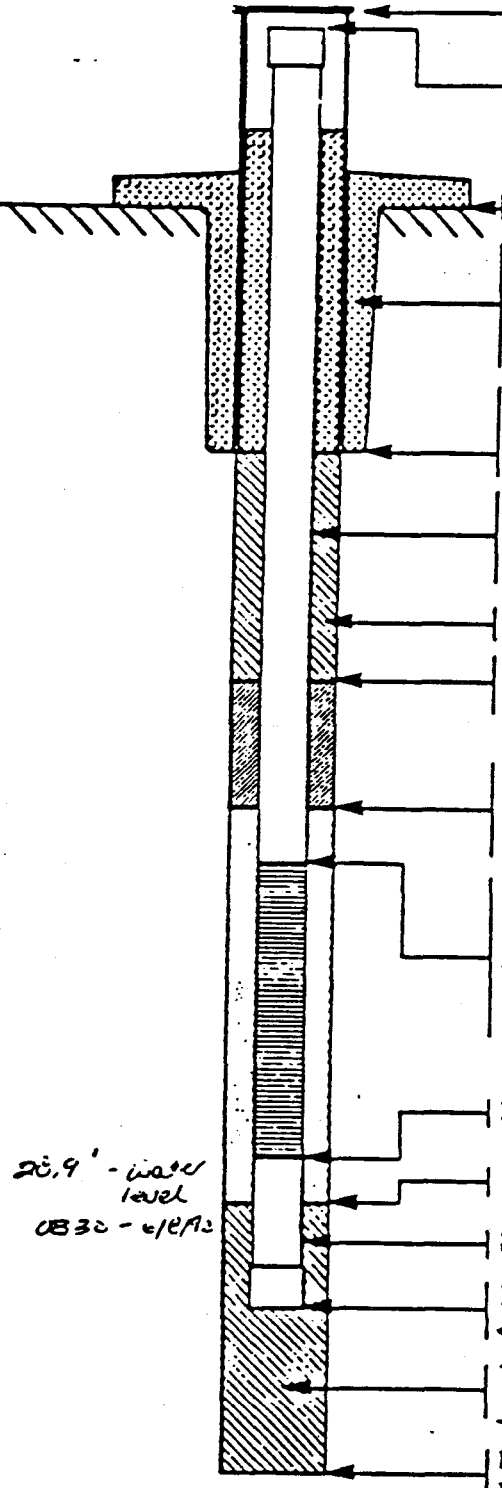
Groundwater Monitoring Well and Piezometer Report

PROJECT NAME Geologic Characterization- BA70774EB	WELL NO. 44392
LOCATION Present Landfill	SCREENED INTERVAL
DATE COMPLETED 6/8/92 TOTAL HOLE DEPTH (FT) 31.8' (reamed to base)	DEPTH (FT) 29.7' to 14.2'
CHECKED BY _____ DATE _____	LITHOLOGY landfill

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 Geologist Notes)



Height of top of protective casing (Ft)	N/A
Height of top of well casing (Ft)	3.5'
Ground Elevation (Ft)	5985.72 ~~not measured~~
I.D. of protective casing (In)	~~4"~~ N/A
Type of protective casing: N/A	
Depth of protective casing (Ft)	N/A
Depth of surface seal (Ft)	N/A
Type of surface seal: N/A	
I.D. of well casing (In)	4"
Type of well casing: Schedule 40 PVC	
Type of backfill: American Colloid Bentonite Grout	
Depth of top of seal (Ft)	11.1'
Type of seal: Bentonite	
Depth of top of filter pack / bottom of seal (Ft)	13.2'
Type of filter pack: 3/8" washed pea gravel	
Depth of top of screened section (Ft)	14.2'
Type of screened section: 80 slot	
I.D. of screened section (In)	4"
Size of screen openings (In)	.0080 inches
Depth of bottom of screened section (Ft)	29.7'
Depth of base of casing	30.4'
Depth of bottom of filter pack (Ft)	32.8'
~~Length of plugged blank section - Sump (Ft)~~	N/A
~~Depth of bottom of plugged blank section - Sump (Ft)~~	N/A
Type of backfill below filter pack: 1.0' Bentonite 30.8' - 31.8'	
Diameter of hole (In)	14"
Depth of hole (Ft)	reamed to 31.8'

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

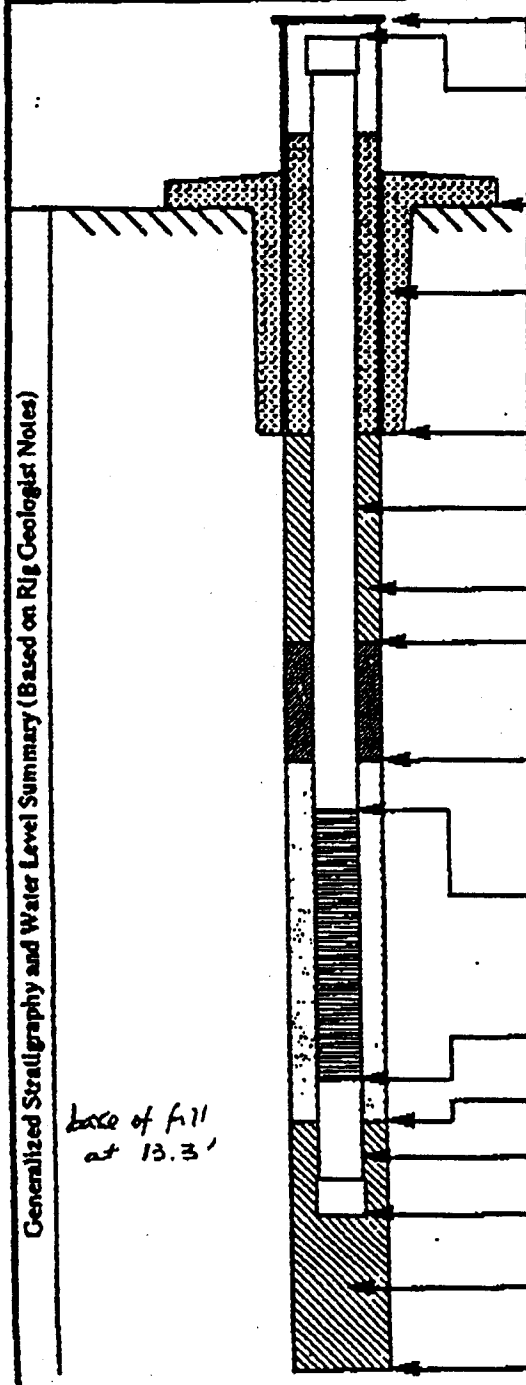
Modified for Landfill Gas-Vent wells

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME Geologic Characterization BA707746B	WELL NO. 44492
LOCATION Present Landfill	SCREENED INTERVAL
DATE COMPLETED 6/12/92 TOTAL HOLE DEPTH (FT) 27.0' (6" diameter) 14.2' (14" diameter)	DEPTH (FT) 11.6' to 7.6'
CHECKED BY _____ DATE _____	LITHOLOGY landfill

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): N/A

Height of top of well casing (Ft): 3.1'

Ground Elevation (Ft): ND

I.D. of protective casing (In): N/A
Type of protective casing: N/A

Depth of protective casing (Ft): N/A

Depth of surface seal (Ft): N/A
Type of surface seal: N/A

I.D. of well casing (In): 4"
Type of well casing: Schedule 40 PVC

Type of backfill: Pure Gold Bentonite Grout

Depth of top of seal (Ft): 5.5'
Type of seal: Bentonite

Depth of top of filter pack / bottom of seal (Ft): 6.7'
Type of filter pack: 3/8" pea gravel

Depth of top of screened section (Ft): 7.6'
Type of screened section: PD Slot Schedule 40 PVC

I.D. of screened section (In): 4"
Size of screen openings (In): .0020

Depth of bottom of screened section (Ft): 11.6'
Depth of base of casing (Ft) 12.3

Depth of bottom of filter pack (Ft): 13.0'

~~Length of plugged blank section - Sump (Ft)~~: N/A

~~Depth of bottom of plugged blank section - Sump (Ft)~~: N/A

Type of backfill below filter pack: backfill below Bentonite seal 14.2' to 13.0'

Diameter of hole (In): 14"
Depth of hole (Ft) I.D. = 27.0' reamed to → 14.2'

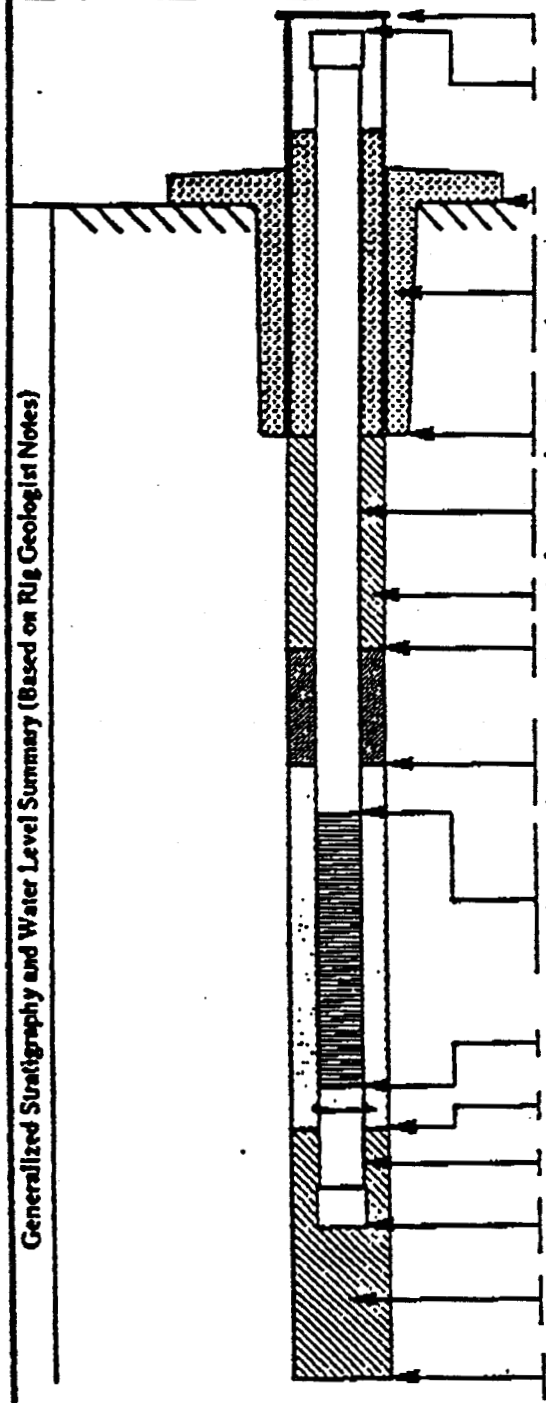
Modified for Landfill [illegible]

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME Geologic Characterization - BA70774EB	WELL NO. 44592
LOCATION Present Landfill	SCREENED INTERVAL
DATE COMPLETED 6/5/92 TOTAL HOLE DEPTH (FT) 27.8'	DEPTH (FT) 22.3' to 6.9'
CHECKED BY _____ DATE _____	LITHOLOGY landfill

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 Geologist Notes)

Height of top of protective casing (Ft)	
Height of top of well casing (Ft)	
Ground Elevation (Ft)	5985.86
I.D. of protective casing (In)	N/A
Type of protective casing: N/A	
Depth of protective casing (Ft)	N/A
Depth of surface seal (Ft)	N/A
Type of surface seal: N/A	
I.D. of well casing (In)	4"
Type of well casing: Sch. 40 PVC	
Type of backfill: American Colloid Pure Gold Bentonite Grout	
Depth of top of seal (Ft)	3.5'
Type of seal: Bentonite	
Depth of top of filter pack / bottom of seal (Ft)	5.2'
Type of filter pack: 3/8" pea gravel	
Depth of top of screened section (Ft)	6.9'
Type of screened section: 80 slot	
I.D. of screened section (In)	4"
Size of screen openings (In)	.0080"
Depth of bottom of screened section (Ft)	22.3'
Depth of base of casing	22.9'
Depth of bottom of filter pack (Ft)	25.1'
~~Length of plugged blank section - Sump (Ft)~~	N/A
~~Depth of bottom of plugged blank section - Sump (Ft)~~	N/A
Type of backfill below filter pack: 0.8' 3/8" pea gravel below 1.9' bentonite seal	
Diameter of hole (In)	14"
Depth of hole (Ft)	27.8'

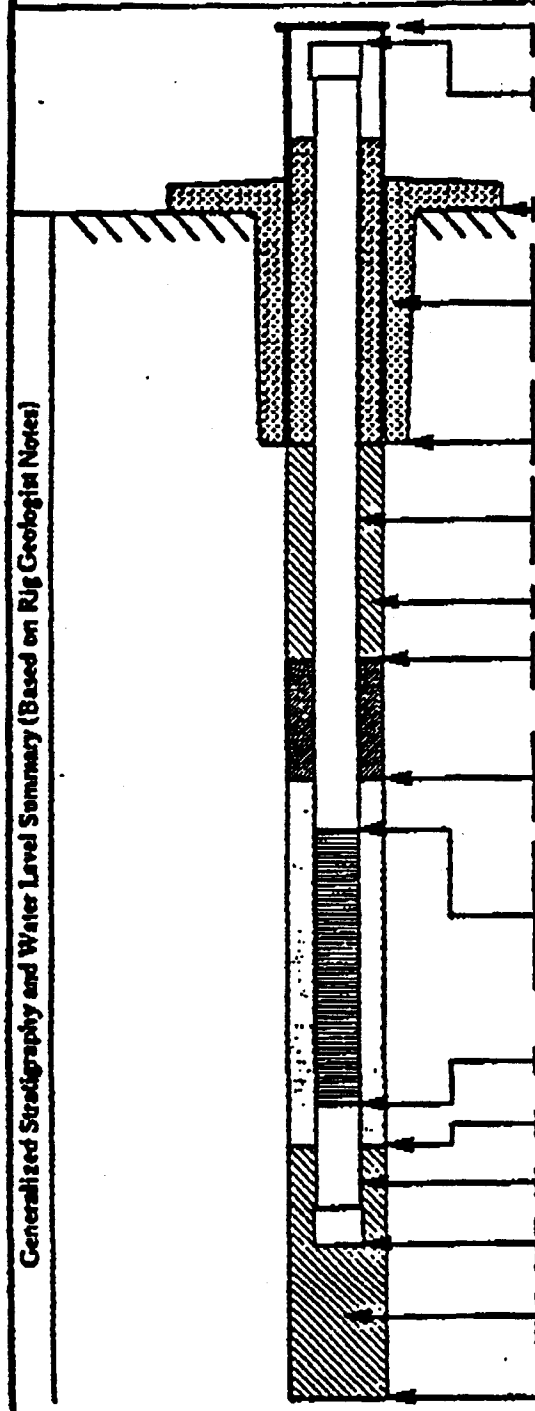
Modified for Present Landfill [illegible]

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME Geologic Characterization BA70774EB	WELL NO. 44692
LOCATION Present Landfill	SCREENED INTERVAL
DATE COMPLETED 6/15/92 TOTAL HOLE DEPTH (FT) 20.3' w/6" augers 14.7' manual w/ 14" augers	DEPTH (FT) 12.2' to 8.0'
CHECKED BY _____ DATE _____	LITHOLOGY landfill

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 Geologist Notes)

Height of top of protective casing (Ft)	N/A
Height of top of well casing (Ft)	+3.1'
Ground Elevation (Ft)	5984.47
I.D. of protective casing (In)	N/A
Type of protective casing: N/A	
Depth of protective casing (Ft)	N/A
Depth of surface seal (Ft)	N/A
Type of surface seal: N/A	
I.D. of well casing (In)	4"
Type of well casing: Schedule 40 PVC	
Type of backfill: Pure Grout Bentonite Grout	
Depth of top of seal (Ft)	4.6'
Type of seal: Bentonite	
Depth of top of filter pack / bottom of seal (Ft)	6.6'
Type of filter pack: 3/8" washed pea gravel	
Depth of top of screened section (Ft)	8.0'
Type of screened section: Schedule 40 PVC	
I.D. of screened section (In)	4"
Size of screen openings (In)	.0020"
Depth of bottom of screened section (Ft)	12.2'
Depth at base of casing (Ft) 12.5'	
Depth of bottom of filter pack (Ft)	12.7'
~~Length of plugged blank section~~ - Sump (Ft)	N/A
~~Depth of bottom of plugged blank section - Sump (Ft)~~	N/A
Type of backfill below filter pack: Bentonite 20.3' - 13.0'	
Diameter of hole (In)	14"
Depth of hole (Ft) 20.3' T.D. w/6" augers	12.7'

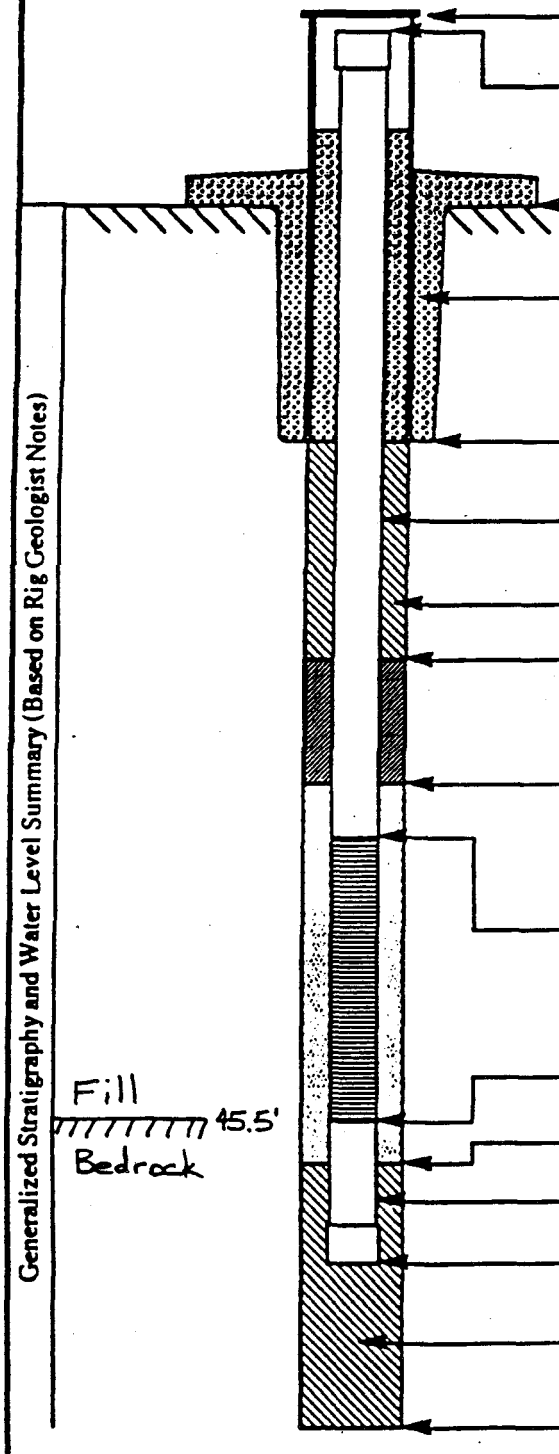
U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME ~~Dams~~ LVS A-3, B-1, B-3, LF DAMS	~~WELL~~ PIEZOMETER NO. TH047292
LOCATION LANDFILL DAM	SCREENED INTERVAL
DATE COMPLETED 9/29/92 TOTAL HOLE DEPTH (FT) 51.2	DEPTH (FT) 45.5 to 10.5
CHECKED BY Michael May FOF DATE 11-10-92	LITHOLOGY FILL

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

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



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

Height of top of protective casing (Ft)	-2.75 (10/6/9
Height of top of well casing (Ft)	-2.5'
Ground Elevation (Ft)	
I.D. of protective casing (In)	6"
Type of protective casing: STEEL	
Depth of protective casing (Ft)	~~2.5~~ LVS 2.25
Depth of surface seal (Ft)	3.0'
Type of surface seal: CONCRETE	
I.D. of well casing (In)	2"
Type of well casing: SCH.40 PVC	
Type of backfill: ~~BENTONITE PELLETS~~ BENTONITE GROUT LVS	
Depth of top of seal (Ft)	5.5'
Type of seal: BENTONITE PELLETS	
Depth of top of filter pack / bottom of seal (Ft)	8.5'
Type of filter pack: 16-40 SILICA SAND	
Depth of top of screened section (Ft)	10.5'
Type of screened section: 0.010" SLOT SCH. 40 PVC	
I.D. of screened section (In)	2"
Size of screen openings (In)	0.010"
Depth of bottom of screened section (Ft)	45.5
Depth of bottom of filter pack (Ft)	47.5
Length of plugged blank section - Sump (Ft)	2.0'
Depth of bottom of plugged blank section - Sump (Ft)	47.5'
Type of backfill below filter pack: BENTONITE PELLETS	
Diameter of hole (In)	8½"
Depth of hole (Ft)	51.2'

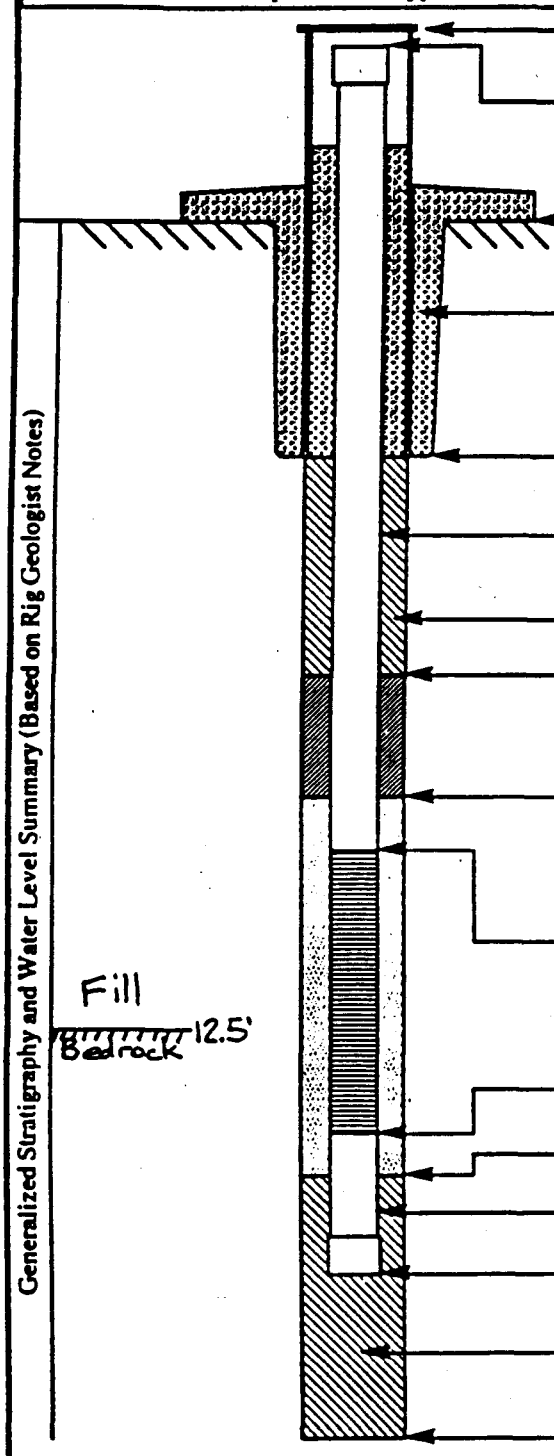
U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT — FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME A-3, B-1, B-3 LF Dam	WELL NO. TH047492
LOCATION TH047492 Landfill Dam	SCREENED INTERVAL
DATE COMPLETED 10-21-92 TOTAL HOLE DEPTH (FT) 19.3	DEPTH (FT) 15.0 to 5.0
CHECKED BY Michael May DATE 11-10-92	LITHOLOGY Fill + 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)	-3.3
Height of top of well casing (Ft)	-2.5
Ground Elevation (Ft)	
I.D. of protective casing (In)	6
Type of protective casing: STEEL	
Depth of protective casing (Ft)	1.7
Depth of surface seal (Ft)	2.5
Type of surface seal: CONCRETE	
I.D. of well casing (In)	2
Type of well casing: Sch 40 PVC	
Type of backfill: Bentonite Grout	
Depth of top of seal (Ft)	2.5
Type of seal: BENTONITE PELLETS	
Depth of top of filter pack / bottom of seal (Ft)	4.5
Type of filter pack: 16-40 SILICA SAND	
Depth of top of screened section (Ft)	5.0
Type of screened section: Sch. 40 PVC	
I.D. of screened section (In)	~~0.010~~ 2
Size of screen openings (In)	0.010
Depth of bottom of screened section (Ft)	15.0
Depth of bottom of filter pack (Ft)	17.2
Length of plugged blank section - Sump (Ft)	2.0
Depth of bottom of plugged blank section - Sump (Ft)	17.2
Type of backfill below filter pack: Bentonite Pellets	
Diameter of hole (In)	8½
Depth of hole (Ft)	19.3

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 1/12/93 TOTAL HOLE DEPTH (FEET) 24.4

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70093

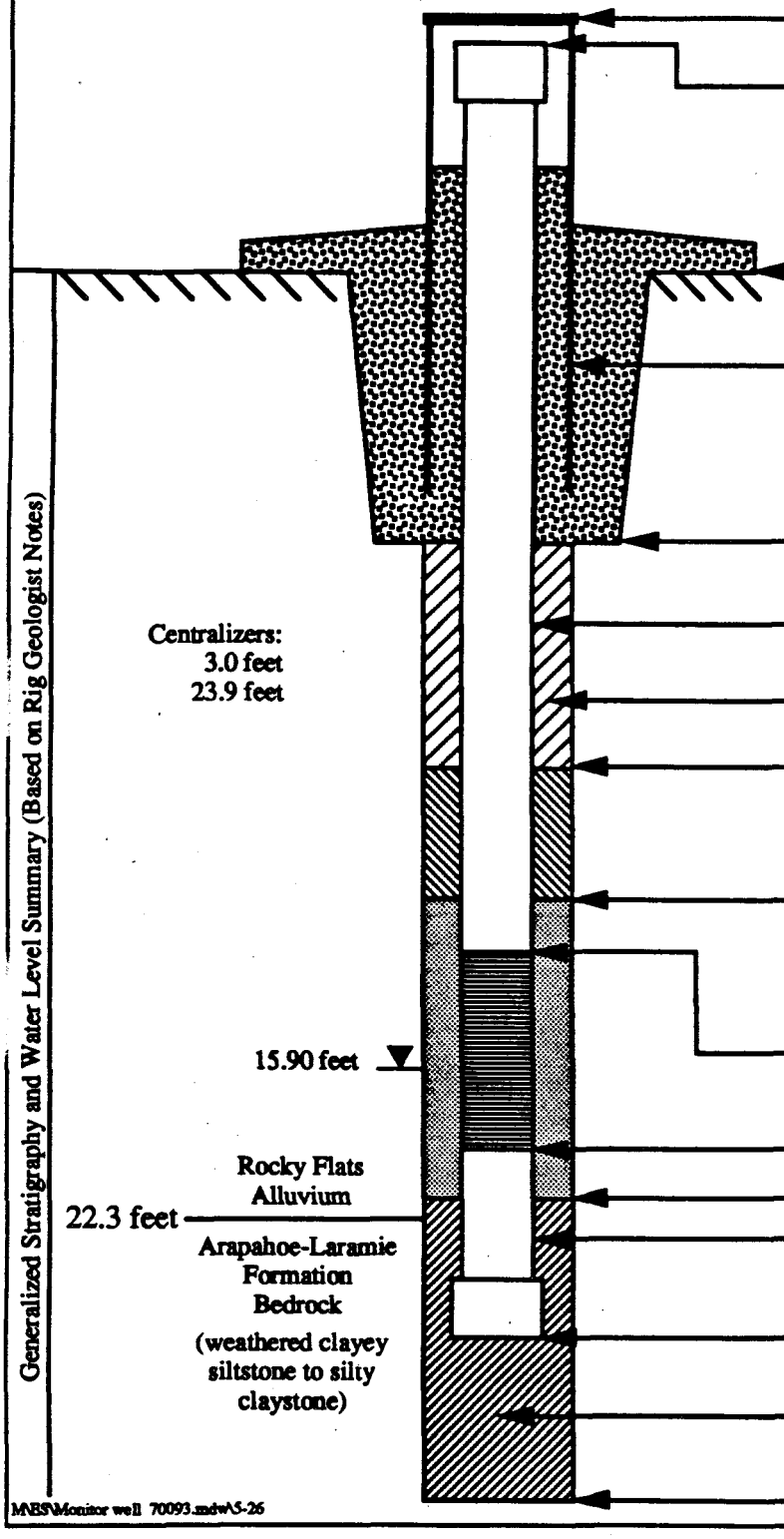
SCREENED INTERVAL

DEPTH (FEET) 7.0 to 22.0

LITHOLOGY Alluvium

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

Surface Casing Used (Check One): ___Yes ___√ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet)	2.4
Height of top of well casing (feet)	2.0
Ground Elevation (feet)	5990.9
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.6
Depth of surface seal (feet)	2.0
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	2.9
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	5.0
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	7.0
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	22.0
Depth of bottom of filter pack (feet)	22.1
Length of plugged blank section - Sump (feet)	2.0
Depth of bottom of plugged blank section - Sump (feet)	24.0
Type of backfill below filter pack: Native Materials	
Diameter of hole (inches)	7
Depth of hole (feet)	24.4

MRS\Monitor well 70093.mdw\5-26

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 1/15/93 TOTAL HOLE DEPTH (FEET) 39.4

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70193

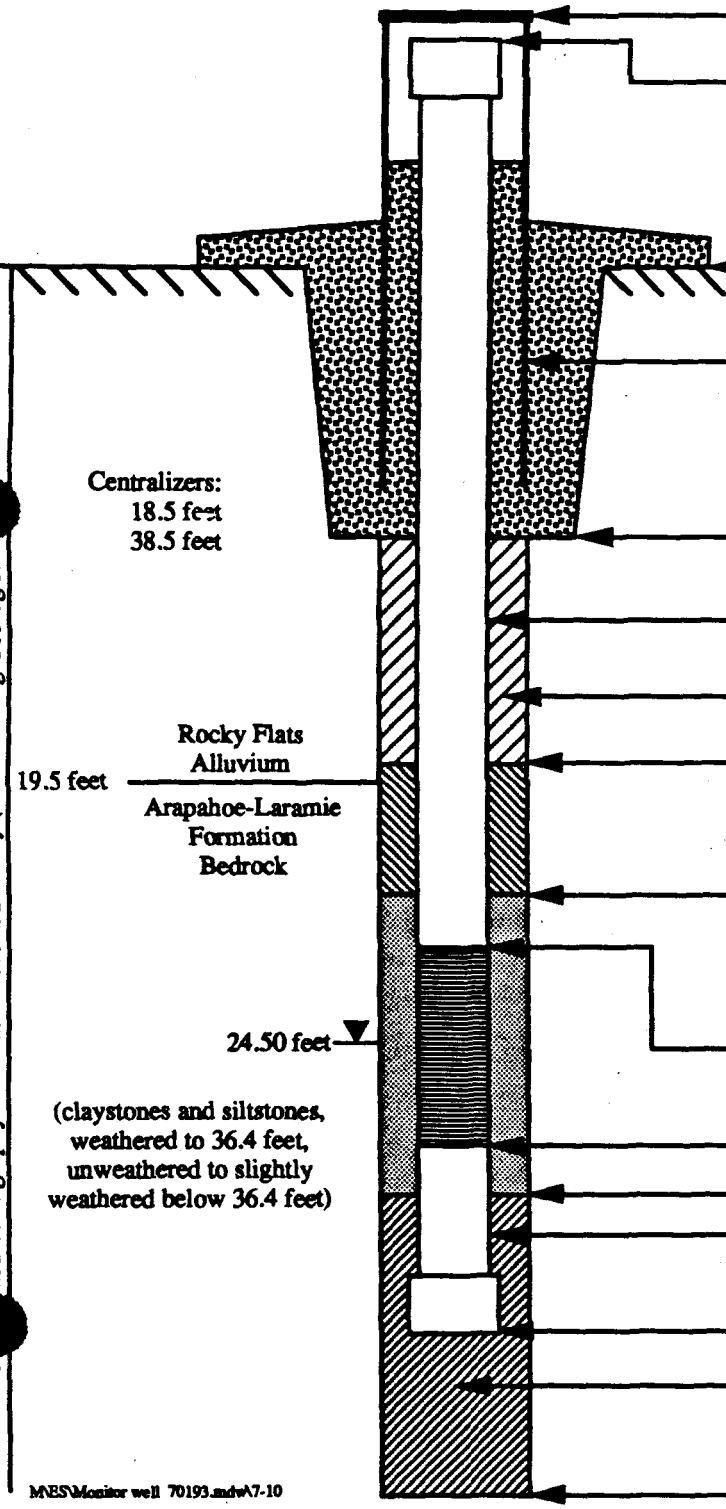
SCREENED INTERVAL

DEPTH (FEET) 22.3 to 37.3

LITHOLOGY Weathered claystones and siltstones

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

Surface Casing Used (Check One): ___Yes ___√___No (If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.3

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5990.3

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.7

Depth of surface seal (feet) 2.0

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 19.2

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 21.5

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 22.3

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 37.3

Depth of bottom of filter pack (feet) 37.6

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 39.3

Type of backfill below filter pack: Native Materials

Diameter of hole (inches) 10-1/4 from 0 to 37.5 feet; 3 from 37.5 to 39.4 feet

Depth of hole (feet) 39.4

Geologic Stratigraphy and Water Level Summary (Based on Rig Geologist N

M:\ES\Monitor well 70193.mdw\7-10

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 1/11/93 TOTAL HOLE DEPTH (FEET) 73.3

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70293

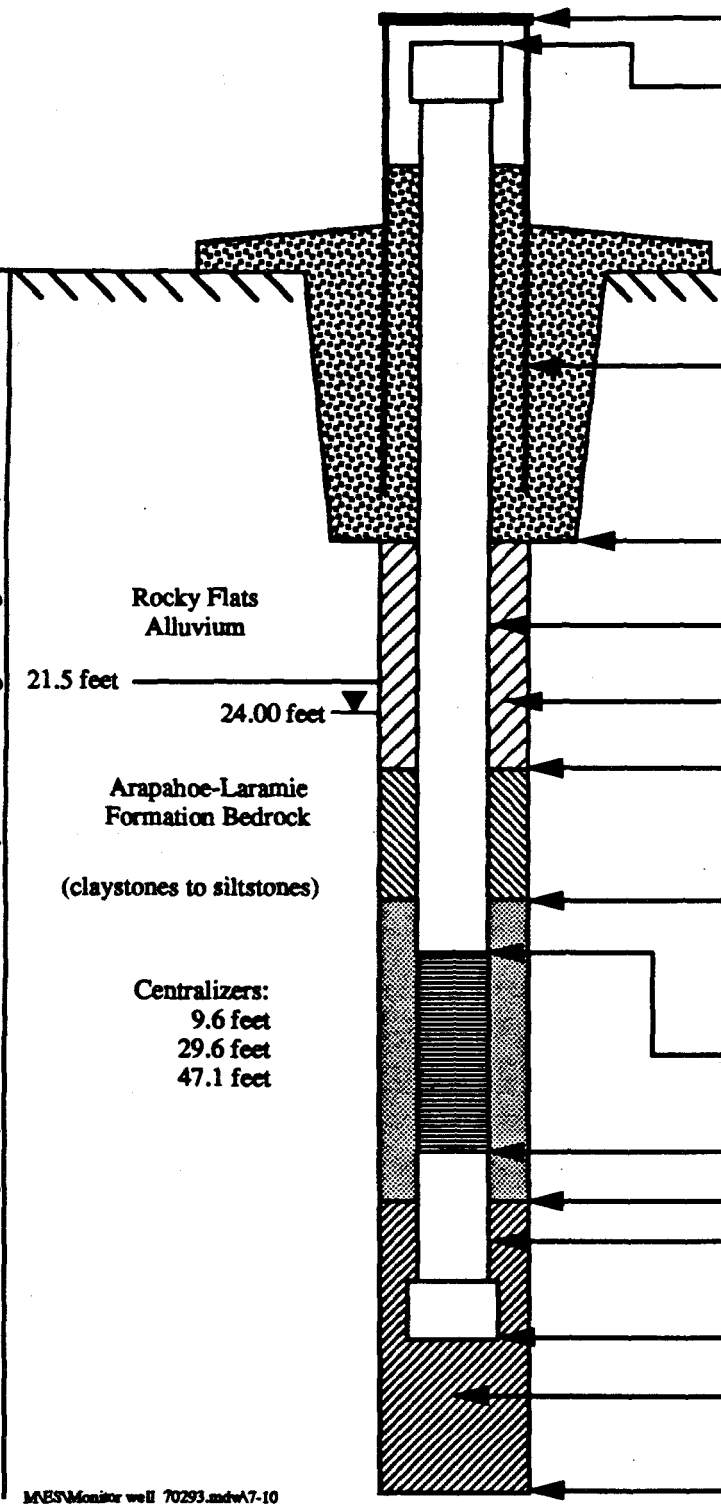
SCREENED INTERVAL

DEPTH (FEET) 52.1 to 67.1

LITHOLOGY Siltstone with sand

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

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



Height of top of protective casing (feet)	2.4
Height of top of well casing (feet)	2.0
Ground Elevation (feet)	5990.7
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.6
Depth of surface seal (feet)	2.0
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	47.9
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	50.1
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	52.1
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	67.1
Depth of bottom of filter pack (feet)	69.0
Length of plugged blank section - Sump (feet)	2.0
Depth of bottom of plugged blank section - Sump (feet)	69.1
Type of backfill below filter pack: Native materials & bentonite pellets	
Diameter of hole (inches)	6-1/2 from 0 to 69.5 feet; 3 from 69.5 to 73.3 feet
Depth of hole (feet)	73.3

M:\ES\Monitor well 70293.mdw\7-10

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

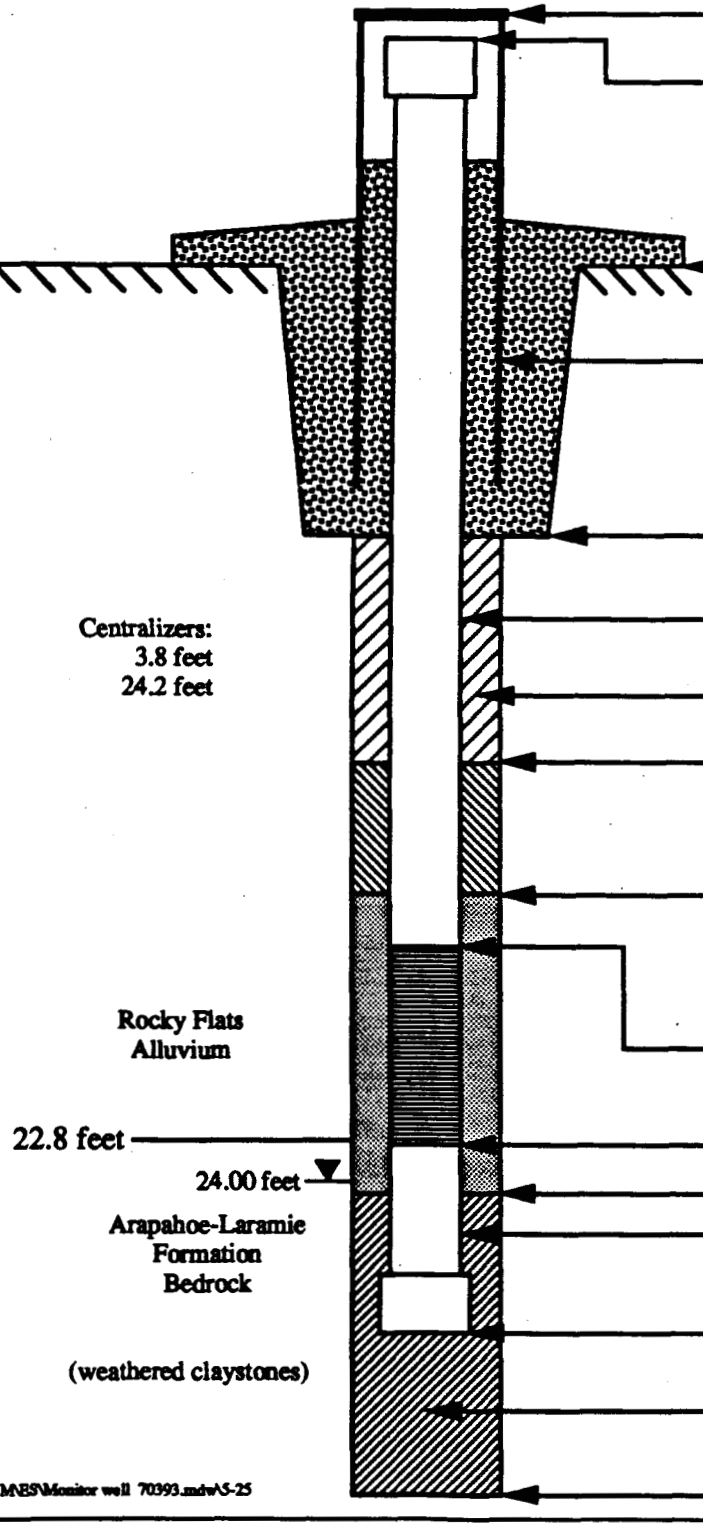
FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill	WELL NO. 70393
LOCATION OU7	SCREENED INTERVAL
DATE COMPLETED 2/2/93 TOTAL HOLE DEPTH (FEET) 26.0	DEPTH (FEET) 7.8 to 22.8
CHECKED BY M.K. Vaag DATE 2/9/93	LITHOLOGY Alluvium

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

Surface Casing Used (Check One): ___Yes ___√ No
(If yes, See Form GT.3A for specific information)



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

Height of top of protective casing (feet)	2.5
Height of top of well casing (feet)	2.2
Ground Elevation (feet)	5997.9
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.5
Depth of surface seal (feet)	2.0
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	4.2
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	6.5
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	7.8
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	22.8
Depth of bottom of filter pack (feet)	24.5
Length of plugged blank section - Sump (feet)	2.0
Depth of bottom of plugged blank section - Sump (feet)	24.8
Type of backfill below filter pack: Bentonite pellets over native materials	
Diameter of hole (inches)	7
Depth of hole (feet)	26.0

MBS\Monitor well 70393.mdwA5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 2/1/93 TOTAL HOLE DEPTH (FEET) 46.0

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70493

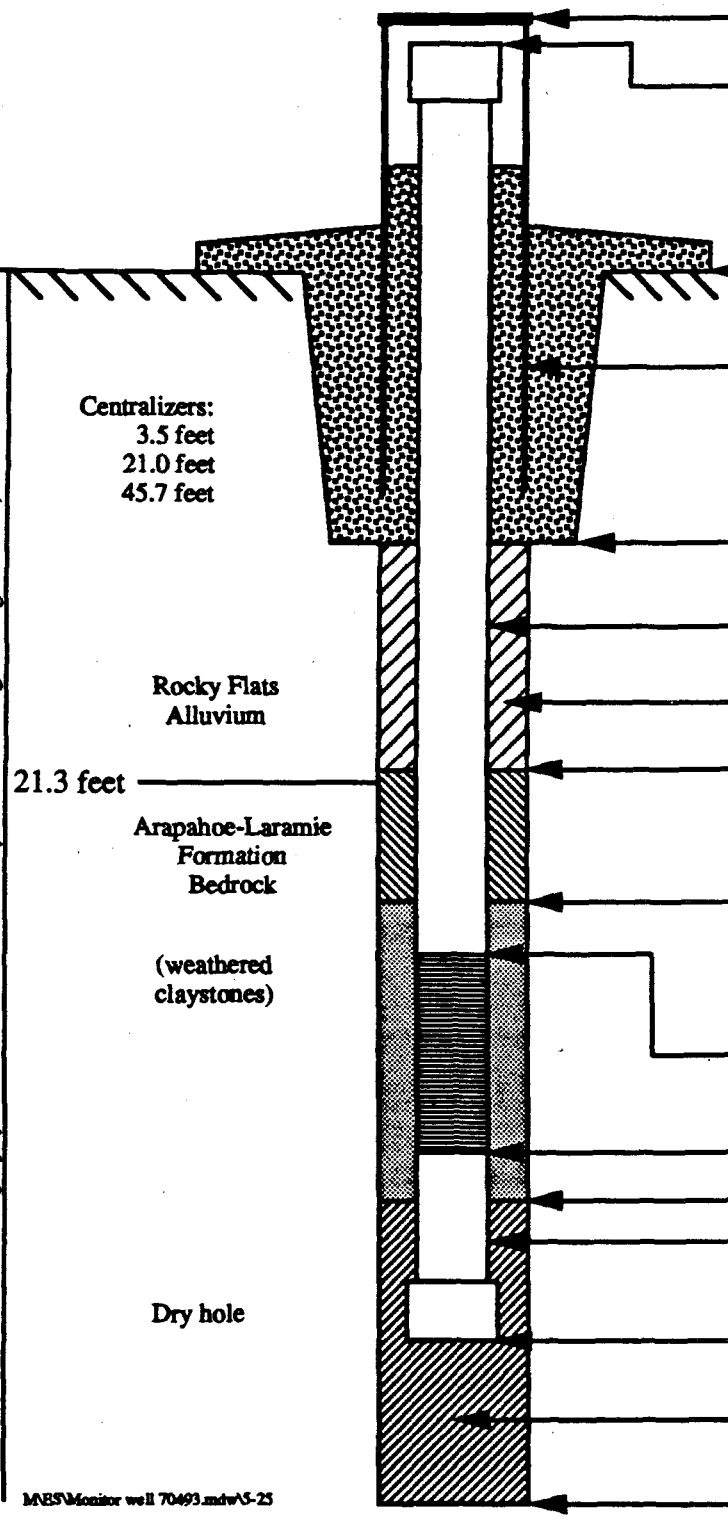
SCREENED INTERVAL

DEPTH (FEET) 24.0 to 44.0

LITHOLOGY Weathered claystones

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

Surface Casing Used (Check One): ___Yes ___√ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet)	2.3
Height of top of well casing (feet)	2.0
Ground Elevation (feet)	5998.0
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.7
Depth of surface seal (feet)	2.0
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	21.2
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	23.3
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	24.0
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	44.0
Depth of bottom of filter pack (feet)	46.0
Length of plugged blank section - Sump (feet)	2.0
Depth of bottom of plugged blank section - Sump (feet)	46.0
Type of backfill below filter pack: Not Applicable	
Diameter of hole (inches)	7
Depth of hole (feet)	46.0

MES\Monitor well 70493.mdw\5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 1/28/93 TOTAL HOLE DEPTH (FEET) 151.5

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70593

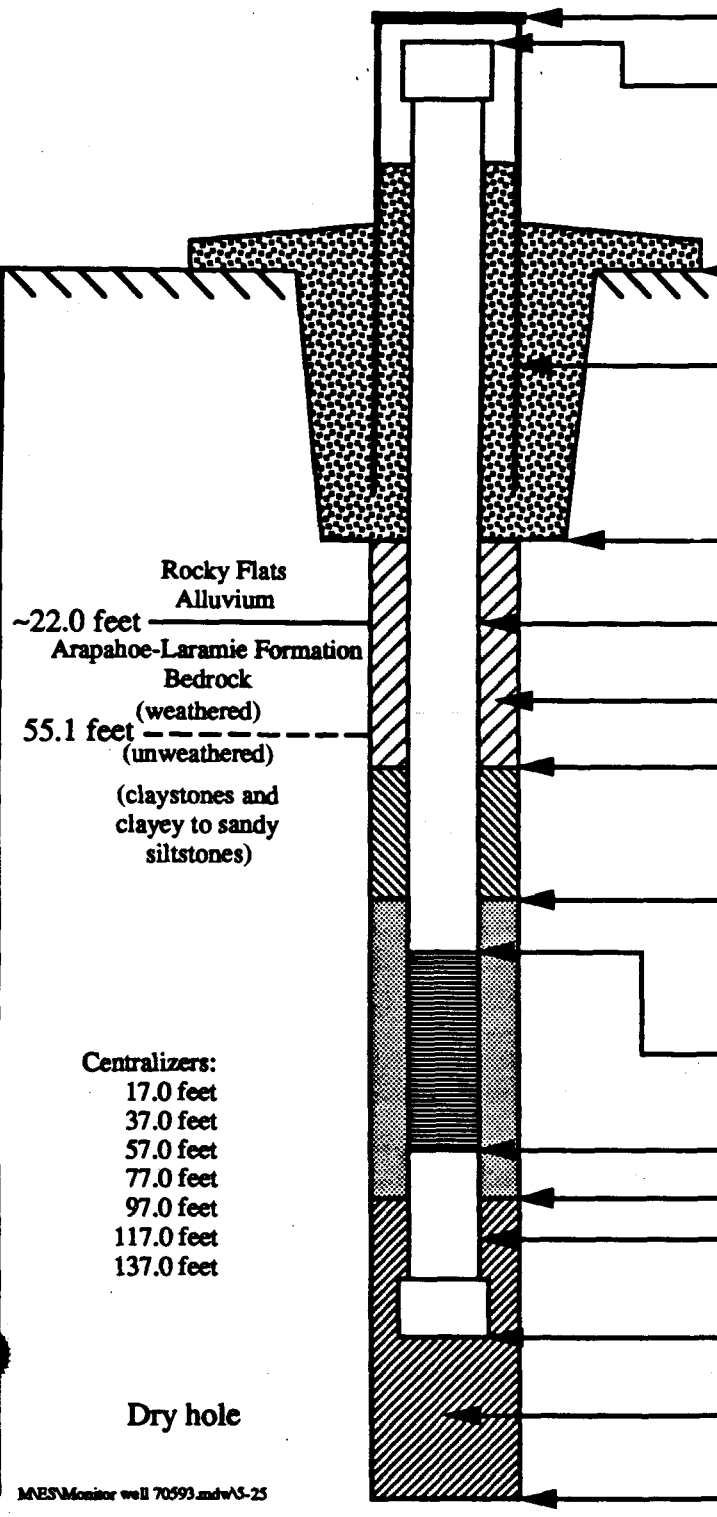
SCREENED INTERVAL

DEPTH (FEET) 121.0 to 136.0

LITHOLOGY Siltstone

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

Surface Casing Used (Check One): √ Yes ___ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.4

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5998.0

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.6

Depth of surface seal (feet) 2.0

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 118.2

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 120.4

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 121.0

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 136.0

Depth of bottom of filter pack (feet) 137.2

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 138.0

Type of backfill below filter pack: Native materials

Diameter of hole (inches) 7

Depth of hole (feet) 151.5

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

MES\Monitor well 70593.mdw\5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 12/4/92 TOTAL HOLE DEPTH (FEET) 30.5

CHECKED BY M.K. Vaag DATE 1/5/93

WELL NO. 70693

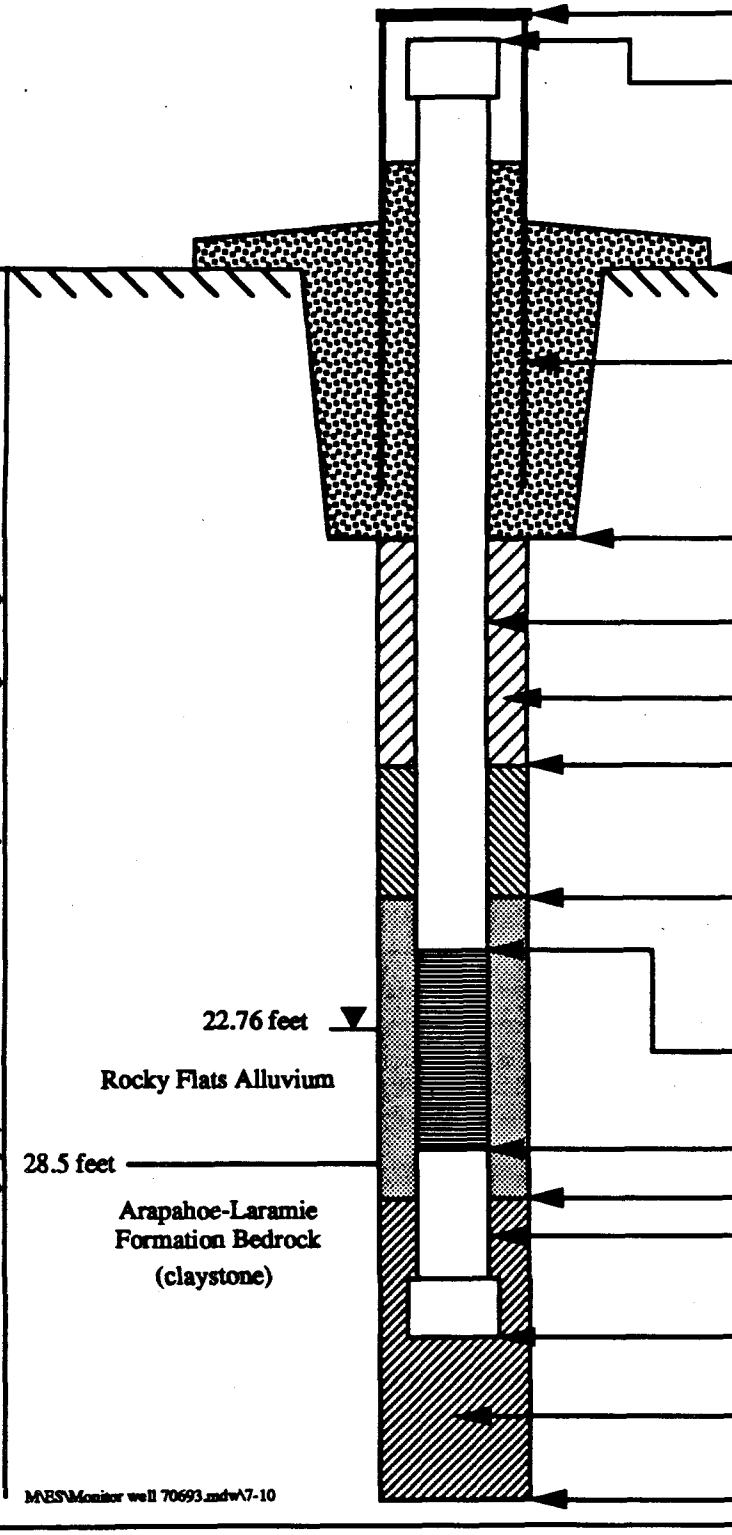
SCREENED INTERVAL

DEPTH (FEET) 8.4 to 28.4

LITHOLOGY Alluvium

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

Surface Casing Used (Check One): ____Yes √ No
(If yes, See Form GT.3A for specific information)



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

Height of top of protective casing (feet)	2.2
Height of top of well casing (feet)	1.7
Ground Elevation (feet)	5991.2
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.8
Depth of surface seal (feet)	2.0
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	4.2
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	6.5
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	8.4
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	28.4
Depth of bottom of filter pack (feet)	30.5
Length of plugged blank section - Sump (feet)	2.1
Depth of bottom of plugged blank section - Sump (feet)	30.5
Type of backfill below filter pack: Not applicable	
Diameter of hole (inches)	10-1/4 from 0 to 28.5 feet; 3 from 28.5 to 30.5 feet
Depth of hole (feet)	30.5

M:\ES\Monitor well 70693.mdw\7-10

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 1/6/93 TOTAL HOLE DEPTH (FEET) 153.5

CHECKED BY M.K. Vaag DATE 2/3/93

WELL NO. 70893

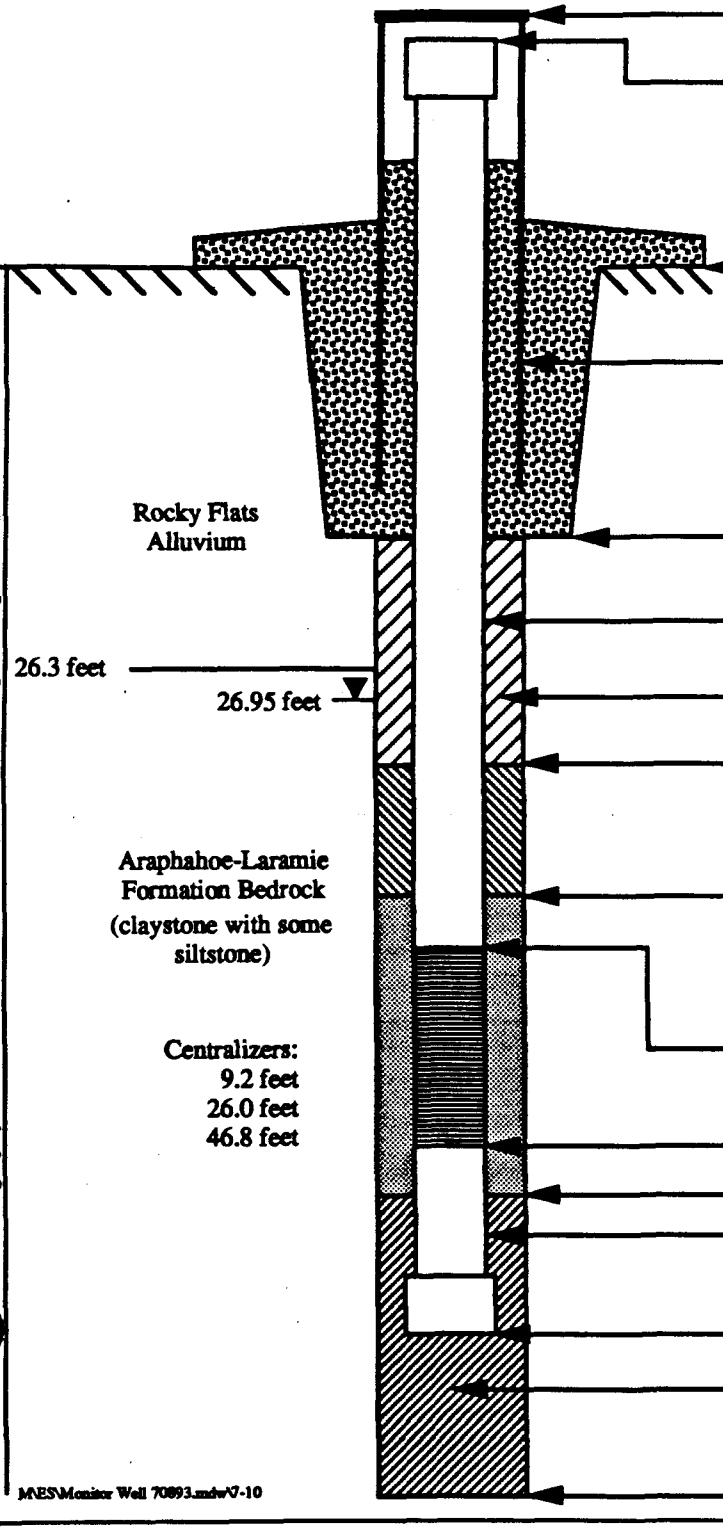
SCREENED INTERVAL

DEPTH (FEET) 51.0 to 66.0

LITHOLOGY Siltstone with sand

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

Surface Casing Used (Check One): √ Yes ___ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.5

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5991.2

I.D. of protective casing (inches) 6.25
Type of protective casing: steel

Depth of protective casing (feet) 2.5

Depth of surface seal (feet) 2.0
Type of surface seal: concrete

I.D. of well casing (inches) 2.0
Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 47.1
Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 49.6
Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 51.0
Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0
Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 66.0

Depth of bottom of filter pack (feet) 67.8

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 68.0

Type of backfill below filter pack: ~1.5 feet bentonite pellets over ~25 feet native material over ~59 feet grout

Diameter of hole (inches) 6-5/8 from 0 to 70.0 feet; 3 from 70.0 to 153.5 feet

Depth of hole (feet) 153.5

Generalized Stratigraphy and Water Level Summary (Based on Rig Geologist N

MES\Monitor Well 70893.mdw\7-10

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 2/18/93 TOTAL HOLE DEPTH (FEET) 36.0

CHECKED BY M.K. Vaag DATE 3/9/93

WELL NO. 71193

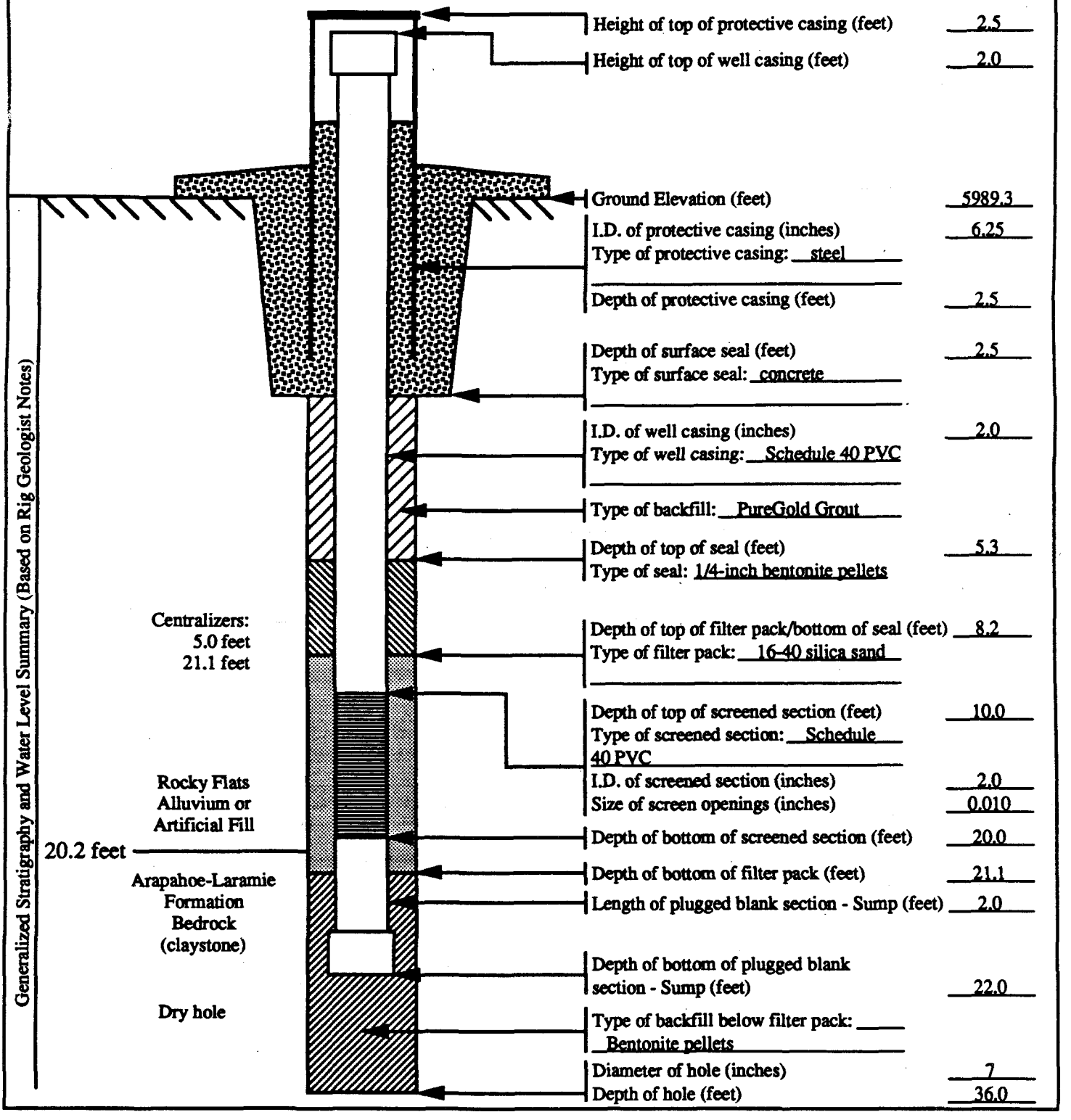
SCREENED INTERVAL

DEPTH (FEET) 10.0 to 20.0

LITHOLOGY Alluvium or artificial fill

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

Surface Casing Used (Check One): ___Yes ___√___No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.5

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5989.3

I.D. of protective casing (inches) 6.25
Type of protective casing: steel

Depth of protective casing (feet) 2.5

Depth of surface seal (feet) 2.5
Type of surface seal: concrete

I.D. of well casing (inches) 2.0
Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 5.3
Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 8.2
Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 10.0
Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0
Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 20.0

Depth of bottom of filter pack (feet) 21.1

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 22.0

Type of backfill below filter pack: Bentonite pellets

Diameter of hole (inches) 7

Depth of hole (feet) 36.0

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 3/4/93 TOTAL HOLE DEPTH (FEET) 26.0

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 71493

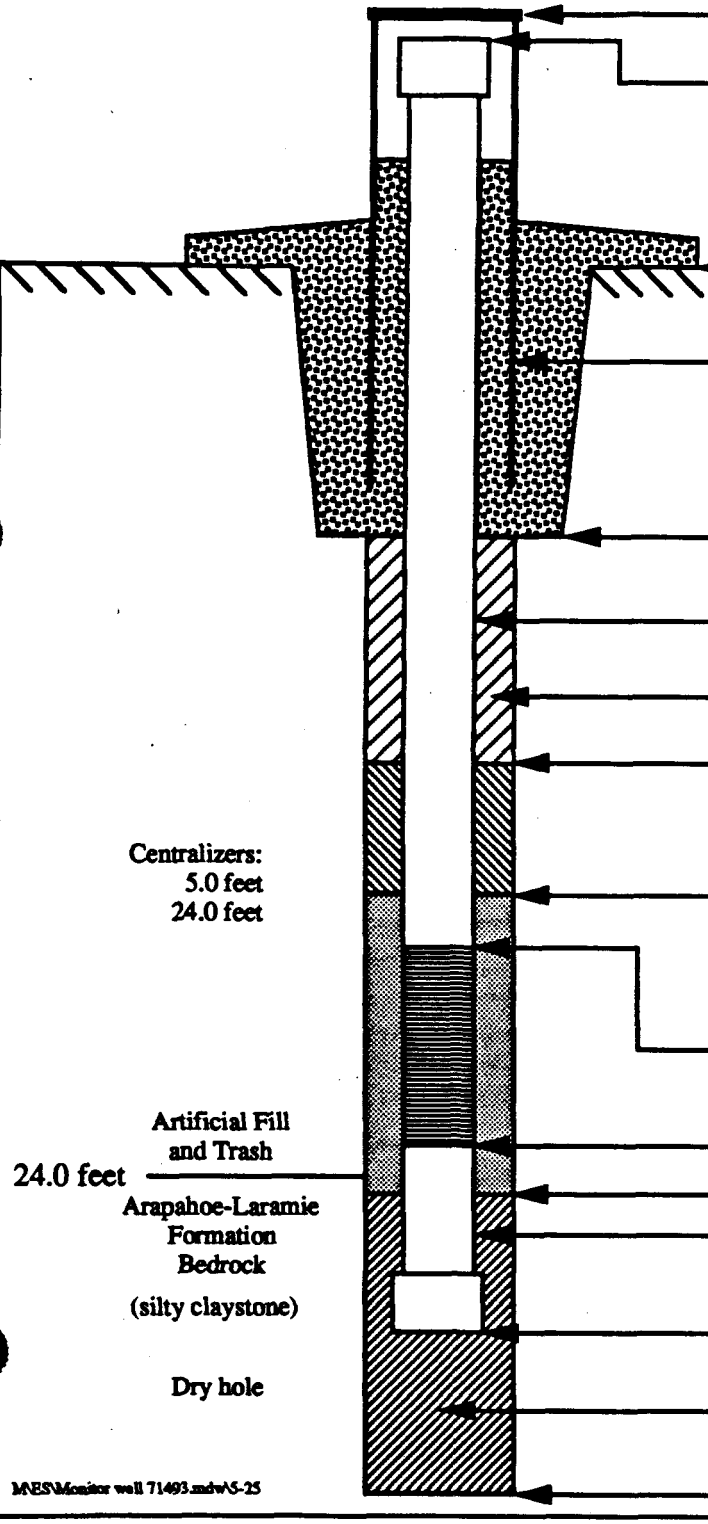
SCREENED INTERVAL

DEPTH (FEET) 18.8 to 22.8

LITHOLOGY Artificial fill and trash

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

Surface Casing Used (Check One): √ Yes ___ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.5

Height of top of well casing (feet) 2.3

Ground Elevation (feet) 5990.4

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.5

Depth of surface seal (feet) 2.5

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 13.6

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 16.8

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 18.8

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 22.8

Depth of bottom of filter pack (feet) 24.8

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 24.8

Type of backfill below filter pack: Bentonite pellets

Diameter of hole (inches) 7

Depth of hole (feet) 26.0

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

MES\Monitor well 71493.mdw\5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 3/5/93 TOTAL HOLE DEPTH (FEET) 28.3

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 71693

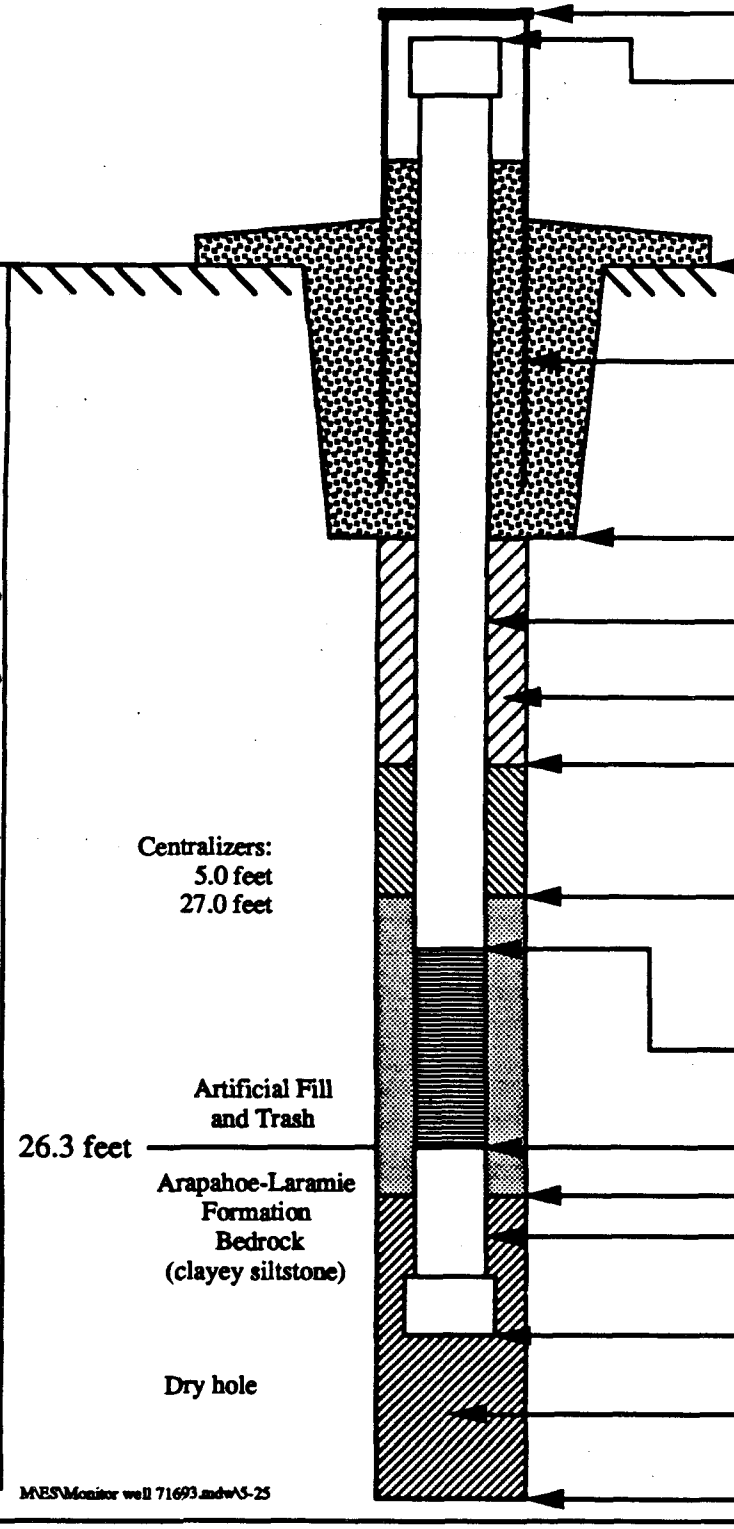
SCREENED INTERVAL

DEPTH (FEET) 16.3 to 26.3

LITHOLOGY Artificial fill and trash

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

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



Height of top of protective casing (feet)	2.5
Height of top of well casing (feet)	2.0
Ground Elevation (feet)	5988.3
I.D. of protective casing (inches)	6.25
Type of protective casing: steel	
Depth of protective casing (feet)	2.5
Depth of surface seal (feet)	2.5
Type of surface seal: concrete	
I.D. of well casing (inches)	2.0
Type of well casing: Schedule 40 PVC	
Type of backfill: PureGold Grout	
Depth of top of seal (feet)	9.7
Type of seal: 1/4-inch bentonite pellets	
Depth of top of filter pack/bottom of seal (feet)	14.0
Type of filter pack: 16-40 silica sand	
Depth of top of screened section (feet)	16.3
Type of screened section: Schedule 40 PVC	
I.D. of screened section (inches)	2.0
Size of screen openings (inches)	0.010
Depth of bottom of screened section (feet)	26.3
Depth of bottom of filter pack (feet)	28.3
Length of plugged blank section - Sump (feet)	2.0
Depth of bottom of plugged blank section - Sump (feet)	28.3
Type of backfill below filter pack: Not Applicable	
Diameter of hole (inches)	7
Depth of hole (feet)	28.3

M:\ES\Monitor well 71693.mdw\5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 3/4/93 TOTAL HOLE DEPTH (FEET) 28.0

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 71893

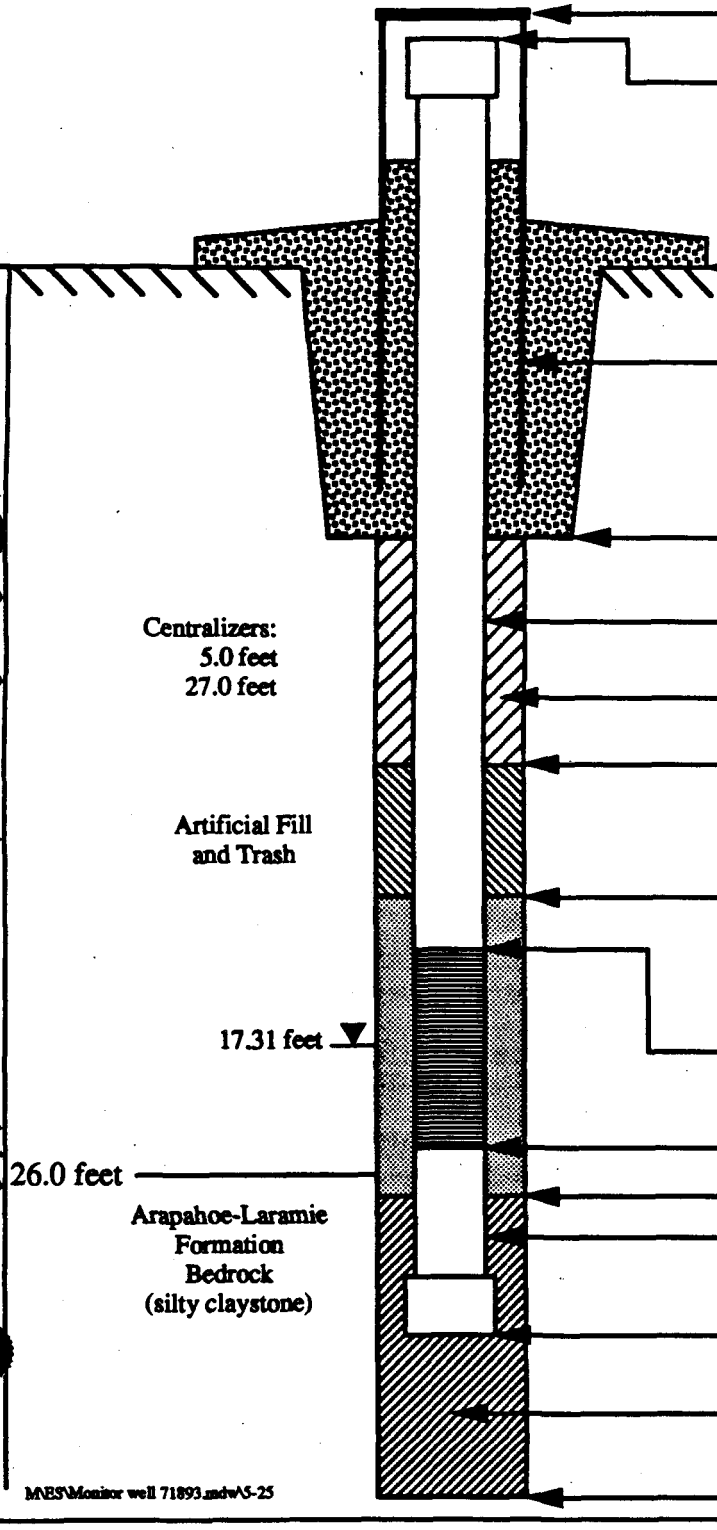
SCREENED INTERVAL

DEPTH (FEET) 10.7 to 25.7

LITHOLOGY Artificial fill and trash

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

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



Height of top of protective casing (feet) 2.5

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5987.7

I.D. of protective casing (inches) 6.25
Type of protective casing: steel

Depth of protective casing (feet) 2.5

Depth of surface seal (feet) 2.5
Type of surface seal: concrete

I.D. of well casing (inches) 2.0
Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 6.0
Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 9.0
Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 10.7
Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0
Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 25.7

Depth of bottom of filter pack (feet) 28.0

Length of plugged blank section - Sump (feet) 2.3

Depth of bottom of plugged blank section - Sump (feet) 28.0

Type of backfill below filter pack: ____
Not Applicable

Diameter of hole (inches) 7

Depth of hole (feet) 28.0

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

MES\Monitor well 71893.mdw\S-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 2/23/93 TOTAL HOLE DEPTH (FEET) 37.6

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 72093

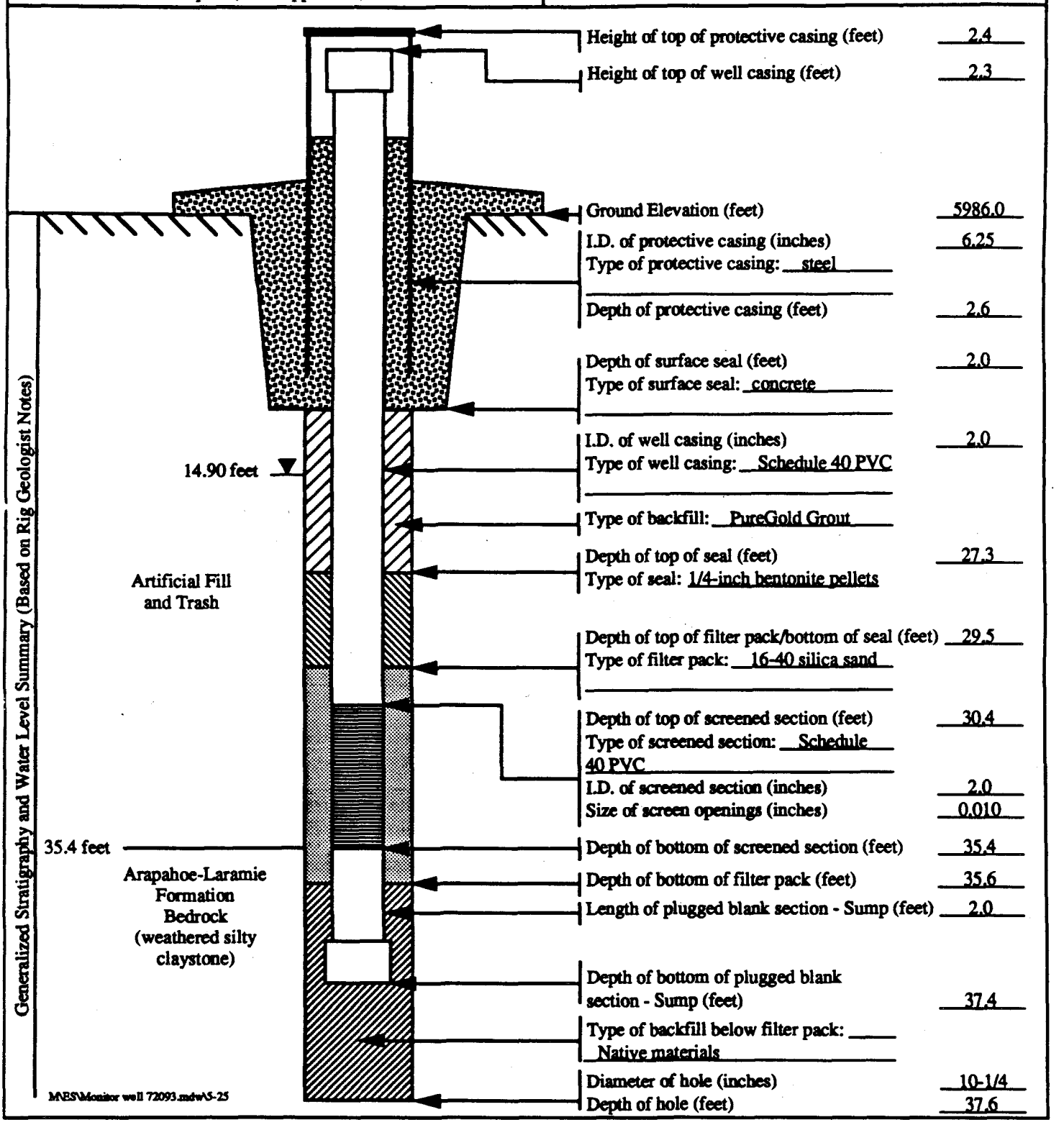
SCREENED INTERVAL

DEPTH (FEET) 30.4 to 35.4

LITHOLOGY Artificial fill and trash

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

Surface Casing Used (Check One): ____Yes √ No
(If yes, See Form GT.3A for specific information)



U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 3/4/93 TOTAL HOLE DEPTH (FEET) 34.6

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 72293

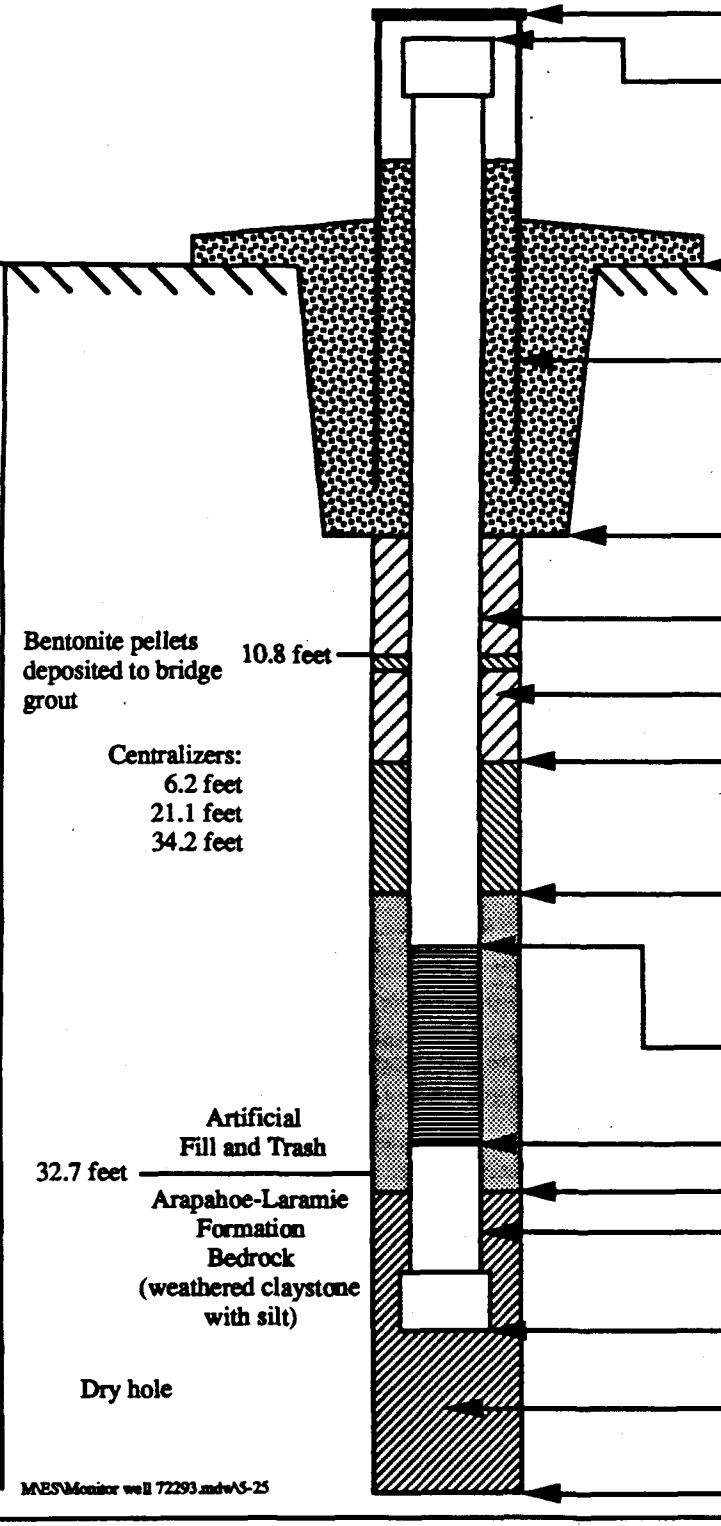
SCREENED INTERVAL

DEPTH (FEET) 27.6 to 32.6

LITHOLOGY Artificial fill and trash

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

Surface Casing Used (Check One): ____Yes ___√ No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.6

Height of top of well casing (feet) 2.4

Ground Elevation (feet) 5973.7

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.4

Depth of surface seal (feet) 2.0

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 22.3

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 26.6

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 27.6

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 32.6

Depth of bottom of filter pack (feet) 34.5

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 34.6

Type of backfill below filter pack: Native materials

Diameter of hole (inches) 7

Depth of hole (feet) 34.6

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

M:\ES\Monitor well 72293.mdw\S-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 2/23/93 TOTAL HOLE DEPTH (FEET) 24.4

CHECKED BY M.K. Vaag DATE 3/12/93

WELL NO. 72393

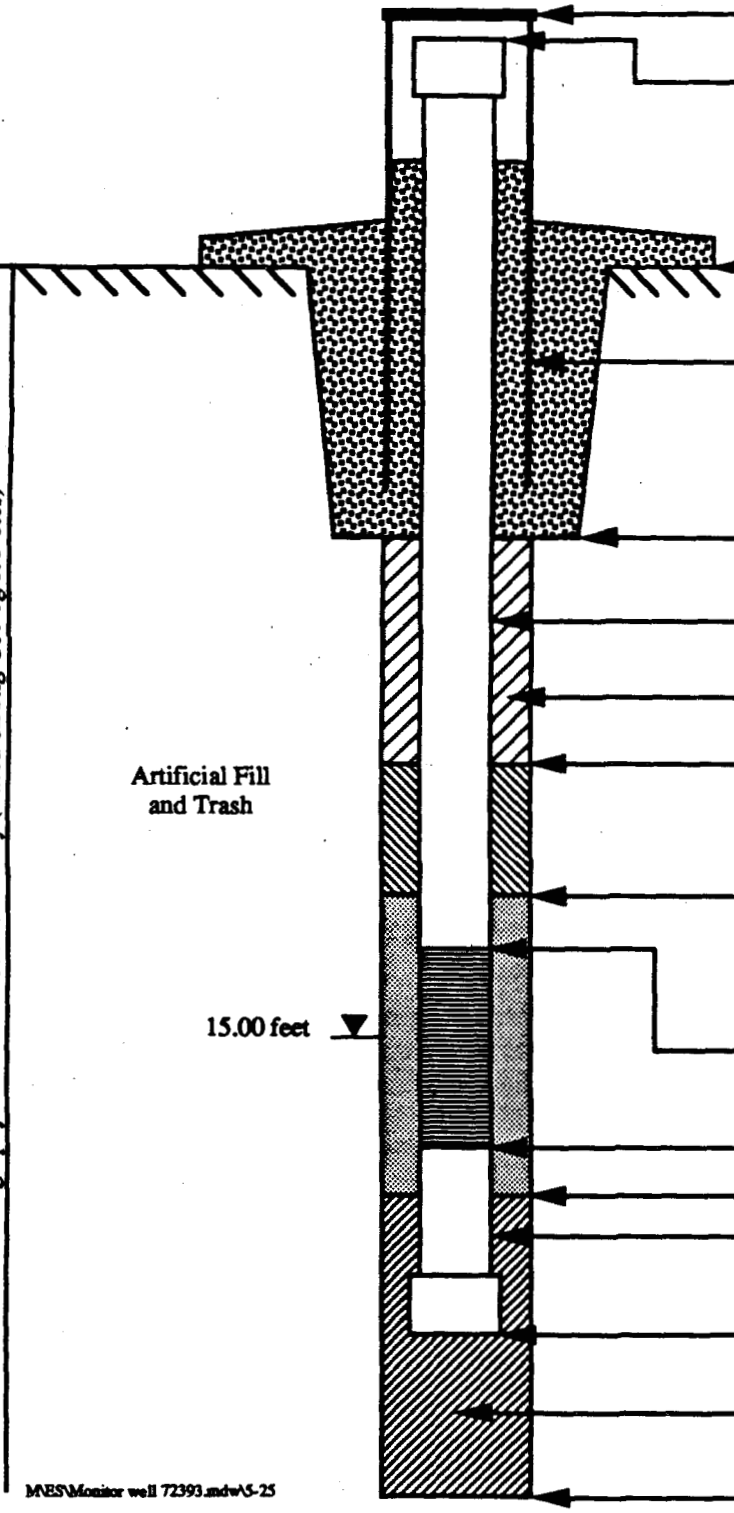
SCREENED INTERVAL

DEPTH (FEET) 12.0 to 22.0

LITHOLOGY Artificial fill and trash

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

Surface Casing Used (Check One): ____Yes √ No
(If yes, See Form GT.3A for specific information)



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

Height of top of protective casing (feet) 2.3

Height of top of well casing (feet) 2.0

Ground Elevation (feet) 5985.2

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.7

Depth of surface seal (feet) 2.0

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 6.4

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 10.8

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 12.0

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 22.0

Depth of bottom of filter pack (feet) 24.0

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 24.0

Type of backfill below filter pack: Native materials

Diameter of hole (inches) 10-1/4

Depth of hole (feet) 24.4

M:\ES\Monitor well 72393.mdw\5-25

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.6A (REV. 2)

Groundwater Monitoring Well and Piezometer Report

PROJECT NAME OU7 – Present Landfill

LOCATION OU7

DATE COMPLETED 2/27/93 TOTAL HOLE DEPTH (FEET) 30.2

CHECKED BY M.K. Vaag DATE 3/2/93

WELL NO. 72493

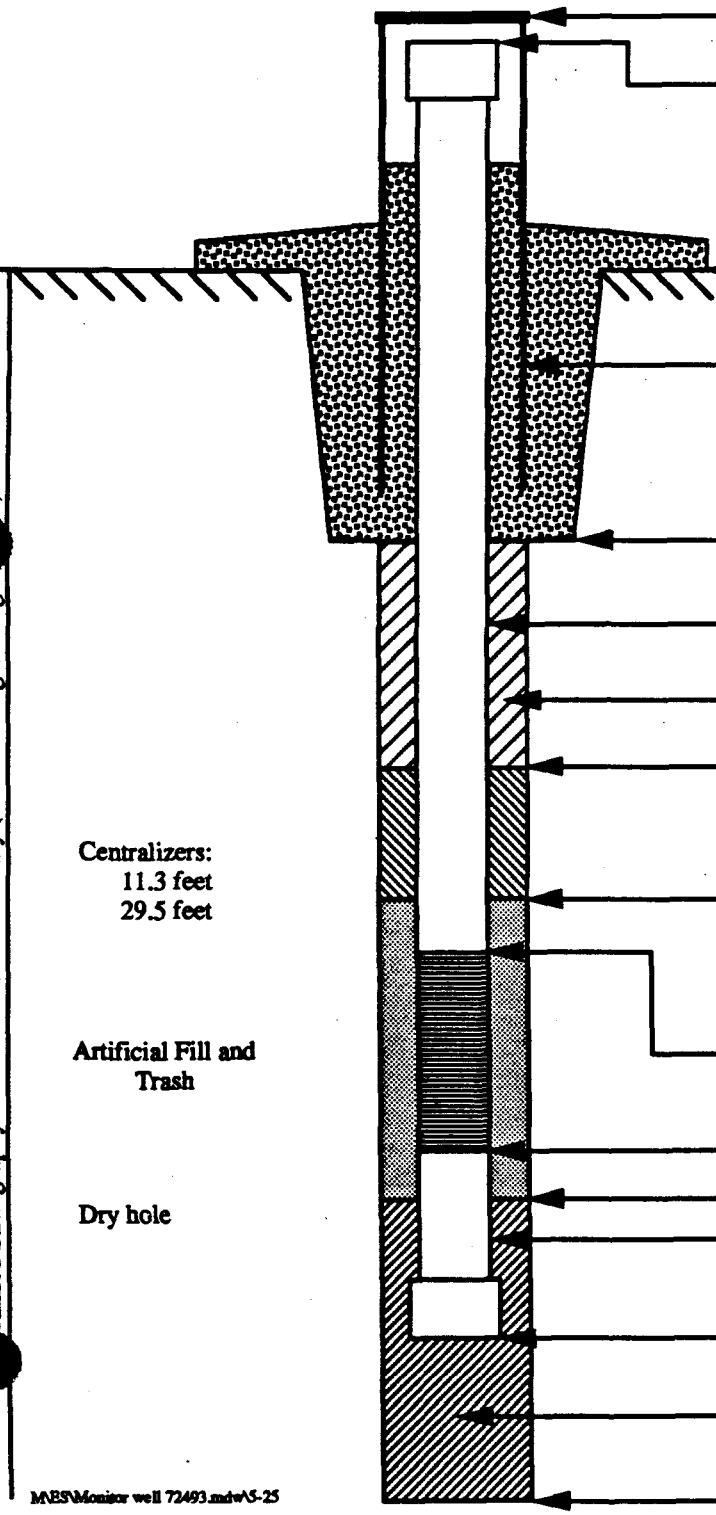
SCREENED INTERVAL

DEPTH (FEET) 17.9 to 27.9

LITHOLOGY Artificial fill and trash

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

Surface Casing Used (Check One): ____Yes ___√___No
(If yes, See Form GT.3A for specific information)



Height of top of protective casing (feet) 2.5

Height of top of well casing (feet) 2.1

Ground Elevation (feet) 5973.7

I.D. of protective casing (inches) 6.25

Type of protective casing: steel

Depth of protective casing (feet) 2.5

Depth of surface seal (feet) 2.0

Type of surface seal: concrete

I.D. of well casing (inches) 2.0

Type of well casing: Schedule 40 PVC

Type of backfill: PureGold Grout

Depth of top of seal (feet) 12.9

Type of seal: 1/4-inch bentonite pellets

Depth of top of filter pack/bottom of seal (feet) 17.2

Type of filter pack: 16-40 silica sand

Depth of top of screened section (feet) 17.9

Type of screened section: Schedule 40 PVC

I.D. of screened section (inches) 2.0

Size of screen openings (inches) 0.010

Depth of bottom of screened section (feet) 27.9

Depth of bottom of filter pack (feet) 29.9

Length of plugged blank section - Sump (feet) 2.0

Depth of bottom of plugged blank section - Sump (feet) 29.9

Type of backfill below filter pack: Native materials

Diameter of hole (inches) 7

Depth of hole (feet) 30.2

ralized Stratigraphy and Water Level Summary (Based on Rig Geologis s)

MES\Monitor well 72493.mdw\S-25

PHASE I RFI/RI FIELD DATA

Field-measurement data for the Operable Unit (OU) No. 7 Phase I Resource Recovery and Conservation Act (RCRA) facility investigation/remedial investigation (RFI/RI) are included on one 3½-inch disk. The files are American Standard Code for Information Interchange (ASCII) text files. The names and contents of the files are:

WATLEV.TXT	Water-level measurements from wells installed during the Phase I RFI/RI
SURVEY.TXT	Survey coordinates for all Phase I RFI/RI locations
GWFIELD.TXT	Groundwater field measurements recorded when samples were collected from the Phase I wells
SWFIELD.TXT	Surface-water field measurements recorded when samples were collected during the Phase I RFI/RI

NOTICE:

DISKS

This document contains two computer disks which take the place of:

Appendix G	Phase I RFI/RI Field Data
Appendix H	Slug Test Data

These disks can be found in the original AR file at the Interlocken facility.

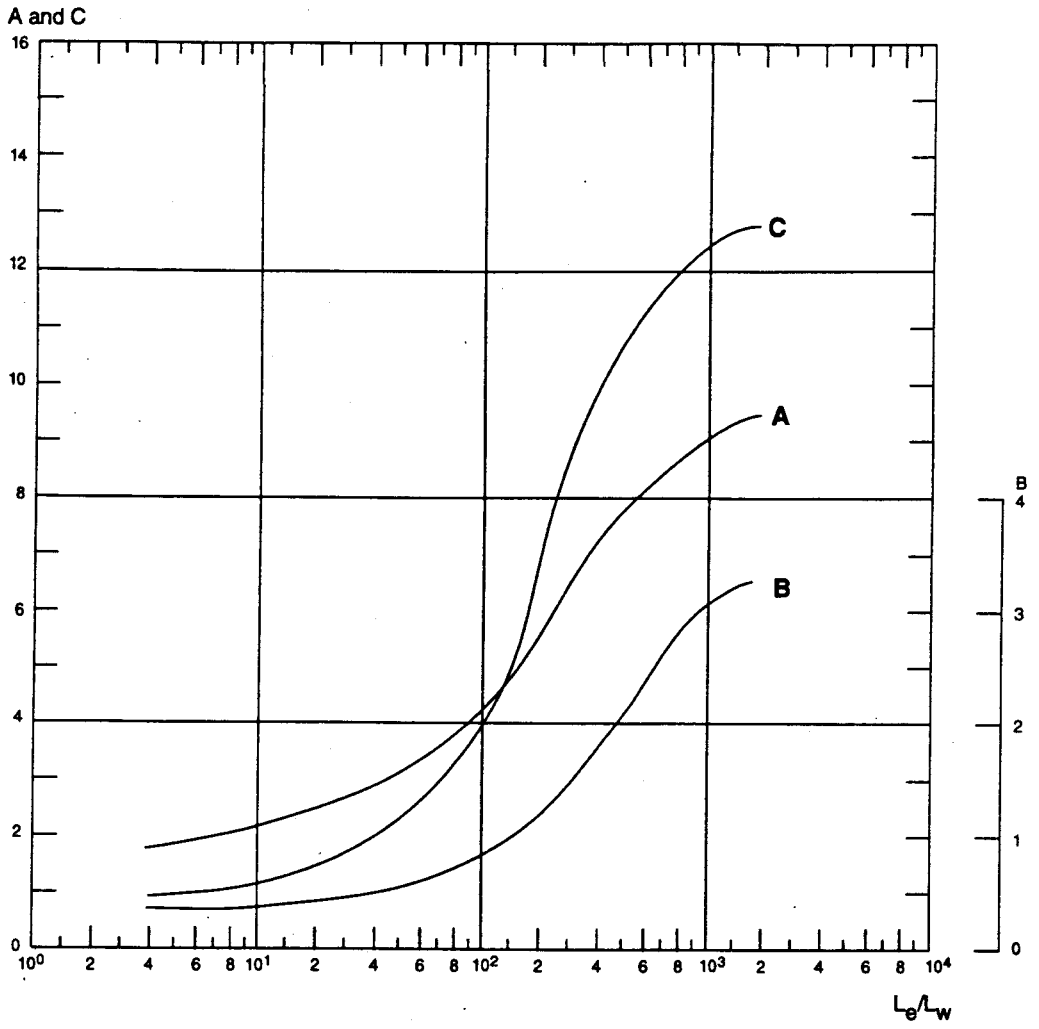
(OU07 Technical Memorandum, Vol. II)

The Adminstrative Record Staff

DRAWDOWN RECOVERY TEST DATA

Drawdown recovery test data for the Operable Unit (OU) No. 7 Phase I Resource Recovery and Conservation Act (RCRA) facility investigation/remedial investigation (RFI/RI) are included on one 3½-inch disk. The files are self-extracting, compressed, text files. There are many smaller files within a single .EXE file. To "decompress" the data, copy the files to a hard drive and type the file name followed by a Return. The names and contents of the files are:

SLUG_DAT.EXE	Includes files with .DAT extensions that were produced by the HERMIT® data logger
SLUG_ASC.EXE	Includes files with .ASC extensions corresponding to the .DAT files converted to ASCII format
SLUG_AQT.EXE	Includes files with .AQT extensions that were generated by the AQTESOLV program
SLUG_PRN.EXE	Includes files with .PRN extensions, which are print files, that were generated by the AQTESOLV program



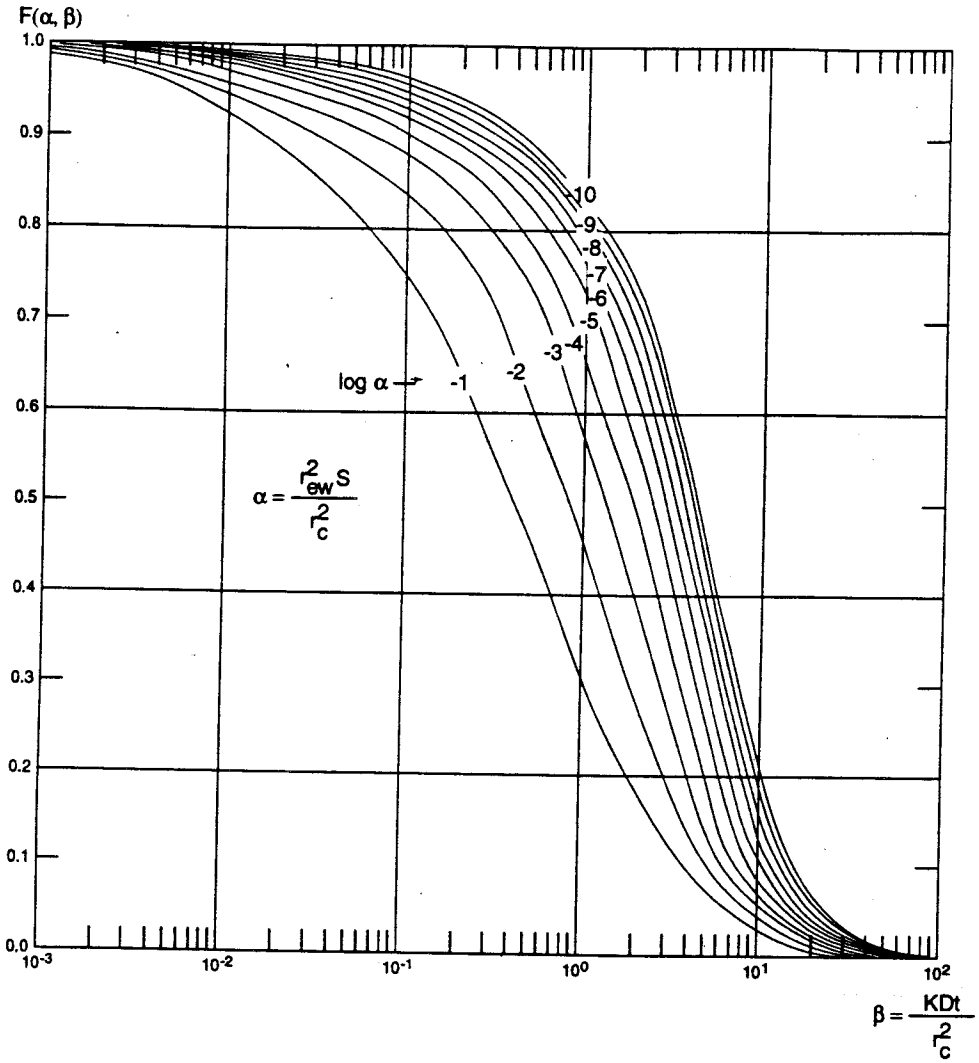
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

A,B,C Type Curves as a Function of L_e/L_w (Bouwer and Rice 1976)

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure H-1

M65\ES\Fig. 2-11 Coopcurves.mdw\4-5-94



U.S. DEPARTMENT OF ENERGY Rocky Flats Site, Golden, Colorado	
Cooper, Bredehoeft, and Papadopulos Type Curve	
Revised Work Plan	Operable Unit No. 7
Date: April 1994	Figure H-2

M65\ES\Fig. 2-12 Coopcurves.mdw\4-5-94

Table H-1
AQTESOLV Parameters

Parameter Descriptions	Bouwer & Rice Parameters	Cooper Parameters	AQTESOLV Parameters
Screen Length	L_e	L^1	L
Static Water Level in Well (datum above bottom of screen)	L_w	H^1	H
Aquifer Saturated Thickness	H	b^1	b^1
Radius of Casing	r_c	r_c	r_c
Radius of Borehole	r_w	r_w	r_w
Hydraulic Conductivity	K	N/A	K
Storage Coefficient	N/A	S	S
Transmissivity	N/A	T	T
Time Duration of Test	t	t	t

[1] Parameters are not defined in Equation 5 but are required AQTESOLV input parameters.

Definition:

N/A not applicable

Table H-2
Drawdown Recovery Test Data

Well Location	Test Date	DTW Pre-Dev. (ft toc)	DTW Test Date (ft toc)	FP\PP	Screen Interval (ft bgs)	INT DD (ft)	r_w (ft)	r_w (cm)	L_e (ft)	L_e (cm)	r_c (ft)	r_c (cm)	H (ft)	H (cm)	L_w (ft)	L_w (cm)	Geologic Unit	Potentio-metric Surface	Test Analysis Method	T (Cooper Only) (ft per day)	S (Cooper Only) (dimensionless)	Estimated K (cm/sec)
70093	04/06/93	14.81	10.34	FP	7.0 - 22.0	4.8	0.292	8.9	13.67	416.7	0.193	5.883	13.97	425.8	13.67	416.7	Qrf	Unconfined	Bouwer & Rice	N/A	N/A	4.05×10^{-4}
70193	04/12/93	14.14	10.55	FP	22.3 - 37.3	6.8	0.427	13.01	15	457.2	0.083	2.53	28.81	878.1	28.81	878.1	KaKl(w)	Unconfined	Bouwer & Rice	N/A	N/A	1.29×10^{-6}
70293	04/08/93	18.75	28.44	FP	52.1 - 67.1	7.69	0.292	8.9	15	457.2	0.083	2.53	9	274.3	40.67	1240	KaKl(ss)	Confined	Cooper et. al.	0.01207	0.0001	4.73×10^{-7}
70393	04/05/93	14.28	12.08	FP	7.8 - 22.8	2.01	0.292	8.9	12.83	391.1	0.193	5.883	12.83	391.1	12.83	391.1	Qrf	Unconfined	Bouwer & Rice	N/A	N/A	2.99×10^{-5}
70493	04/12/93	15.75	18.31	FP	24.0 - 44.0	6.81	0.292	8.9	20	609.6	0.083	2.53	22.7	691.9	22.7	691.9	KaKl(w)	Unconfined	Bouwer & Rice	N/A	N/A	1.48×10^{-7}
70593	04/16/93	40.87	97.96	PP	121.0 - 136.0	5.53	0.292	8.9	15	457.2	0.083	2.53	39.88	1216	39.88	1216	KaKlss(u)	Confined	Bouwer & Rice	N/A	N/A	5.60×10^{-7}
70593	04/16/93	40.87	97.96	PP	121.0 - 136.0	5.53	0.292	8.9	15	457.2	0.083	2.53	25.8	774	39.88	1216	KaKlss(u)	Confined	Cooper et. al.	0.04333	0.0001	5.92×10^{-7}
70693	04/05/93	20.8	12.71	FP	8.4 - 28.4	3.02	0.427	13.01	17.2	524.3	0.274	8.352	17.3	527.3	17.2	524.3	Qrf	Unconfined	Bouwer & Rice	N/A	N/A	3.37×10^{-4}
70893	04/20/93	43.41	64.95	FP	51.0 - 66.0	1.52	0.292	8.9	15	457.2	0.193	5.883	2.91	88.7	2.91	88.7	KaKlss(u)	Confined	Bouwer & Rice	N/A	N/A	5.90×10^{-7}
71193	04/08/93	15.25	11.42	FP	10.0 - 20.0	4.21	0.292	8.9	10.39	316.7	0.193	5.883	10.59	322.8	10.39	316.7	af	Unconfined	Bouwer & Rice	N/A	N/A	5.90×10^{-6}
71493	04/06/93	22.36	21.95	PP	18.8 - 22.8	2.4	0.292	8.9	2.88	87.78	0.193	5.883	4.08	124.4	2.88	87.78	af	Unconfined	Bouwer & Rice	N/A	N/A	9.62×10^{-6}
71693	N/A	DRY	DRY	FP	16.3 - 26.3	N/A	0.292	8.9	N/A	0	0.083	2.53	0	0	0	0	af	Unconfined	N/A	N/A	N/A	N/A
71893	04/06/93	19.88	14.01	FP	10.7 - 25.7	4.87	0.292	8.9	13.66	416.4	0.193	5.883	13.96	425.5	13.66	416.4	af	Unconfined	Bouwer & Rice	N/A	N/A	6.20×10^{-5}
72093	04/07/93	17.21	17.34	PP	30.4 - 35.4	5.77	0.427	13.01	5	152.4	0.083	2.53	20.38	621.2	20.38	621.2	af	Unconfined	Bouwer & Rice	N/A	N/A	2.32×10^{-5}
72293	04/07/93	32.41	31.65	FP	27.6 - 32.6	2.12	0.292	8.9	3.19	97.23	0.193	5.883	3.29	100.3	3.19	97.23	af	Unconfined	Bouwer & Rice	N/A	N/A	6.48×10^{-5}
72393	04/07/93	16.47	16.48	PP	12.0 - 22.0	4.79	0.427	13.01	7.84	239	0.274	8.352	21.24	647.4	7.84	239	af	Unconfined	Bouwer & Rice	N/A	N/A	1.35×10^{-4}
72493	N/A	DRY	DRY	FP	17.9 - 27.9	N/A	0.292	8.9	N/A	0	0.083	2.53	0	0	0	0	af	Unconfined	N/A	N/A	N/A	N/A

Definitions:

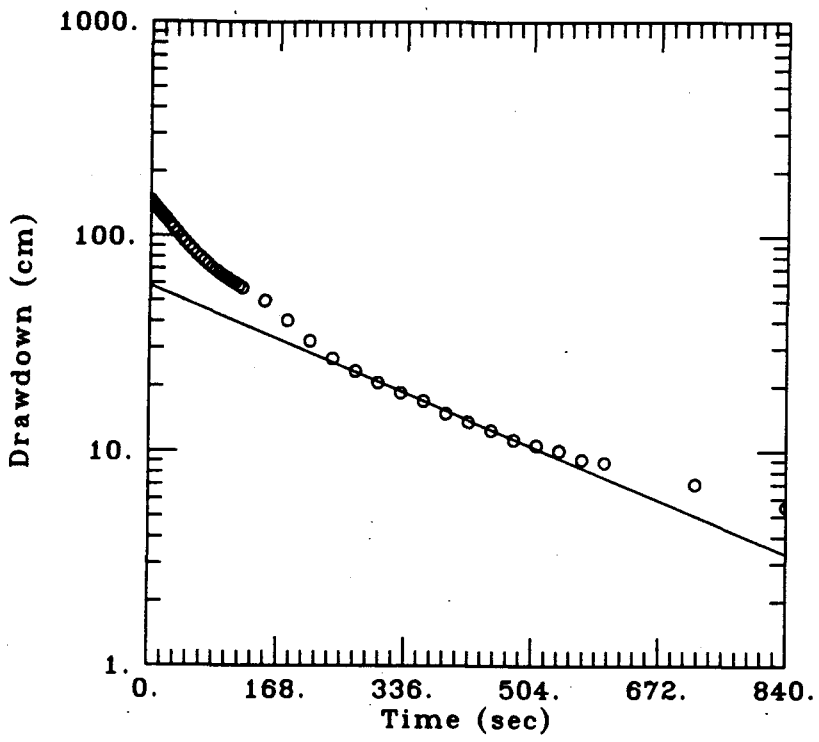
af Artificial Fill
bgs below ground surface
cm centimeters
DTW depth to water
FP fully penetrating
ft feet
H saturated thickness
INT DD initial drawdown
K hydraulic conductivity
KaKlss(u) Unweathered undifferentiated Arapahoe and Laramie sandstone
KaKl(w) Weathered undifferentiated Arapahoe and Laramie Formation
L_w water column thickness
L_e screen length
N/A not applicable
PP partially penetrating
Pre-Dev. pre-development
Qrf Rocky Flats Alluvium
r_c radius of casing
r_w radius of borehole
S storage coefficient
sec seconds
T transmissivity
toc top of casing

Table H-3
Drawdown Recovery Test Data Files

Generated Data Files for Drawdown/Recovery Tests				
Well Locaction	.DAT	.ASC	.AQT	.PRN
70093	70093.DAT	70093.ASC	70093.AQT	70093.PRN
70193	70193.DAT	70193.ASC	70193.AQT	70193.PRN
70293	70293.DAT	70293.ASC	70293.AQT	70293.PRN
70393	70393.DAT	70393.ASC	70393.AQT	70393.PRN
70493	70493.DAT	70493.ASC	70493.AQT	70493.PRN
70593	70593.DAT	70593.ASC	70593.AQT	70593.PRN
70593	70593.DAT	70593.ASC	70593C.AQT	70593C.PRN
70693	70693.DAT	70693.ASC	70693.AQT	70693.PRN
70893	70893.DAT	70893.ASC	70893.AQT	70893.PRN
71193	71193.DAT	71193.ASC	71193.AQT	71193.PRN
71493	71493.DAT	71493.ASC	71493.AQT	71493.PRN
71893	71893.DAT	71893.ASC	71893.AQT	71893.PRN
72093	72093.DAT	72093.ASC	72093.AQT	72093.PRN
72293	72293.DAT	72293.ASC	72293.AQT	72293.PRN
72393	72393.DAT	72393.ASC	72393.AQT	72393.PRN

OU7 - PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70093 ROCKY FLATS ALLUVIUM



DATA SET:
70093.AQT
05/18/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

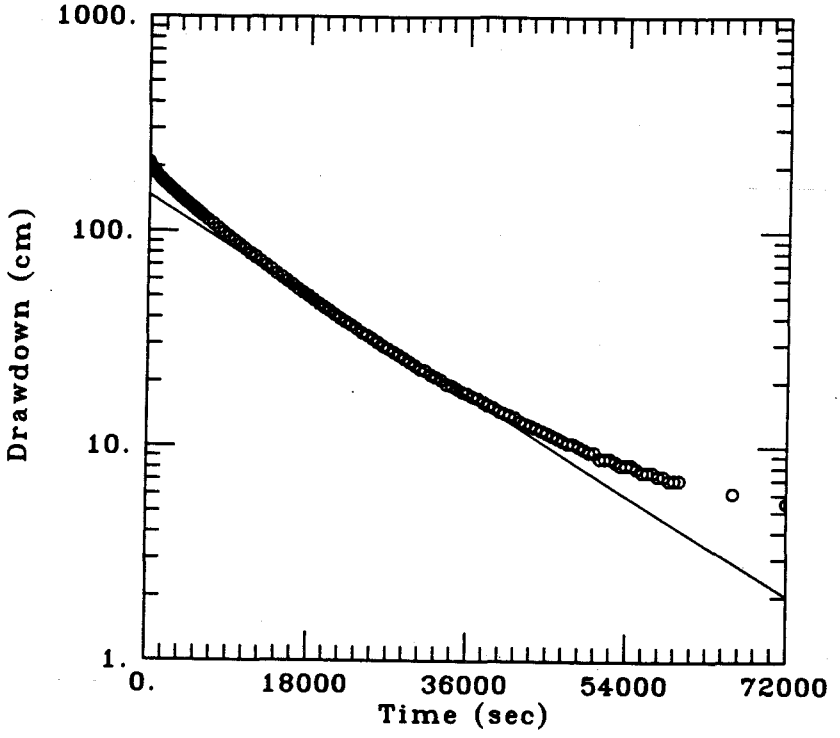
TEST DATE:
APRIL 6, 1993

ESTIMATED PARAMETERS:
$K = 4.047 \times 10^{-4}$ cm/sec
y0 = 58.26 cm

TEST DATA:
H0 = 146.3 cm
rc = 5.883 cm
rw = 8.9 cm
L = 416.7 cm
b = 425.8 cm
H = 416.7 cm

OU7 - PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70193 WEATHERED LARAMIE



DATA SET:
70193.AQT
05/18/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

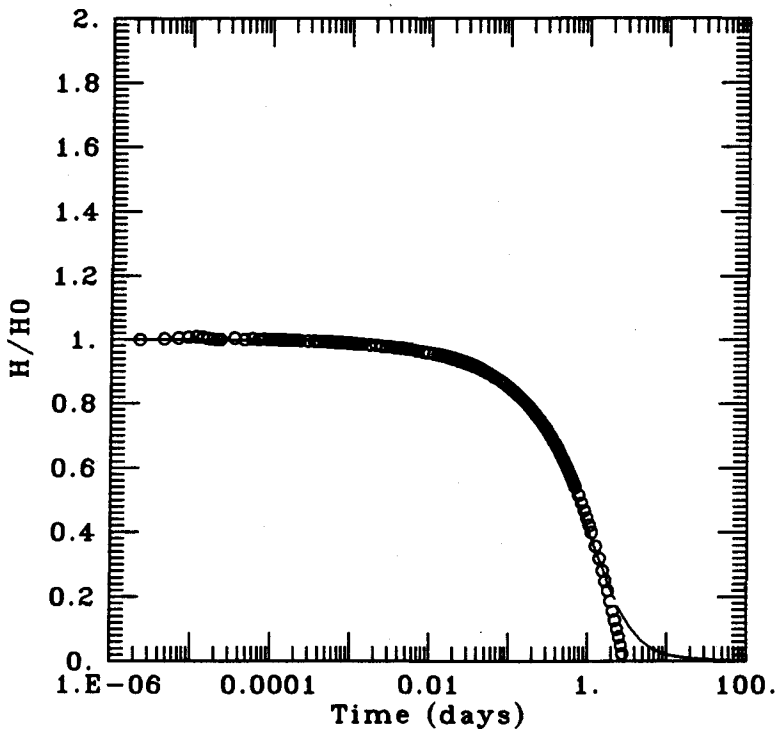
TEST DATE:
APRIL 12, 1993

ESTIMATED PARAMETERS:
K = 1.2934E-06 cm/sec
y0 = 146.9 cm

TEST DATA:
H0 = 207.3 cm
rc = 2.53 cm
rw = 13.02 cm
L = 457.2 cm
b = 878.1 cm
H = 878.1 cm

OU7 - PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: 70293

70293 UNWEATHERED LARAMIE SANDSTONE



DATA SET:
70293.AQT
05/18/93

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

TEST DATE:
APRIL 8, 1993

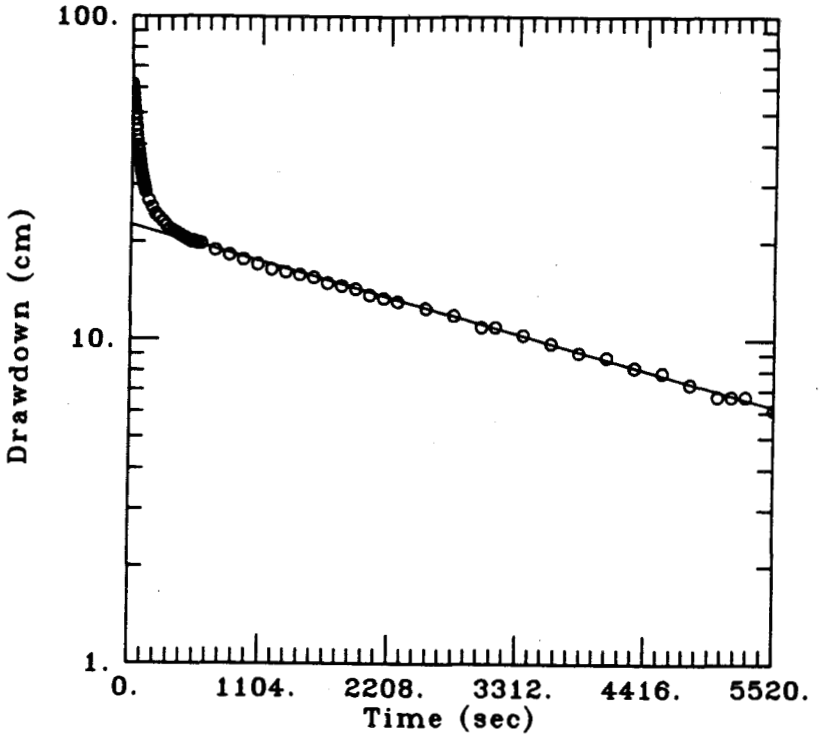
ESTIMATED PARAMETERS:
T = 0.01207 ft^2/day
S = 0.0001

TEST DATA:
HO = 7.69 ft
rc = 0.083 ft
rw = 0.292 ft

b = 9 ft
K = T/b
K = 4.7 x 10^{-7} cm/sec

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70393 ROCKY FLATS ALLUVIUM



DATA SET:
70393.AQT
05/18/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

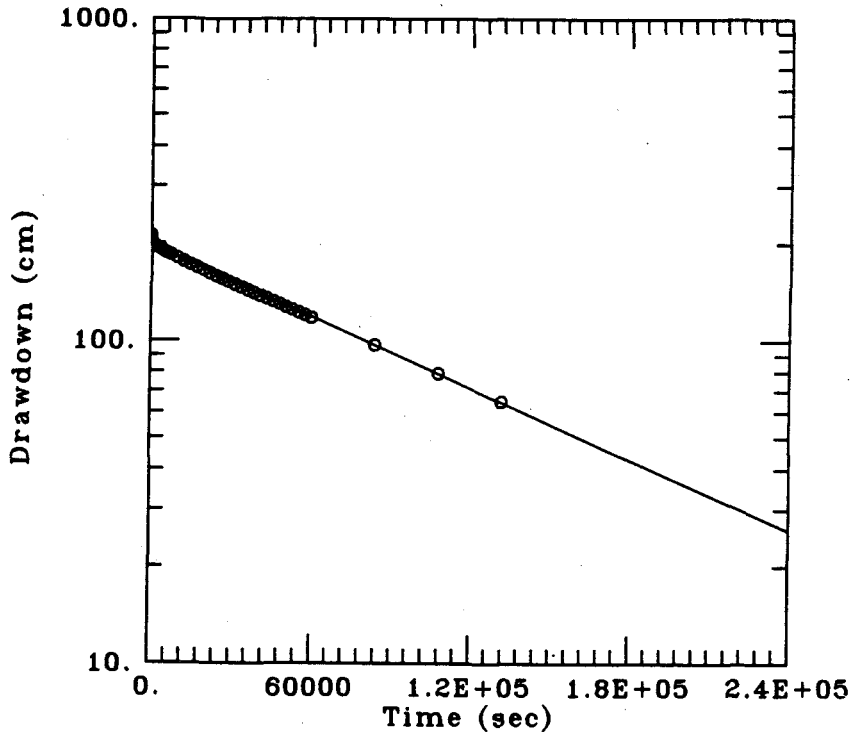
TEST DATE:
APRIL 5, 1993

ESTIMATED PARAMETERS:
K = 2.9867E-05 cm/sec
y0 = 22.61 cm

TEST DATA:
H0 = 61.27 cm
rc = 5.883 cm
rw = 8.9 cm
L = 391.1 cm
b = 391.1 cm
H = 391.1 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70493 WEATHERED LARAMIE



DATA SET:
70493.AQT
05/18/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

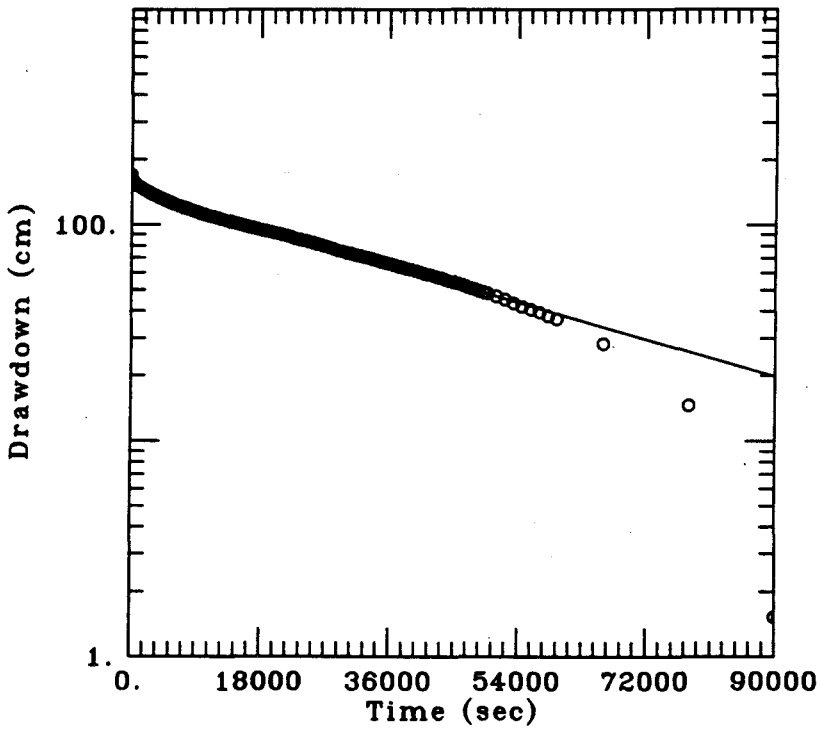
TEST DATE:
APRIL 12, 1993

ESTIMATED PARAMETERS:
K = 1.4798E-07 cm/sec
y0 = 197. cm

TEST DATA:
H0 = 207.6 cm
rc = 2.53 cm
rw = 8.9 cm
L = 609.6 cm
b = 691.9 cm
H = 691.9 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70593 UNWEATHERED LARAMIE SANDSTONE



DATA SET:
70593.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

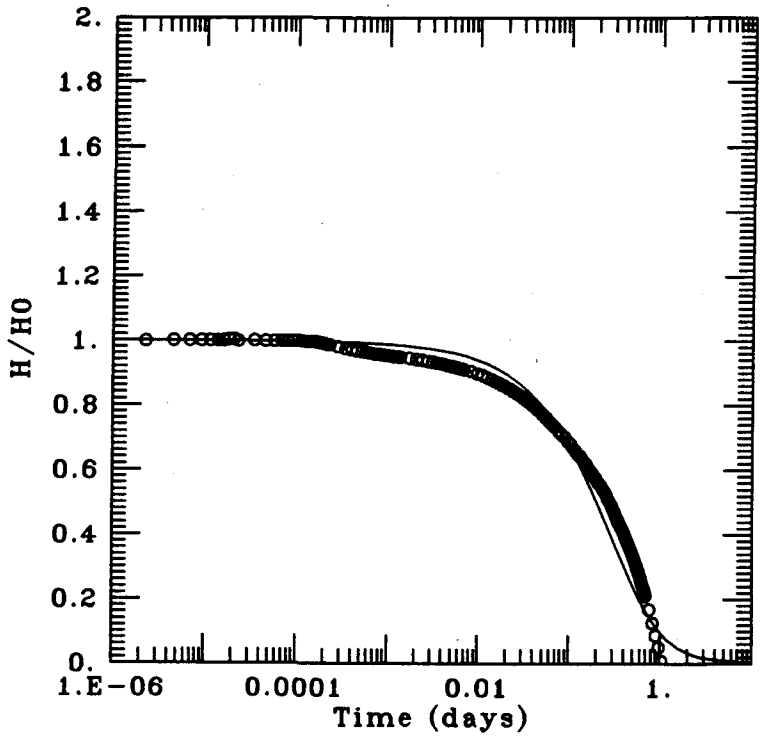
TEST DATE:
APRIL 16, 1993

ESTIMATED PARAMETERS:
K = 5.5983E-07 cm/sec
y0 = 145.1 cm

TEST DATA:
H0 = 168.6 cm
rc = 2.53 cm
rw = 8.9 cm
L = 457.2 cm
b = 1215.5 cm
H = 1215.5 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70593 UNWEATHERED LARAMIE SANDSTONE



DATA SET:
70593C.AQT
05/19/93

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

TEST DATE:
APRIL 16, 1993

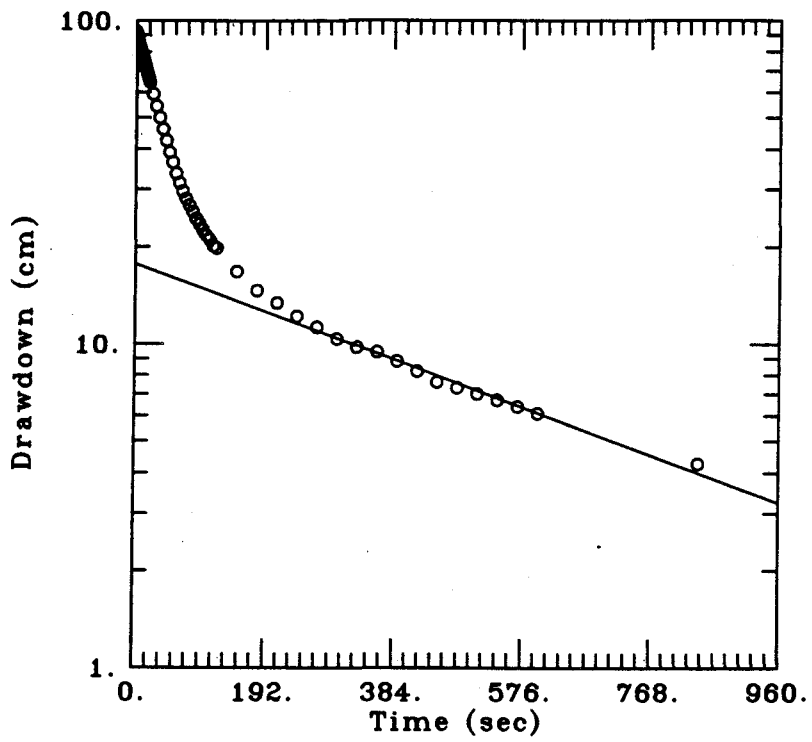
ESTIMATED PARAMETERS:
T = 0.04333 ft^2/day
S = 0.0001

TEST DATA:
H0 = 5.53 ft
rc = 0.083 ft
rw = 0.292 ft

b = 25.8 ft
K = T/b
K = 5.92 x 10^{-7} cm/sec

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70693 ROCKY FLATS ALLUVIUM



DATA SET:
70693.AQT
05/18/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

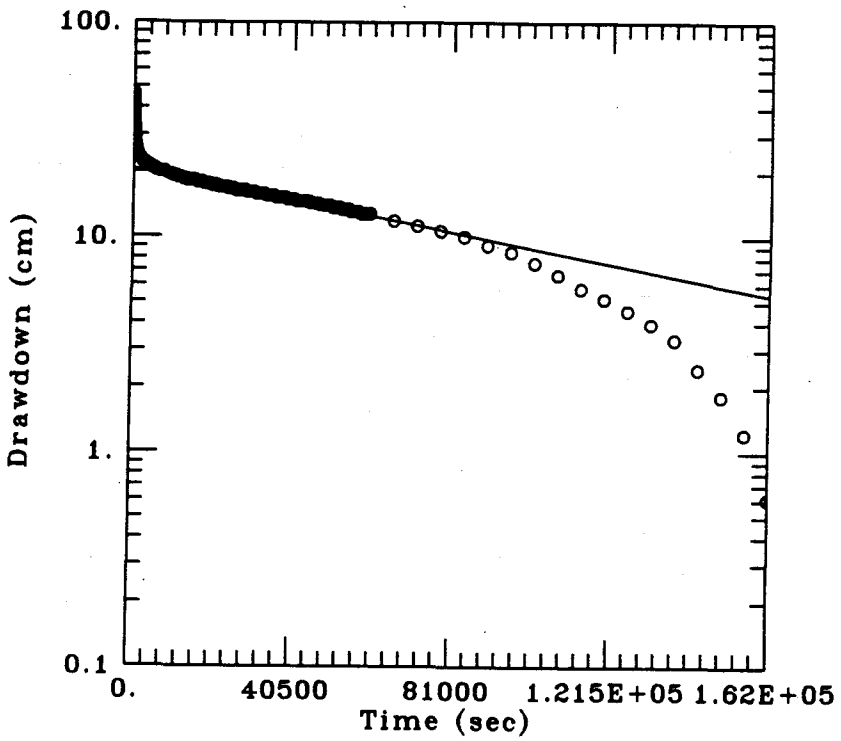
TEST DATE:
APRIL 5, 1993

ESTIMATED PARAMETERS:
$K = 3.368 \times 10^{-4}$ cm/sec
y0 = 17.7 cm

TEST DATA:
H0 = 92.05 cm
rc = 8.352 cm
rw = 13.02 cm
L = 524.3 cm
b = 527.3 cm
H = 524.3 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

70893 UNWEATHERED LARAMIE SANDSTONE



DATA SET:
70893.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

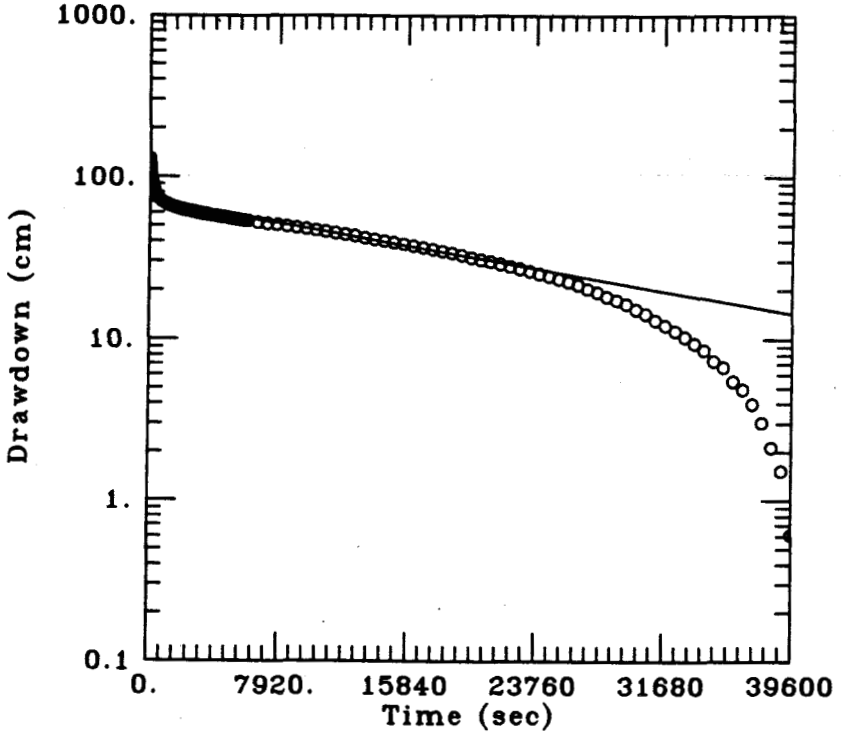
TEST DATE:
APRIL 20, 1993

ESTIMATED PARAMETERS:
K = 5.8984E-07 cm/sec
y0 = 20.52 cm

TEST DATA:
H0 = 46.33 cm
rc = 5.883 cm
rw = 8.9 cm
L = 457.2 cm
b = 88.7 cm
H = 88.7 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

71193 LANDFILL DEBRIS



DATA SET:
71193.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

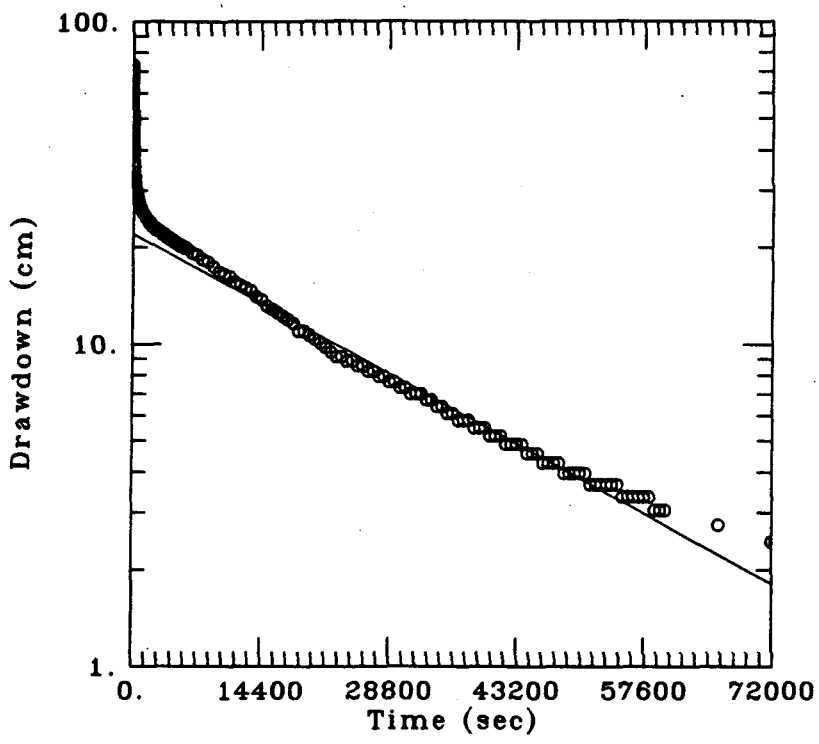
TEST DATE:
APRIL 8, 1993

ESTIMATED PARAMETERS:
K = 5.8992E-06 cm/sec
y0 = 71.56 cm

TEST DATA:
H0 = 128.3 cm
rc = 5.883 cm
rw = 8.9 cm
L = 316.7 cm
b = 322.8 cm
H = 316.7 cm

OU7 - PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

71493 LANDFILL DEBRIS



DATA SET:
71493.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

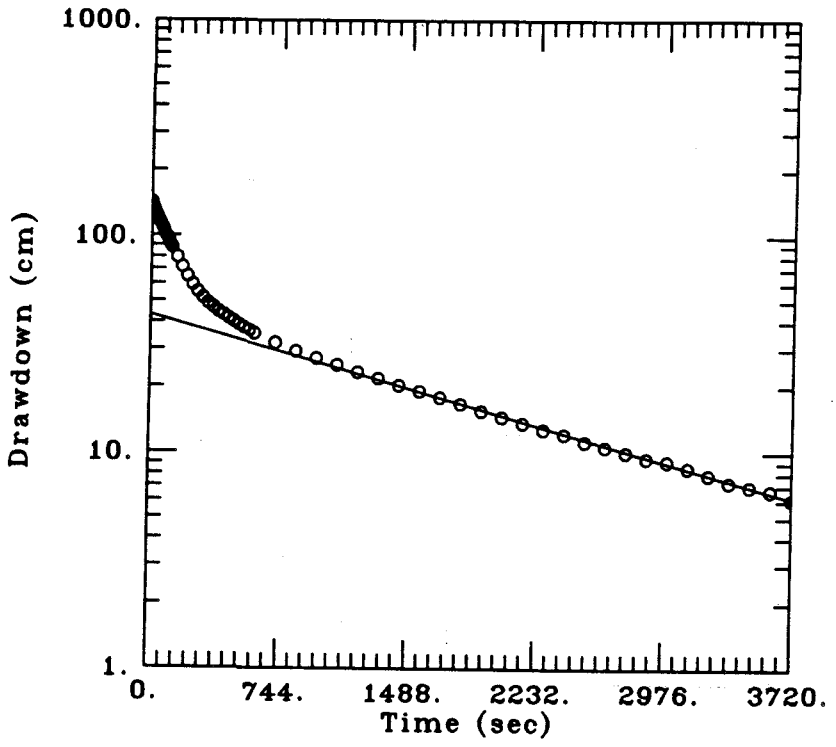
TEST DATE:
APRIL 6, 1993

ESTIMATED PARAMETERS:
K = 9.6223E-06 cm/sec
y0 = 22. cm

TEST DATA:
H0 = 73.15 cm
rc = 5.883 cm
rw = 8.9 cm
L = 87.78 cm
b = 124.4 cm
H = 87.78 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

71893 LANDFILL DEBRIS



DATA SET:
71893.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

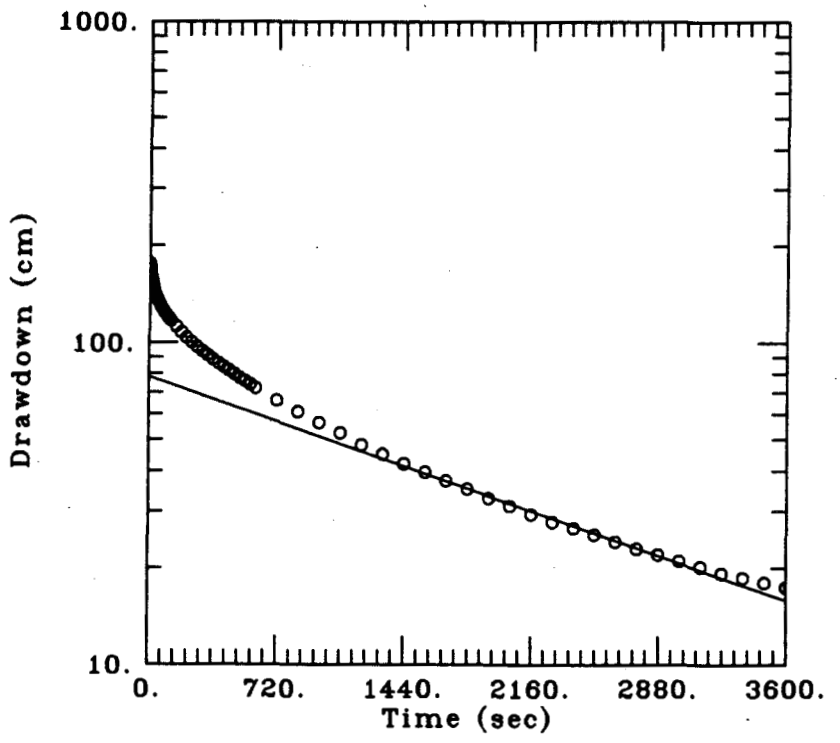
TEST DATE:
APRIL 6, 1993

ESTIMATED PARAMETERS:
K = 6.204E-05 cm/sec
y0 = 43.07 cm

TEST DATA:
H0 = 142.3 cm
rc = 5.883 cm
rw = 8.9 cm
L = 416.4 cm
b = 425.5 cm
H = 416.4 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

72093 LANDFILL DEBRIS



DATA SET:
72093.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

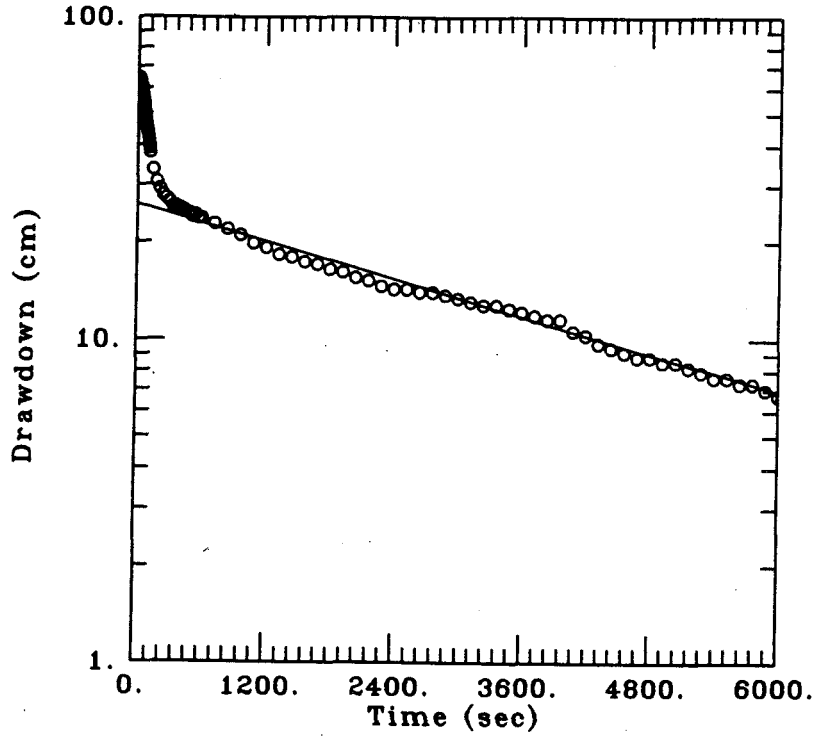
TEST DATE:
APRIL 7, 1993

ESTIMATED PARAMETERS:
K = 2.3197E-05 cm/sec
y0 = 78.16 cm

TEST DATA:
H0 = 175.9 cm
rc = 2.53 cm
rw = 13.02 cm
L = 152.4 cm
b = 621.2 cm
H = 621.2 cm

OU7 - PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

72293 LANDFILL DEBRIS



DATA SET:
72293.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

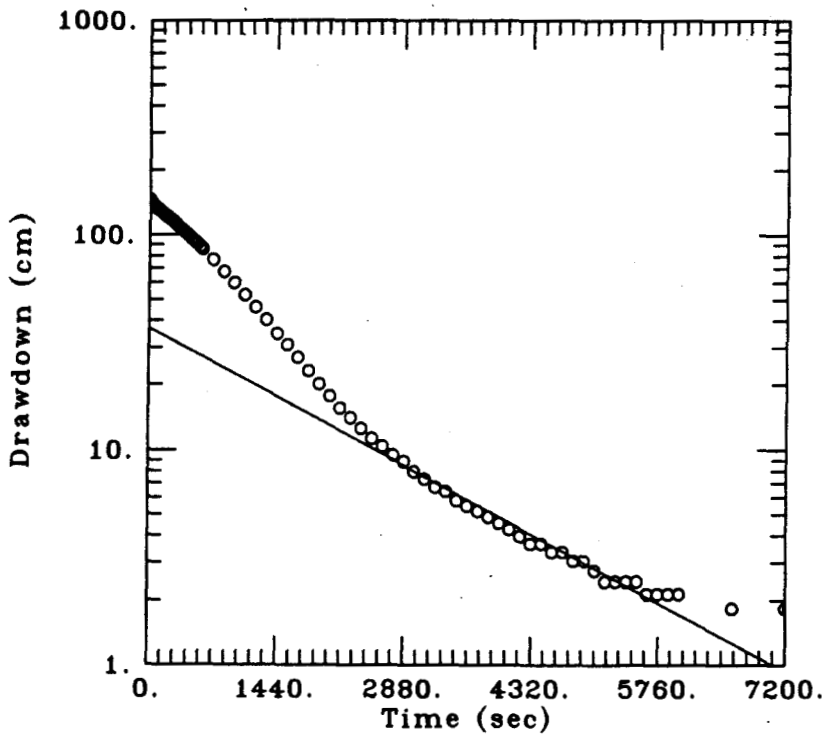
TEST DATE:
APRIL 7, 1993

ESTIMATED PARAMETERS:
K = 6.483E-05 cm/sec
y0 = 26.26 cm

TEST DATA:
H0 = 64.62 cm
rc = 5.883 cm
rw = 8.9 cm
L = 97.23 cm
b = 100.3 cm
H = 97.23 cm

OU7 – PRESENT LANDFILL	Client: EG&G
Project No.: PHASE I RFI/RI	Location: ROCKY FLATS PLANT

72393 LANDFILL DEBRIS



DATA SET:
72393.AQT
05/19/93

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

TEST DATE:
APRIL 7, 1993

ESTIMATED PARAMETERS:
K = 1.348 x 10 $^{-4}$ cm/sec
y0 = 36.92 cm

TEST DATA:
H0 = 146. cm
rc = 8.352 cm
rw = 13.02 cm
L = 239. cm
b = 647.4 cm
H = 239. cm

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 70093
Test Date/Time 4/6/93 / 12:45 ~~10:25~~
Measuring Point 5992.91 - 10.35(toc)
Type of Test BAIL - DOWN
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 5
(include time and date for identification purposes) 12:45 4/6/93

Name J. HIGGINS / D. REEDER / K. TEGMEYER
Groundwater Elevation Before Test (Ho) 5992.91 - 10.35(toc) = 5982.5
Total Casing Depth Measured Depth = 26.10'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 7' - 22'
Sand Pack Interval 5' - 22.1'
Lithology Tested Alluvium

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

70093
70093
SE1000B
Environmental Logger
04/07 16:24

Unit# 00022 Test# 5

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/06 12:38

Elapsed Time	Value
0.0000	4.80
0.0033	4.79
0.0066	4.77
0.0099	4.77
0.0133	4.75
0.0166	4.74
0.0200	4.73
0.0233	4.72
0.0266	4.71
0.0300	4.70
0.0333	4.69
0.0500	4.64
0.0666	4.59
0.0833	4.54
0.1000	4.50
0.1166	4.46
0.1333	4.41
0.1500	4.37
0.1666	4.33
0.1833	4.29
0.2000	4.25
0.2166	4.21
0.2333	4.17
0.2500	4.13

70093

0.2666	4.09
0.2833	4.05
0.3000	4.02
0.3166	3.98
0.3333	3.94
0.4167	3.75
0.5000	3.57
0.5833	3.40
0.6667	3.23
0.7500	3.08
0.8333	2.94
0.9167	2.82
1.0000	2.70
1.0833	2.60
1.1667	2.50
1.2500	2.41
1.3333	2.33
1.4166	2.26
1.5000	2.20
1.5833	2.13
1.6667	2.08
1.7500	2.02
1.8333	1.97
1.9167	1.92
2.0000	1.87
2.5000	1.63
3.0000	1.32
3.5000	1.06
4.0000	0.88
4.5000	0.77
5.0000	0.68
5.5000	0.61
6.0000	0.56
6.5000	0.49
7.0000	0.45
7.5000	0.41
8.0000	0.37
8.5000	0.35
9.0000	0.33
9.5000	0.30
10.0000	0.29

70093

12.0000	0.23
14.0000	0.18

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Name J HIGGINS D REEDER
Borehole No. 70193
Groundwater Elevation Before Test (Ho) 5992.36-10.55' = 5981.81'
Test Date/Time 4/12/93 1200
Total Casing Depth Measured Depth = 41.52'
Measuring Point 5992.36 - 10.55'
Borehole Diameter 10.25" / 7.00"
Type of Test RAIL-DOWN SLUG TEST
Casing Diameter 2"
Transductor Probe Serial No. 10451H
Screened Interval 22.3' - 37.3'
Datalogger Test Run No. 401A #8
Sand Pack Interval 21.5' - 37.6'
(include time and date for identification purposes)
Lithology Tested WEATHERED BEDROCK

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

70193

SE1000B
Environmental Logger
04/14 01:11

Unit# 01009 Test# 0

INPUT 2: Level (F) TOC

Reference 0.00
Scale factor 9.99
Offset 0.00

Step# 0 04/13 03:30

Elapsed Time	Value
0.0000	6.80
0.0033	6.81
0.0066	6.81
0.0099	6.80
0.0133	6.79
0.0166	6.78
0.0200	6.77
0.0233	6.77
0.0266	6.78
0.0300	6.78
0.0333	6.78
0.0500	6.77
0.0666	6.77
0.0833	6.76
0.1000	6.76
0.1166	6.75
0.1333	6.75
0.1500	6.74
0.1666	6.74
0.1833	6.74
0.2000	6.73
0.2166	6.73
0.2333	6.73
0.2500	6.72
0.2666	6.72

70193

0.2833	6.72
0.3000	6.72
0.3166	6.71
0.3333	6.71
0.4167	6.70
0.5000	6.69
0.5833	6.69
0.6667	6.68
0.7500	6.67
0.8333	6.66
0.9167	6.65
1.0000	6.65
1.0833	6.65
1.1667	6.64
1.2500	6.63
1.3333	6.63
1.4166	6.62
1.5000	6.61
1.5833	6.61
1.6667	6.60
1.7500	6.59
1.8333	6.59
1.9167	6.59
2.0000	6.58
2.5000	6.55
3.0000	6.52
3.5000	6.49
4.0000	6.47
4.5000	6.44
5.0000	6.42
5.5000	6.39
6.0000	6.36
6.5000	6.35
7.0000	6.32
7.5000	6.30
8.0000	6.28
8.5000	6.25
9.0000	6.23
9.5000	6.21
10.0000	6.19
12.0000	6.11

	70193
14.0000	6.02
16.0000	5.94
18.0000	5.87
20.0000	5.80
22.0000	5.73
24.0000	5.67
26.0000	5.60
28.0000	5.54
30.0000	5.48
32.0000	5.42
34.0000	5.36
36.0000	5.31
38.0000	5.25
40.0000	5.20
42.0000	5.14
44.0000	5.09
46.0000	5.04
48.0000	4.99
50.0000	4.94
52.0000	4.89
54.0000	4.84
56.0000	4.79
58.0000	4.74
60.0000	4.70
62.0000	4.65
64.0000	4.61
66.0000	4.56
68.0000	4.52
70.0000	4.47
72.0000	4.43
74.0000	4.39
76.0000	4.35
78.0000	4.31
80.0000	4.26
82.0000	4.22
84.0000	4.19
86.0000	4.15
88.0000	4.11
90.0000	4.07
92.0000	4.03
94.0000	4.00

	70193
96.0000	3.96
98.0000	3.92
100.000	3.88
110.000	3.71
120.000	3.55
130.000	3.39
140.000	3.24
150.000	3.10
160.000	2.97
170.000	2.84
180.000	2.72
190.000	2.60
200.000	2.50
210.000	2.39
220.000	2.29
230.000	2.20
240.000	2.10
250.000	2.02
260.000	1.94
270.000	1.86
280.000	1.78
290.000	1.71
300.000	1.65
310.000	1.58
320.000	1.52
330.000	1.46
340.000	1.41
350.000	1.35
360.000	1.30
370.000	1.25
380.000	1.21
390.000	1.16
400.000	1.11
410.000	1.08
420.000	1.04
430.000	1.00
440.000	0.96
450.000	0.93
460.000	0.90
470.000	0.87
480.000	0.84

	70193
490.000	0.81
500.000	0.78
510.000	0.75
520.000	0.74
530.000	0.71
540.000	0.69
550.000	0.67
560.000	0.64
570.000	0.63
580.000	0.61
590.000	0.59
600.000	0.58
610.000	0.56
620.000	0.55
630.000	0.53
640.000	0.51
650.000	0.50
660.000	0.48
670.000	0.47
680.000	0.46
690.000	0.45
700.000	0.43
710.000	0.42
720.000	0.41
730.000	0.40
740.000	0.39
750.000	0.38
760.000	0.37
770.000	0.36
780.000	0.35
790.000	0.34
800.000	0.34
810.000	0.33
820.000	0.32
830.000	0.31
840.000	0.31
850.000	0.29
860.000	0.29
870.000	0.29
880.000	0.28
890.000	0.27

	70193
900.000	0.27
910.000	0.27
920.000	0.26
930.000	0.25
940.000	0.25
950.000	0.25
960.000	0.24
970.000	0.24
980.000	0.23
990.000	0.23
1000.00	0.23
1100.00	0.20
1200.00	0.18

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Name J. HIGGINS / D. REEDER
Borehole No. 70293
Groundwater Elevation Before Test (Ho) 5992.71 - 28.44 = 5964.27'
Test Date/Time 4/8/93 1127
Total Casing Depth Measured Depth 70.04'
Measuring Point 5992.71 - 28.44'
Borehole Diameter 6 1/2"
Type of Test FALL-DOWN / SLUG TEST
Casing Diameter 2"
Transductor Probe Serial No. 1045 CH
Screened Interval 52.1' - 67.1'
Datalogger Test Run No. Ø (901A)
Sand Pack Interval 50.1' - 69.0'
(include time and date for identification purposes) 4/8/93 11:27
Lithology Tested BEDROCK (CLAYSTONE)

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

70293

Environmental Logger
04/13 02:37

Unit# 01009 Test# 0

INPUT 2: Level (F) TOC

Reference 0.00
Scale factor 9.99
Offset 0.00

Step# 0 04/09 03:01

Elapsed Time	Value
0.0000	7.69
0.0033	7.69
0.0066	7.71
0.0099	7.73
0.0133	7.75
0.0166	7.76
0.0200	7.75
0.0233	7.72
0.0266	7.70
0.0300	7.69
0.0333	7.69
0.0500	7.73
0.0666	7.69
0.0833	7.71
0.1000	7.69
0.1166	7.70
0.1333	7.69
0.1500	7.69
0.1666	7.69
0.1833	7.68
0.2000	7.68
0.2166	7.68
0.2333	7.67
0.2500	7.67
0.2666	7.67
0.2833	7.67

70293

0.3000	7.67
0.3166	7.67
0.3333	7.66
0.4167	7.65
0.5000	7.65
0.5833	7.64
0.6667	7.64
0.7500	7.63
0.8333	7.63
0.9167	7.62
1.0000	7.62
1.0833	7.62
1.1667	7.61
1.2500	7.61
1.3333	7.60
1.4166	7.60
1.5000	7.60
1.5833	7.59
1.6667	7.59
1.7500	7.58
1.8333	7.58
1.9167	7.58
2.0000	7.58
2.5000	7.56
3.0000	7.55
3.5000	7.53
4.0000	7.52
4.5000	7.52
5.0000	7.50
5.5000	7.49
6.0000	7.48
6.5000	7.48
7.0000	7.47
7.5000	7.46
8.0000	7.45
8.5000	7.45
9.0000	7.44
9.5000	7.43
10.0000	7.42
12.0000	7.39
14.0000	7.37

70293

16.0000	7.35
18.0000	7.33
20.0000	7.31
22.0000	7.29
24.0000	7.27
26.0000	7.25
28.0000	7.23
30.0000	7.22
32.0000	7.20
34.0000	7.18
36.0000	7.17
38.0000	7.15
40.0000	7.14
42.0000	7.12
44.0000	7.11
46.0000	7.10
48.0000	7.08
50.0000	7.07
52.0000	7.05
54.0000	7.04
56.0000	7.03
58.0000	7.01
60.0000	7.00
62.0000	6.99
64.0000	6.98
66.0000	6.96
68.0000	6.95
70.0000	6.94
72.0000	6.93
74.0000	6.92
76.0000	6.90
78.0000	6.89
80.0000	6.88
82.0000	6.87
84.0000	6.86
86.0000	6.85
88.0000	6.83
90.0000	6.82
92.0000	6.81
94.0000	6.80
96.0000	6.79

	70293
98.0000	6.78
100.000	6.77
110.000	6.72
120.000	6.67
130.000	6.62
140.000	6.57
150.000	6.53
160.000	6.48
170.000	6.44
180.000	6.39
190.000	6.35
200.000	6.31
210.000	6.27
220.000	6.23
230.000	6.19
240.000	6.16
250.000	6.12
260.000	6.08
270.000	6.05
280.000	6.01
290.000	5.97
300.000	5.94
310.000	5.91
320.000	5.87
330.000	5.84
340.000	5.81
350.000	5.78
360.000	5.75
370.000	5.71
380.000	5.68
390.000	5.65
400.000	5.62
410.000	5.60
420.000	5.56
430.000	5.54
440.000	5.51
450.000	5.48
460.000	5.45
470.000	5.42
480.000	5.39
490.000	5.36

	70293
500.000	5.34
510.000	5.31
520.000	5.28
530.000	5.25
540.000	5.23
550.000	5.21
560.000	5.18
570.000	5.15
580.000	5.13
590.000	5.10
600.000	5.08
610.000	5.05
620.000	5.03
630.000	5.00
640.000	4.97
650.000	4.95
660.000	4.92
670.000	4.90
680.000	4.88
690.000	4.85
700.000	4.83
710.000	4.80
720.000	4.78
730.000	4.76
740.000	4.73
750.000	4.71
760.000	4.69
770.000	4.66
780.000	4.64
790.000	4.61
800.000	4.60
810.000	4.57
820.000	4.55
830.000	4.52
840.000	4.50
850.000	4.48
860.000	4.46
870.000	4.43
880.000	4.41
890.000	4.39
900.000	4.37

	70293
910.000	4.35
920.000	4.33
930.000	4.31
940.000	4.28
950.000	4.26
960.000	4.24
970.000	4.22
980.000	4.20
990.000	4.18
1000.00	4.15
1100.00	3.96
1200.00	3.77
1300.00	3.59
1400.00	3.41
1500.00	3.24
1600.00	3.07
1700.00	2.91
1800.00	2.74
1900.00	2.59
2000.00	2.45
2100.00	2.31
2200.00	2.16
2300.00	2.03
2400.00	1.91
2500.00	1.79
2600.00	1.68
2700.00	1.55
2800.00	1.43
2900.00	1.32
3000.00	1.20
3100.00	1.09
3200.00	0.98
3300.00	0.87
3400.00	0.77
3500.00	0.67
3600.00	0.57
3700.00	0.47
3800.00	0.37
3900.00	0.27
4000.00	0.17
4100.00	0.09

	70293
4200.00	0.00
4300.00	-0.07
4400.00	-0.16
4500.00	-0.25
4600.00	-0.33
4700.00	-0.40
4800.00	-0.47
4900.00	-0.54
5000.00	-0.62
5100.00	-0.69
5200.00	-0.76
5300.00	-0.83
5400.00	-0.90
5500.00	-0.97
5600.00	-1.04

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 70393
Test Date/Time 4/5/93 - 15:20
Measuring Point DTW 12.08' (6000.01)
Type of Test SLUG TEST (FALLING HEAD)
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 0 & 3
(include time and date for 4/5/93 identification purposes)

Name J. Higgins / D. Reeder / S. Lynn
Groundwater Elevation Before Test (Ho) 12.08(toc) (5987.93)
Total Casing Depth 24.8 (from log) / Measured Depth: 27.02'
Borehole Diameter 7.0"
Casing Diameter 2.0"
Screened Interval 7.8' - 22.8'
Sand Pack Interval 6.5' - 24.5'

Lithology Tested Alluvium

(TEST # 0 & TEST # 3 ON HERMIT SW22)

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho
0910	0	12.08	0	

70393
70393
SE1000B
Environmental Logger
04/07 16:31

Unit# 00022 Test# 3

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/05 15:22

Elapsed Time	Value
0.0000	2.01
0.0033	2.00
0.0066	2.00
0.0099	2.00
0.0133	2.00
0.0166	2.01
0.0200	2.01
0.0233	2.00
0.0266	1.99
0.0300	1.99
0.0333	1.99
0.0500	1.97
0.0666	1.95
0.0833	1.93
0.1000	1.91
0.1166	1.90
0.1333	1.88
0.1500	1.87
0.1666	1.85
0.1833	1.83
0.2000	1.81
0.2166	1.80
0.2333	1.78
0.2500	1.77

70393

0.2666	1.75
0.2833	1.74
0.3000	1.72
0.3166	1.71
0.3333	1.69
0.4167	1.63
0.5000	1.57
0.5833	1.50
0.6667	1.45
0.7500	1.39
0.8333	1.34
0.9167	1.30
1.0000	1.25
1.0833	1.21
1.1667	1.18
1.2500	1.14
1.3333	1.11
1.4166	1.08
1.5000	1.06
1.5833	1.03
1.6667	1.01
1.7500	0.99
1.8333	0.97
1.9167	0.96
2.0000	0.94
2.5000	0.88
3.0000	0.84
3.5000	0.80
4.0000	0.78
4.5000	0.76
5.0000	0.74
5.5000	0.72
6.0000	0.71
6.5000	0.70
7.0000	0.69
7.5000	0.68
8.0000	0.67
8.5000	0.66
9.0000	0.66
9.5000	0.65
10.0000	0.65

70393

12.0000	0.62
14.0000	0.60
16.0000	0.58
18.0000	0.56
20.0000	0.54
22.0000	0.53
24.0000	0.52
26.0000	0.51
28.0000	0.49
30.0000	0.48
32.0000	0.47
34.0000	0.45
36.0000	0.44
38.0000	0.43
40.0000	0.42
42.0000	0.41
44.0000	0.40
46.0000	0.39
48.0000	0.38
50.0000	0.36
52.0000	0.36
54.0000	0.35
56.0000	0.34
58.0000	0.33
60.0000	0.32
62.0000	0.31
64.0000	0.30
66.0000	0.29
68.0000	0.29
70.0000	0.28
72.0000	0.27
74.0000	0.26
76.0000	0.26
78.0000	0.25
80.0000	0.24
82.0000	0.23
84.0000	0.22
86.0000	0.22
88.0000	0.22
90.0000	0.21
92.0000	0.20

70393 SLUG TEST
70393 SLUG TEST
SE1000B
Environmental Logger
04/07 16:42

Unit# 00022 Test# 0

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/05 09:31

Elapsed Time	Value
0.0000	-0.64
0.0033	-0.64
0.0066	-0.64
0.0099	-0.65
0.0133	-0.66
0.0166	-0.69
0.0200	-0.67
0.0233	-0.62
0.0266	-0.61
0.0300	-0.62
0.0333	-0.74
0.0500	-0.60
0.0666	-0.59
0.0833	-0.59
0.1000	-0.59
0.1166	-0.56
0.1333	-0.58
0.1500	-0.56
0.1666	-0.56
0.1833	-0.55
0.2000	-0.55
0.2166	-0.54
0.2333	-0.54
0.2500	-0.54

70393 SLUG TEST

0.2666	-0.54
0.2833	-0.54
0.3000	-0.46
0.3166	-0.55
0.3333	-0.50
0.4167	-0.51
0.5000	-0.50
0.5833	-0.50
0.6667	-0.49
0.7500	-0.49
0.8333	-0.48
0.9167	-0.48
1.0000	-0.48
1.0833	-0.48
1.1667	-0.48
1.2500	-0.47
1.3333	-0.47
1.4166	-0.47
1.5000	-0.47
1.5833	-0.47
1.6667	-0.46
1.7500	-0.46
1.8333	-0.48
1.9167	-0.45
2.0000	-0.45
2.5000	-0.45
3.0000	-0.44
3.5000	-0.43
4.0000	-0.42
4.5000	-0.42
5.0000	-0.41
5.5000	-0.41
6.0000	-0.41
6.5000	-0.40
7.0000	-0.40
7.5000	-0.39
8.0000	-0.38
8.5000	-0.38
9.0000	-0.38
9.5000	-0.37
10.0000	-0.37

70393 SLUG TEST

.0000	-0.36
14.0000	-0.35
16.0000	-0.33
18.0000	-0.32
20.0000	-0.31
22.0000	-0.30
24.0000	-0.29
26.0000	-0.28
28.0000	-0.27
30.0000	-0.26
32.0000	-0.25
34.0000	-0.25
36.0000	-0.24
38.0000	-0.23
40.0000	-0.22
42.0000	-0.22
44.0000	-0.22
46.0000	-0.21
48.0000	-0.21
50.0000	-0.20
0000	-0.20
54.0000	-0.19
56.0000	-0.19
58.0000	-0.18
60.0000	-0.18
62.0000	-0.18
64.0000	-0.17
66.0000	-0.17
68.0000	-0.17
70.0000	-0.17
72.0000	-0.16
74.0000	-0.16
76.0000	-0.16
78.0000	-0.16
80.0000	-0.15
82.0000	-0.15
84.0000	-0.15
86.0000	-0.15
88.0000	-0.15
90.0000	-0.15
0000	-0.14

70393 SLUG TEST

94.0000	-0.14
96.0000	-0.14
98.0000	-0.14
100.000	-0.13
110.000	-0.12
120.000	-0.11
130.000	-0.10
140.000	-0.10
150.000	-0.09
160.000	-0.08
170.000	-0.08
180.000	-0.08
190.000	-0.08

SLUG TEST DATA FORM

Location SW7 PRESENT LANDFILL
Borehole No. 70493
Test Date/Time 8/12/93 9:46
Measuring Point 5999.98'-16.31'
Type of Test BAIL-DOWN SLUG TEST
Transducer Probe Serial No. 1045CH
Datalogger Test Run No. 1 (embed)
(include time and date for identification purposes)

Name J HIGGINS D BEEDER
Groundwater Elevation Before Test (Ho) 5999.98' -16.31' = 5983.67'
Total Casing Depth Measured Depth 48.00'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 24'-44'
Sand Pack Interval 23.3'-46.0'

Lithology Tested WEATHERED BEDROCK

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

SE1000C
Environmental Logger
04/15 06:46

Unit# 01820 Test 1

PUT 1: Level (F) TOC

ference	0.000
earity	0.050
le factor	10.030
set	0.040
ay mSEC	50.000

p 0 04/12 08:42:42

apsed Time	INPUT 1
0.0000	6.818
0.0033	6.863
0.0066	6.897
0.0100	6.916
0.0133	6.907
More --	
0.0166	6.881
0.0200	6.844
0.0233	6.812
0.0266	6.796
0.0300	6.799
0.0333	6.818
0.0366	6.847
0.0400	6.869
0.0433	6.878
0.0466	6.875
0.0500	6.859
0.0533	6.837
0.0566	6.815
0.0600	6.806
0.0633	6.809
0.0666	6.818
0.0700	6.834
0.0733	6.847
0.0766	6.853
0.0800	6.853
0.0833	6.844
0.0866	6.828
0.0900	6.815
0.0933	6.809
-- More --	
0.0966	6.812
0.1000	6.815
0.1033	6.825
0.1066	6.834
0.1100	6.837
0.1133	6.837
0.1166	6.828
0.1200	6.821
0.1233	6.815
0.1266	6.809
0.1300	6.809
0.1333	6.812
0.1366	6.818
0.1400	6.821
0.1433	6.825
0.1466	6.825
0.1500	6.821
0.1533	6.815
0.1566	6.812
0.1600	6.809
0.1633	6.806
0.1666	6.809
0.1700	6.812
0.1733	6.815
-- More --	
0.1766	6.815
0.1800	6.815
0.1833	6.815
0.1866	6.809
0.1900	6.806
0.1933	6.802
0.1966	6.806
0.2000	6.806
0.2033	6.806
0.2066	6.809
0.2100	6.809
0.2133	6.809
0.2166	6.809
0.2200	6.806
0.2233	6.802
0.2266	6.799
0.2300	6.799
0.2333	6.799
0.2366	6.802
0.2400	6.802
0.2433	6.802
0.2466	6.802
0.2500	6.799
0.2533	6.799
-- More --	
0.2566	6.796
0.2600	6.796
0.2633	6.796
0.2666	6.796
0.2700	6.796
0.2733	6.796
0.2766	6.799
0.2800	6.796
0.2833	6.796
0.2866	6.793
0.2900	6.793
0.2933	6.793
0.2966	6.793
0.3000	6.793
0.3033	6.793
0.3066	6.793
0.3100	6.793
0.3133	6.793
0.3166	6.793
0.3200	6.790
0.3233	6.787
0.3266	6.790
0.3300	6.790
0.3333	6.787
-- More --	
0.3266	6.790
0.3300	6.790
0.3333	6.787
-- More --	
0.3500	6.787
0.3666	6.787
0.3833	6.783
0.4000	6.780
0.4166	6.780
0.4333	6.780
0.4500	6.777
0.4666	6.774
0.4833	6.774
0.5000	6.771
0.5166	6.771
0.5333	6.768
0.5500	6.768
0.5666	6.765
0.5833	6.765
0.6000	6.761
0.6166	6.761
0.6333	6.758
0.6500	6.758
0.6666	
0.3500	6.787
0.3666	6.787
0.3833	6.783
0.4000	6.780
0.4166	6.780
0.4333	6.780
0.4500	6.777
0.4666	6.774
0.4833	6.774
0.5000	6.771
0.5166	6.771
0.5333	6.768
0.5500	6.768
0.5666	6.765
0.5833	6.765
0.6000	6.761
0.6166	6.761
0.6333	6.758
0.6500	6.758
0.6666	6.758
0.6833	6.758
0.7000	6.755
0.7166	6.752
0.7333	6.752
-- More --	
0.7500	6.752
0.7666	6.749
0.7833	6.749
0.8000	6.749
0.8166	6.746
0.8333	6.746
0.8500	6.746
0.8666	6.746
0.8833	6.742
0.9000	6.742
0.9166	6.742
0.9333	6.739
0.9500	6.736

0.9666	6.739
0.9833	6.736
1.0000	6.736
1.2000	6.720
[illegible]	6.711
[illegible]	6.704
1.8000	6.692
2.0000	6.685
2.2000	6.679
2.4000	6.670
2.6000	6.663

-- More --

2.8000	6.657
3.0000	6.651
3.2000	6.648
3.4000	6.641
3.6000	6.638
3.8000	6.635
4.0000	6.629
4.2000	6.625
4.4000	6.619
4.6000	6.616
4.8000	6.606
5.0000	6.603
5.2000	6.600
5.4000	6.597
5.6000	6.591
5.8000	6.591
6.0000	6.591
6.2000	6.587
6.4000	6.581
[illegible]	6.578
[illegible]	6.578
7.0000	6.575
7.2000	6.572
7.4000	6.569

-- More --

7.6000	6.562
7.8000	6.559
8.0000	6.556
8.2000	6.556
8.4000	6.553
8.6000	6.550
8.8000	6.546
9.0000	6.546
9.2000	6.543
9.4000	6.540

9.6000	6.537
9.8000	6.534
10.0000	6.531
12.0000	6.515
14.0000	6.499
16.0000	6.483
18.0000	6.471
20.0000	6.458
22.0000	6.445
24.0000	6.433
26.0000	6.420
28.0000	6.410
30.0000	6.401
32.0000	6.391

-- More --

34.0000	6.382
36.0000	6.372
38.0000	6.363
40.0000	6.354
42.0000	6.347
44.0000	6.341
46.0000	6.331
48.0000	6.322
50.0000	6.316
52.0000	6.303
54.0000	6.293
56.0000	6.290
58.0000	6.278
60.0000	6.268
62.0000	6.262
64.0000	6.252
66.0000	6.246
68.0000	6.240
70.0000	6.230
72.0000	6.221
74.0000	6.214
76.0000	6.205
78.0000	6.195
80.0000	6.189

-- More --

66.0000	6.246
68.0000	6.240
70.0000	6.230
72.0000	6.221
74.0000	6.214
76.0000	6.205
78.0000	6.195

80.0000	6.189

-- More --

82.0000	6.183
84.0000	6.176
86.0000	6.167
88.0000	6.158
90.0000	6.151
92.0000	6.142
94.0000	6.135
96.0000	6.129
98.0000	6.120
100.000	6.113
120.000	6.041
140.000	5.971
160.000	5.901
180.000	5.835
200.000	

82.0000	6.183
84.0000	6.176
86.0000	6.167
88.0000	6.158
90.0000	6.151
92.0000	6.142
94.0000	6.135
96.0000	6.129
98.0000	6.120
100.000	6.113
120.000	6.041
140.000	5.971
160.000	5.901
180.000	5.835
200.000	5.769
220.000	5.708
240.000	5.645
260.000	5.585
280.000	5.525
300.000	5.468
320.000	5.414
340.000	5.361
360.000	5.307
380.000	5.250

-- More --

400.000	5.199
420.000	5.149
440.000	5.098
460.000	5.044

480.000	4.994
500.000	4.940
520.000	4.892
540.000	4.845
560.000	4.794
580.000	4.747
600.000	4.706
620.000	4.658
640.000	4.611
660.000	4.570
680.000	4.522
700.000	4.478
720.000	4.437
740.000	4.389
760.000	4.345
780.000	4.304
800.000	4.266
820.000	4.222
840.000	4.174
860.000	4.139

-- More --

880.000	4.098
900.000	4.057
920.000	4.016
940.000	3.972
960.000	3.940
980.000	3.899
1000.00	3.861
1200.00	3.500
1400.00	3.183
1600.00	2.883
1800.00	2.601
2000.00	2.357
2200.00	2.129
2400.00	1.885
2600.00	1.657
2800.00	1.473
3000.00	1.280
3200.00	1.093
3400.00	0.919
3600.00	0.782
3800.00	0.630
4000.00	0.478

C:\OU7SLUG
>

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 70593
Test Date/Time 4/8/93 / 11:39
Measuring Point 5999.84' - 125.28'
Type of Test BAIL - DOWN SLUG TEST
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. Ø
(include time and date for 4/8/93 11:39 identification purposes)

Name JEN HIGGINS / D. REEDER
Groundwater Elevation Before Test (Ho) 5999.84' - 125.28' = 5985.76'
Total Casing Depth Measured Depth 140.08'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 121.0' - 136.0'
Sand Pack Interval 120.35' - 137.2'

Lithology Tested BEDROCK

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

SE1000B 70593
Environmental Logger
[illegible]2 13:09

Unit# 00022 Test# 0

UT 1: Level (F) TOC

erence	0.00
le factor	10.01
set	0.00

0 04/16 08:46

sed Time	Value
.0000	5.53
.0033	5.52
.0066	5.53
0099	5.53
0133	5.53
0166	5.53
0200	5.53
re --	
0233	5.53
0266	5.55
300	5.55
333	5.52
500	5.53
666	5.52
833	5.52
00	5.52
66	5.52
33	5.52
00	5.52
66	5.51
3	5.51
0	5.51
6	5.51
3	5.51
0	5.50
	5.49
	5.48
	5.47
	5.46
	5.46
0.4167	5.42
0.5000	5.39
-- More --	
0.5833	5.37
0.6667	5.35
0.7500	5.34
0.8333	5.33
0.9167	5.32
1.0000	5.31
1.0833	5.30
1.1667	5.30
1.2500	5.29
1.3333	5.28
1.4166	5.28
1.5000	5.27
1.5833	5.27
1.6667	5.26
1.7500	5.26
1.8333	5.26
1.9167	5.25
2.0000	5.25
2.5000	5.23
3.0000	5.21
3.5000	5.20
4.0000	5.18
4.5000	5.17
5.0000	5.15
-- More --	
5.5000	5.14
6.0000	5.13
6.5000	5.11
7.0000	5.10
7.5000	5.09
8.0000	5.08
8.5000	5.07
9.0000	5.06
9.5000	5.05
10.0000	5.04
12.0000	5.01
14.0000	4.97
16.0000	4.94
18.0000	4.90
20.0000	4.87
22.0000	4.84
24.0000	4.81
26.0000	4.78
28.0000	4.76
30.0000	4.73
32.0000	4.71
34.0000	4.68
36.0000	4.66
38.0000	4.63
-- More --	
40.0000	4.61
42.0000	4.59
44.0000	4.57
46.0000	4.54
48.0000	4.52
50.0000	4.50
52.0000	4.48
54.0000	4.46
56.0000	4.44
58.0000	4.42
60.0000	4.40
62.0000	4.38
64.0000	4.36
66.0000	4.34
68.0000	4.33
70.0000	4.31
72.0000	4.29
74.0000	4.27
76.0000	4.25
78.0000	4.23
80.0000	4.22
82.0000	4.20
84.0000	4.18
86.0000	4.17
-- More --	
88.0000	4.15
90.0000	4.13
92.0000	4.12
94.0000	4.10
96.0000	4.09
98.0000	4.07
100.000	4.06
110.000	3.99
120.000	3.93
130.000	3.88
140.000	3.81
150.000	3.76
160.000	3.69
170.000	3.64
180.000	3.59
190.000	3.56
200.000	3.51
210.000	3.46
220.000	3.42
230.000	3.37
240.000	3.33
250.000	3.29
260.000	3.25
270.000	3.21
-- More --	
280.000	3.18
290.000	3.14
300.000	3.10
310.000	3.08
320.000	3.05
330.000	3.01
340.000	2.98
350.000	2.95
360.000	2.92
370.000	2.88
380.000	2.83
390.000	2.80
400.000	2.77
410.000	2.74
420.000	2.71
430.000	2.67
440.000	2.64
450.000	2.61
460.000	2.57
470.000	2.53
480.000	2.49
490.000	2.47
500.000	2.43
510.000	2.41
-- More --	
520.000	2.38
530.000	2.36
540.000	2.33
550.000	2.31
560.000	2.28
570.000	2.25
580.000	2.22
590.000	2.19
600.000	2.17
610.000	2.14
620.000	2.11
630.000	2.09
640.000	2.06

650.000	2.04
660.000	2.02
670.000	1.99
680.000	1.96
690.000	1.94
700.000	1.92
710.000	1.89
720.000	1.87
730.000	1.84
740.000	1.81
750.000	1.79

-- More --

760.000	1.76
770.000	1.74
780.000	1.71
790.000	1.68
800.000	1.66
810.000	1.63
820.000	1.61
830.000	1.59
840.000	1.56
850.000	1.54
860.000	1.51
870.000	1.49
880.000	1.46
890.000	1.43
900.000	1.41
910.000	1.38
920.000	1.36
930.000	1.34
940.000	1.32
950.000	1.30
960.000	1.27
970.000	1.25
980.000	1.23
990.000	1.21

- More --

1000.00	1.17
1100.00	0.93
1200.00	0.70
1300.00	0.48
1400.00	0.28
1500.00	0.05
1600.00	-0.20
1700.00	-0.37
1800.00	-0.64
1900.00	-0.81

2000.00	-1.07
2100.00	-1.27
2200.00	-1.45
2300.00	-1.64
2400.00	-1.84
2500.00	-2.04
2600.00	-2.24
2700.00	-2.43
2800.00	-2.60
2900.00	-2.77
3000.00	-3.00
3100.00	-3.16
3200.00	-3.34
3300.00	-3.54

-- More --

3400.00	-3.82
3500.00	-3.91
3600.00	-4.09
3700.00	-4.25
3800.00	-4.43
3900.00	-4.58
4000.00	-4.75
4100.00	-4.95
4200.00	-5.06
4300.00	-5.22
4400.00	-5.42
4500.00	-5.58
4600.00	-5.74
4700.00	-5.93
4800.00	-6.07
4900.00	-6.22
5000.00	-6.36
5100.00	-6.52
5200.00	-6.66
5300.00	-6.82
5400.00	-6.97
5500.00	-7.13
5600.00	-7.29
5700.00	-7.42

-- More --

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 70693 E
Test Date/Time 4/5/93 / 14:55
Measuring Point 5992.71 - 12.71 (bc)
Type of Test BAIL-DOWN & SLUG TEST
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 1 & 2
(include time and date for identification purposes)
(TEST #1 & 2 ON HERMIT SWZZ)

Name JENNIFER HIGGINS/DAN Reeder
Groundwater Elevation Before Test (Ho) 5992.71 - 12.71 = 5980
Total Casing Depth Measured depth = 31.90'
Borehole Diameter 10.82' 25"
Casing Diameter 2"
Screened Interval 8.4' - 28.4' bgs
Sand Pack Interval 6.5' - 30.5' bgs
Lithology Tested Alluvium

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

70693
70693
SE1000B
Environmental Logger
04/07 16:34

Unit# 00022 Test# 2

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/05 14:48

Elapsed Time	Value
0.0000	3.02
0.0033	3.01
0.0066	3.01
0.0099	2.99
0.0133	2.98
0.0166	2.96
0.0200	2.96
0.0233	2.95
0.0266	2.93
0.0300	2.91
0.0333	2.90
0.0500	2.85
0.0666	2.79
0.0833	2.74
0.1000	2.70
0.1166	2.65
0.1333	2.60
0.1500	2.56
0.1666	2.51
0.1833	2.47
0.2000	2.42
0.2166	2.38
0.2333	2.34
0.2500	2.30

70693

0.2666	2.26
0.2833	2.22
0.3000	2.18
0.3166	2.15
0.3333	2.11
0.4167	1.94
0.5000	1.78
0.5833	1.64
0.6667	1.51
0.7500	1.39
0.8333	1.28
0.9167	1.19
1.0000	1.10
1.0833	1.03
1.1667	0.97
1.2500	0.92
1.3333	0.88
1.4166	0.84
1.5000	0.80
1.5833	0.77
1.6667	0.74
1.7500	0.71
1.8333	0.69
1.9167	0.66
2.0000	0.65
2.5000	0.55
3.0000	0.48
3.5000	0.44
4.0000	0.40
4.5000	0.37
5.0000	0.34
5.5000	0.32
6.0000	0.31
6.5000	0.29
7.0000	0.27
7.5000	0.25
8.0000	0.24
8.5000	0.23
9.0000	0.22
9.5000	0.21
10.0000	0.20

70693

12.0000	0.16
14.0000	0.14
16.0000	0.12

70693 SLUG TEST
70693 SLUG TEST
SE1000B
Environmental Logger
04/07 16:36

Unit# 00022 Test# 1

INPUT 1: Level (F)

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/05 13:20

Elapsed Time	Value
0.0000	0.34
0.0033	0.34
0.0066	0.34
0.0099	0.34
0.0133	0.34
0.0166	0.34
0.0200	0.34
0.0233	0.33
0.0266	0.33
0.0300	0.33
0.0333	0.33
0.0500	0.33
0.0666	0.32
0.0833	0.32
0.1000	0.31
0.1166	0.31
0.1333	0.31
0.1500	0.30
0.1666	0.30
0.1833	0.30
0.2000	0.30
0.2166	0.29
0.2333	0.29
0.2500	0.29

70693 SLUG TEST

0.2666	0.28
0.2833	0.28
0.3000	0.28
0.3166	0.28
0.3333	0.27
0.4167	0.26
0.5000	0.25
0.5833	0.25
0.6667	0.24
0.7500	0.24
0.8333	0.23
0.9167	0.22
1.0000	0.22
1.0833	0.21
1.1667	0.21
1.2500	0.20
1.3333	0.20
1.4166	0.20
1.5000	0.19
1.5833	0.19
1.6667	0.19
1.7500	0.18
1.8333	0.18
1.9167	0.18
2.0000	0.18
2.5000	0.16
3.0000	0.14
3.5000	0.13
4.0000	0.12
4.5000	0.12
5.0000	0.11
5.5000	0.10
6.0000	0.10
6.5000	0.09
7.0000	0.09
7.5000	0.08
8.0000	0.08
8.5000	0.08
9.0000	0.07
9.5000	0.07
10.0000	0.07

70693 SLUG TEST

12.0000	0.06
14.0000	0.06
16.0000	0.05
18.0000	0.05
20.0000	0.05
22.0000	0.05
24.0000	0.05
26.0000	0.04
28.0000	0.04
30.0000	0.04
32.0000	0.04
34.0000	0.04
36.0000	0.04
38.0000	0.05

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 70893
Test Date/Time 4/12/93 1020
Measuring Point 5993.06' - 66.59'
Type of Test BAIL-DOWN SLUG TEST
Transductor Probe Serial No. 10450H
Datalogger Test Run No. SW22 #~~#~~ 1
(include time and date for identification purposes)

Name J. HIGGINS D. REEDER
Groundwater Elevation Before Test (Ho) 5993.06 - 66.59' = 5926.47'
Total Casing Depth Measured Depth = 70.05'
Borehole Diameter 3"
Casing Diameter 2"
Screened Interval 51' - 66.0'
Sand Pack Interval 49.6' - 67.8'

Lithology Tested BEDROCK

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

70893

SE1000B
Environmental Logger
04/14 12:30

Unit# 00022 Test# 1

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/12 10:09

Elapsed Time	Value
0.0000	2.24
0.0033	2.24
0.0066	2.24
0.0099	2.24
0.0133	2.24
0.0166	2.24
0.0200	2.24
0.0233	2.24
0.0266	2.24
0.0300	2.24
0.0333	2.24
0.0500	2.24
0.0666	2.24
0.0833	2.24
0.1000	2.24
0.1166	2.24
0.1333	2.23
0.1500	2.23
0.1666	2.23
0.1833	2.23
0.2000	2.23
0.2166	2.23
0.2333	2.23
0.2500	2.23
0.2666	2.23

70893

0.2833	2.23
0.3000	2.23
0.3166	2.22
0.3333	2.22
0.4167	2.22
0.5000	2.21
0.5833	2.21
0.6667	2.20
0.7500	2.20
0.8333	2.19
0.9167	2.18
1.0000	2.18
1.0833	2.18
1.1667	2.17
1.2500	2.17
1.3333	2.16
1.4166	2.16
1.5000	2.15
1.5833	2.15
1.6667	2.15
1.7500	2.14
1.8333	2.13
1.9167	2.13
2.0000	2.13
2.5000	2.10
3.0000	2.07
3.5000	2.05
4.0000	2.03
4.5000	2.01
5.0000	1.99
5.5000	1.97
6.0000	1.95
6.5000	1.93
7.0000	1.92
7.5000	1.90
8.0000	1.89
8.5000	1.87
9.0000	1.86
9.5000	1.85
10.0000	1.83
12.0000	1.78

	70893
14.0000	1.73
16.0000	1.69
18.0000	1.65
20.0000	1.62
22.0000	1.59
24.0000	1.56
26.0000	1.54
28.0000	1.51
30.0000	1.50
32.0000	1.48
34.0000	1.46
36.0000	1.45
38.0000	1.43
40.0000	1.42
42.0000	1.40
44.0000	1.39
46.0000	1.38
48.0000	1.37
50.0000	1.36
52.0000	1.35
54.0000	1.34
56.0000	1.33
58.0000	1.33
60.0000	1.32
62.0000	1.31
64.0000	1.31
66.0000	1.30
68.0000	1.29
70.0000	1.29
72.0000	1.28
74.0000	1.28
76.0000	1.27
78.0000	1.27
80.0000	1.27
82.0000	1.26
84.0000	1.26
86.0000	1.25
88.0000	1.25
90.0000	1.24
92.0000	1.24
94.0000	1.24

	70893
96.0000	1.23
98.0000	1.23
100.000	1.23
110.000	1.21
120.000	1.20
130.000	1.18
140.000	1.17
150.000	1.16
160.000	1.15
170.000	1.14
180.000	1.14
190.000	1.13
200.000	1.12
210.000	1.11
220.000	1.11
230.000	1.10
240.000	1.09
250.000	1.09
260.000	1.08
270.000	1.08
280.000	1.07
290.000	1.07
300.000	1.06
310.000	1.05
320.000	1.05
330.000	1.04
340.000	1.04
350.000	1.03
360.000	1.03
370.000	1.02
380.000	1.02
390.000	1.02
400.000	1.01
410.000	1.01
420.000	1.00
430.000	1.00
440.000	1.00
450.000	0.99
460.000	0.99
470.000	0.98
480.000	0.98

	70893
490.000	0.97
500.000	0.97
510.000	0.96
520.000	0.96
530.000	0.96
540.000	0.95
550.000	0.95
560.000	0.95
570.000	0.94
580.000	0.94
590.000	0.93
600.000	0.93
610.000	0.92
620.000	0.92
630.000	0.92
640.000	0.91
650.000	0.91
660.000	0.91
670.000	0.90
680.000	0.90
690.000	0.90
700.000	0.89
710.000	0.89
720.000	0.89
730.000	0.88
740.000	0.88
750.000	0.87
760.000	0.87
770.000	0.87
780.000	0.86
790.000	0.86
800.000	0.85
810.000	0.85
820.000	0.85
830.000	0.84
840.000	0.84
850.000	0.84
860.000	0.83
870.000	0.83
880.000	0.82
890.000	0.82

	70893
900.000	0.82
910.000	0.81
920.000	0.81
930.000	0.81
940.000	0.80
950.000	0.80
960.000	0.79
970.000	0.79
980.000	0.79
990.000	0.78
1000.00	0.78
1100.00	0.74
1200.00	0.71
1300.00	0.68
1400.00	0.65
1500.00	0.62
1600.00	0.59
1700.00	0.56
1800.00	0.53
1900.00	0.50
2000.00	0.48
2100.00	0.45
2200.00	0.42
2300.00	0.39
2400.00	0.36
2500.00	0.34
2600.00	0.31
2700.00	0.28
2800.00	0.26
2900.00	0.23
3000.00	0.20

5994.
70.69

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GW4A

SLUG TEST DATA FORM

Location OU 7 PRESENT LANDFILL
Borehole No. 71193
Test Date/Time 4/8/93 / 10:18
Measuring Point 5991.11 - 11.42'(toc)
Type of Test BAIL-DOWN SLUG TEST
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. Ø (#2)
(include time and date for identification purposes)

Name J. HIGGINS / D. REEDER
Groundwater Elevation Before Test (Ho) 5991.11 - 11.42'(toc) = 5979.69
Total Casing Depth Measured Depth = 24.00'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 10.0' - 20.0'
Sand Pack Interval 8.2' - 21.1'

Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

(4011-920-0111-920)(GW4REV.2)(03-02-92)

71193

SE1000B
Environmental Logger
04/14 12:27

Unit# 00022 Test# 0

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/08 10:12

Elapsed Time	Value
0.0000	4.21
0.0033	4.21
0.0066	4.20
0.0099	4.20
0.0133	4.19
0.0166	4.19
0.0200	4.18
0.0233	4.18
0.0266	4.17
0.0300	4.17
0.0333	4.17
0.0500	4.15
0.0666	4.12
0.0833	4.11
0.1000	4.08
0.1166	4.06
0.1333	4.05
0.1500	4.03
0.1666	4.01
0.1833	3.99
0.2000	3.97
0.2166	3.95
0.2333	3.93
0.2500	3.92
0.2666	3.90

71193

0.2833	3.88
0.3000	3.87
0.3166	3.85
0.3333	3.83
0.4167	3.75
0.5000	3.69
0.5833	3.63
0.6667	3.57
0.7500	3.53
0.8333	3.48
0.9167	3.44
1.0000	3.41
1.0833	3.38
1.1667	3.35
1.2500	3.32
1.3333	3.30
1.4166	3.28
1.5000	3.26
1.5833	3.24
1.6667	3.22
1.7500	3.20
1.8333	3.18
1.9167	3.17
2.0000	3.15
2.5000	3.06
3.0000	2.98
3.5000	2.90
4.0000	2.82
4.5000	2.76
5.0000	2.70
5.5000	2.64
6.0000	2.60
6.5000	2.56
7.0000	2.53
7.5000	2.50
8.0000	2.47
8.5000	2.45
9.0000	2.42
9.5000	2.41
10.0000	2.39
12.0000	2.33

71193

14.0000	2.28
16.0000	2.24
18.0000	2.22
20.0000	2.18
22.0000	2.16
24.0000	2.14
26.0000	2.12
28.0000	2.10
30.0000	2.09
32.0000	2.07
34.0000	2.06
36.0000	2.04
38.0000	2.03
40.0000	2.02
42.0000	2.01
44.0000	2.00
46.0000	1.99
48.0000	1.97
50.0000	1.96
52.0000	1.95
54.0000	1.94
56.0000	1.93
58.0000	1.93
60.0000	1.91
62.0000	1.90
64.0000	1.89
66.0000	1.89
68.0000	1.88
70.0000	1.87
72.0000	1.86
74.0000	1.85
76.0000	1.85
78.0000	1.84
80.0000	1.83
82.0000	1.82
84.0000	1.81
86.0000	1.81
88.0000	1.80
90.0000	1.79
92.0000	1.78
94.0000	1.78

	71193
96.0000	1.77
98.0000	1.76
100.000	1.76
110.000	1.72
120.000	1.69
130.000	1.66
140.000	1.63
150.000	1.60
160.000	1.57
170.000	1.54
180.000	1.51
190.000	1.48
200.000	1.45
210.000	1.42
220.000	1.38
230.000	1.35
240.000	1.32
250.000	1.29
260.000	1.26
270.000	1.23
280.000	1.20
290.000	1.17
300.000	1.14
310.000	1.11
320.000	1.08
330.000	1.04
340.000	1.01
350.000	0.98
360.000	0.95
370.000	0.92
380.000	0.89
390.000	0.86
400.000	0.83
410.000	0.80
420.000	0.77
430.000	0.74
440.000	0.71
450.000	0.67
460.000	0.64
470.000	0.60
480.000	0.57

	71193
490.000	0.54
500.000	0.50
510.000	0.47
520.000	0.43
530.000	0.40
540.000	0.37
550.000	0.34
560.000	0.31
570.000	0.28
580.000	0.24
590.000	0.22
600.000	0.18
610.000	0.16
620.000	0.13
630.000	0.10
640.000	0.07
650.000	0.05
660.000	0.02
670.000	0.00
680.000	-0.02
690.000	-0.04
700.000	-0.07
710.000	-0.09
720.000	-0.10
730.000	-0.12
740.000	-0.13
750.000	-0.14
760.000	-0.16
770.000	-0.17
780.000	-0.18
790.000	-0.20
800.000	-0.21
810.000	-0.22
820.000	-0.23
830.000	-0.24
840.000	-0.25
850.000	-0.26
860.000	-0.27
870.000	-0.28
880.000	-0.29
890.000	-0.30

	71193
900.000	-0.30
910.000	-0.31
920.000	-0.31
930.000	-0.32
940.000	-0.33
950.000	-0.33
960.000	-0.34
970.000	-0.34
980.000	-0.35
990.000	-0.35
1000.00	-0.35
1100.00	-0.40
1200.00	-0.42
1300.00	-0.45
1400.00	-0.48
1500.00	-0.51
1600.00	-0.54
1700.00	-0.56
1800.00	-0.59
1900.00	-0.61
2000.00	-0.62
2100.00	-0.63
2200.00	-0.65
2300.00	-0.66
2400.00	-0.66
2500.00	-0.67
2600.00	-0.68
2700.00	-0.68
2800.00	-0.70
2900.00	-0.69
3000.00	-0.70
3100.00	-0.72
3200.00	-0.71
3300.00	-0.71
3400.00	-0.71
3500.00	-0.71
3600.00	-0.70
3700.00	-0.71
3800.00	-0.71
3900.00	-0.72
4000.00	-0.71

71193

4100.00	-0.70
4200.00	-0.69
4300.00	-0.70
4400.00	-0.70
4500.00	-0.71
4600.00	-0.72
4700.00	-0.72
4800.00	-0.72
4900.00	-0.72
5000.00	-0.71
5100.00	-0.70
5200.00	-0.69
5300.00	-0.69
5400.00	-0.68
5500.00	-0.68
5600.00	-0.67

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 71493
Test Date/Time 4/6/93-4/7 13:20
Measuring Point 5910.4' - 21.95' (toc)
Type of Test BAIL-DOWN (SLUG)
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 6
(include time and date for identification purposes) 4/6-4/7 13:20

Name J. HIGGINS / D. REEDER
Groundwater Elevation Before Test (Ho) 5910.4'-21.95' = 5968.45
Total Casing Depth Measured Depth = 27.05'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 18.8' - 22.8'
Sand Pack Interval 16.8' - 24.8'

Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

71493
71493
SE1000B
Environmental Logger
04/07 16:20

Unit# 00022 Test# 6

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/06 13:13

Elapsed Time	Value
0.0000	2.40
0.0033	2.40
0.0066	2.40
0.0099	2.39
0.0133	2.39
0.0166	2.38
0.0200	2.38
0.0233	2.37
0.0266	2.36
0.0300	2.36
0.0333	2.36
0.0500	2.33
0.0666	2.30
0.0833	2.28
0.1000	2.25
0.1166	2.23
0.1333	2.20
0.1500	2.18
0.1666	2.16
0.1833	2.13
0.2000	2.11
0.2166	2.09
0.2333	2.07
0.2500	2.05

71493

0.2666	2.03
0.2833	2.01
0.3000	1.99
0.3166	1.97
0.3333	1.95
0.4167	1.87
0.5000	1.80
0.5833	1.73
0.6667	1.67
0.7500	1.62
0.8333	1.57
0.9167	1.53
1.0000	1.49
1.0833	1.46
1.1667	1.44
1.2500	1.41
1.3333	1.39
1.4166	1.37
1.5000	1.35
1.5833	1.33
1.6667	1.32
1.7500	1.30
1.8333	1.29
1.9167	1.27
2.0000	1.27
2.5000	1.21
3.0000	1.16
3.5000	1.12
4.0000	1.09
4.5000	1.07
5.0000	1.05
5.5000	1.03
6.0000	1.01
6.5000	1.00
7.0000	0.98
7.5000	0.97
8.0000	0.96
8.5000	0.95
9.0000	0.94
9.5000	0.93
10.0000	0.92

71493	
12.0000	0.90
14.0000	0.87
16.0000	0.85
18.0000	0.84
20.0000	0.83
22.0000	0.82
24.0000	0.81
26.0000	0.80
28.0000	0.79
30.0000	0.78
32.0000	0.78
34.0000	0.77
36.0000	0.76
38.0000	0.76
40.0000	0.75
42.0000	0.75
44.0000	0.74
46.0000	0.74
48.0000	0.74
50.0000	0.73
52.0000	0.73
54.0000	0.72
56.0000	0.72
58.0000	0.72
60.0000	0.71
62.0000	0.71
64.0000	0.70
66.0000	0.70
68.0000	0.70
70.0000	0.69
72.0000	0.69
74.0000	0.69
76.0000	0.68
78.0000	0.68
80.0000	0.68
82.0000	0.67
84.0000	0.67
86.0000	0.67
88.0000	0.66
90.0000	0.66
92.0000	0.66

71493	
94.0000	0.66
96.0000	0.65
98.0000	0.65
100.000	0.65
110.000	0.63
120.000	0.62
130.000	0.60
140.000	0.59
150.000	0.57
160.000	0.55
170.000	0.54
180.000	0.53
190.000	0.51
200.000	0.50
210.000	0.49
220.000	0.48
230.000	0.46
240.000	0.45
250.000	0.43
260.000	0.42
270.000	0.41
280.000	0.40
290.000	0.39
300.000	0.38
310.000	0.36
320.000	0.36
330.000	0.35
340.000	0.34
350.000	0.33
360.000	0.32
370.000	0.31
380.000	0.30
390.000	0.30
400.000	0.29
410.000	0.29
420.000	0.28
430.000	0.28
440.000	0.27
450.000	0.27
460.000	0.26
470.000	0.26

71493

480.000	0.25
490.000	0.25
500.000	0.24
510.000	0.24
520.000	0.23
530.000	0.23
540.000	0.23
550.000	0.22
560.000	0.22
570.000	0.21
580.000	0.21
590.000	0.20
600.000	0.20
610.000	0.19
620.000	0.19
630.000	0.19
640.000	0.18
650.000	0.18
660.000	0.18
[illegible].000	0.17
[illegible]0.000	0.17
690.000	0.17
700.000	0.16
710.000	0.16
720.000	0.16
730.000	0.16
740.000	0.15
750.000	0.15
760.000	0.15
770.000	0.14
780.000	0.14
790.000	0.14
800.000	0.14
810.000	0.13
820.000	0.13
830.000	0.13
840.000	0.13
850.000	0.13
860.000	0.12
[illegible]000	0.12
[illegible]000	0.12

71493

890.000	0.12
900.000	0.12
910.000	0.12
920.000	0.11
930.000	0.11
940.000	0.11
950.000	0.11
960.000	0.11
970.000	0.11
980.000	0.10
990.000	0.10
1000.00	0.10
1100.00	0.09
1200.00	0.08

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 71893
Test Date/Time 4/6/93 / 11:14
Measuring Point 5989.67 - 14.01'
Type of Test RAIL-DOWN (SLUG)
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 4
(include time and date for identification purposes) 4/6/93 11:14

Name J. HIGGINS / D. REEDER / K. TEGMEYER
Groundwater Elevation Before Test (Ho) 5989.67-14.01' = 5975.66'
Total Casing Depth Measured Depth = 30.20'
Borehole Diameter 7
Casing Diameter 2"
Screened Interval ~~[illegible]~~ 3' 10.7'-25.7'
Sand Pack Interval ~~[illegible]~~ 9'-28.0'

Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

71893
71893
SE1000B
Environmental Logger
04/07 16:26

Unit# 00022 Test# 4

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/06 11:08

Elapsed Time	Value
0.0000	4.67
0.0033	4.61
0.0066	4.59
0.0099	4.62
0.0133	4.65
0.0166	4.62
0.0200	4.58
0.0233	4.59
0.0266	4.60
0.0300	4.59
0.0333	4.57
0.0500	4.54
0.0666	4.53
0.0833	4.50
0.1000	4.48
0.1166	4.46
0.1333	4.44
0.1500	4.41
0.1666	4.40
0.1833	4.38
0.2000	4.35
0.2166	4.34
0.2333	4.32
0.2500	4.30

71893

0.2666	4.28
0.2833	4.26
0.3000	4.25
0.3166	4.23
0.3333	4.21
0.4167	4.13
0.5000	4.05
0.5833	3.97
0.6667	3.89
0.7500	3.82
0.8333	3.75
0.9167	3.68
1.0000	3.61
1.0833	3.54
1.1667	3.47
1.2500	3.41
1.3333	3.34
1.4166	3.28
1.5000	3.22
1.5833	3.16
1.6667	3.11
1.7500	3.05
1.8333	3.00
1.9167	2.94
2.0000	2.89
2.5000	2.60
3.0000	2.35
3.5000	2.13
4.0000	1.95
4.5000	1.81
5.0000	1.70
5.5000	1.61
6.0000	1.54
6.5000	1.47
7.0000	1.42
7.5000	1.37
8.0000	1.32
8.5000	1.27
9.0000	1.23
9.5000	1.20
10.0000	1.16

71893

12.0000	1.05
14.0000	0.96
16.0000	0.89
18.0000	0.83
20.0000	0.77
22.0000	0.72
24.0000	0.67
26.0000	0.63
28.0000	0.59
30.0000	0.55
32.0000	0.51
34.0000	0.48
36.0000	0.45
38.0000	0.42
40.0000	0.40
42.0000	0.37
44.0000	0.35
46.0000	0.33
48.0000	0.31
50.0000	0.30
52.0000	0.28
54.0000	0.26
56.0000	0.24
58.0000	0.23
60.0000	0.22
62.0000	0.20

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Name T. HIGGINS / D. REEDER
Borehole No. 72093
Groundwater Elevation Before Test (Ho) 5988.32 - 17.34 = 5970.98'
Test Date/Time 4/7/93
Total Casing Depth Measuring Depth = 39.80'
Measuring Point 5988.32 - 17.34'
Borehole Diameter 3"
Type of Test BAIL-DOWN (SLUG)
Casing Diameter 2"
Transductor Probe Serial No. 104SCH
Screened Interval ~~29.5' - 35.6'~~ JAH 30.4' - 35.4'
Datalogger Test Run No. 7
Sand Pack Interval 29.5' - 35.6'
(include time and date for identification purposes)
Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho
(Ø) 9:58	5.77'			
10:08	2.76'			
10:14	1.87'			
10:16	1.73'			
10:25	1.28'			
10:40	0.82'			

72093
72093
SE1000B
Environmental Logger
04/07 16:18

Unit# 00022 Test# 7

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/07 09:52

Elapsed Time	Value
0.0000	5.77
0.0033	5.76
0.0066	5.74
0.0099	5.74
0.0133	5.71
0.0166	5.69
0.0200	5.67
0.0233	5.66
0.0266	5.65
0.0300	5.64
0.0333	5.62
0.0500	5.56
0.0666	5.50
0.0833	5.45
0.1000	5.40
0.1166	5.35
0.1333	5.30
0.1500	5.26
0.1666	5.22
0.1833	5.18
0.2000	5.14
0.2166	5.10
0.2333	5.07
0.2500	5.04

72093

0.2666	5.01
0.2833	4.98
0.3000	4.95
0.3166	4.92
0.3333	4.90
0.4167	4.78
0.5000	4.68
0.5833	4.59
0.6667	4.52
0.7500	4.46
0.8333	4.39
0.9167	4.34
1.0000	4.29
1.0833	4.23
1.1667	4.19
1.2500	4.15
1.3333	4.11
1.4166	4.07
1.5000	4.03
1.5833	4.00
1.6667	3.96
1.7500	3.93
1.8333	3.90
1.9167	3.87
2.0000	3.84
2.5000	3.68
3.0000	3.53
3.5000	3.40
4.0000	3.29
4.5000	3.18
5.0000	3.08
5.5000	3.00
6.0000	2.91
6.5000	2.83
7.0000	2.76
7.5000	2.69
8.0000	2.62
8.5000	2.55
9.0000	2.49
9.5000	2.43
10.0000	2.37

72093

12.0000	2.17
14.0000	2.00
16.0000	1.85
18.0000	1.72
20.0000	1.58
22.0000	1.48
24.0000	1.38
26.0000	1.30
28.0000	1.22
30.0000	1.15
32.0000	1.08
34.0000	1.02
36.0000	0.96
38.0000	0.91
40.0000	0.87
42.0000	0.83
44.0000	0.79
46.0000	0.75
48.0000	0.72
50.0000	0.69
52.0000	0.66
54.0000	0.63
56.0000	0.61
58.0000	0.59
60.0000	0.57

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GW4A

SLUG TEST DATA FORM

Location OU7 PRESENT LANDFILL
Borehole No. 72293
Test Date/Time 4/7/93 / 13:46
Measuring Point 5975.94' - 31.65'(tpc)
Type of Test BAIL-DOWN SLUG TEST
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 9
(include time and date for identification purposes)

Name J. HIGGINS / D. REEDER
Groundwater Elevation Before Test (Ho) 5975.94-31.65 5954.29
Total Casing Depth Measured Depth = 37.05'
Borehole Diameter 7"
Casing Diameter 2"
Screened Interval 27.6' - 32.6'
Sand Pack Interval 26.6' - 34.6'

Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

2293

2293

SE1000B

Environmental Logger

04/07 16:13

Unit# 00022 Test# 9

INPUT 1: Level (F) TOC

Reference 0.00

Scale factor 10.01

Offset 0.00

Step# 0 04/07 13:39

Elapsed Time	Value
0.0000	2.12
0.0033	2.12
0066	2.11
9099	2.12
0.0133	2.10
0.0166	2.11
0.0200	2.10
0.0233	2.12
0.0266	2.10
0.0300	2.11
0.0333	2.11
0.0500	2.09
0.0666	2.08
0.0833	2.09
0.1000	2.09
0.1166	2.11
0.1333	2.09
0.1500	2.09
0.1666	2.10
0.1833	2.11
0.2000	2.10
0.2166	2.09
0.2333	2.08
2500	2.08

72293

0.2666	2.09
0.2833	2.09
0.3000	2.08
0.3166	2.09
0.3333	2.08
0.4167	2.05
0.5000	2.01
0.5833	1.99
0.6667	1.93
0.7500	1.87
0.8333	1.82
0.9167	1.77
1.0000	1.71
1.0833	1.66
1.1667	1.61
1.2500	1.56
1.3333	1.51
1.4166	1.48
1.5000	1.44
1.5833	1.43
1.6667	1.39
1.7500	1.35
1.8333	1.31
1.9167	1.28
2.0000	1.24
2.5000	1.10
3.0000	1.01
3.5000	0.96
4.0000	0.92
4.5000	0.90
5.0000	0.88
5.5000	0.85
6.0000	0.85
6.5000	0.84
7.0000	0.83
7.5000	0.82
8.0000	0.81
8.5000	0.79
9.0000	0.80
9.5000	0.78
10.0000	0.78

72293

12.0000	0.75
14.0000	0.72
16.0000	0.69
18.0000	0.65
20.0000	0.63
22.0000	0.60
24.0000	0.59
26.0000	0.57
28.0000	0.56
30.0000	0.54
32.0000	0.53
34.0000	0.51
36.0000	0.50
38.0000	0.48
40.0000	0.47
42.0000	0.47
44.0000	0.46
46.0000	0.46
48.0000	0.45
50.0000	0.44
52.0000	0.43
54.0000	0.42
56.0000	0.42
58.0000	0.41
60.0000	0.40
62.0000	0.39
64.0000	0.38
66.0000	0.38
68.0000	0.35
70.0000	0.34
72.0000	0.32
74.0000	0.31
76.0000	0.30
78.0000	0.29
80.0000	0.29
82.0000	0.28
84.0000	0.28
86.0000	0.27
88.0000	0.26
90.0000	0.25
92.0000	0.25

72293

94.0000	0.24
96.0000	0.24
98.0000	0.23
100.000	0.22

SLUG TEST DATA FORM

Location DU7 PRESENT LANDFILL
Borehole No. 72393
Test Date/Time 4/7/93 / 11:11
Measuring Point 5987.52 - 16.48(Ho)'
Type of Test BAIL-DOWN SLUG TEST
Transductor Probe Serial No. 1045CH
Datalogger Test Run No. 8
(include time and date for identification purposes)

Name J. HIGGINS / D. REEDER
Groundwater Elevation Before Test (Ho) 5987.52 -16.48' =
Total Casing Depth Measured Depth = 25.79'
Borehole Diameter 10.25"
Casing Diameter 2"
Screened Interval 12.0' - 22.0'
Sand Pack Interval 10.8' - 24.0'

Lithology Tested ALLUVIUM

Actual Time	Elapsed Time	Depth to Water from Top of Casing (ft)	H Excess Head (ft)	H/Ho

72393
72393
SE1000B
Environmental Logger
04/07 16:16

Unit# 00022 Test# 8

INPUT 1: Level (F) TOC

Reference 0.00
Scale factor 10.01
Offset 0.00

Step# 0 04/07 11:05

Elapsed Time	Value
0.0000	4.79
0.0033	4.79
0.0066	4.79
0.0099	4.78
0.0133	4.78
0.0166	4.78
0.0200	4.78
0.0233	4.78
0.0266	4.78
0.0300	4.77
0.0333	4.78
0.0500	4.76
0.0666	4.75
0.0833	4.74
0.1000	4.73
0.1166	4.73
0.1333	4.72
0.1500	4.71
0.1666	4.70
0.1833	4.70
0.2000	4.69
0.2166	4.68
0.2333	4.67
0.2500	4.66

72393

0.2666	4.66
0.2833	4.65
0.3000	4.64
0.3166	4.64
0.3333	4.63
0.4167	4.60
0.5000	4.58
0.5833	4.55
0.6667	4.53
0.7500	4.51
0.8333	4.48
0.9167	4.46
1.0000	4.43
1.0833	4.42
1.1667	4.40
1.2500	4.38
1.3333	4.37
1.4166	4.35
1.5000	4.33
1.5833	4.31
1.6667	4.29
1.7500	4.27
1.8333	4.26
1.9167	4.24
2.0000	4.23
2.5000	4.12
3.0000	4.03
3.5000	3.95
4.0000	3.86
4.5000	3.77
5.0000	3.67
5.5000	3.57
6.0000	3.48
6.5000	3.40
7.0000	3.31
7.5000	3.23
8.0000	3.14
8.5000	3.06
9.0000	2.98
9.5000	2.89
10.0000	2.81

72393

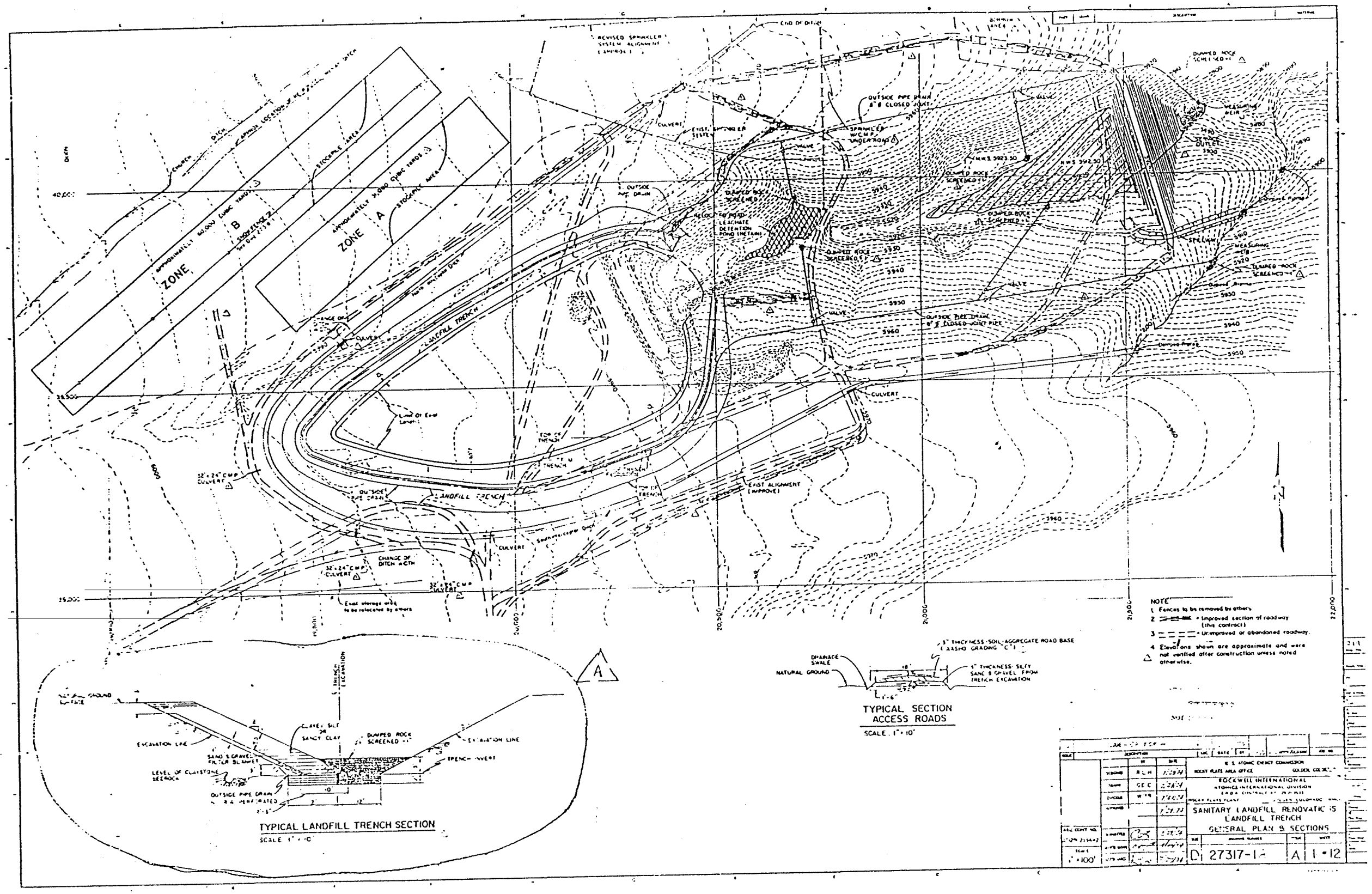
12.0000	2.51
14.0000	2.21
16.0000	1.96
18.0000	1.72
20.0000	1.51
22.0000	1.32
24.0000	1.14
26.0000	1.01
28.0000	0.88
30.0000	0.76
32.0000	0.66
34.0000	0.58
36.0000	0.51
38.0000	0.46
40.0000	0.41
42.0000	0.37
44.0000	0.34
46.0000	0.31
48.0000	0.29
50.0000	0.26
52.0000	0.24
54.0000	0.22
56.0000	0.21
58.0000	0.19
60.0000	0.18
62.0000	0.17
64.0000	0.16
66.0000	0.15
68.0000	0.14
70.0000	0.13
72.0000	0.12
74.0000	0.12
76.0000	0.11
78.0000	0.11
80.0000	0.10
82.0000	0.10
84.0000	0.09
86.0000	0.08
88.0000	0.08
90.0000	0.08
92.0000	0.08

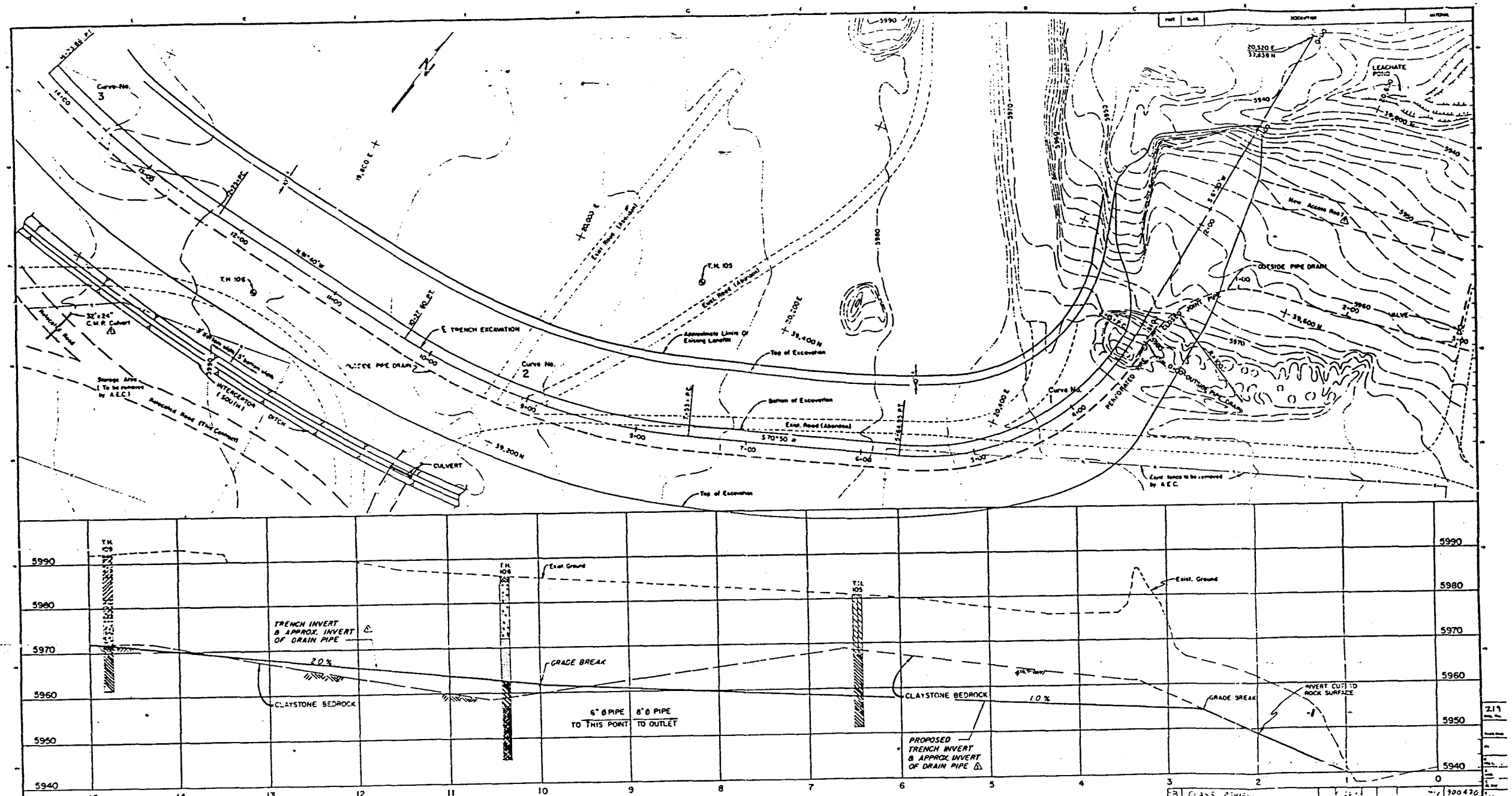
NOTICE:

"BEST AVAILABLE COPY"

PORTIONS OF THE FOLLOWING DOCUMENT ARE ILLEGIBLE

The Administrative Record Staff


ZONE A
ZONE B
STOCKPILE AREA
LANDFILL TRENCH
EXIST ALIGNMENT (IMPROVE)
CULVERT
DUMPED ROCK SCREENED
OUTSIDE PIPE DRAIN
TYPICAL LANDFILL TRENCH SECTION
SCALE 1" = 10'
TYPICAL SECTION ACCESS ROADS
SCALE 1" = 10'
NOTE
1. Fences to be removed by others
2. Improved section of roadway (this contract)
3. Unimproved or abandoned roadway.
4. Elevations shown are approximate and were not verified after construction unless noted otherwise.
U. S. ATOMIC ENERGY COMMISSION
ROCKY FLATS AREA OFFICE
GOLDEN, COLOR.
ROCKWELL INTERNATIONAL
SANITARY LANDFILL RENOVATION
LANDFILL TRENCH
GENERAL PLAN & SECTIONS
D 27317-1
A
1 of 12



℄ CURVE DATA

1. Δ = 64°20'
R = 222.6'
T = 140'
P.C. = 3+15.00
P.T. = 5+64.95

2. Δ = 27°30'
R = 572.13'
T = 140'
P.C. = 7+53.00
P.T. = 10+27.60

3. Δ = 15°00'
R = 759.58'
T = 100'
P.C. = 12+25.00
P.T. = 14+23.86

SCALES:
PLAN - 1" = 40'
PROFILE - 1" = 50' HORIZ
1" = 10' VERT.

NOTES:
1. PROFILE SHOWS INVERT OF TRENCH
2. SECTION OF COMPLETED TRENCH WITH CLAY BARRIER SHOWN ON DWG. 27317-1.
3. NORTH SIDE OF TRENCH SHOWN ON DWG. 27317-3.
4. CONTINUATION OF OUTSIDE PIPE DRAIN PROFILE SHOWN ON DWG. 27317-4.
5. INTERCEPTOR DITCH PROFILE SHOWN ON DWG. 27317-5 & 6
6. ELEVATIONS SHOWN ARE APPROXIMATE AND WERE NOT VERIFIED AFTER CONSTRUCTION UNLESS NOTED OTHERWISE.

ISSUE	DESCRIPTION	LIC.	DATE	BY	APPR'D	AEC APPR'D/CLASSIF	ISS. NO.
B	CLASS. REVIEW						300430
A	"As Built", Per Construction AT129-213508		12-26-74	RLH			
0	ORIGINAL ISSUE		3-5-74				345614

	BY	DATE
DESIGNED	RLH	7/29/74
DRAWN	GEC	7/29/74
CHECKED	WPR	7/29/74
APPROVED		7/29/74
SUBMITTED	COS	7/29/74
APP'D BUILD		7/29/74
APP'D ENG		7/29/74

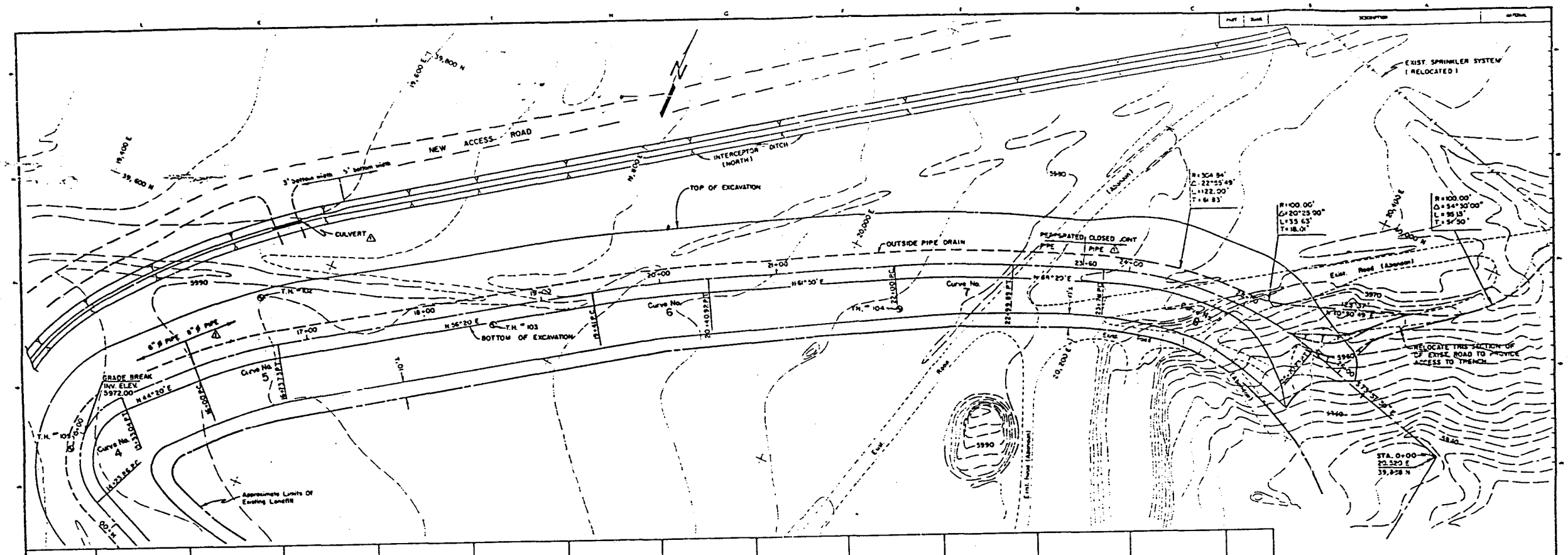
AEC CONT. NO. AT129-213442
SCALE AS SHOWN

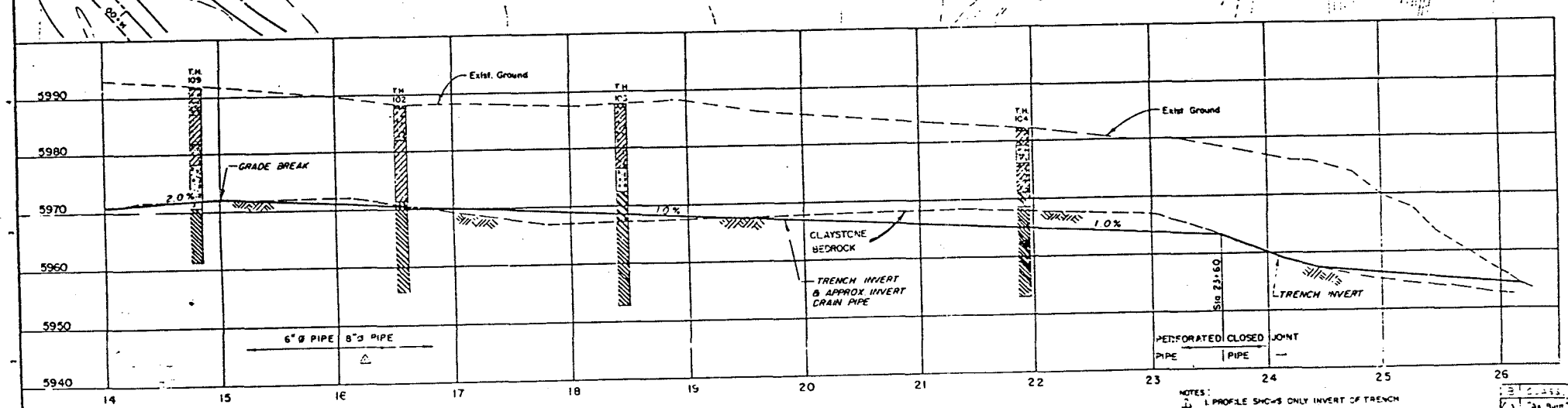
U. S. ATOMIC ENERGY COMMISSION
ROCKY FLATS AREA OFFICE GOLDEN, COLORADO

ZEPP, COGORNO & SEALY INC.
TRI-CONSULTANTS INC.
HYDRO-TRIAD, LTD. Denver, Colo.

SANITARY LANDFILL RENOVATIONS
LANDFILL TRENCH
PLAN & PROFILE 0 TO 15+00

SIZE D | DRAWING NUMBER 27317-2 | ZONE | SHEET 2 of 12





NOTES:

1. PROFILE SHOWS ONLY INVERT OF TRENCH
2. SECTION OF COMPLETED TRENCH WITH CLAY BARRIER SHOWN ON DWG. 27317-1
3. SOUTH SIDE OF TRENCH SHOWN ON DWG. 27317-2
4. CONTINUATION OF OUTSIDE PIPE DRAIN SHOWN ON DWG. 27317-4
5. INTERCEPTOR DITCH PROFILE SHOWN ON DWG. 27317-5 & 6.
6. ELEVATIONS SHOWN ARE APPROXIMATE AND HERE NOT VERIFIED AFTER CONSTRUCTION UNLESS NOTED OTHERWISE

℄ CURVE DATA

4.	5	6.	7.	8.
Δ=111°00'	Δ=12°00'	Δ=5°30'	Δ=6°30'	Δ=37°42'30"
R 56.36'	R=352.03'	R=1040.94'	R=880.53'	R=292.84'
T=82.00'	T=37.00	T=50.00'	T=50.00'	T=100.30'
P.C.=14+23.86	P.C.=16+00.00	P.C.=19+41	P.C.=22+00	P.C.=23+78
P.T.=15+33.04	P.T.=16+73.73	P.T.=20+40.92	P.T.=22+99.89	P.T.=25+70.73

SCALES:
PLAN - 1" = 40'
PROFILE - 1" = 50' HORIZ
1" = 10' VERT

REV	DATE	BY	DESCRIPTION
A	2-28-74	RLN	"As Built", Per Construction AT(29-2)3508
0	12-5-73		ORIGINAL ISSUE

U. S. ATOMIC ENERGY COMMISSION
ROCKY FLATS AREA OFFICE
GOLDEN, COLORADO

DESIGNED: A.L. 7/22/74
DRAWN: S.E.S. 7/24/74
CHECKED: W.P.R. 7/29/74
APPROVED: 7/29/74

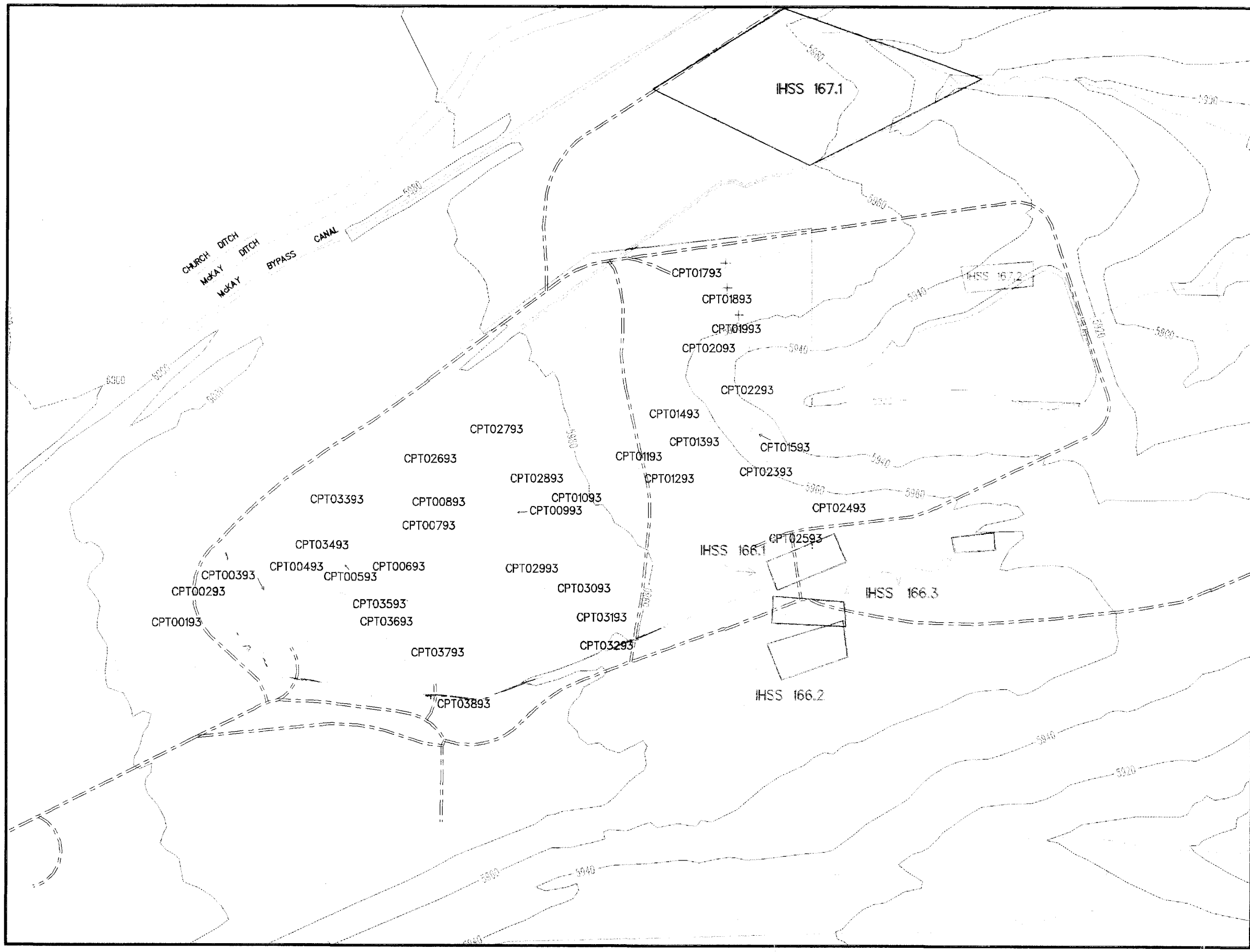
DEPT. GACCHO & SEALY
TPI-CONSULT
HYDRO-TITAN LTD

SANITARY LANDFILL RENOVATIONS
LANDFILL TRENCH
PLAN PROFILE 15+00 TO 25+75

REC CONT NO. AT(29-2)3450
SUBMITTED: 7/29/74
SCALE: AS SHOWN
APPROVED: 7/29/74

D 27317-3

3 of 12



EXPLANATION

Ditch

Intermittent Stream

Dirt Road

Surface-Water Diversion Ditch

OU 7 IHSS Boundary

OU 6 IHSS Boundary

CPT Location

Note: Methane survey, soil gas and leachate/groundwater sampling using BAT® system performed within approximately ten feet of respective CPT locations. (See Tables C-3, C-5, C-6, C-7, and C-8)

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

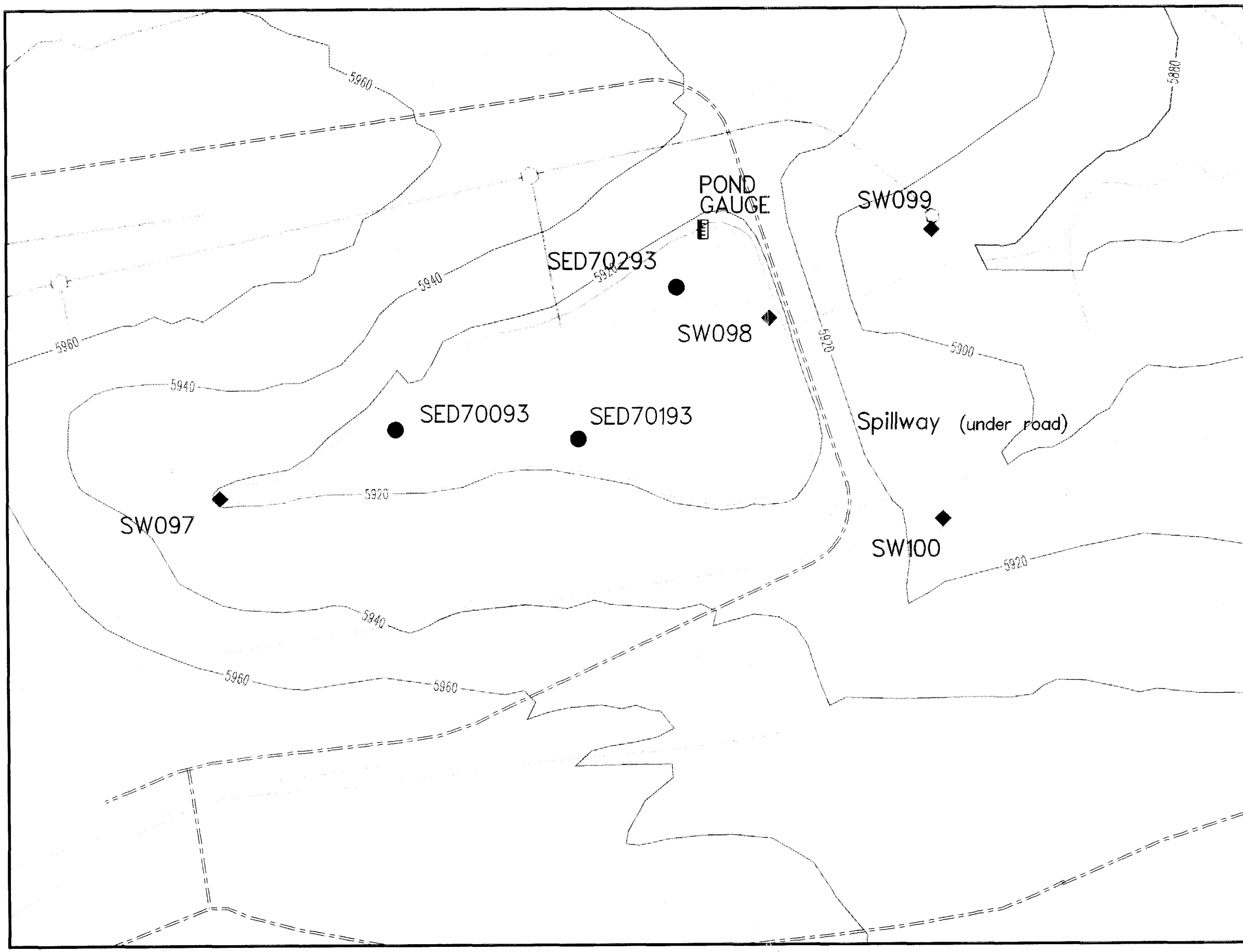
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I
CPT Locations

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-1

04/04/94 CPTPTS.MAP



EXPLANATION

- Sediment Sampling Location
- Surface–Water Sampling Location
- Intermittent Stream
- Dirt Road
- Landfill Structures

Note: See Tables C–9 and C–10 for details on surface water and sediment sample analyses.

0 Feet 120 240

Topographic Contour Interval = 20 Feet

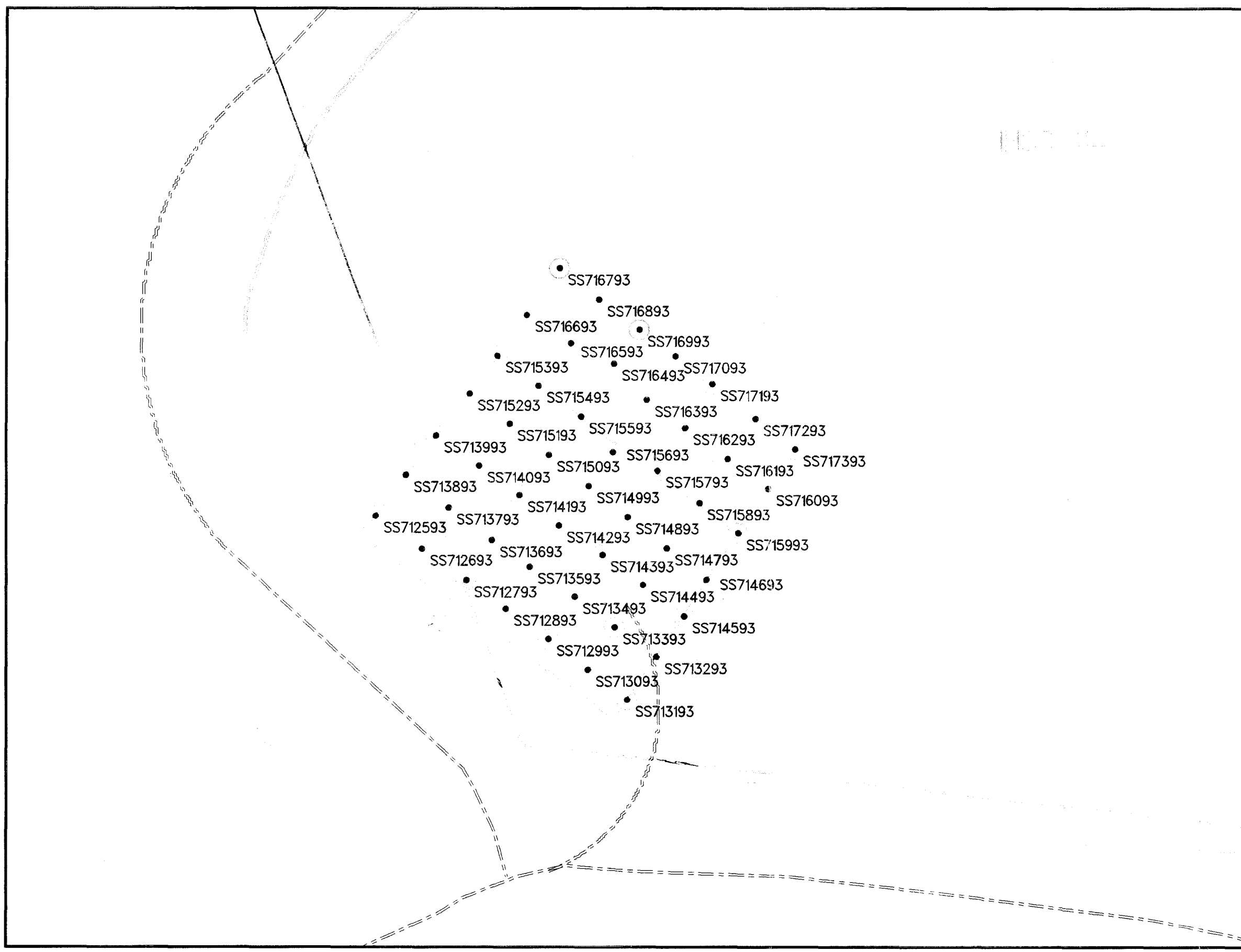
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Surface–Water and Sediment Sampling Locations

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C–3

04/04/94 SWSED.MAP



EXPLANATION

- • Surface Soil and Soil–Gas Sampling Location
- + Additional Surface Soil and Soil–Gas Sampling Location
- ○ Subsurface Soil Sampling Location
- OU 7 IHSS Boundary
- Intermittent Stream
- Dirt Road
- Surface–Water Diversion Ditch

Note: See Tables C–11 and C–12 for details on soil and soil–gas sample analyses.

N

0 Feet 50 100

Topographic Contour Interval = 20 Feet

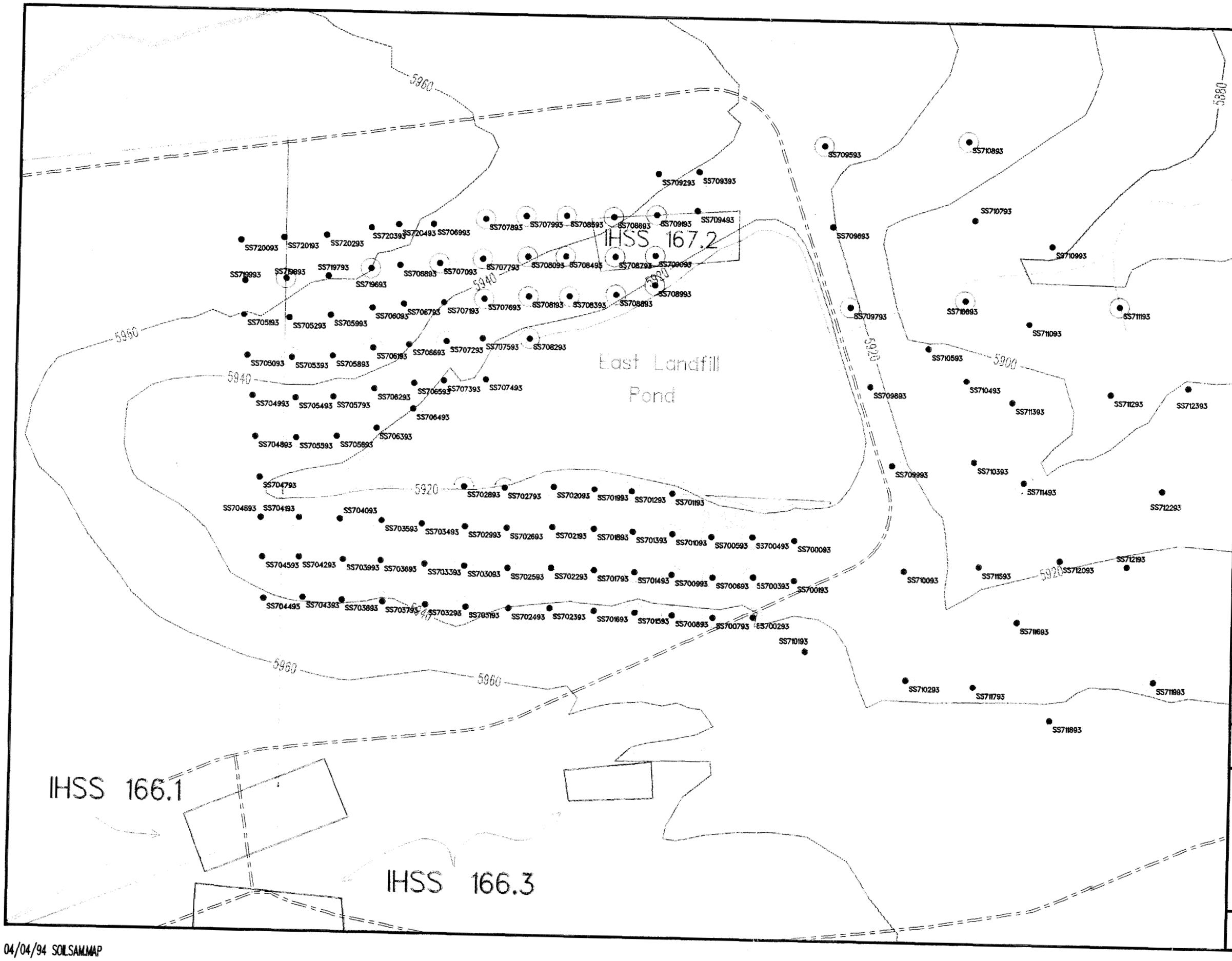
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Soil and Soil-Gas Sampling Locations at IHSS 203

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C–4

04/07/94 IHSS203.MAP



EXPLANATION

- Surface Soil Sampling Location
- Subsurface Soil Sampling Location
- Intermittent Stream
- Dirt Road
- Surface-Water Diversion Ditch
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary

Note: See Table C-13 for details on soil sample analyses.

0 Feet 120 240

Topographic Contour Interval = 20 Feet

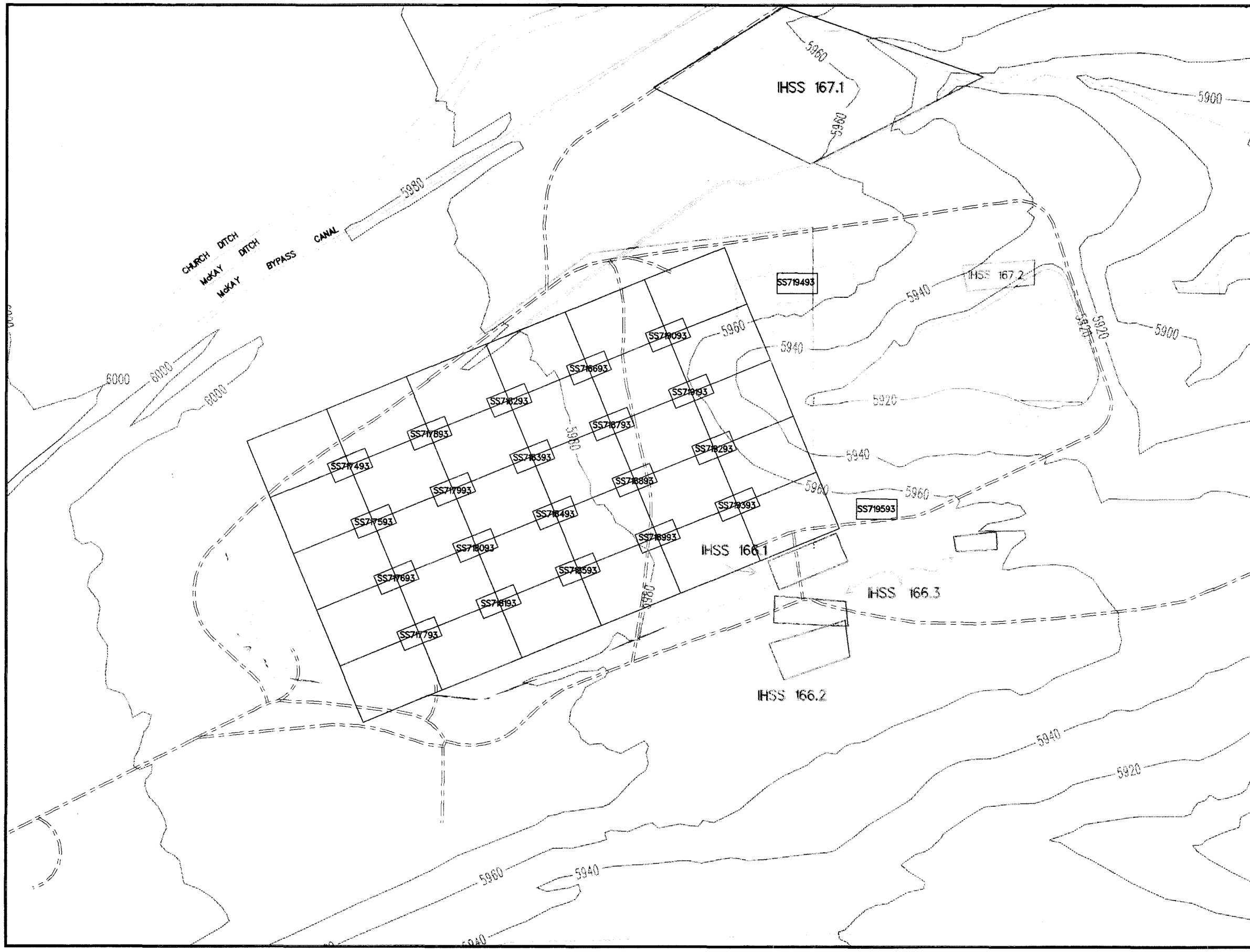
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I
Soil Sampling Locations
at
East Landfill Pond

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-5

04/04/94 SOILSAM.MAP



EXPLANATION

- Ditch
- Intermittent Stream
- Dirt Road
- Surface-Water Diversion Ditch
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary
- Approximate Extent of Asbestos Disposal
- Composite Surface Soil Sampling Location

Note: See Table C-14 for details on soil sample analyses.

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

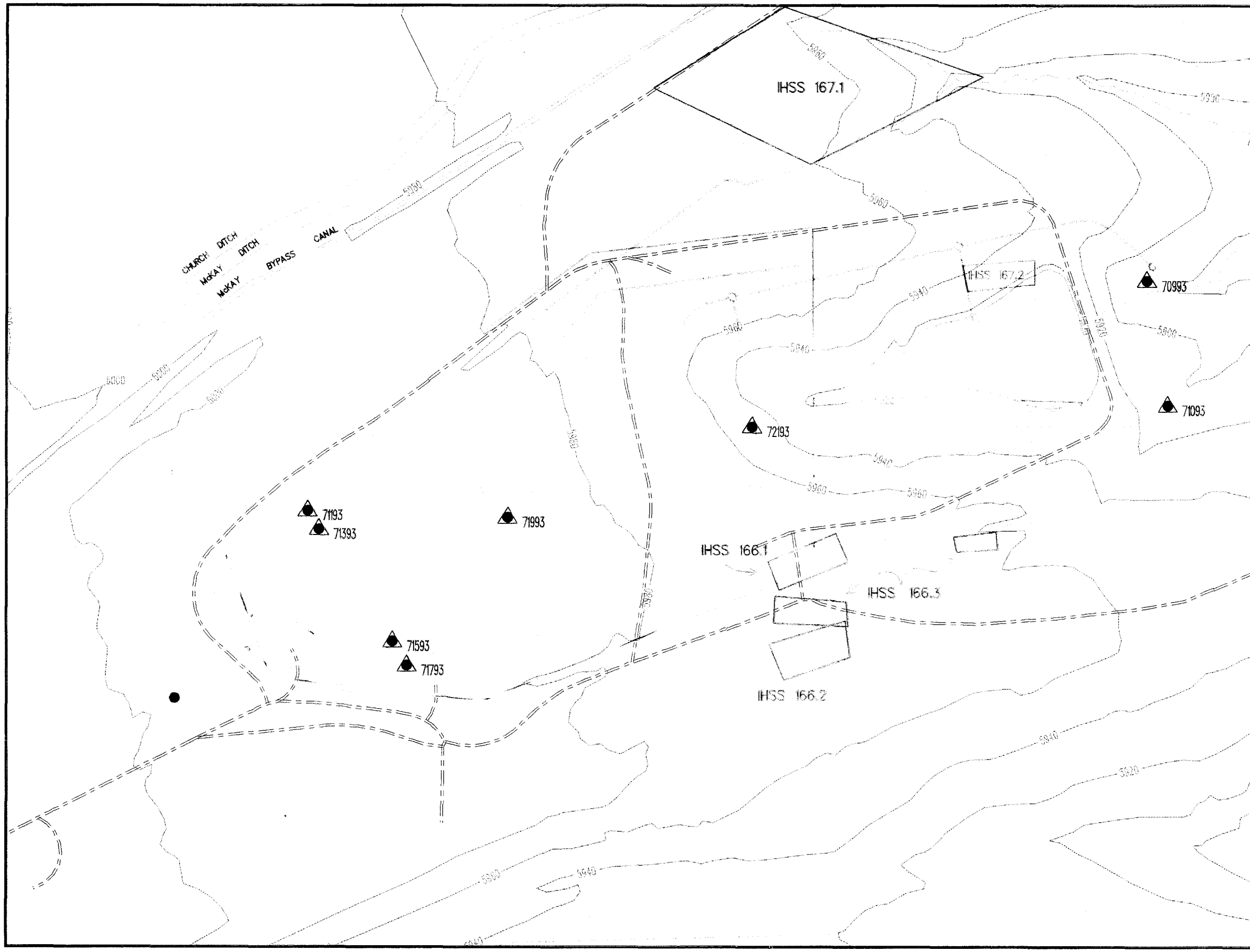
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Soil Sampling Locations at IHSS 114

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-6

04/04/94 GRID114.MAP



EXPLANATION

- △ Borehole Drilling Location
- ● Borehole Sampling Location
- Ditch
- Intermittent Stream
- Dirt Road
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary
- Landfill Structures

Note: See Table C-15 for drilling details and Table C-16 for borehole sample analyses.

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

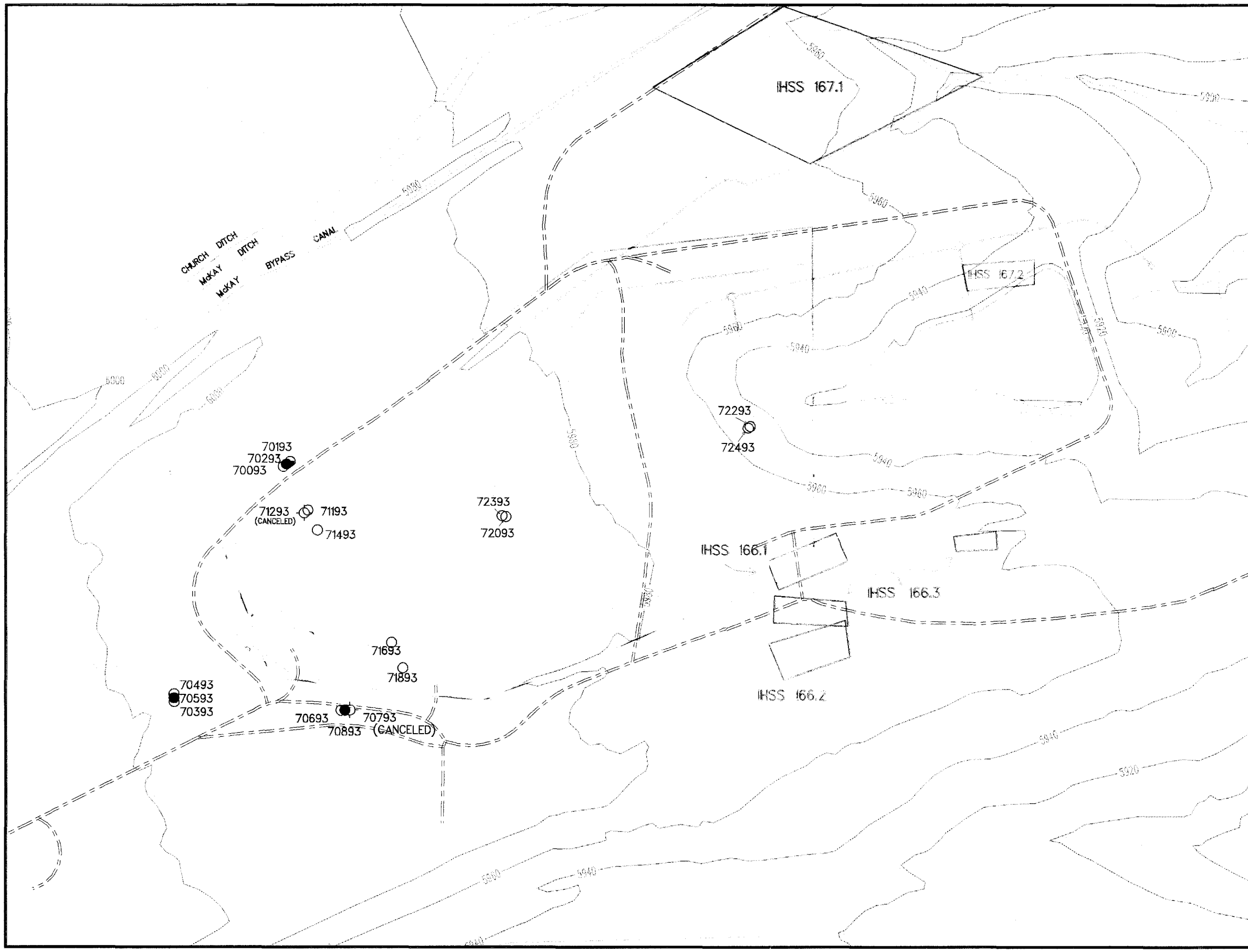
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Borehole Drilling and Sampling Locations

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-7

04/04/94 BOREHOLE.MAP



EXPLANATION

- Alluvial/Artificial Fill Well
- Weathered Bedrock Well
- Unweathered Bedrock Well
- Abandoned Well
- Ditch
- Intermittent Stream
- Dirt Road
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary
- Landfill Structures

Note: See Table C-15 for well completion details and Table C-17 for groundwater sample analyses.

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

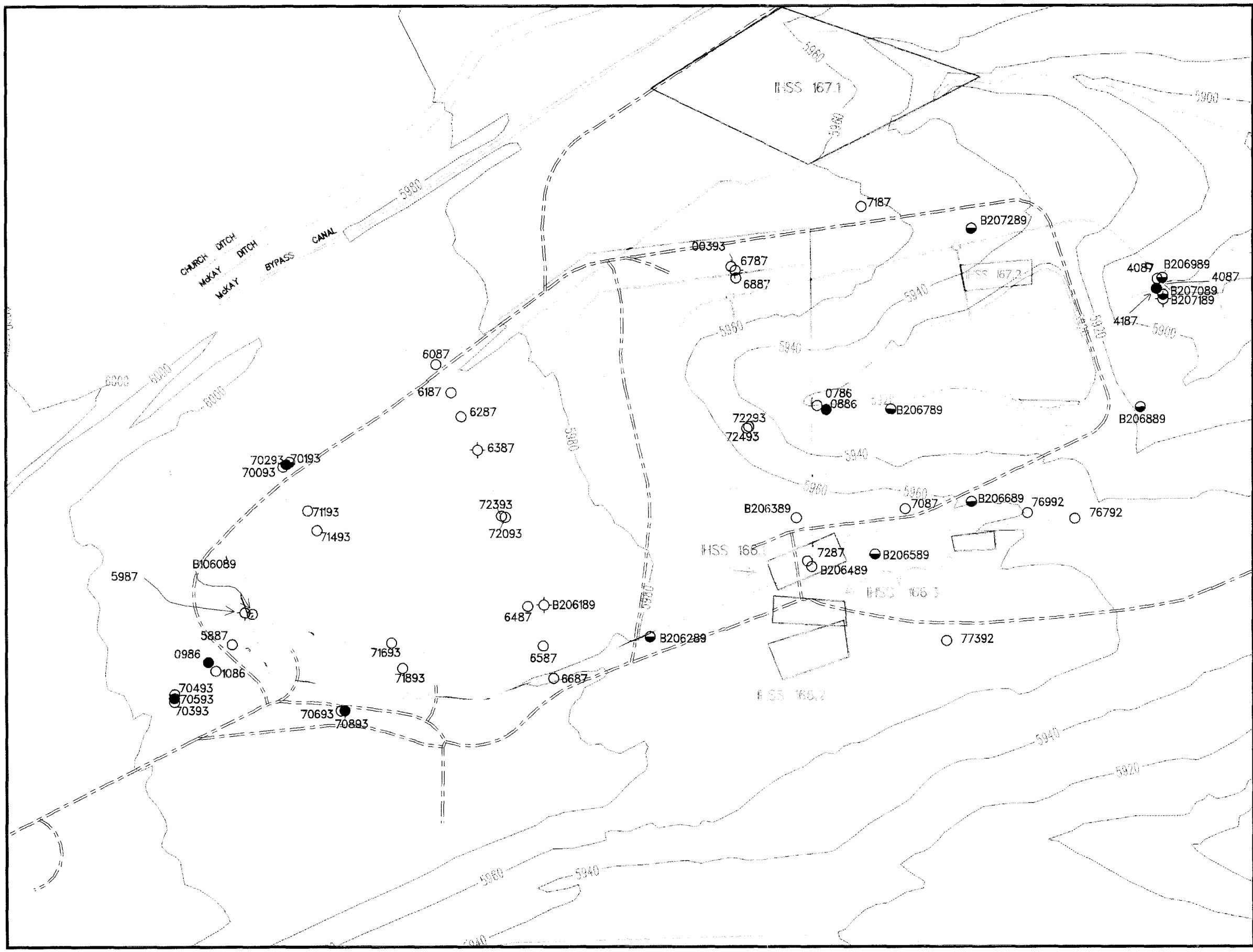
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Monitoring Well Locations

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-8

04/04/94 MONWELLS.MAP



EXPLANATION

- Alluvial/Artificial Fill Well
- Weathered Bedrock Well
- Unweathered Bedrock Well
- Abandoned Well
- Ditch
- Intermittent Stream
- Dirt Road
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary
- Landfill Structures

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

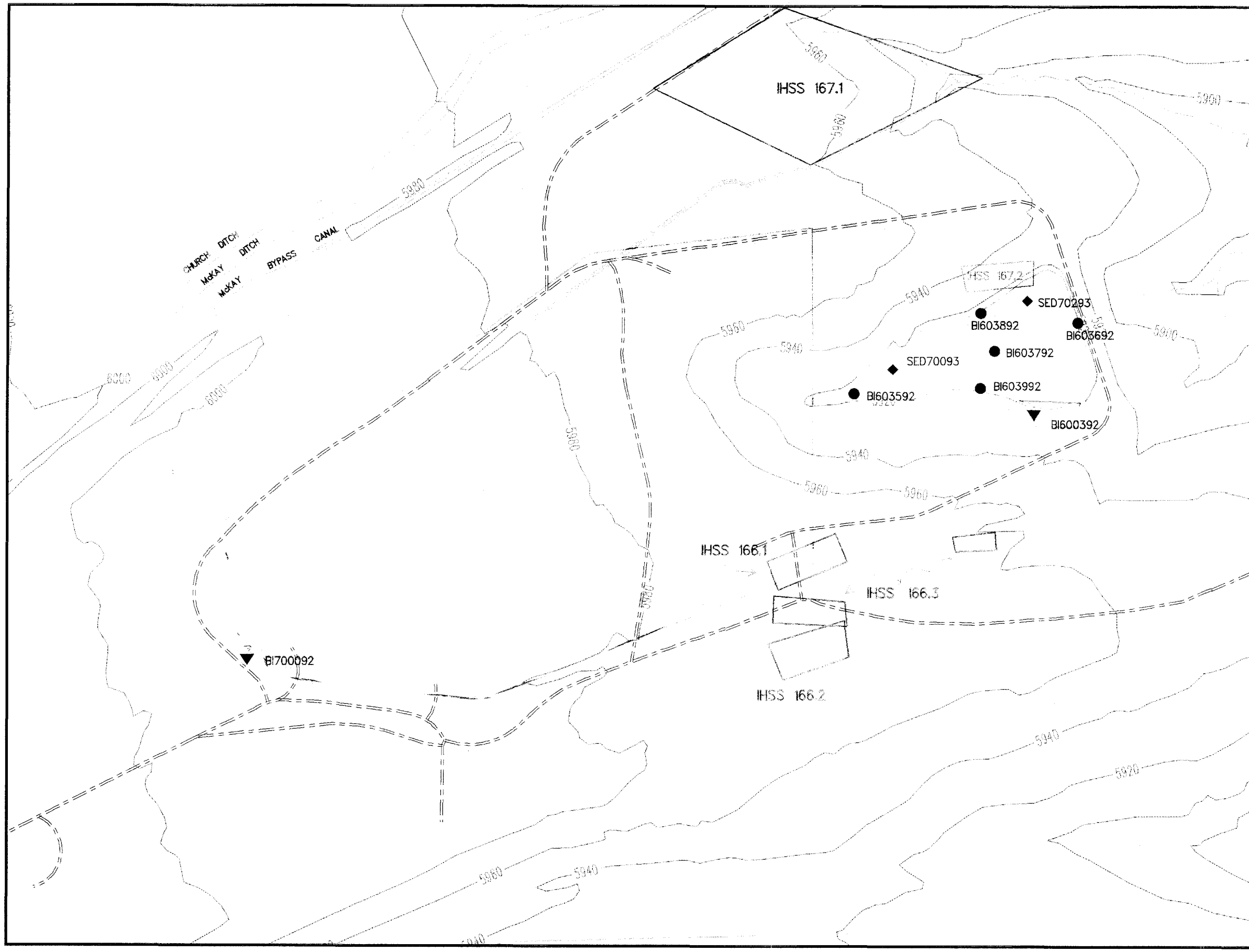
U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

OU 7 Groundwater Monitoring Well Network

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-10

04/04/94 STATWATER.MAP



EXPLANATION

- ● Benthic Macroinvertebrate Sampling Location
- ◆ Acute Toxicity Water and Sediment Sampling Location
- ▼ Mammal and Vegetation Transects
- Ditch
- Intermittent Stream
- Dirt Road
- Surface-Water Diversion Ditch
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary

Note: See Table C-18 for details on ecological sample analyses.

N

0 Feet 250 500

Topographic Contour Interval = 20 Feet

U.S. DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Phase I Ecological Sampling Locations

Revised Work Plan | Operable Unit No. 7

Date: April 1994 | Figure C-11

04/04/94 ECOSAMP.MAP