

WM-61

UNITED STATES DEPARTMENT OF ENERGY
Albuquerque, New Mexico

**Uranium Mill Tailings
Remedial Action Project
(UMTRAP)
Gunnison, Colorado**

Main Construction Subcontract GUN-2

Information for Bidders

Volume III Disposal Site Information (1 of 2)

June 1991



MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

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W/Ltr 10/2/91
92-0013

PURPOSE/DISCLAIMER

Disclaimer

The "Information for Bidders" documents provide bidders with available data regarding conditions at the processing, disposal and borrow sites. These data are not part of the subcontract documents, but are provided to bidders only to disclose the extent of data available to the Contractor and for the information and convenience of bidders. The Contractor makes no representation and offers no warranty either expressed or implied regarding the accuracy, precision or validity of the data contained herein. The Contractor also disclaims responsibility for any interpretations of this data by bidders, or for any opinions, conclusions or deductions which may be expressed or implied in the information contained herein.

Purpose

The purpose of this information is to provide bidders with available data regarding the following:

1. Geotechnical characteristics of the existing tailings pile or other contaminated materials at the processing site;
2. Geotechnical characteristics of the Landfill disposal site;
3. Geotechnical characteristics of radon barrier borrow and rock borrow materials at the approved and potential borrow sites;
4. Groundwater characteristics of the processing and disposal sites and vicinity;
5. Meteorological characteristics of the sites and vicinity;

The information has been extracted from data collected or prepared by Jacobs Engineering Group, Inc. and Morrison-Knudsen Environmental Services Group.

Additional information not presented in this report includes radiological characterization data for the processing site from various sources.

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- C) Test Pit Logs
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- A) Geotechnical Data
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- A) Test Pit Logs
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Volume IV - Disposal Site Information (2 of 2)

- A) Piezometer Logs
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- A) Sixmile Lane
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A) Test Pit Logs

- Jacobs Engineering Group Inc., 601 to 609, 630 to 641
- Lambert and Associates, L1 to L14

B) Monitoring Well Logs

- Jacobs Engineering Group Inc., 1 to 3, 608 to 611, 621, 625 to 640, 701 to 703, 705, 707 to 718, W1 to W3

TEST PIT LOGS

TEST PIT LOGS

Taken From: TAC, "Test Pit, Borehole, and Well Construction Logs: Gunnison
Landfill Site," Various Dates, MKE Doc #4005-GUN-R-09-00249-00

Lambert & Associates, "Gunnison Six Mile Lane Borrow Site", MKE
Doc # 4005-GUN-R-09-00775-00, Feb 1990

BID.GUN

GUNNISON COLORADO SITE
 SUPCONTRACT 34-6704-S-88-0008

Coordinates for Wells & Test Pits

<u>Designation</u>	<u>X coordinate</u>	<u>Y coordinate</u>	<u>Elevation</u>
Et. cor. Sec.15	15000.0000	15000.0000	7923.27
SE cor. Sec.15	15000.0000	12358.4200	8084.64
USGS Benchmark	16016.2617	12635.1394	8032.884
Trav. Pt. #1	15000.0000	14518.0600	8003.36
Trav. Pt. #2	17818.1484	15829.0750	7911.02
Trav. Pt. #2A	18477.3487	15547.8796	7848.65
Trav. Pt. #3	12483.2319	14755.7800	8007.30
Trav. Pt. #3A	13077.9232	16246.2176	8053.32
Trav. Pt. #3E	11452.2986	13871.5996	8020.82
Trav. Pt. #4	15669.5487	12863.8075	8059.78
Trav. Pt. #5	13205.3363	13759.5748	8063.35

TEST PITS NEAR ENTRANCE

Test Pit 611	18058.3954	15568.2909	7843.69
Test Pit 612	18913.9508	16321.3639	7824.04
Test Pit 613	18909.6863	15681.2670	7829.73
Test Pit 614	18305.2260	14654.5027	7858.14
Test Pit 615	18624.9420	15455.6098	7838.78
Test Pit 616	18321.8685	15261.5996	7854.69
Test Pit 617	18161.4550	15343.4124	7844.03
Test Pit 618	17448.8632	15321.9049	7854.54
Test Pit 619	16331.5097	15159.0809	7882.03
Test Pit 620	16374.1651	15254.6251	7882.22
Test Pit 621	18470.5902	15731.2823	7835.64
Test Pit 622	18730.2874	15915.0298	7829.84
Test Pit 642	could not find		
Test Pit 643	18914.3511	15156.6264	7851.22
Test Pit 644	could not find		
Test Pit 645	17269.3346	14942.2113	7871.20
Test Pit 646	could not find		
Test Pit 647	could not find		
Test Pit 648	17571.2494	15566.7513	7868.34
Test Pit 649	18135.7720	15735.9998	7853.55
Test Pit 650	18540.8025	16073.3019	7838.30
Test Pit 651	18926.2090	15884.7815	7826.23

<u>Designation</u>	<u>X coordinate</u>	<u>Y coordinate</u>	<u>Elevation</u>
--------------------	---------------------	---------------------	------------------

TEST PITS SOUTHWEST OF SITE

Test Pit 601	12693.8958	13601.5979	8068.61
Test Pit 602	12450.3885	14107.1310	8039.46
Test Pit 603	12144.5154	14545.1799	8005.37
Test Pit 604	11991.1578	13977.6723	8004.48
Test Pit 605	11765.2044	13275.4826	8022.16
Test Pit 606	11895.8107	14844.4855	7982.52
Test Pit 607	11452.2986	13871.5996	8020.82
Test Pit 608	11138.9128	13362.0616	8037.70
Test Pit 609	12938.7619	14491.3525	8006.83
Test Pit 610	13513.9321	14576.5014	7979.47

TEST PITS ON SITE

Test Pit #2	12881.4251	14740.6647	8003.76
Test Pit #3	12825.8135	15499.1814	8028.51
Test Pit #5	12827.2128	14903.3525	8007.09
Test Pit 630	12674.1485	16537.0811	8054.69
Test Pit 631	13189.8142	16518.7312	8060.61
Test Pit 632	13645.2606	16530.9971	8059.43
Test Pit 633	14297.3743	16577.3891	8048.21
Test Pit 634	14211.3467	17101.8911	8071.79
Test Pit 635	13565.7229	17057.8031	8074.17
Test Pit 636	13114.8913	17067.3459	8066.62
Test Pit 637	12676.3283	17074.0050	8069.93
Test Pit 638	13068.8996	17684.5693	8092.04
Test Pit 639	12674.7114	17715.0184	8089.35
Test Pit 640	12326.5560	15474.1429	8023.87
Test Pit C41	13470.6826	14961.0220	8008.45

WELLS ON SITE

	<u>E</u>	<u>N</u>	
Well #1	12655.8347	15054.0951	8014.71(C)
Well #2	12785.9078	15185.4073	8012.77
Well #3	12830.4898	15017.4179	8019.26(C)
Well 609	12563.2665	14961.0168	8017.64
Well 610	12546.4693	15114.5799	8013.14(C)
Well 611	12751.1039	15087.3296	8011.19
Well 621	12559.4877	15007.7331	8012.64(C)
			8010.73
			8016.54(C)
			8014.98
			8015.70(C)
			8013.73
			8013.44(C)
			8011.65

GUNNISON COLORADO SITE
SUBCONTRACT 34-6704-S-88-0008

Coordinates for Test Pit locations

A. DISPOSAL SITE

<u>DESIGNATION</u>	<u>NORTHING</u>	<u>EASTING</u>
L-1	16120	13030
L-2	15830	12520
L-3	15800	12820
L-4	15800	13200
L-5	15850	13560
L-6	15380	13540
L-7	15470	13215
L-8	15470	12870
L-9	15380	12500
L-10	15290	12820
L-11	15270	13030
L-EXTRA	15290	13260
L-12	15130	12870
L-EXTRA	15130	13210
L-13	14820	12900
L-14	14820	13120

B. SIX MILE LANE BORROW SOURCE

<u>DESIGNATION</u>	<u>NORTHING</u>	<u>EASTING</u>
SX-1	15350	17790
SX-2	15640	16860
SX-3	15570	18340
SX-4	15980	18600
SX-5	15100	18430
SX-6	14900	18720
SX-7	14100	18250
SX-8	13760	18080

BOREHOLE LOG (SOIL)

Page ___ of ___

LOCATION MAP:

SITE ID: GUN-12 LOCATION ID: 601

SITE COORDINATES (ft.):

N **E**

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.:

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

LOCATION DESCRIPTION

SITE CONDITION:

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

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SITE COORDINATES (ft.):

N

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.:

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



Page _ of _

SITE COORDINATES (ft.):

N

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: 11/10/87

DATE COMPLETED: 11/10/87 10:30

FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

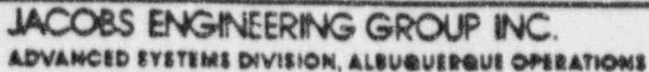
SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOPSOIL, Lt Brown to Brown, dry, stiff with gravel & sand Silty sandy clay to Clayey silt
									clay - Sand - Gravel matrix with some cobbles & boulders dry, dense (hard digging). Lt Brown
									gravelly Silty-clay w/ some boulders weathered rock has turned to silt & clay, ^{some} boulders that are black are not weathered materials are slightly moist & dense, also hard to dig
									TO 7', too hard for backhoe

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



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A
B
C

SITE ID: _____ LOCATION ID: 004

SITE COORDINATES (ft.):

Z _____

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: 11/11/1964

FIELD REP.:

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tub.



BOREHOLE LOG (SOIL)

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LOCATION MAP:



SITE ID: _____ LOCATION ID: 604
SITE COORDINATE (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOCKS PER 8 in.	N VALUE	USCS	VISUAL CLASSIFICATION
6									same as above
8									Gravel-Sand-clay matrix too hard to dig, dense, some white streaks, slightly moist TD 9 1/2'
9									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page ____ of ____

LOCATION MAP:



SITE ID: _____ LOCATION ID: 605

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD:

DRILLING CONTR.:

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.:

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



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ANS

SITE ID: _____ LOCATION ID: 626
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE

A - Aupper cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



Page _ of _



SITE COORDINATES (ft.):

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-wa... Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



SITE ID: _____ LOCATION ID: 608
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	UPCB	VISUAL CLASSIFICATION
									Topsoil
2						300 Sample		CL-M	gravelly clay with silt, slightly moist, lt brown, w/ occasional cobble
3								GC	clayey gravel, slightly moist, dense to very dense with occasional cobble
4									
5									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page __ of __

LOCATION MAP:



SITE ID: _____ LOCATION ID: 209

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

TD=65' REFUSAL IN BLACK ROCK

COMMENTS:

SAMPLE TYPE

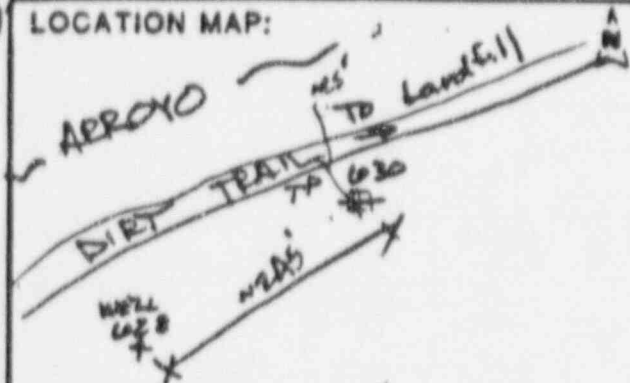
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



TEST PIT **BOREHOLE LOG (SOIL)**

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LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 630
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: cat 225 - track hole
DRILLING CONTR.: Schmalz
DATE STARTED: Dec 8, 1987
DATE COMPLETED: "
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								SM	Topsoil, Silty SAND, pred li-sand and coarse, some organics, brn
5	X				Q1			Gh-GC	GRAVEL, sandy, some silt, lime cemented, to cobbles, small boulders, SR, A to 9" boulders to 1 1/2' cobbles up, white-tan
10								GW	Sandy GRAVEL, med-coarse sand, gravel through small boulders, SR, highly weathered, iron staining, med orange brn boulders to 1 1/2'
15									
20									backhoe refusal @ 14 1/2'
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									
80									
85									
90									
95									
100									

COMMENTS: 1-5 gal bucket sampler

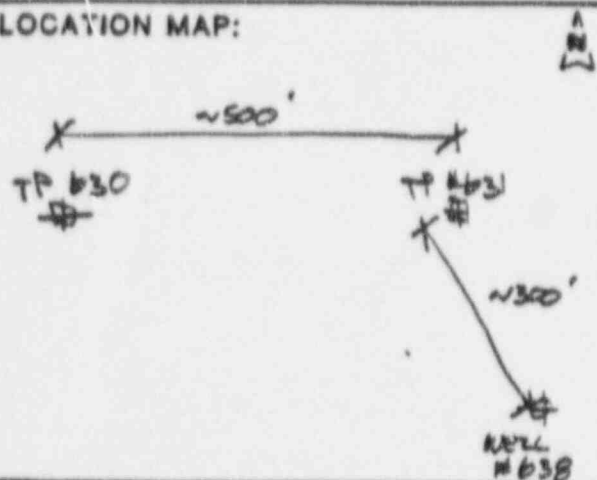
SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thru-walled Shelby tube

TEST PIT BOREHOLE LOG (SOIL)

Page 1 of 1

LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 631

SITE COORDINATES (ft.):

N NK E NK

GROUND ELEVATION (ft. MSL): NK

DRILLING METHOD: CAT 225-TRK MOUNTED

DRILLING CONTR.: SCHWALTZ

DATE STARTED: DEC. 8, 1987

DATE COMPLETED:

FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								SM	TOPSOIL: Silty SAND, med ci-med, cons. organics, LP, med hum
5								ML	SILT, fine sand, pin size root wholes, LP, TAN
10								GM	Silty GRAVEL & COBBLES, some med-coarse sand, org. boulder, SE, med-highly lime cement white-tan
15									BACKHOE REFUSAL @ 7 1/2'

COMMENTS:

SAMPLE TYPE

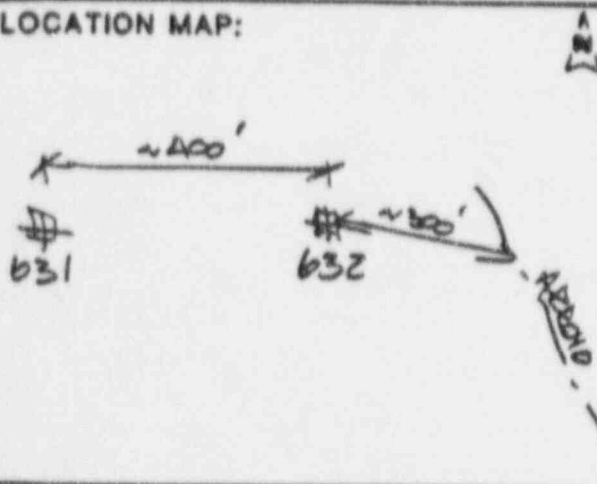
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



TEST PIT BOREHOLE LOG (SOIL)

Page 1 of 1

LOCATION MAP:



SITE ID: GDW 12 LOCATION ID: 632
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: CAT 225-TYPE MOUNTED
DRILLING CONTR.: SCHEMATA
DATE STARTED: DEC 8, 1987
DATE COMPLETED: 11
FIELD REP.: G. SMITH

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION	SITE CONDITION

[illegible]

COMMENTS: 1-5 gal bucket sampled

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

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Diagram showing a vertical line with a point labeled "100" and a horizontal line segment labeled "100" and "63".

SITE ID: GVU 12 LOCATION ID: 633
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: CAT 225-TRAC MOUNTED
DRILLING CONTR.: SCHMALKITZ
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

[illegible][illegible]

COMMENTS: 1-5 good bucket sampled

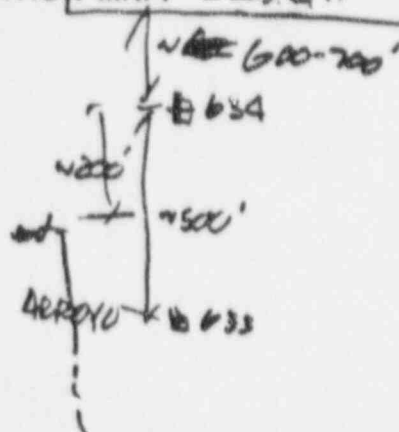
SAMPLE TYPE

- A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

TEST PIT BOREHOLE LOG (SOIL)

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LOCATION MAP: Land 411



SITE ID: GUV 12 LOCATION ID: 634

SITE COORDINATES (ft.):

N NK E NK

GROUND ELEVATION (ft. MSL): NK

DRILLING METHOD: CAT 225-TRK MOUNTED

DRILLING CONTR.: Schmalz

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								SM	Topsoil, Silty SAND, some organic cons. gravel, LP, bin
5								ML	SILT, cons cobbles & gravel, SR LP, fan
10	X				Q1			GM	Silty GRAVEL, some sand, LP, Si-med gravel, moderate mod or lime cemented, tan. white base
15								GM	Silty GRAVEL, cons nd sand, LP, occ cobble, SR, hard, greenish tan
20									have refusal @ 9'

COMMENTS: 1-5 gal. bucket sampled

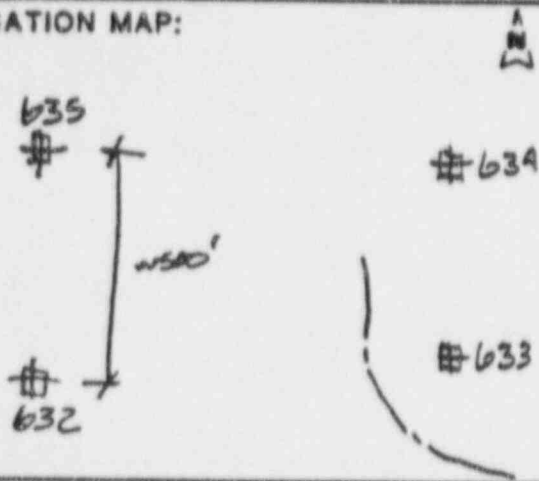
SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

TEST PIT ~~BOREHOLE~~ LOG (SOIL)

Page 1 of 1

LOCATION MAP:



SITE ID: GUN 12 LOCATION ID: 635

SITE COORDINATES (ft.):

 NK NK

GROUND ELEVATION (ft. MSL): NK

DRILLING METHOD: CAT 225 TRAC MOVING

DRILLING CONTR.: SCHMALTZ

DATE STARTED:

DATE COMPLETED:

FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

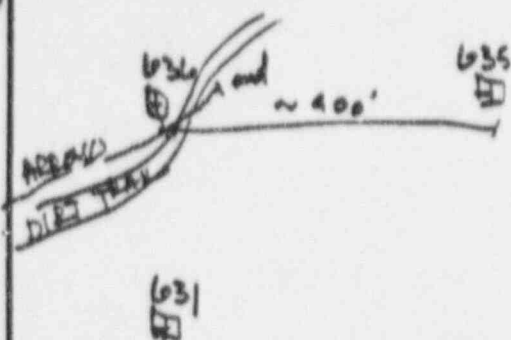
DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								SM	TOPSOIL: silty SAND, prod li-med, cons organics, LP, lt brn
5								GM	silty GRAVELS, cons. coarse snd, occ cobble, SR, med-highly lime cemented, LP, white-tan
10	X				01			GM	silty GRAVEL, cons med-coarse sand, occ cobble, SA-SR, LP, greenish-lt brn
15									SANDSTONE, med coarse grained med. hard, med cemented, lt brn
									Backhoe refusal @ 16 1/2'

COMMENTS: 1-5 gal bucket sampled

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 636
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
~~DRILLING METHOD:~~ CAT ZES TRK MOUNTED
DRILLING CONTR.: SCHMALTZ
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS: 1-5 gal bucket sampled

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 637
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: EAT 225 - TRAC MOUNT
DRILLING CONTR.: SCHMIDT
DATE STARTED: DEC 10, 1987
DATE COMPLETED: _____
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

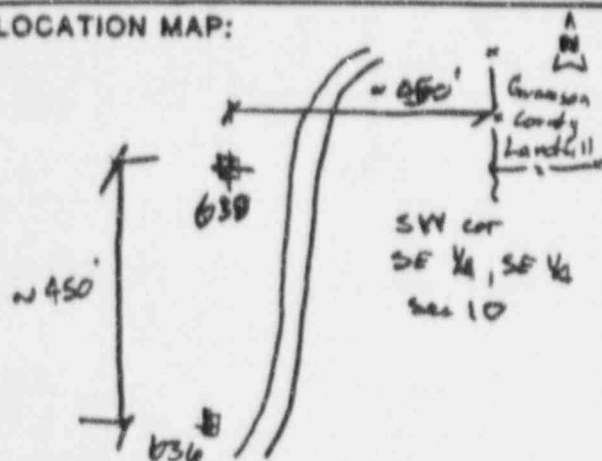
1-5 gal bucket sample

SAMPLE TYPE

- A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

TEST PIT ~~BOREHOLE~~ LOG (SOIL)

LOCATION MAP:



SITE ID: GUN 12 LOCATION ID: 638

SITE COORDINATES (ft.):

N NK E NK

GROUND ELEVATION (ft. MSL): NK

DRILLING METHOD: CAT 224 TRAC MOUNTED

DRILLING CONTR.: 544472

DATE STARTED: 12/19/87

DATE COMPLETED:

FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

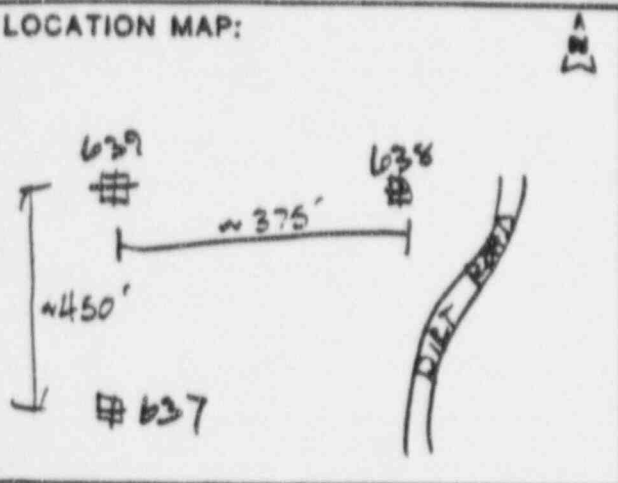
COMMENTS:

- 5 gal bucket sampled

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.36" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 639
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
~~DRILLING METHOD:~~ CAT 225-TRAC MOUNTED
DRILLING CONTR.: SCHMIDT
DATE STARTED: 12/9/87
DATE COMPLETED: 1
FIELD REP.: A. Smith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								SC-SM	TOPSOIL: Silty Clayey SAND, cons organics, LP, brn
5								ML	Sandy SILT, some clay, occ organic, fine fi sand, LP, med brn
10								GM	Silty GRAVEL & COBBLES, cons med sand, SR, LP, tan sl. cemented
15									Stopped Pit @ 15' Backfilled w/ spoils

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



755T #1T

BOREHOLE LOG (SOIL)

Page 4 of 4

LOCATION MAP:



SITE ID: GVN 12 LOCATION ID: 640

SITE COORDINATES (ft.):

N NK E NK

GROUND ELEVATION (ft. MSL): N/A

DRILLING METHOD: CAT 225 - TRAC MOUNTED

DRILLING CONTR.: SCHMALTZ

DATE STARTED: 12/9/87

DATE COMPLETED: 1/

FIELD REP.: 9.5/17/1

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

1-5 gal bucket sampler

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

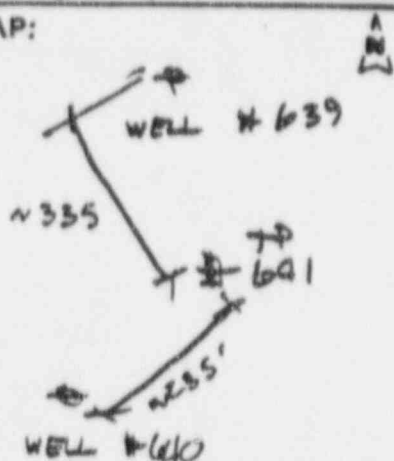


TEST PIT

BOREHOLE LOG (SOIL)

Page 1 of 1

LOCATION MAP:



SITE ID: GUN 12 LOCATION ID: 691

SITE COORDINATES (ft.):

N AK E NK

GROUND ELEVATION (ft. MSL): NK

DRILLING METHOD: CAT 225-TRAC MCVAR

DRILLING CONTR.: SCHMALTZ

DATE STARTED: 12/9/67

DATE COMPLETED:

FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								ML	TOPSOIL: Sandy SILT, cons clay, cons organics, fine li' gravel, LP, brn
5								GM	Silty GRAVEL, some cobbles, cons. med sand, med cemented, silty tan
10								GM	Silty GRAVEL & COBBLES, some med sand, hi cemented, some vacuum mineralization?, greenish brown
15									Stopped Pit @ 9' Backfilled with spoils

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

LOG OF TEST HOLE

Date Drilled 10-31-89 Field Engineer Trautner Boring Number L - 1

Location North end of proposed disposal cell Elevation _____

Diameter pit Total Depth 9 feet Water Table None Encountered

Feet	Sample Type	N	Soil Description	Laboratory Test Results
5	COMPOSITE BULK - 3 Buckets		Silt and gravel, sandy, medium dense, slightly moist, brown (ML-GM).	
			Gravel, cobbles, sandy and silty medium dense to dense, slightly moist, light tan (GM), chemical deposits.	
			Cobbles, gravelly, sandy, dense slightly moist, brown to variegated color (GM-GP). Scattered boulders.	Increase in excavation effort
10			Bottom of test pit at 9 feet.	Increase in excavation effort
15				
20				
25				

Project Name Gunnison Umtra Project Number M89070GE Figure A2

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 10-31-89 Field Engineer Trautner Boring Number L - 2
 Location _____ Elevation _____
 Diameter _____ Total Depth 9 1/2 feet Water Table None Encountered

Depth Feet	Sample Type	N	Soil Description	Laboratory Test Results
0	COMPOSITE 5ULK - 3 Buckets		Silt and gravel, medium dense, slightly moist, Brown (ML-GM), 12 inches of organics.	
5			Gravel, cobbles, sandy and silty dense, slightly moist, light brown to tan (GM-GP), chemical deposits.	
			Some increase in cobble content with depth.	
10			Gravel, cobbles, sandy, dense, medium moist, brown (GP). Increase in moisture content.	
15				
20				
25			Bottom of test pit at 9 1/2 feet.	

Project Name Gunnison Umtra Project Number M89070GE Figure A3

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 10-31-89 Field Engineer Trautner Boring Number L - 3
 Location _____ Elevation _____
 Diameter _____ Total Depth 10 feet Water Table None Encountered

Depth Feet	Sample Type	N	Soil Description	Laboratory Test Results
0			Silt, gravelly, sandy, medium stiff, slightly moist, (ML-SM), 12 inches of organics.	
5			Gravel, some cobbles, silty, medium dense, slightly moist, light tan to white (GM), chemical deposits. Some poorly indurated sand lense, soft.	
10			Gravel and cobbles, dense, slightly moist, brown and variegated color (GP-GM)	
15				
20				
25				

Project Name Guadalupe Irrigation Project Number US007001 Figure 31

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 10-31-89 Field Engineer Trautner Boring Number L - 4
 Location _____ Elevation _____
 Diameter pit Total Depth 9½ feet Water Table None Encountered

Depth ft	Sample Type	N	Soil Description	Laboratory Test Results
0 BULK - 3 Buckets			Silt, gravelly and sandy, medium stiff, slightly moist, Brown (ML-SM), 12% of organics.	
			Gravel, cobbles, silty, dense, slightly moist, light tan (GM) chemical deposits.	
			Gravel, cobbles, sandy, dense, slightly moist, gray (GP-GM)	
10			Bottom of test pit at 9½ feet.	
15				
20				
25				

Project Name Gunnison Ultra Project Number MS907005 Figure 15

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 31-1-9 Field Engineer Trautner Boring Number L - 5
 Location _____ Elevation _____
 Diameter 3 1/2 Total Depth 9 feet Water Table None Encountered

Soil Description		Laboratory Test Results
0 BULK - 3 Buckets 5 10 15 20 25	Silt and gravelly, sandy, medium stiff, slightly moist, Brown (ML-GM), 12 inches of organics.	
	Gravel, scattered cobbles, silty, dense, slightly moist, light tan (GM), chemical deposits.	
	Cobbles, gravel, sandy and silty, dense, slightly moist, variegated color (GP-GM)	
	Bottom of test pit at 9 feet.	

Project Name Gunnison Umtra Project Number MS9070GE Figure 10

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 10-31-89 Field Engineer Trautner Boring Number L - 6
 Location Approximately 40 feet northwest of
staked location as requested. Elevation _____
 Diameter _____ Total Depth 9 feet Water Table _____

Depth ft	Elev ft	Sample		Soil Description	Laboratory Test Results
		Type	N		
5		BULK - 3 Buckets		Silt and gravel, stiff, slightly moist, Brown (ML-GM), 12 inches of organics.	
				Gravel, clayey, scattered cobbles, dense, light tan to white (GC-CL).	
				Gravel, cobbles, silty, dense, slightly moist, gray-brown (GP-GM)	
10				Bottom of test pit at 9 feet.	
15					
20					
25					

Project Name Gunnison Umtra Project Number MS9070GE Figure 27

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 7
 Location _____ Elevation _____
 Diameter _____ Total Depth 9½ feet Water Table _____

Depth ft	Sample Type	N	Soil Description	Laboratory Test Results
5	BULK - 3 Buckets		Silt, gravelly and clayey, medium stiff, slightly moist, Brown (ML).	
			Gravel, cobbles, silty, dense, slightly moist, light tan (GM).	
			Cobbles, gravelly, silty, dense, slightly moist, Green to gray-brown (GP-GM)	
10			Bottom of test hole at 9½ feet,	
15				
20				
25				

Project Name Gunnison Umtra Project Number M89070GE Figure 3A

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 8

Location _____ **Elevation** _____

Diameter _____ Total Depth 10 feet Water Table _____

Depth Feet	Sample		Soil Description	Laboratory Test Results
	Type	N		
0 BULK - 3 Buckets			Silt, gravelly, slightly clayey, medium stiff, slightly moist, Brown (ML).	
			Gravel, some cobbles, silty, medium dense, slightly moist, light tan (GM).	
			Gravel, cobbles, sandy and silty medium dense, slightly moist, gray to green-brown (GM-GP).	
10			Bottom of test hole at 10 feet.	
15				
20				
25				

Project Name Gunnison Umtra Project Number N89070CF Figure A0

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 9
 Location _____ Elevation _____
 Diameter pit Total Depth 9 feet Water Table None Encountered

Depth ft	Sample Type	N	Soil Description	Laboratory Test Results
0			Silt, gravelly, medium stiff, slightly moist, Brown (ML)	
5			Gravel, few cobbles, silty, medium dense to dense, light tan to white (GM), chemical deposits.	
10	3 Buckets		Gravel and cobbles, dense, slightly moist, green-brown (GP-GM) Scattered boulders. Difficult excavation. Near refusal of excavation by backhoe.	
15				
20				
25			Bottom of test hole at 9 feet.	

Project Name Gunnison Imtra Project Number 889070GE Figure A10

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 10
 Location _____ Elevation _____
 Diameter pit Total Depth 9½ feet Water Table None Encountered

Depth of Sample	Type	N	Soil Description	Laboratory Test Results
5	BULK - 1 Bucket		Silt, scattered gravel, medium stiff, slightly moist, Brown (ML), 12 inches of organics.	
			Silt and gravel, few cobbles, medium dense, slightly moist, light tan to white (GM-ML), chemical deposits.	
	3 Buckets		Gravel, cobbles, sandy, dense, slightly moist, Green-brown (GP-GM)	
10			Bottom of test hole at 9½ feet.	
15				
20				
25				

Project Name Gunnison Umtra Project Number 8890700E Figure 511

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 11
 Location _____ Elevation _____
 Diameter _____ Total Depth 9½ feet Water Table None Encountered

Depth ft	Sample Type	N	Soil Description	Laboratory Test Results
5	3 Buckets		Silt, scattered gravel, medium stiff, slightly moist, brown (ML), 36 inches of organics.	
			Gravel, cobbles, silty, dense, slightly moist, light tan to white (GM), chemical deposits.	
			Gravel, cobbles, sandy, dense, slightly moist, gray-brown to green-brown (GP-GM)	
10			Bottom of test boring at 9½ feet	
15				
20				
25				

Project Name Union Ultra Project Number MS907001 Figure 1

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 12
 Location _____ Elevation _____
 Diameter _____ Total Depth 10 feet Water Table _____

Depth ft	Sample Type	N	Soil Description	Laboratory Test Results
0	1 Bucket		Sand, silty, scattered gravel, medium dense, slightly moist, brown (SM) 12" of organics	
5	BULK - 3 Buckets		Gravel, scattered cobbles, silty medium dense to dense, slightly moist, light tan to white (GM)	
10			Gravel, cobbles, sandy, medium dense to dense, slightly moist, gray to green-brown (GP-GM)	
15			Bottom of test hole at 10 feet.	
20				
25				

Project Name Gunnison Umtra Project Number M89070GE Figure A.1

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number L - 13

Location _____ Elevation _____

Diameter _____ Total Length 10 feet Water Table _____

Depth Feet	Sample		Soil Description	Laboratory Test Results
	Type	N		
0			Silt, few gravels, medium stiff slightly moist, Brown (ML) 12 inches of organics.	
5			Silt, few gravels, stiff, slightly moist, light tan to white (ML), chemical deposits. Transitional contact.	
			Gravel, cobbles, silty, medium dense, slightly moist, light tan to white (GM).	
			Gravel, cobbles, sandy, slightly moist, gray to green-brown (GP)	
10			Bottom of test hole at 10 feet.	
15				
20				
25				

Project Name Gunnison Umtra Project Number MR9070GE Figure N-1

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST HOLE

Date Drilled 11-1-89 Field Engineer Trautner Boring Number 1 - 14
 Location Southeast disposal area Elevation _____
 Diameter _____ Total Depth 9 1/2 feet Water Table None Encountered

Depth Feet	Sample Type	N	Soil Description	Laboratory Test Results
0	Bucket		Silt, some gravels, medium stiff slightly moist, Brown (ML), 18 inches of organics.	
5	1 Bucket		Gravel, silty, scattered cobbles medium dense, slightly moist, light tan to white (GM).	
8	3 Buckets		Gravel, some cobbles, sandy, dense, slightly moist, Gray to green-brown (GM-GP).	
	BULK		Some thin sand lenses (SP). Some angular rock pieces.	
10			Bottom of test boring at 9 1/2 feet	
15				
20				
25				

Project Name Gunnison Umtra Project Number M89070GE Figure A15

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

MONITORING WELL LOGS

MONITORING WELL LOGS

Taken From: TAC, "Test Pit, Borehole, and Well Construction Logs: Gunnison Landfill Site," Various Dates, MKE Doc #4005-GUN-R-09-00249-00

TAC, "Test Pit, Monitoring Well and Piezometer Logs: Gunnison Landfill Disposal Site", Mke Doc # 3885-GUN-R-04-01078-00, July 1990

BID.GUN

OCT 11 1990

UMTRA-S.E.

GUNNISON COLORADO SITE

SUBCONTRACT 34-6704-S-PP-000P

Coordinates for Additional Piezometer Wells

Field work completed 8-6-88

<u>Designation</u>	(east) <u>X coordinate</u>	(north) <u>Y coordinate</u>	<u>Elevation</u>
✓Piez. Well 650	12337.3866	15478.1110	8023.75
✓Piez. Well 651	12652.8252	15677.6671	8033.94
✓Piez. Well 652	12244.9395	16013.1698	8036.58
✓Piez. Well 653	12477.8934	15980.3836	8040.03
✓Piez. Well 654	12805.8146	16281.9904	8052.98
✓Piez. Well 656	12444.6945	16296.7272	8045.54
✓Piez. Well 657	12686.0410	16551.7628	8054.70
✓Piez. Well 660	13108.4782	15325.2843	8024.12
✓Piez. Well 661	13352.7718	15834.2336	8040.11
✓Piez. Well 662	13141.9262	16646.0372	8062.28
✓Piez. Well 663	13543.7857	16780.2981	8066.11
✓Piez. Well 664	13685.1031	16265.6261	8049.88
✓Piez. Well 665	13791.7947	15798.9758	8036.61
✓Piez. Well 666	13882.5545	15358.0718	8012.17
✓Piez. Well 667	13371.7475	15021.3051	8010.46
✓Piez. Well 668	13615.1647	14920.2939	8005.24
✓Piez. Well 669	13427.2653	14449.8917	7993.51
✓Piez. Well 670	13887.5972	14485.0955	7987.96
✓Piez. Well 671	12681.6136	17064.7050	8069.55
✓Piez. Well 672	13282.4906	17157.6628	8074.14
✓Piez. Well 673	12804.7640	15163.2151	8016.32
✓Piez. Well 674	12581.0515	15831.3492	8036.13
✓Piez. Well 675	14480.1800	16334.6108	8041.99
✓Piez. Well 676	15388.2103	15902.4594	7976.29
Piez. Well 801	15509.7198	15249.4438	7904.72
Piez. Well 802	16166.8494	15579.8113	7896.84

<u>Designation</u>	<u>EWT</u> <u>X coordinate</u>	<u>NORTH</u> <u>Y coordinate</u>	<u>Elevation</u>
--------------------	-----------------------------------	-------------------------------------	------------------

TEST PITS SOUTHWEST OF SITE

Test Pit 601	12693.8958	13601.5979	8068.61
Test Pit 602	12450.3885	14107.1310	8039.46
Test Pit 603	12144.5154	14545.1799	8005.37
Test Pit 604	11991.1578	13977.6723	8004.48
Test Pit 605	11765.2044	13275.4826	8022.16
Test Pit 606	11895.8107	14844.4855	7982.52
Test Pit 607	11452.2986	13871.5996	8020.92
Test Pit 608	11138.9128	13362.0616	8037.70
Test Pit 609	12938.7619	14491.3525	8006.35
Test Pit 610	13513.9321	14576.5014	7979.47

TEST PITS ON SITE

Test Pit #2	12881.4251	14740.6647	8003.76
Test Pit #3	12825.8135	15499.1814	8028.54
Test Pit #5	12827.2129	14903.3525	8007.39
Test Pit 630	12674.1485	16537.0811	8054.50
Test Pit 631	13189.8142	16518.7312	8060.61
Test Pit 632	13645.2606	16530.9971	8059.53
Test Pit 633	14297.3743	16577.3801	8048.31
Test Pit 634	14211.3467	17101.8911	8071.70
Test Pit 635	13565.7229	17057.8031	8074.17
Test Pit 636	13114.8913	17067.3459	8066.52
Test Pit 637	12676.3283	17074.0050	8069.93
Test Pit 638	13068.8996	17684.5693	8092.04
Test Pit 639	12674.7114	17715.0184	8089.35
Test Pit 640	12326.5560	15474.1429	8023.57
Test Pit 641	13470.6826	14961.0220	8008.45

WELLS ON SITE

Well #1	12655.8347	15054.0951	8014.71(C)
Well #2	12785.9078	15185.4073	8012.77
Well #3	12830.4898	15017.4179	8019.26(C)
Well 609	12563.2665	14961.0168	8017.64
Well 610	12546.4693	15114.5799	8013.14(C)
Well 611	12751.1039	15087.3296	8011.19
Well 621	12557.4877	15007.7331	8012.64(C)
			8010.73
			8016.54(C)
			8014.98
			8015.70(C)
			8013.73
			8013.44(C)
			8011.65

<u>Designation</u>	<u>EAST</u> <u>X coordinate</u>	<u>NORTH</u> <u>Y coordinate</u>	<u>Elevation</u>
WELLS ON SITE (CONT.)			
∟ Well 625	12662.9866	15042.9269	8014.72(C)
∟ Well 626	12795.6099	15177.3231	8012.22
∟ Well 627	12963.3658	15031.4605	8019.79(C)
Well 628	12545.4370	16301.2264	8017.10
Well 629	12564.4984	15745.8303	8013.46(C)
∟ Well 630	12524.1862	14674.4606	8010.82
∟ Well 631	12582.4071	14314.5279	8052.11(C)
∟ Well 632	11991.9468	15077.4650	8050.02
∟ Well 633	11659.8080	15108.6291	8035.16(C)
∟ Well 634	11639.5673	15390.9243	8033.63
∟ Well 635	12967.0216	14496.8977	8010.58(C)
Well 636	12960.6349	15314.2863	8008.95
Well 637	12964.6495	15879.5530	8030.18(C)
∟ Well 638	13261.1018	16210.2831	8028.28
∟ Well 639	13443.2381	15459.9934	7979.61(C)
Well 640	13383.7763	14722.0128	7977.62
P #1 (622)	12525.1100	14665.4340	7984.70(C)
P #2 (623)	12526.8906	14660.9912	7982.93
P #3 (624)	12529.8598	14665.1740	7977.87(C)
			7975.92
			8007.68(C)
			8005.95
			8025.98(C)
			8024.16
			8044.30(C)
			8042.38
			8054.89(C)
			8053.11
			8026.28(C)
			8024.14
			7992.30(C)
			7990.51
			8011.02(C)
			8008.94
			8011.11(C)
			8009.02
			8011.05(C)
			8009.05

GUNNISON COLORADO SITE
 SUPCONTRACT 34-6704-S-88-0008

Coordinates for Wells & Test Pits

<u>Designation</u>	<u>X coordinate</u>	<u>Y coordinate</u>	<u>Elevation</u>
Et cor. Sec.15	15000.0000	15000.0000	7923.27
SE cor. Sec.15	15000.0000	12358.4200	8084.64
USGS Benchmark	16016.2617	12635.1394	8032.884
Trav. Pt. #1	15000.0000	14518.0600	8003.36
Trav. Pt. #2	17818.1484	15829.0750	7911.02
Trav. Pt. #2A	18477.3487	15547.8796	7848.65
Trav. Pt. #3	12483.2319	14755.7800	8007.30
Trav. Pt. #3A	13077.9232	16246.2176	8053.32
Trav. Pt. #3E	11452.2986	13871.5996	8020.82
Trav. Pt. #4	15669.5487	12863.8075	8059.78
Trav. Pt. #5	13205.3363	13759.5748	8063.35

TEST PITS NEAR ENTRANCE

Test Pit 611	18058.3954	15568.2909	7843.69
Test Pit 612	18913.9508	16321.3639	7824.04
Test Pit 613	18909.6863	15681.2670	7829.73
Test Pit 614	18305.2260	14654.5027	7858.14
Test Pit 615	18624.9420	15455.6098	7838.78
Test Pit 616	18321.8685	15261.5996	7854.69
Test Pit 617	18101.4550	15343.4124	7844.03
Test Pit 618	17448.8632	15321.9049	7854.54
Test Pit 619	16331.5097	15159.0809	7882.03
Test Pit 620	16374.1651	15254.6251	7882.22
Test Pit 621	18470.5902	15731.2823	7835.64
Test Pit 622	18730.2874	15915.0298	7829.84
Test Pit 642	could not find		
Test Pit 643	18914.3511	15156.6264	7851.22
Test Pit 644	could not find		
Test Pit 645	17269.3346	14942.2113	7871.20
Test Pit 646	could not find		
Test Pit 647	could not find		
Test Pit 648	17571.2494	15566.7513	7868.34
Test Pit 649	18135.7720	15735.9998	7853.55
Test Pit 650	18540.8025	16073.3019	7838.30
Test Pit 651	18926.2090	15884.7815	7826.23

<u>Designation</u>	<u>EAST</u> <u>X coordinate</u>	<u>NORTH</u> <u>Y coordinate</u>	<u>Elevation</u>
--------------------	------------------------------------	-------------------------------------	------------------

TEST PITS SOUTHWEST OF SITE

Test Pit 601	12693.8958	13601.5979	8068.61
Test Pit 602	12450.3885	14107.1310	8039.46
Test Pit 603	12144.5154	14545.1799	8005.37
Test Pit 604	11991.1578	13977.6723	8004.48
Test Pit 605	11765.2044	13275.4826	8022.16
Test Pit 606	11895.8107	14844.4855	7982.52
Test Pit 607	11452.2986	13871.5996	8020.82
Test Pit 608	11138.9128	13362.0616	8037.70
Test Pit 609	12938.7619	14491.3525	8006.85
Test Pit 610	13513.9321	14576.5014	7979.47

TEST PITS ON SITE

Test Pit #2	12881.4251	14740.6647	8003.76
Test Pit #3	12825.8135	15499.1814	8028.51
Test Pit #5	12827.2128	14903.3525	8007.08
Test Pit 630	12674.1485	16537.0811	8054.69
Test Pit 631	13189.8142	16518.7312	8060.61
Test Pit 632	13645.2606	16530.9971	8058.43
Test Pit 633	14297.3743	16577.3891	8048.32
Test Pit 634	14211.3467	17101.8911	8071.70
Test Pit 635	13565.7229	17057.8031	8074.17
Test Pit 636	13114.8913	17067.3459	8066.62
Test Pit 637	12676.3283	17074.0050	8069.93
Test Pit 638	13068.8996	17684.5693	8092.04
Test Pit 639	12674.7114	17715.0184	8089.35
Test Pit 640	12326.5560	15474.1429	8023.87
Test Pit 641	13470.6826	14961.0220	8008.45

WELLS ON SITE

	<u>E</u>	<u>N</u>	
✓ Well #1	12655.8347	15054.0951	8014.71(C)
✓ Well #2	12785.9078	15185.4073	8012.77
✓ Well #3	12830.4898	15017.4179	8019.26(C)
✓ Well 609	12563.2665	14961.0168	8017.64
✓ Well 610	12546.4693	15114.5799	8013.14(C)
✓ Well 611	12751.1039	15087.3296	8011.19
✓ Well 621	12559.4877	15007.7331	8012.64(C)
			8010.73
			8016.54(C)
			8014.98
			8015.70(C)
			8013.73
			8013.44(C)
			8011.65

<u>Designation</u>	<u>X coordinate</u>	<u>Y coordinate</u>	<u>Elevation</u>
WELLS ON SITE (CONT.)			
Well 625	12662.9866	15042.9269	8014.72(C) 8012.22
Well 626	12795.6099	15177.3231	8019.79(C) 8017.10
Well 627	12963.3658	15031.4605	8013.46(C) 8010.82
Well 628	12545.4370	16301.2264	8052.11(C) 8050.02
Well 629	12564.4994	15745.8303	8035.16(C) 8033.63
Well 630	12524.1862	14674.4606	8010.58(C) 8008.95
Well 631	12582.4071	14314.5279	8030.18(C) 8028.28
Well 632	11991.9468	15077.4650	7979.61(C) 7977.62
Well 633	11659.8080	15108.6291	7984.70(C) 7982.93
Well 634	11639.5673	15390.9243	7977.87(C) 7975.92
Well 635	12967.0216	14496.8977	8007.68(C) 8005.95
Well 636	12960.6349	15314.2863	8025.98(C) 8024.16
Well 637	12964.6495	15879.5530	8044.30(C) 8042.38
Well 638	13261.1018	16210.2831	8054.89(C) 8053.11
Well 639	13443.2381	15459.9934	8026.28(C) 8024.14
Well 640	13383.7763	14722.0128	7992.30(C) 7990.51
P #1	12525.1100	14665.4340	8011.02(C) 8008.94
P #2	12526.8906	14660.9912	8011.11(C) 8009.02
P #3	12529.8598	14665.1740	8011.05(C) 8009.05

GUNNISON, COLORADO

LANDFILL DISPOSAL SITE

SUBCONTRACT NO. 34-6705-P-90-0021

XYZ TABLES FOR MONITOR WELLS

MONITOR WELL NUMBER	NORTH-SOUTH COORDINATE	EAST-WEST COORDINATE	ELEVATION OF TOP OF CASING	ELEVATION OF GROUND
GUN-08-701	N 15794.2766	E 12880.0548	8041.17	8039.43
GUN-08-702	N 15796.6247	E 12899.7742	8041.72	8039.47
GUN-08-703	N 15102.3226	E 12557.4451	8016.11	8014.14
GUN-08-704	N 15031.2845	E 12603.5968	8014.03	8012.31
GUN-08-705	N 16115.0527	E 13263.3321	8052.78	8050.68
GUN-08-706	N 16105.5136	E 13200.6043	8051.87	8050.08
GUN-08-707	N 16247.8605	E 12502.8873	8050.60	8048.67
GUN-08-708	N 16248.3180	E 12523.8288	8052.21	8050.99
GUN-08-709	N 17094.6313	E 10205.9777	7928.68	7926.74
GUN-08-710	N 13590.8065	E 12679.3140	8071.00	8069.47
GUN-08-711	N 14274.6552	E 14744.5313	8021.81	8019.41
GUN-08-712	N 15096.2213	E 10503.6256	7972.98	7971.06
GUN-08-713	N 14701.3288	E 13387.3000	7992.72	7991.10
GUN-08-714	N 15385.3996	E 16124.1424	7890.96	7889.24
GUN-08-715	N 15450.1262	E 14336.3560	8022.91	8021.21
GUN-08-716	N 17499.1849	E 13216.2521	8087.22	8085.66
GUN-08-717	N 16385.6211	E 14728.1718	8049.57	8047.88
PANEL POINT	N 16069.2950	E 13277.3329	---	8048.89
PANEL POINT	N 13074.7736	E 10309.5491	---	8074.07



BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:



SITE ID: GMN-08 LOCATION ID: 1
SITE COORDINATES (ft.):
N NK 12655.83 E N NK 15054.09
GROUND ELEVATION (ft. MSL): NK 8012.77
DRILLING METHOD: Rotary - 7 1/2" Casing - Air
DRILLING CONTR.: Bowles Bros. - T. Crowther
DATE STARTED: 11-13-87
DATE COMPLETED: 11-14-87
FIELD REP.: J. Carver

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-20-87	NK	72.56

LOCATION DESCRIPTION _____
SITE CONDITION _____

NK

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	SLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
	X			G	01	NA	NA	GM	silty sand and gravel, poorly graded to 3", subng. to silty, low to NP, brown
5	X			K	02			SM	silty sand, some subrounded gravel to 2", grad. fine, NP, brown Tg
10	X			G	03			GP	sand, gravel and cobbles to 8", poorly graded, NP brown
15	X			G	04			GM	silty sand, gravel and cobbles to 8", poorly graded, low to NP, brown
20	X			G	05				
25	X			G	06			GMSC	silty, clayey sand, gravel and cobbles to 8", poorly graded, subrounded, low PI, brown

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:



see pg. 1

SITE ID: GWN-06 LOCATION ID: 1
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" dia. x 1' Air
DRILLING CONTR.: Boyle Bros - T. Crenshaw
DATE STARTED: 11-13-67
DATE COMPLETED: 11-14-67
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

see pg. 1

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X			G	07	NA	NA	GC	clayey sand and gravel with cobbles, 6-10", poorly graded, poorly low PI, brown
40	X			G	08				
45	X			G	09				
50	X			G	10				volcanic breccia(?) clayey sand and gravel with cobbles to 6-10", poorly graded, sub-sandy, low PI, greyish green
55	X			G	11				
60	X			G	12				

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thermal-welded Shelby tube



Page 3 of 3

AN

SITE ID: GRN-02 LOCATION ID: 21
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" Circum - Air
DRILLING CONTR.: Baylor Bros - T. Crenshaw
DATE STARTED: 11-13-87
DATE COMPLETED: 11-14-87
FIELD REP.: J. Barred

DATE	TIME	DEPTH (ft.)
------	------	-------------

see pg. 1

SITE CONDITION

[illegible]

COMMENTS:

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-waxed Shelby tube



BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:



NA

SITE ID: GWR-08 LOCATION ID: 2
SITE COORDINATES (ft.):
N 12755.91 E 15185.41
GROUND ELEVATION (ft. MSL): 8017.64
DRILLING METHOD: Rotary - 7 1/2" diameter - Air
DRILLING CONTR.: Boyle Bros - T. Co. & Son
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-20-87	NA	79.18

LOCATION DESCRIPTION

NA

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
	X			G	01	NA	NA	SC	clayey sand, some to consid. gravel to 2", pred. fine, med. Pl. brown
5	X			G	02				
10	X			G	03			GP	sand, gravel and cobbles, max size 6-10", poorly graded, subang NP, brown
15	X			G	04				
20	X			G	05			GC	clayey sand, gravel and cobbles, max size 6-8", poorly graded, subrounded, low Pl to NP, brown
25	X			G	06			-	

COMMENTS: G: grain lab cuttings

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-walled Shelby tube



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:

A
2nd

SITE ID: GAW-08 LOCATION ID: 2
SITE COORDINATES (N. E. S. W.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Retainer - 7" O.D. - 4" I.D.
DRILLING CONTR.: Boyle Bros. - Ft. Worth
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Barnes

see
pg. 1

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

see pg. 1

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMARKS	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
25	X			G	07				see previous pg.
	X			G	08				
	X			G	09				
	X			G	10				
	X			G	11				
	X			G	12				
								GC	volcanic breccia clayey sand and gravel, poorly graded 4" +, low to med pl, gray green

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 3 of 3

LOCATION MAP:



SITE ID: See N-08 LOCATION ID: 2
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" Diameter - Air
DRILLING CONTR.: Boyle Bros - T. Crowther
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Barents

see pg. 1

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION

see pg. 1

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			G	13				
70	X			G	14				
75	X			G	15				
80	X			G	16				
85									Stopped drilling at 80.0'

COMMENTS:

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:



NA

SITE ID: LAUN-25 LOCATION ID: 3
SITE COORDINATES (ft.):
N 12830.49 E 15017.42
GROUND ELEVATION (ft. MSL): 8011.19
DRILLING METHOD: Rotary 3" Constant Air
DRILLING CONTR.: Bechtel Bros. - T. C. C. Co.
DATE STARTED: 11-10-67
DATE COMPLETED: 11-18-67
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-20-67	NK	73.27

LOCATION DESCRIPTION

NA

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
5	X			G	01	NA	NA	SC	clayey sand, some to mud. gravel to 4", subang. to subround, poorly sorted, med Pl, brown
10	X			G	02			GM	silty sand and gravel, cobbles poorly graded, max size 6-8", low Pl to NP, brown
15	X			G	03				
20	X			G	04				
25	X			G	05				
	X			G	06			GC	clayey sand, gravel and cobbles, poorly graded to 10", low Pl, brown

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



WOREHOLE LOG (SOIL)

Page 3 of 3

LOCATION MAP:



see P5.1

SITE ID: CLN-06 LOCATION ID: 3
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 7/8" G-Whit - Air
DRILLING CONTR.: Baker Bros. T. Co. - Denver
DATE STARTED: 11-16-67
DATE COMPLETED: 11-16-67
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

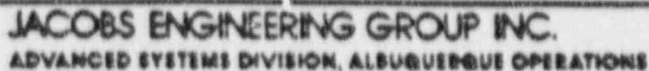
SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
30	X			G	07				
35	X			G	08				
40	X			G	09				
45	X			G	10				
50	X			G	11			GC	volcanic breccia. clayey sand and gravel with occ. pebbles, poorly graded 6-10", low to med pl, gray-green
55	X			G	12				

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



Page 3 of 3

SITE COORDINATES (ft.):

GROUND ELEVATION (ft. MSL): AK

GROUND ELEVATION (ft. MSL): 114

DRILLING METHOD: Rotary - 7"m 6-cubit - A/c

DRILLING CONTR.: Reuter's Press - T. Crawford

DATE STARTED: 11-17-87

DATE COMPLETED: 11-18-87

FIELD REP.: J. B. Jones

GROUNDWATER LEVELS

DATE _____

TIME

DEPTH (ft.)

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
60	X			G	13				
65	X								
70	X			G	14				
75	X			G	15				
80	X			G	16			GC	volc. breccia (?) probably Tg psm clayey sand, gravel and cobbles to 10", pebbly gravel, low to med Pl, lt. brown to lt. gray
85									stopped drilling at 80.0'

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



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Cone Hole: did not get

sufficient recovery for
pump use.

BOREHOLE LOG (ROCK)

Page 1 of 1

LOCATION MAP:



SITE ID: SUN-08 LOCATION ID: 608
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: MAX CORE
DRILLING CONTR.: Kissner Drilling
DATE STARTED: 7/1/87
DATE COMPLETED: _____
FIELD REP.: R. Corbett

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION Landfill Site, S.W. of Existing Landfill
SITE CONDITION Relatively Flat Plateau, Bare Short Sage Cover

DEPTH (ft.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											SC Alluvium, clayey sand, fine - med, coarse gravel, L.P., Lt. Brn
5											
10											
15											SC Sandstone, medium coarse grained Tuff, lightly indurated to med. indurated, very weathered, Brn - Grey
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											
80											
85											
90											
95											
100											

COMMENTS:

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING



BOREHOLE LOG (ROCK)

Page 2 of

LOCATION MAP:



SITE ID: 64K-08 LOCATION ID: 608
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: NX CORE
DRILLING CONTR.: Kissack Drilling
DATE STARTED: 5/1/87
DATE COMPLETED: _____
FIELD REP.: A. Grubbs

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
65	X	45	0	00							Tuff, lightly welded - not welded, very weathered, Brn - Grey
70											
75											For continuation see logs by G. Smith
80											
85											
90											
95											
100											
105											
110											
115											
120											

COMMENTS:

BORING OPERATION

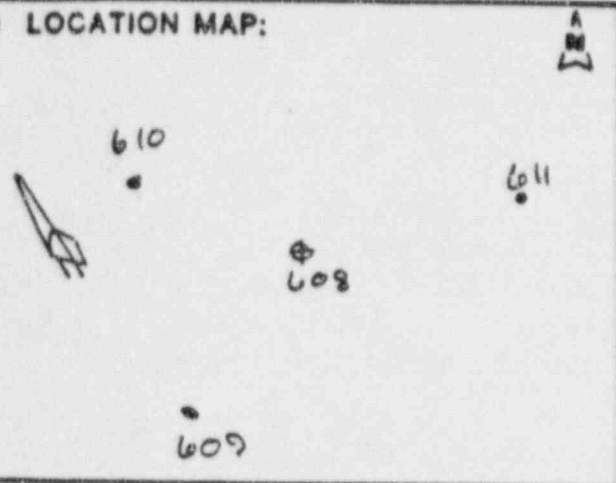
H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING



BOREHOLE LOG (ROCK)

Page 1 of 4

LOCATION MAP:



SITE ID: GUN-02 LOCATION ID: 608
SITE COORDINATES (ft.):
N N.K. E N.K.
GROUND ELEVATION (ft. MSL): Approx 8020
DRILLING METHOD: rotary w/ water
DRILLING CONTR.: Bill Kissner
DATE STARTED: 7/9/87
DATE COMPLETED: 9/12/87
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
	NONE	

LOCATION DESCRIPTION landfill site, corehole approx 1 mi. S. US 50
SITE CONDITION high mountain plateau, sage brush, some grasses

DEPTH (FT.)	BORING OPERATI. N	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											

GROUP

SEE ROCK LOG DONE BY
R. CROCKETT FOR UPPER 30 FT

buff Angular
Mod flow, a breccia, a mod cement, ~~hard~~, solid,
by fragmental pieces of biotite, hornblende,
diomite? lt brn matrix

COMMENTS: TD = 79.4'

BORING OPERATION

M - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
WX - WX ROCK CORING
NO - NO WIRELINE ROCK CORING



BOREHOLE LOG (ROCK)

Page 2 of 4

LOCATION MAP:



SEE pg 1 of

SITE ID: GUN 08 LOCATION ID: 608
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL):
DRILLING METHOD: rotary - w/ water - HQ core
DRILLING CONTR.: Bull Kiser
DATE STARTED: 9/9/87
DATE COMPLETED: 9/12/87
FIELD REP.: G. SMITH

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
	NONE	

LOCATION DESCRIPTION
SITE CONDITION

see pg 1 of

DEPTH (ft.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
25											
30											
		100	0	100							
		80	0	70							plugged
35											
		90	0	80							
		10	0	70							
40											
40.93											
45											
		40	0	70							using thin mud
46.5											
		50	0	70							
48.5											
		40	0	70							
50											

COMMENTS: considerable material washing away, seems to be worse w/ longer runs

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING



BOREHOLE LOG (ROCK)

Page 3 of 4

LOCATION MAP:



See pg 1 of 2

SITE ID: GVN 08 LOCATION ID: 608
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: relax - core (CQR) w/ mud
DRILLING CONTR.: Ball & Kisser
DATE STARTED: 9/9/87
DATE COMPLETED: 9/12/87
FIELD REP.: G. M. Smith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
	NONE	

LOCATION DESCRIPTION
SITE CONDITION

See pg 1 of 2

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
50	X	60	0	70						
52	X	70	0	70						
54	X	75	15	70						
56	X	75	0	70						
58	X	30	0	70						
60	X	50	0	70						
62	X	50	0	60						
64	X	55	15	70						
66	X	40	0	70						
68	X	70	0	80						
70	X	40	0	70						
72	X	80	0							
74	X	45	0							
76	X									

ROCK TYPE & REMARKS

color change in matrix @ 50' from tan to green

color change in tuff to med. brown @ 67'

COMMENTS:

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING



BOREHOLE LOG (ROCK)

Page 4 of 4

LOCATION MAP:



See pg 1 of

SITE ID: GUN 08 LOCATION ID: 608
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - mud - NC core
DRILLING CONTR.: B. W. Kessner
DATE STARTED: 9/9/87
DATE COMPLETED: 9/12/87
FIELD REP.: G. A. Smith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
	NONE	

LOCATION DESCRIPTION SITE CONDITION

See pg 1 of

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
76.9	X	40	0	70						
79.4	X	25	0	70						
80										
85										
90										
95										
100										

Tuff breccia, med soft, fine grained tuff,
angular, fragmented pieces of andesite,
hornblende, plagioclase, biotite

Stopped hole @ 79.4'

COMMENTS:

BORING OPERATION

M - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
RX - RX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

Page 1 of 3

LOG OF TEST BORING NO. 609JOB NO. GUN08 DATE 09/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0								SC	Failing F-15	6" ROTARY	8,010.73'	MSL	Qped	<u>SOIL:</u> Clayey Sand, predominantly fine grained, considerable gravel, low plasticity, light brown.
5								GP					Tg	<u>TERTIARY GRAVEL:</u> Sand and Gravel, predominantly fine to medium grained, trace clay, subangular to subrounded, brown-grey.
10														
15														
20														
25														
30								SC					Tb-l	<u>LAHAR BRECCIA:</u> Clayey Sand, some gravel greenish grey.
35														
40														
45														
50								SC						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0		09/03/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 609JOB NO. GUN08DATE 09/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 36" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55			*						Failing F-15	6" ROTARY	8,010.73	MSL	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
			*	G										
60			*											
			*	G										
65			*											
			*	G										
70			*											
			*	G										
75			*											
			*	G										
80			*											
			*	G										
85			*											
			*	G										
90			*											
			*	G										
95			*											
			*	G										
100			*											
			*	G				SC						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0		09/03/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 609

JOB NO. GUN08 DATE 09/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105									Failing F-15	6" ROTARY	8,010.73'	MSL	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.) Note: Color change to light reddish brown at 115'.
110				G										
115				G										
120				G										
125				G				GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, trace to some clay, brown. Note: Water encountered at approximately 130'.
130				G										
135				G										
140				G										
145				G										
150														Stopped drilling at 150.0'. Installed 2" diameter PVC casing with 10 feet of screen set bottom of the screen at 148 feet blow land surface.
155														

GROUNDWATER		
DEPTH	HOUR	DATE
130.0		09/03/87

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 610

JOB NO. GUN08 DATE 09/03/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	FAILING 1500
									BORING TYPE	6" TRICONE
									SURFACE ELEV.	8,014.98'
									DATUM	MSL
									REMARKS	VISUAL CLASSIFICATION
0			*	G				SC	Qped	<u>SOIL: Clayey Sand</u> , predominantly fine grained, considerable gravel, low plasticity, light brown.
5			*	G				GP	Tg	<u>TERTIARY GRAVELS: Sand</u> and Gravel, fine to medium grained, trace of clay, subangular to subrounded, brown to black.
10			*	G						<u>NOTE: At 25 feet to 35 feet</u> becomes more clayey (possible ash-flow tuff).
15			*	G						
20			*	G						
25			*	G						
30			*	G						
35			*	G						
40			*	G				GC	Tb-1	<u>LAHAR BRECCIA: Clayey Sand</u> and Gravels, greenish-gray to olive green.
45			*	G						
50			*	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0		09/02/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

Page 2 of 4
 LOG OF TEST BORING NO. 610

JOB NO. GUN08 DATE 09/03/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									<u>FAILING 1500</u>	<u>6" TRICONE</u>	<u>N15,110.0 E12,525.0</u>	<u>MSL</u>		
55			*										Tb-1	<u>LAHAR BRECCIA:</u>
			*	G										(Cont.)
60			*											
			*	G										
65			*											
			*	G										
70			*											
			*	G										
75			*											
			*	G										
80			*											
			*	G										
85			*											
			*	G										
90			*											
			*	G										
95			*											
			*	G										
100			*											
			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0		09/02/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LOG OF TEST BORING NO. 610

JOB NO. GUN08 DATE 09/03/87

DATE 09/03/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30 free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	FALING 1500
								BORING TYPE	6" TRICONE
								SURFACE ELEV.	8,014.98'
								DATUM	MSL
								REMARKS	VISUAL CLASSIFICATION
105			x	G				Tb-l	<u>LAHAR BRECCIA:</u> (Cont.)
110			x	G					
115			.	G			GM	Tg	<u>TERTIARY GRAVELS:</u> Silty Sand and Gravel, mixed lithology (granite, quartz, etc.), brown to grayish-brown.
120			.	G					
125			.	G					
130			.	G					
135			.	G					
140			.	G					
145			.	G					NOTE: Began injecting water at 145 feet.
150			.	G					
155									Stopped drilling at 152 feet. Installed 2" diameter PVC casing

GROUNDWATER		
DEPTH	HOUR	DATE
130.0		09/02/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 611

JOB NO. GUN08

DATE 09/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Gardner-Denver		
								BORING TYPE	6" Rotary	N15,087.3 E12,751.1
								SURFACE ELEV.	8,013.73'	
								DATUM	MSL	
								REMARKS	VISUAL CLASSIFICATION	
0			x	G			SC	Qped	<u>SOIL</u> : Clayey Sand, some gravel, to medium grained, considerable gravel, low plasticity, light brown.	
5			x	G						
10			x	G						
15			x	G			GP	Tg	<u>TERTIARY GRAVEL</u> : Sand and Gravel, trace clay, fine grained sand, subrounded to subangular, brown.	
20			x	G						
25			x	G						
30			x	G						
35			x	G						
40			x	G			GC	Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand and Gravels, grey-green.	
45			x	G						
50			x	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
	NONE	

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LOG OF TEST BORING NO. 611

JOB NO. GUN08 DATE 09/02/87

DATE 09/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation
RIG TYPE Gardner-Denver							
BORING TYPE 6" Rotary N15,087.3 E12,751.1							
SURFACE ELEV. 8,013.73'							
DATUM MSL							
				REMARKS	VISUAL CLASSIFICATION		
55			*				
			*	G			
			*				
60			*				
			*	G			
			*				
65			*	G			
			*				
70			*	G			
			*				
75			*	G			
			*				
80			*	G			
			*				
85			*	G			
			*				
90			*	G			
			*				
95			*	G			
			*				
100			*				
				Tb-1	NOTE: Added water to 60 feet to aid in cuttings removal.		
					Stopped drilling at 102 feet.		

Stopped drilling at 102 feet.

DEPTH	HOUR	DATE
	NONE	

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 611

JOB NO. GUN08 DATE 09/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Gardner-Denver</u>	BORING TYPE <u>6" Rotary</u>	SURFACE ELEV. <u>8,013.73'</u>	DATUM <u>MSL</u>	REMARKS	VISUAL CLASSIFICATION
110													
115													
120													
125													
130													
135													
140													
145													
150													
155													

Installed 2 inch PVC casing with 10 feet of screen with the bottom of screen at 97.5 feet below ground surface.

GROUNDWATER		
DEPTH	HOUR	DATE
	NONE	

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OK - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	FAILING F-15
								BORING TYPE	ROTARY/AIR
								SURFACE ELEV.	8,011.65'
								DATUM	MSL
REMARKS								VISUAL CLASSIFICATION	
0							SM	Log based on geophysical log & adjacent wells. Qped	
5							SP/ GP	Tg	
10								<u>TERTIARY GRAVEL:</u> Sand and Gravel with Cobbles, subrounded to rounded, trace clay, low plasticity, light brown.	
15									
20									
25									
30									
35									
40							SC		
45									
50							SC		

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 621JOB NO. GUN08DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lb./cu. foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55								Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
60									
65									
70									
75									
80									
85									
90									
95									
100							CL	Tg	<u>TERTIARY GRAVEL:</u> (contact of Lahar and Tg gravel based on geophysical log). Silty Clay, plastic, brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE
 JOB NO. GUN08 DATE 11/01/87

Page 3 of 4
 LOG OF TEST BORING NO. 621

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" Case-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Failing F-15</u> BORING TYPE <u>ROTARY/AIR</u> NIS-040.0 E12.670.0 SURFACE ELEV. <u>8,011.65'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
105									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110										
115										
120								SC	Tg	Clayey Sand, some fine gravel, light brown.
125										
130										
135								CL	Tg	Silty Clay brown, plastic.
140								CL	Tg	Sandy Clay, some gravel.
145										
150								CL	Tg	Silty Clay, some sand and gravel.
155										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 621JOB NO. GUN08DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
160									Failing F-15	ROTARY/AIR	N15,640.0 E12,670.0	MSL	Tg	(Cont.)
165														
170								CL/ SC/ GC					Tg	Sandy Clay, clayey sand with gravel.
175														
180														
185														Total depth = 180.0 feet. Completed as 6 inch pumping well.
190														
195														
200														
205														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:



SITE ID: GKN-08 LOCATION ID: 1
SITE COORDINATES (N. 1.):
E NK 12655.83 N NK 15054.09
GROUND ELEVATION (ft. MSL): NK 8012.99
DRILLING METHOD: Rotary - 7 1/2" Drill - R.C.
DRILLING CONTR.: Becker Bros. - T. Crawford
DATE STARTED: 11-13-87
DATE COMPLETED: 11-13-87
FIELD REP.: J. G. G. G.

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-20-87	NK	72.56

LOCATION DESCRIPTION

NK

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMARKS	TYPE	ID	BL. NO. PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
	X			G	01	NA	NA	GM	silly sand and gravel, poorly graded to 3", subsoil to subsoil, low to NP, brown
5	X			G	02			SM	silly sand, some subrounded gravel to 2", poor. fine, NP, brown
10	X			G	03			GP	sand, gravel and cobbles to 8", poorly graded, brown
15	X			G	04			GM	silly sand, gravel and cobbles to 8", poorly graded, low to NP, brown
20	X			G	05				
25	X			G	06			SM	silly, clayey sand, gravel and cobbles to 8", poorly graded, subrounded, low P, brown
30	X								

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.98" I.D. drive sample
U - 2" O.D. 2.42" I.D. tube sample



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:



see pg. 1

SITE ID: GWN-06 LOCATION ID: 1622
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" x 5' - Air
DRILLING CONTR.: Bowles Bros. - T. Crowther
DATE STARTED: 11-13-87
DATE COMPLETED: 11-14-87
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION

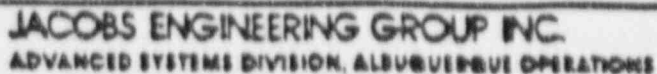
see pg. 1

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMARKS	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X			G	07	NA	NA	GC	clayey sand and gravel with cobbles, 6-8", poorly graded, fine low PI, brown
40	X			G	08				
42	X			G	09				NOTE: 42'-44' slig. moist zone
45	X			G	10				
50	X			G	11				volcanic breccia clayey sand and gravel with cobbles to 6-10", poorly graded, subang, low PI, greyish green
55	X			G	12				
60	X			G	13				

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sampler
U - 3" O.D. 2.43" I.D. tube sampler



BOREHOLE LOG (SOIL)

Page 3 of 3

LOCATION MAP:



SITE ID: Gravel-02 LOCATION ID: 8-1622
SITE COORDINATES (N.):
N NK E NK
GROUND ELEVATION (ft. MSL): 214
DRILLING METHOD: Rotary - 7 1/2" Circumbit - Air
DRILLING CONTR.: Boules Bros - T. Greenhaw
DATE STARTED: 11-18-87
DATE COMPLETED: 11-14-87
FIELD REP.: J. Barrow

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION _____

see pg. 1

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCB	VISUAL CLASSIFICATION
	X			G	13				
65	X			G	14				
70	X			G	15				
75	X			G	16				
80									stopped drill at 80'0"

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38' LD drive sample
U - 8" O.D. 2.42' LD tube sample



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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623

(A1)

LOCATION MAP:



NA

SITE ID: GUN-05 LOCATION ID: 3
SITE COORDINATES (N.): N 15185.41
E 12785.91
GROUND ELEVATION (ft. MSL): 8017.64
DRILLING METHOD: Rotary - 7 1/2" - 10" - 12" - 14" - 16" - 18" - 20" - 22" - 24" - 26" - 28" - 30" - 32" - 34" - 36" - 38" - 40" - 42" - 44" - 46" - 48" - 50" - 52" - 54" - 56" - 58" - 60" - 62" - 64" - 66" - 68" - 70" - 72" - 74" - 76" - 78" - 80" - 82" - 84" - 86" - 88" - 90" - 92" - 94" - 96" - 98" - 100"
DRILLING CONTR.: Biggs Bros - T. Co. - 1000
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-24-87	NA	79.18

LOCATION DESCRIPTION

NA

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	R VALUE	UCSB	VISUAL CLASSIFICATION
	X			G	01	NA	NA	SC	clayey sand, some to consid. gravel to 2", prod. fine, med Pl. brown
5	X			G	02				
10	X			G	03			GP	small, gravel and cobbles, med size 6-10", poorly graded, subang NP, brown
15	X			G	04				
20	X			G	05			GC	clayey sand, gravel and cobbles, med size 6-8", poorly graded, subrounded, low Pl to NP, brown
25	X			G	06				

COMMENTS: See gene lab cuttings

SAMPLE TYPE

A - Auger cuttings
B - 3" O.D. 1.38' LD. drive sampler
U - 3" O.D. 2.42' LD. tube sampler



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:



see pg. 1

SITE ID: 6W-02 LOCATION ID: X 623
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" Rod - Air
DRILLING CONTR.: Reynolds & Co. - I. Crockett
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

see pg. 1

SITE CONDITION

80

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	SLIPS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X			G	07				see previous pg.
40	X			G	08				see previous pg.
45	X			G	09				see previous pg.
50	X			G	10				see previous pg.
55	X			G	11				see previous pg.
60	X			G	12			GC	volcanic breccia clayey sand gravel, pebbly gravel 4" dia. low to med pl, green green

COMMENTS:

SAMPLE TYPE

- A - Auger cuttings
- B - 8" O.D. 1.38' LD. drive sample
- U - 8" O.D. 2.42' LD. tube sample
- T - 8" O.D. thin-walled Shelby tube



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 2 of 2

LOCATION MAP:



see pg. 1

SITE ID: G-N-02 LOCATION ID: 21022
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" - Gravel - Air
DRILLING CONTR.: Geotek Bros - T. G. G. & Co.
DATE STARTED: 11-14-87
DATE COMPLETED: 11-15-87
FIELD REP.: J. Burns

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

see pg. 1

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 9 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			G	13				
71	X			G	14				
75	X			G	15				
81	X			G	16				
85									Stopped drilling at 80.0'

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38' LD drive sample
U - 2" O.D. 2.42' LD tube sample
T - 2" O.D. thin-walled Shelby tube



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 1 of 2

LOCATION MAP:



NA

SITE ID: 2000-05 LOCATION ID: 524 (WST)
SITE COORDINATES (N.):
E 12830.49 N 15019.42
GROUND ELEVATION (ft. MSL): 9011.19
DRILLING METHOD: Rotary 7 1/2" Casing + Bit
DRILLING CONTR.: Anglo-Bios - 3, Co. - 100
DATE STARTED: 11-16-67
DATE COMPLETED: 11-18-67
FIELD REP.: J. Amos

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-20-67	NA	73.27

LOCATION DESCRIPTION

NA

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 5 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
5	X			G	01	NA	NA	SC	clayey sand, some to med. gravel to 4", sandy to sub-sandy, pred. fine, med Pl, brown
10	X			G	02	(1)		GM	silty sand and gravel, fairly poorly graded, med size 6-8" @ low Pl to NP, brown
15	X			G	03				
20	X			G	04				
25	X			G	05				
30	X			G	06			GC	clayey sand, gravel and cobbles poorly graded to 10", low Pl, brown

tg

COMMENTS:

SAMPLE TYPE

A - Auger Cuttings
B - 2" O.D. 1.38' LD. Drive Sample
U - 2" O.D. 2.42' LD. Tube Sample



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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LOCATION MAP:



see p5.1

SITE ID: 64N-06 LOCATION ID: 3624
SITE COORDINATES (N.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary - 7 1/2" casing - Air
DRILLING CONTR.: Bentley Bros. - T. Crowder
DATE STARTED: 11-10-67
DATE COMPLETED: 11-16-67
FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE DETAILS	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X			G	07				
40	X			G	08				
45	X			G	09				
50	X			G	10				
55	X			G	11			GC	volcanic breccia. clayey sand and gravel with occ. pebbles, poorly graded 6-10", low to med Pl, gray-green
60	X			G	12				

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.58' I.D. drive sample
U - 2" O.D. 2.42' I.D. tube sample
T - 8" O.D. thin-walled Shelby tube



JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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LOCATION MAP:



SITE WAD-08 LOCATION ID: 31624
 BIT COORDINATES (N, E):
 N AK E AK
 GROUND ELEVATION (ft. MSL): AK
 DRILLING METHOD: Reinforced Gravity - Air
 DRILLING CONTR.: Reynolds Bros. - T. Crew
 DATE STARTED: 11-17-87
 DATE COMPLETED: 11-18-87
 FIELD REP.: J. Barnes

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION

60

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMARKS	TYPE	D	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			G 13					
70	X			G 14					
75	X			G 15					
80	X			G 16				GC	vol. breccia (?) probably 75 fine sand, gravel and cobbles to 6", pebbly gravel, low to med Pl, lt. brown to lt. gray
85									stopped drilling at 80.0'

90

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
 B - 2" O.D. 1.38' I.D. drive sample
 U - 2" O.D. 2.42' I.D. tube sample
 T - 2" O.D. thermostated Shelby tube

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 625

JOB NO. GUN08

DATE 11/12/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs./cu cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0								SC	Log based on geophysical log and adjacent wells 609, 611. Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel with Cobbles, trace clay, low plasticity, light brown.
5										
10										
15										
20										
25										
30										
35										
40										
45									Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand with Gravel, cobble size basalt fragments, dark greyish green.
50										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 625

JOB NO. GUN08 DATE 11/12/87

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Failing F-15	BORING TYPE ROTARY/AIR	SURFACE ELEV. 8,012.22'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
55													Tb-1	<u>LAHAR BRECCIA</u> (Cont.)
60														
65														
70														
75														
80														
85														
90														
95														
100								SC						

GROUNDWATER		
DEPTH	HOUR	DATE

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 625

JOB NO. GUN08 DATE 11/12/87

Depth in Feet	Continuous Penetration Resistance	Sprengel Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Failing F-15</u>	
									BORING TYPE <u>ROTARY/AIR</u>	<u>N15,035.0 E12,670.0</u>
									SURFACE ELEV. <u>8,012.22'</u>	
									DATUM <u>MSL</u>	
REMARKS									VISUAL CLASSIFICATION	
105									Tb-1	<u>LAHAR BRECCIA</u> (Cont.)
110										
115										
120										
125										
130										
								SC/ GC	Tg	<u>TERTIARY GRAVEL: Clayey</u> <u>Sand and Gravel, some small</u> <u>cobble.</u>
135										
140										
145										
150										Total depth = 147.0 feet.
155										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 626

JOB NO. GUN08 DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0								SM	Rotary	Rotary 6"	N15,155.0 E12,615.0	MSL	Log is based on adjacent holes & geophysical log. Qped	<u>SOIL</u> : Silty Sand
5								SP/ GP					Tg	<u>TERTIARY GRAVEL</u> : Gravelly Sand, occasional cobble.
10														
15														
20								SC					Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand, with some gravel and cobble size basalt fragments, subangular, dark greyish green.
25														
30														
35														
40														
45														
50								SC						

GROUNDWATER

DEPTH	HOUR	DATE

SAMPLE TYPE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 626

JOB NO. GUN08 DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Rotary	BORING TYPE Rotary 6"	SURFACE ELEV. 8,017.10'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
55												Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
60													
65													
70													
75													
80													
85													
90													
95													
100							SC						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUNC8 DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105									Rotary	Rotary 6"	N15,155.0 E12,515.0	MSL	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
110														
115														
120														
125														
130														
135														
140														
145													Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, some fine gravel, brown.
150														Total depth = 150.0 feet.
155														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 627JOB NO. GT-008DATE 11/01/87

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0									Rotary	Rotary 6"	N15,030.0 E12,080.0	MSL	Log is based on adjacent holes and geophysical log.	<u>SOIL</u> : Silty Sand some fine gravel, occasional cobble, light brown.
5														
10													Tg	<u>TERTIARY GRAVEL</u> : Silty Sand and Gravel, occasional cobble, rounded particles mixed lithology, (plutonic metasediment and volcanic).
15														
20														
25														
30														
35														
40														
45													Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand, some gravel and cobble size basalt fragments, dark greyish green.
50														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 627

JOB NO. GUN08 DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	BORING TYPE	Rotary	Rotary 6"	N15,030.0 E12,980.0
									SURFACE ELEV.	8,010.82'		
									DATUM	MSL		
REMARKS									VISUAL CLASSIFICATION			
55									Tb-1	<u>LAHAR BRECCIA:</u>		
60										(Cont.)		
65												
70												
75												
80												
85									Tb-1	<u>LAHAR BRECCIA:</u> Gravel and boulder size basalt fragments, subangular, dark greyish green.		
90									Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, dark grey green.		
95												
100												

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08DATE 11/01/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Rotary	BORING TYPE Rotary 6"	SURFACE ELEV. 8,010.82'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
105													Tb-i	<u>LAHAR BRECCIA:</u> (Cont.)
110														
115														
120														
125														
130														
135														
140								SC/ GC					Tg	<u>TERTIARY GRAVEL:</u> Silty to Clayey Sand, some fine gravel, occasional cobble, rounded mixed lithology particles, light brown.
145														
150														
155														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/06/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0									Failing F-1500	Rotary/Air	N16,301.2 E12,545.4	MSL		
5			*	G				ML					Colluvium	<u>SOIL:</u> Sandy Silt, some gravels, some clay, considerable lime, low plasticity, light tan.
			*										Qped	
10			*	G				GC					Tg	<u>TERTIARY GRAVELS:</u> Clayey Sand, Gravel and Cobbles, well graded, to 8 inches, subrounded, low to medium plasticity, tan.
			*											
15			*	G										
			*											
20			*	G										
			*											
25			*	G										
			*											
30			*	G										
			*											
35			*	G										
			*											
40			*	G										
			*											
45			*	G										
			*											
50			*	G										
			*											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
	Dry	06/12/87
	Dry	21/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" C.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 628JOB NO. GUN08DATE 12/06/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55			*						Failing F-1500	Rotary/Air	N16,301.2 E12,545.4	MSL		(Cont.)
60			*	G				GM					Tg	TERTIARY GRAVELS: Silty Sand, Gravel and Cobbles, trace of clay, poorly graded to 6 inches, subangular, low plasticity, brown. Note: cuttings moist at 60 to 63 feet.
65			*	G										
70			*	G										
75			*	G										
80			*	G										
85			*	G										
90														Stopped drilling at 85 feet.
95														Set 4 inch diameter schedule 80 PVC well with bottom at 85 feet and screened at 73 to 83 feet.
100														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
	Dry	06/12/87
	Dry	21/01/90

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 629

JOB NO. GUN08

DATE 12/07/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot - 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
				G				ML	Qped	SOIL: Sandy Silt, trace gravel, considerable lime, low plastic, light tan.
5				G				GM	Tg	TERTIARY GRAVEL: Silty Sand, Gravel and Cobbles, subrounded, low plasticity, tan to brown.
10				G						
15				G						
20				G				SP/ GC	Tg	TERTIARY GRAVEL: Clayey Sand, Gravel and Cobbles, subrounded to subangular, low to medium plasticity, brown.
25				G						
30				G						
35				G						
40				G						
45				G						
50				G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 629

JOB NO. GUN08 DATE 12/07/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55			*					Falling F-15	7 7/8 Roty	N15,745.8	E12,564.5	Tg	<u>TERTIARY GRAVEL</u> (Cont.) NOTE: Very moist at 57 feet.
60			G										
65			*				GC					Tb-I	<u>LAHAR BRECCIA</u> : Clayey Sand, Gravel and Cobbles, subrounded to subangular, low to medium plasticity, light greenish -tan.
70			G										
75			*										
80			G										NOTE: color change to green-gray at 80 feet.
85			*										Stopped drilling at 85 feet. Installed 4" PVC well to 85 feet.
90													
95													
100													

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								<u>Falling 1500</u>	<u>7 7/8 Roty</u>	<u>N14,674.4 E12,524.1</u>			
								<u>8,008.95'</u>			<u>MSL</u>		
0													
5							SM					Qped	<u>SOIL:</u> Clayey Silt, some sand.
10							CL					Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, some lime, medium plasticity, (reworked altered ash), light tan.
15													
20							GC					Tg	<u>LAHAR BRECCIA:</u> Clayey Sand, gravel and cobbles size basalt fragments, poorly graded to 8 inches, subrounded, low to medium plasticity, tan grey, moderately weathered.
25													
30							GC					Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, some gravel size fragments, poorly graded to 8 inches, subrounded, low to medium plasticity, drab grey green.
35													
40													
45													
50							SC					Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, some gravel size fragments, occasional cobble, subrounded, low to medium plasticity, light greenish-tan.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
25.0	13:15	11/1/87
110.0	09:41	11/2/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 630

JOB NO. GUN08 DATE 11/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55			G					Tb-1	<u>LAHAR BRECCIA</u> (Cont.)
60			G						
65			G						
70			G						
75			G						
80			G						
85			G						
90			G						
95			G						
100			G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
25.0	13:15	11/1/87
110.0	09:41	11/2/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 630

JOB NO. GUN08 DATE 11/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105								Failing 1500	7 7/8 Roty	N14,674.4 E12,524.1	MSL	Tb-1	<u>LAHAR BRECCIA</u> : little gravel size fragments.
			x	G									
			x										
			x	G									
			x										
			x	G									
110												Tg	<u>TERTIARY GRAVEL</u> : Silty Clay, brown.
			x	G									
			x										
			x	G									
			x										
			x	G									
115												Total depth = 137.0 feet. Installed 4" diameter PVC casing with 10 feet of screen set with the bottom of the screen at 135 feet below ground level.	
			x	G									
			x										
			x	G									
			x										
			x	G									
120													
			x	G									
			x										
			x	G									
			x										
			x	G									
125													
			x	G									
			x										
			x	G									
			x										
			x	G									
130													
			x	G									
			x										
			x	G									
			x										
			x	G									
135													
			x	G									
			x										
			x	G									
			x										
			x	G									
140													
145													
150													
155													

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
25.0	13:15	11/1/87
110.0	09:41	11/2/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

Page 1 of 2

LOG OF TEST BORING NO. 631

JOB NO. GUN08 DATE _____

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	Failure 1500	BORING TYPE	7 7/8 Roty	N14,314.5 E12,582.4	SURFACE ELEV.	8,028.28'	DATUM	MSL	REMARKS	VISUAL CLASSIFICATION
0																	Qped	<u>SOIL</u> : Silty Sand, predominantly fine grained, small amount of gravel, trace clay, very low plasticity, tan.
5																	Taf	<u>ASH FLOW</u> : Silty Sand, predominantly fine grained, some gravel, some lime, small amount of clay, low plasticity, light greenish grey.
10																		
15																		
20																		
25																		
30																		
35							GM										Tg	<u>TERTIARY GRAVELS</u> : Silty Sand, Gravel and Cobbles, well graded to 10 inches, subangular to subrounded, nonplastic, dark gray.
40							GC										Tb-l	<u>LAHAR BRECCIA</u> : ash matting with basalt fragments, grey green.
45							GM											
50							GM										Tg	<u>TERTIARY GRAVE S</u> :

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 631

JOB NO. GUN08 DATE _____

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lb./cu. foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55			*							Silty Sand with Gravel and Cobbles, well graded to 8", subangular to subrounded, nonplastic, tan to grey, mixed lithology fines appears to be reworked ash. NOTE: Moist from 60 feet plus.
			*	G				GC		
60			*							
			*	G						
65			*							Tb-1 <u>LAHAR BRECCIA</u> : Clayey Sand with Gravel and Cobbles size fragments, well graded to 8 in. hes, subangular to subrounded, low to medium plasticity, light greenish-grey, some welded tuff fragments. NOTE: becoming poorly graded at 81 feet.
			*	G				GC		
70			*							
			*	G						
75			*							
			*	G						
80			*							
			*	G						
85			*							Stopped drilling at 97 feet. Installed 4 inch diameter PVC casing with 10 feet screen set with bottom of screen at 95 feet below land surface.
			*	G						
90			*							
			*	G						
95			*							
			*	G						
100			*							
			*	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 632

JOB NO. GUN08

DATE _____

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0									
5								Qped	<u>SOIL</u> : Clayey Sand, some fine gravel, occasional cobbles, low plasticity, light brown.
10								Tg	<u>TERTIARY GRAVEL</u> : Clayey Gravel; subrounded, low plasticity, mixed lithology, light brown.
15									
20								Tb-1	<u>LAHAR BRECCIA</u> : Sandy Ash matrix with gravel size basalt fragments, angular fragments, drab green.
25									
30									Note: increasing fragment size from 30 to 50 feet.
35									
40									
45									
50									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
98.0	03:15	11/13/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LAN' FILL DISPOSAL SITE

LOG OF TEST BORING NO. 632JOB NO. GUN08

DATE

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55									Failing 1500	7 7/8 Roty	N15,077.4 E11,991.9	MSL		
60													Tb-1	<u>LAHAR BRECCIA</u>
65														
70								SC/ GC						
75														
80														
85														
90								SM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, with gravel, occasional cobbles, trace clay, low plasticity to nonplastic, reddish brown.
95														
100				G				GP					Tg	Sand, Gravel and Cobbles, subrounded, nonplastic, reddish brown to light grey.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
98.0	03:15	11/13/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 633

JOB NO. GUN08 DATE 11/12/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								Failing 1500	7 7/8 Roty	N15,108.6 E11,659.8	MSL		
0			G				SC					Qped	<u>SOIL</u> : Clayey Sand, some gravel to 3/4 inch, predominantly fine grained, low to medium plasticity, light tan to brown.
5			G										
10			G										
15			G									Tb-l	<u>LAHAR BRECCIA</u> : Silty Sand, some gravel, subangular to 1 inch, trace of clay, occasional cobble sized fragment, sandy ash matrix, low plasticity to nonplastic, drab grey green.
20			G										
25			G										
30			G										
35			G										
40			G									More boulder size in fragments.	
45			G										
50			G										(continued)

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
90.0	08:30	11/12/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 633JOB NO. GUN08DATE 11/12/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								Falling 1500	7 7/8 Roty	N15,108.6 E11,659.8	MSL		
55			G									Tb-1	<u>LAHAR BRECCIA</u> (Cont.)
60			G										
65			G										
70			G										
75			G										
80			G										
85			G										
90			G				GC					Tg	<u>LOWER TERTIARY GRAVELS:</u> Clayey Sand, Gravel and Cobbles, poorly graded to 8 inches, low to medium plasticity, light tan.
95			G										
100							CL/ CH					Tg	Silty Clay, brown.
			G				GP/ GC					Tg	<u>TERTIARY GRAVEL:</u> Sand, Gravel and Cobbles, poorly graded to 8", small amount of clay.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
90.0	08:30	11/12/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 633JOB NO. GUN08 DATE 11/12/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105				G					Failing 1500	7 7/8 Roty	N15,108.6	E11,659.8	Tg	subrounded, very low plasticity to nonplastic, reddish grey to reddish brown, mixed lithology.
110				G										
115														Stopped drilling at 112.0 feet.
120														Installed 4 inch PVC casing with 10 feet of screen with bottom of screen at 110 feet below ground level.
125														
130														
135														
140														
145														
150														
155														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
90.0	08:30	11/12/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - COEX, downhole reverse circulation.

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	TEST DATA	
									RIG TYPE	FAILING LOAD
									RIG TYPE	Failing 1500
									BORING TYPE	77/8 N15,390.0 E11,639.5
									SURFACE ELEV.	7,975.92'
									DATUM	MSL
									REMARKS	VISUAL CLASSIFICATION
0			*	G				SM	Qped	Silty Sand, fine grained, nonplastic, tan.
1			*					SC		
2			*	G				CH	Tg	<u>TERTIARY GRAVEL</u> : Clayey Sand, predominantly fine grained, some lime cementation, low to medium plasticity, light tan.
3			*							
4			*	G						
5			*							
6			*	G						
7			*							
8			*	G						
9			*							
10			*	G						
11			*							
12			*	G						
13			*							
14			*	G						
15			*							
16			*	G						
17			*							
18			*	G						
19			*							
20			*	G					Tb-l	<u>LAHAR BRECCIA</u> : Silty Clay, some sand, small amount of gravel, medium to high plasticity, grey green.
21			*							
22			*	G						
23			*							
24			*	G						
25			*							
26			*	G						
27			*							
28			*	G						
29			*							
30			*	G					Tb-l	<u>LAHAR BRECCIA</u> : Silty Clay, small amount of sand and fine gravel, medium plasticity, green brown.
31			*							
32			*	G						
33			*							
34			*	G						
35			*							
36			*	G						
37			*							
38			*	G						
39			*							
40			*	G						
41			*							
42			*	G						
43			*							
44			*	G						
45			*							
46			*	G						
47			*							
48			*	G						
49			*							
50			*	G						

GROUNDWATER		
DEPTH	HOUR	DATE

SAMPLE TYPE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE
 JOB NO. GUN08 DATE 11/11/87

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LOG OF TEST BORING NO. 634

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Failing 1500	7 7/8	N15,390.9 E11,639.5	MSL		
55			*										Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand, Gravel and Cobbles, poorly graded to 6 inches, subrounded to angular, low to medium plasticity, greenish-grey.
			*	G										
60			*											
			*	G										
65			*											
			*	G										
70			*											<u>TERTIARY GRAVEL</u> : Clayey Sand, Gravel and Cobbles, subrounded to angular, low to medium plasticity, tan.
			*	G										
75			*											
			*	G				GC					Tg	
80			*											<u>TERTIARY GRAVEL</u> : Sand, Gravel and Cobbles, small amount of silt, subrounded, nonplastic, tan to reddish brown.
			*	G										
85			*											
			*	G				GW/ GM					Tg	
90			*											
			*	G										
95			*											
			*	G										
100			*											
			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - WX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 634

JOB NO. GUN08

DATE 11/11/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Failing 1500	BORING TYPE 7 7/8	SURFACE ELEV. 7,975.92'	DATUM MSL	N15,390.9 E11,639.5	REMARKS	VISUAL CLASSIFICATION
105															
110															
115															
120															
125															
130															
135															
140															
145															
150															
155															

Stopped drilling at 105.0 feet.

Installed 4 inches PVC casing with
 10 feet of screen with the bottom of
 screen at 103 feet below ground
 level.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 635JOB NO. GUN08 DATE 11/19/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	FAILING 1500	BORING TYPE	7 7/8	N14,496.8 E12,969.0	SURFACE ELEV.	8,005.95'	DATUM	MSL	REMARKS	VISUAL CLASSIFICATION
0				G				SC										Qped	<u>SOIL</u> : Clayey Sand, some fine gravel, subrounded to subangular, predominantly fine, medium plasticity, brown.
5				G				GP										Tg	<u>TERTIARY GRAVEL</u> : Sand and Gravel with Cobbles, subrounded to subangular, low plasticity to nonplastic, brown.
10				G															
15				G															
20				G				SM/ GM										Tg	<u>TERTIARY GRAVEL</u> : Silty Sand, Gravel and Cobbles, subangular to subrounded, nonplastic, light grey to tan.
25				G															
30				G															
35				G															
40				G															
45				G				GM										Tb-l	<u>LAHAR BRECCIA</u> : Silty Sand, Gravel and Cobbles, trace of clay, subangular to subrounded, very low plasticity, light greenish-grey.
50				G															

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
140.0	17:25	11/19/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 635

JOB NO. GUN08 DATE 11/19/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Failing 1500	77/8	N14,496.8 E12,969.6	MSL		
55			*										Tb-1	<u>LAHAR BRECCIA:</u>
			*	G										(Cont.)
60			*											
			*	G										
65			*											
			*	G										
70			*											
			*	G										
75			*											
			*	G										
80			*											
			*	G										
85			*											
			*	G										
90			*											
			*	G										
95			*											
			*	G										
100			*											
			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
140.0	17:25	11/19/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08DATE 11/19/87

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105				G					Failing 1500	77/8	N14,496.8 E12,969.0		Tb-1	<u>LAHAR BRECCIA:</u> (cont.)
110				G										
115				G										
120				G										
125				G										
130				G				GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, Gravel and Cobbles, poorly graded to 10 inches, subrounded, tan. NOTE: Free water in cuttings at 142 feet.
135				G										
140				G										
145				G				GC					Tg	<u>LOWER ALLUVIAL GRAVEL:</u> Sand, Gravel and Cobbles, considerable clay, poorly graded to 8 inches, subangular, reddish brown to olive green.
150				G										
155														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
140.0	17:25	11/19/87

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 635

JOB NO. GUN08 DATE 11/19/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unifried Soil Classification	RIG TYPE Failing 1500	BORING TYPE 7 7/8	SURFACE ELEV. 8,005.95'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
160				G										
165														Stopped drilling at 161.0 feet.
170														Installed 4 inch diameter PVC casing with 10 feet of screen set with bottom of screen at 159 feet below the ground surface.
175														
180														
185														
190														
195														
200														
205														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
140.0	17:25	11/19/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/03/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0									Failing 1500	7 7/8	8,024.16'	MSL		
5			*	G				SC					Qped	Clayey Sand, some medium gravel, poorly graded to 2 inches, subangular, medium plasticity, light brown.
10			*					GM					Tg	<u>UPPER ALLUVIAL GRAVELS:</u> Silty Sand, Gravel and Cobbles, subrounded to subangular, nonplastic, brown.
15			*	G										
20			*											
25			*	G										
30			*											
35			*	G				SC/ GC					Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand with Gravel and Cobbles, subrounded, low to medium plasticity, brown.
40			*											
45			*	G				GC					Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, Gravel and Cobbles, subangular, low plasticity, greenish-grey to green.
50			*											
			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
	NONE	

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 12/03/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Failing 1500	BORING TYPE 7 7/8 N15,314.2 F19,260.6	SURFACE ELEV. 8,024.16'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
55			*									Tb-1	<u>LAHAR BRECCIA:</u> (cont.)
			*	G									
			*										
60			*										
			*	G									
			*										
65			*										
			*	G									
			*										
70			*										
			*	G									Stopped drilling at 85 feet. Well completion consists of 4 inch PVC casing set with an unknown screened interval.
			*										
75			*										
			*	G									
			*										
80			*										
			*	G									
			*										
85			*										
			*										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
	NONE	

RX - Rock Coring - M' or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 637

JOB NO. GUN08 DATE 12/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
			•	G			SM	Qped	<u>SOIL</u> : Silty Sand, fine grained, nonplastic, tan.
5			•				GM		
			•	G				Tg	<u>TERTIARY GRAVEL</u> : Silty Sand, Gravel and Cobbles, poorly graded to 6 inches, some lime, subrounded, nonplastic, light tan.
10			•						Note: gravels are of mixed lithology.
			•	G					
15			•				GC	Tg	<u>TERTIARY GRAVEL</u> : Clayey Sand, Gravel and Cobbles, poorly graded to 8 inches, subrounded, low to medium plasticity, tan.
			•	G					
20			•						
			•	G					
25			•						
			•	G					
30			•						
			•	G					
35			•						
			•	G					
40			•						
			•	G			GM	Tg	<u>TERTIARY GRAVEL</u> : Silty Sand, Gravel and Cobbles, well graded to 8 inches, small amount of clay, subrounded, very low plasticity, tan.
45			•						
			•	G					
50			•						
			•	G					

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
141.5		13/01/88
141.6		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - COEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 637

JOB NO. GUN08

DATE 12/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								<u>FAILING 1500</u>	<u>ROTARY/AIR</u>	<u>N15,879.5 ±12,964.6</u>			
								<u>8,042.38'</u>			<u>MSL</u>		
55			*									Tg	<u>TERTIARY GRAVEL:</u> (cont.)
			*	G									
60			*										
			*	G									
65			*										
			*	G									
70			*				GC					Tl-b	<u>LAHAR BRECCIA:</u> Clayey Sand and Cobbles size fragments, subrounded to angular, low to medium plasticity, grey-green.
			*	G									
75			*										
			*	G									
80			*										
			*	G									
85			*										
			*	G									
90			*										
			*	G									
95			*										
			*	G									
100			*										
			*	G									
			*				GM					Tg	<u>TERTIARY GRAVEL:</u>

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
141.5		13/01/83
141.6		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

Note: sample at 70 to 95 feet is
 slightly moist.

JOB NO. GUN08 DATE 12/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105			*	G					<u>FAILING 1500</u>	<u>ROTARY/AIR</u>	<u>N15,879.5 E12,964.6</u>	<u>MSL</u>	Tg	Silty Sand and Gravel, occasional cobbles, trace of clay, subangular, low to nonplastic, brown. Note: increasing clay, clay seams at 108 and 115 feet.
110			*	G										
115			*	G										
120			*	G				GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobbles, trace of clay, low plasticity to nonplastic, light brown. Note: lithology is mixed.
125			*	G										
130			*	G										
135			*	G										
140			*	G										
145			*	G										
150			*	G				GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, Gravel and Cobbles, subrounded to subangular, low to medium plasticity, brown.
155			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
141.5		13/01/88
141.6		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

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LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 637

JOB NO. GUN08 DATE 12/02/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 14# lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	FAILING 1500	BORING TYPE	ROTARY/AIR	N15,879.5 E12,964.6	SURFACE ELEV.	8,042.38'	DATUM	MSL	REMARKS	VISUAL CLASSIFICATION
160			G														Tg	<u>TERTIARY GRAVEL:</u>
165			G															
170			G															Stopped drilling at 167.0 feet.
175																		Installed 4 inch diameter PVC well to 167 feet.
180																		
185																		
190																		
195																		
200																		
205																		

GROUNDWATER

DEPTH	HOUR	DATE
141.5		13/01/88
141.6		24/01/90

SAMPLE TYPE

RX - Rock Coring - RX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/21/87

Depth Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
			*	G				SC	Falling 1500	7 7/8	N16,210.2 E13,261.1	MSL	Qped	<u>SOIL:</u> Clayey Sand, some gravel to 3 inches, predominantly fine, medium plasticity, light tan.
5			*					SM/ GM					Tg	<u>TERTIARY GRAVELS:</u> Silty Sand, Gravel and Cobbles, subrounded, nonplastic, tan to brown. NOTE: Occasional lenses of gravel.
10			*	G										
15			*	G										
20			*	G										
25			*	G										
30			*	G										
35			*	G										
40			*	G										
45			*	G										
50			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
155.0	23:00	11/21/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 638JOB NO. GUN08DATE 11/21/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Failing 1500	7 7/8	8,053.11'	MSL		
55			*										Tg	<u>TERTIARY GRAVELS:</u> (Cont.)
			*	G										
60			*											
			*	G										
65			*											
			*	G										
70			*											
			*	G										
75			*											
			*	G										
80			*											
			*	G				SC/ GC					Tg	<u>TERTIARY GRAVEL: Clayey</u> <u>Sand, Gravel and Cobbles, poorly</u> <u>graded to 8 inches, subangular to</u> <u>subrounded, medium plasticity,</u> <u>brown.</u>
85			*											
			*	G										
90			*											
			*	G										
95			*											
			*	G										
100			*										Tg	<u>TERTIARY GRAVEL: Gravelly</u> <u>Sand, occasional cobbles, rounded.</u>
			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
155.0	23:00	11/21/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 638

JOB NO. GUN08 DATE 11/21/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105							SW/ GP	Failing 1500	7 7/8	8,053.11'	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110													
115													
120													
125													
130							SM/ GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand with Gravel and Cobbles, occasional stringers of clay, subrounded to subangular, brown.
135													
140													
145													
150												Tg	NOTE: Slightly moist at 151.0 feet.
155							GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand with Gravel and Cobbles,

DEPTH	HOUR	DATE
155.0	23:00	11/21/87

GROUNDWATER
SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

DATE 11/21/87

LOG OF TEST BORING NO. 638

DATE 11/21/87

DEPT.	HOUR	DATE
155.3	23:00	11/21/87

SAMPLE TYPE

RX - Rock Coring - WX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 639

JOB NO. GUN08 DATE 12/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 142 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Failing F-15</u>	
								BORING TYPE <u>7 7/8 RGB</u>	<u>N15,459.9 E13,443.2</u>
								SURFACE ELEV. <u>8,024.14'</u>	
								DATUM <u>MSL</u>	
0			G				SC	Qped	<u>SOIL:</u> Clayey Sand, some gravel, medium plasticity, light tan.
5			G				GM/GC	Tg	<u>TERTIARY GRAVEL:</u> Silty and Clayey Sand and Gravel, occasional cobbles, subrounded, low plasticity to nonplastic, brown.
10			G						
15			G						
20			G						
25			G				GM/GC	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, Gravel and Cobbles, some clay stringers, subrounded, low plasticity, brown.
30			G				GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, poorly graded to 8 inches, subrounded to subangular, low to medium plasticity, brown.
35			G						
40			G						
45			G						NOTE: Cuttings moist at 43 feet.
50			G					Tb-1	<u>LAHAR BRECCIA:</u> Sandy Ash, with gravel size basalt fragments, dark grey green.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0	03:00	12/04/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 639

JOB NO. GUN08 DATE 12/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105			G					Falling F-15	7 7/8 RGB	N15,459.9 E13,443.2	MSL	Tg	(cont.)
110			G										
115			G				GM					Tg	<u>TERTIARY GRAVEL: Silty</u> Sand, Gravel and Cobbles, occasional clay seam, subangular, low plasticity to nonplastic, brown.
120			G										
125			G										
130			G										NOTE: Moist at 130 feet.
135			G				GC					Tg	<u>TERTIARY GRAVEL: Clayey</u> Sand and Gravel, frequent cobbles, subrounded to subangular, low to medium plasticity, brown.
140			G										
145			G										
150			G										
155													

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
130.0	03:00	12/04/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 639

JOB NO. GUN08 DATE 12/04/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lb. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
				G					Failing F-15	7 7/8 RGB	N15,459.9 E13,443.2	MSL		
160														Stopped drilling at 157.0 feet.
165														Set 4 inch diameter schedule 80 PVC well to 157 feet at bottom and screened from 145 to 155 feet.
170														
175														
180														
185														
190														
195														
200														
205														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
30.0	03:00	12/04/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 07/12/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Failing F-15</u>	
								BORING TYPE <u>Rotary/Air</u>	<u>N14,722.0 E13,383.8</u>
								SURFACE ELEV. <u>7,990.51'</u>	
								DATUM <u>MSL</u>	
0			*	G			SC		<u>SOIL</u> : Clayey Sand, silt, some gravels, predominantly fine grained, medium plasticity, tan.
5			*	G			GC	Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand matrix with Gravel and Cobbles size fragments, subangular to subrounded, medium plasticity, green brown.
10			*	G			GC		Note: clay moist at 10 to 14 feet.
15			*	G			GC	Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand with Gravel and Cobbles, subangular, nonplastic, occasional zones of gravelly clast, dark greenish brown.
20			*	G					
25			*	G					
30			*	G			GC	Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand and Gravel, occasional cobbles, subangular, medium plasticity, orange-brown.
35			*	G					Note: moist 25 to 34 feet.
40			*	G			GC	Tb-1	<u>LAHAR BRECCIA</u> : Clayey Sand, Gravel and Cobbles, poorly graded to 6 inches, subrounded, low to medium plasticity, light greenish tan to grey green.
45			*	G					
50			*	G					

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
39.2		13/01/88
34.6		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 07/12/87

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55			*					Tb-1	(Cont.)
			G						
60			*					Tb-1	<u>LAHAR BRECCIA</u> : Sandy Clay, grey brown.
			G				CL		
65			*					Tb-1	<u>LAHAR BRECCIA</u> : Silty Sand and Gravel, occasional cobbles, light brown.
			G				GM		
70			*						
			G						
75			*						
			G						
80			*						
			G						
85			*						
			G						
90									Stopped drilling at 85.0 feet.
									Set 4 inch diameter schedule 80 PVC well with bottom at 85 feet and screened at 73 to 83 feet.
95									
100									

GROUNDWATER		
DEPTH	HOUR	DATE
39.2		13/01/88
34.6		24/01/90

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 701

JOB NO. GUN08

DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0				G			GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobbles, tan.
5				G					
10				G					
15				G					
20				G			SM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, medium to coarse grained, occasional cobbles, subangular, reddish brown.
25				G			SM	Tg	
30				G					<u>TERTIARY GRAVEL:</u> Silty Sand, medium to fine grained, considerable gravel, nonplastic, dark tan. Note: Gravels are composed of mixed lithology (granite, quartz, basalt, etc.).
35				G					
40				G					
45				G			GM	Tg	
50				G					<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, predominantly medium to fine grained, subrounded to rounded, light brown to tan.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Falling 25	Rotary/Air	N15,790.0 E12,880.0	MSL		
55			*	G				GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobble, subrounded to angular, light brown. Note: Micaceous.
60			*	G										
65			*	G									Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand and Gravel, occasional cobble, predominantly fine, considerable silt, subangular to angular, medium plasticity, dark brown to olive brown.
70			*	G										
75			*	G										
80			*	G										
85			*	G										
90			*	G										
95			*	G										Note: Becoming harder to drill at 95.0 feet, less clayey and more silty at 100.0 feet.
100			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or MX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 DX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 701JOB NO. GUN08DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
105			*	G					Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
			*					GM		
110			*	G					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, trace of clay, yellowish brown to reddish brown.
115			*	G						
120			*	G						
125			*	G						
130			*	G						
135			*	G						
			*					SM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, fine grained, light brown.
140			*	G						
145			*	G						
			*					GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, fine to coarse grained sand and gravel, light reddish brown.
150			*	G						
155			*	G						

GR WATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Den. ty lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									<u>Failing 25</u>	<u>Rotary/Air</u>	<u>N15,790.0 E12,550.0</u>	<u>MSL</u>		
160			*	G									Tg	<u>TERTIARY GRAVEL:</u> (Cont.) Note: Began injection of water into airstream to assist cutting removal.
165			*	G										
170			*	G										
175			*	G										
180			*	G										Note: No sample recovery 180 to 200 feet after returning to air drilling.
185			*	G										
190			*	G										
195			*	G										
200			*	G				SM					Tg	<u>TERTIARY GRAVEL: Silty</u> <u>Sand, medium to fine grained, low</u> <u>plasticity to nonplastic, rounded to</u> <u>subrounded, brown.</u>
205			*	G										

GROUNDWATER		
DEPTH	HOUR	DATE
145.0	08:30	08/31/89

SAMPLE TYPE
RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
Y - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/15/89

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Falling 25</u>	
								BORING TYPE <u>Rotary/Air</u>	N15,790.0 E12,888.0
								SURFACE ELEV. <u>8,042.00'</u>	
								DATUM <u>MSL</u>	
210			G				CL	Tg	
215			G					Tg	<u>TERTIARY GRAVEL: Sandy Clay</u> , medium to low plasticity, reddish brown.
220			G				GM	Tg	<u>TERTIARY GRAVEL: Silty Sand and Gravel</u> , trace of clay, occasional cobble, well to subrounded, brown.
225			G				SM	Tg	<u>TERTIARY GRAVEL: Silty Sand</u> , very fine, subrounded to subangular, light grey.
230			G				GM	Tg	<u>TERTIARY GRAVEL: Silty Sand and Gravel</u> , occasional cobble, nonplastic, grey to brown.
235			G				CL		
240			G						
245			G				GC	Tg	<u>TERTIARY GRAVEL: Clayey Sand and Gravel</u> , subrounded, low to medium plasticity, reddish brown.
250			G						
255			G						
260									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb., 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Failing 25</u> BORING TYPE <u>Rotary/Air</u> SURFACE ELEV. <u>8,042.00'</u> DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION
260			G					Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265			G						
270			G				GC	Tg	
275			G						<u>TERTIARY GRAVEL: Clayey Sand and Gravel, low plasticity, grey brown.</u> Note: occasional very hard gravel lense.
280			G						
285			G					Tg	
290			G						<u>TERTIARY GRAVEL: Sandy Clay, low plasticity, greyish brown.</u> Note: Possible weathered tuff unit.
295			G						
300			G						
305			G						<u>TERTIARY GRAVEL: Clayey Sand and Gravel, medium to fine grained, low plasticity, greyish</u>
310			G				GC	Tg	

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 701JOB NO. GUN08 DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Failing 25</u>		BORING TYPE <u>Rotary/Air</u>		SURFACE ELEV. <u>8,042.00'</u>		DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION						
315			x	G				Tg	brown. Note: gravels composed of quartz and basalt. <u>TERTIARY GRAVEL:</u> (Cont.)						
320			x	G											
325			x	G			GM	Tb	<u>BASALT FLOW: (?)</u> Cuttings return do not reflect lithology below 325.0 feet. The lithology below 325.0 feet is base on geophysical logs and drilling rate.						
330			x	G											
335			x	G											
340			x	G											
345			x	G				PC	<u>PRECAMBRIAN:</u> Amphibolite metamorphic rock basement rock complex.						
350			x	G			GM								
355			x	G											
360			x	G											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	Boring Type	Surface Elev	Datum	REMARKS	VISUAL CLASSIFICATION
365			G					Falling 25	Rotary/Air	8,042.00'	MSL	PC	<u>PRECAMBRIAN:</u> (Cont.)
370			G										
375			G										
380			NC										Began NC-NX coring 377.0 feet to total depth. Core shows amphibolite is highly fractured with slickensides, some calcite fillings and quartz? Color typical dark greenish grey to black.
385			NX										
390			NX										
395			NX										
400			NX										
405			NX										
410													Stopped coring at 407.5 feet.
415													

DEPTH	HOUR	DATE
145.0	08:30	08/31/89

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/17/89

JOB NO. GUN08

DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0				G				GM	Tg	<u>TERTIARY GRAVEL</u> Silty Sand and Gravel, fine to medium sand with gravels and fragments of cobbles, light brown.
5				G						
10				G						
15				G						
20				G					Note: Reddish brown at 20.0 feet.	
25				G						
30				G						
35				G						
40				G						
45				G						
50				G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
GX - GDEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 702JOB NO. GUN08DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 149 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55			G					Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
60			G					Tb-1	<u>LAHAR BRECCIA: Clayey Sand and Gravel, light brown.</u> Note: Recovery of fines in cuttings where drilling with mud is not entirely successful. Log based partially on adjacent log of hole 701. Note: Stopped drilling at 75.0 feet on 9/17/88, resumed on 9/18/88.
65			G						
70			G						
75			G						
80			G						
85			G						
90			G						
95			G						
100			G						<u>LAHAR BRECCIA</u>

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 702

JOB NO. GUN08 DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	Failure 25	BORING TYPE	7 7/8 RGB	N15,156.0 E12,128.8	SURFACE ELEV.	8,039.47'	DATUM	MSL	REMARKS	VISUAL CLASSIFICATION
105			G														Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
110			G				GM										Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobbles and boulders, trace to little clay, brown.
115			G															
120			G															
125			G															
130			G															
135			G															
140			G															
145			G															
150			G				GC										Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravels, occasional cobble, brown.
155			G															

GROUNDWATER

DEPTH	HOUR	DATE

SAMPLE TYPE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LOG OF TEST BORING NO. 702

JOB NO. GUN08 DATE 09/17/89

JOB NO. GUN08

DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30 free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	Boring Data	
									RIG TYPE	FACE ELEV.
									Failing 25	-N15,150.0 E12,128.8
									7 7/8 RGB	
									8,039.47'	
									MSL	
									REMARKS	VISUAL CLASSIFICATION
160			*	G					Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165			*	G						
170			*	G						
175			*	G						
180			*	G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, coarse to medium grained, occasional cobbles, reddish brown.
185			*	G						
190			*	G					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, medium to fine grained sand and gravel, brown.
195			*	G						
200			*	G						
205			*	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - WX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								<u>Failing 25</u>	<u>7 7/8 RGB</u>	<u>8,039.47'</u>	<u>MSL</u>		
210			*	G								Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
215			*	G								Tg	<u>TERTIARY GRAVEL: Silty</u> <u>Sand and Gravel</u> , occasional cobble, small amount of clay, reddish brown.
220			*	G			GM/ GC						
225			*	G									
230			*	G									
235			*	G								Tg	<u>TERTIARY GRAVEL: Gravelly</u> <u>Sandy Clay</u> , reddish brown, soft drilling.
240			*	G									
245			*	G									
250			*	G									
255			*	G									
260			*										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
260			*	G					Failing 25	7 7/8 RGB	8,039.47'	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265			*	G										
270			*	G										
275			*	G										
280			*	G				SC					Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, grey, soft, (possible ash flow tuff).
285			*	G				GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, mixed lithology for gravels, grey.
290			*	G										
295			*	G										
300			*	G										
305			*	G										
310			*	G				SM/					Tg	<u>TERTIARY GRAVEL:</u>

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 702

JOB NO. GUN08 DATE 09/17/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								SC	Failing 25	7 7/8 RGB	8,039.47'	MSL		
315			*	G									Tg	Silty Sand, trace to some brown clay, occasional gravel, grey. Note: Color changed to reddish brown clay at 320.0 feet.
320			*	G										
325			*	G									PC	<u>PRECAMBRIAN:</u> Andesite/Basalt. Possible highly fractured basalt flow over lying Precambrian basement rock consisting of amphibolite metaigneous rock, see log 701.
330			*	G										
335			*	G										
340			*	G										
345			*	G										
350			*	G										
355			*	G										
360			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0								Failing 25	7 7/8 RGB	8,014.14'	MSL		
5							GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, medium to fine gravel, frequent cobbles and occasional boulder, light brown.
10													
15													
20													
25													Note: Color change to yellowish brown at 25.0 feet.
30													
35													
40													
45												Tb-l	<u>LAHAR BRECCIA:</u> Clayey Sand with Gravel size fragments, largely andesite fragments in clay matrix, dark olive grey.
50													

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 149 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	USUAL CLASSIFICATION
55				G					Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
60				G						
65				G				GM	Tb-1	<u>LAHAR BRECCIA:</u> Silty Sandy Gravel, grey.
70				G						
75				G				GC	Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sandy Gravel, grey with some reddish brown clay.
80				G				CL	Tb-1	<u>LAHAR BRECCIA:</u> Sandy Clay, occasional andesite cobbles size fragments, medium to high plasticity, grey.
85				G						
90				G				GM	Tb-1	<u>LAHAR BRECCIA:</u> Silty Sand with Gravel, trace to some clay, grey.
95				G						
100				G						

GROUNDWATER:

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
105				G					Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
110				G				CL	Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, medium plasticity, grey to grey brown.
115				G						
120				G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, mixed lithology (quartz, andesite, etc.), brown.
125				G						
130				G						
135				G					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, coarse grained, brown. Note: Cuttings saturated at 120.0 feet.
140				G						
145				G						
150				G						Note: Increasing clay 150.0 to 160.0 feet.
155				G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 703

JOB NO. GUN08 DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Failing 25</u>	
								BORING TYPE <u>7 7/8 RGB</u>	<u>N15,100.0 E12,560.0</u>
								SURFACE ELEV. <u>8,014.14'</u>	
								DATUM <u>MSL</u>	
160			G					Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165			G						
170			G				GM	Tg	<u>TERTIARY GRAVEL: Sand</u> <u>and Gravel, coarse, mixed</u> <u>lithology, brown.</u>
175			G						
180			G						Note: Increasing clay at 180.0 feet.
185			G						
190			G						
195			G				CL	Tg	<u>TERTIARY GRAVEL: Sandy</u> <u>Clay, occasional cobble, medium</u> <u>plasticity, grey.</u>
200			G				CH	Tg	<u>TERTIARY GRAVEL: Clay,</u> <u>high plasticity, reddish brown.</u>
205			G						

GROUNDED WATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 703

JOB NO. GUN08 DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									<u>Failing 25</u>	<u>7 7/8 RGB</u>	<u>8,014.14'</u>	<u>MSL</u>		
210			*	G									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
215			*	G										
220			*	G										
225			*	G										
230			*	G										
235			*	G				CL					Tg	<u>TERTIARY GRAVEL:</u> Clay, medium plasticity, grey.
240			*	G										
245			*	G										
250			*	G										Note: Occasional gravel stringers.
255			*	G										
260			*											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 703JOB NO. GUN08DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
260			x	G					Failing 25	7 7/8 RGB	8,014.14'	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265			x	G										
270			x	G										
275			x	G										
280			x	G										
285			x	G										
290			x	G										
295			x	G										
300			x	G										Note: Increasing gravels at 300.0 feet.
305			x	G										
310			x	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - CUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 703

JOB NO. GUN08 DATE 11/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
315			*						Failing 25	7 7/8 RGB	N15,100.0 E12,560.0	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
			*	G										
			*											
			*											
320			*										PC	<u>PRECAMBRIAN:</u> Rock, grey green amphibolite.
			*	G										
			*											
325														Stopped drilling at 322.0 feet.
														Reamed hole with 7 7/8" gearbit to 227', set 4 inch diameter PVC casing with 120.0 feet of screen installed with bottom of screen at 225.0 feet below land surface.
330														
335														
340														
345														
350														
355														
360														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

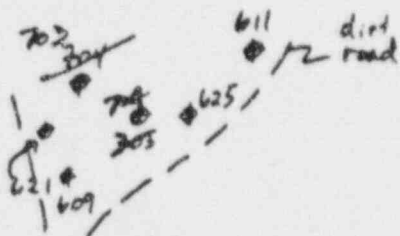
RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.



BOREHOLE LOG (SOIL)

Page 1 of 9

LOCATION MAP:



SITE ID: GUN-08 LOCATION ID: 704
SITE COORDINATES (N. E.):
N 15017.00 E 12509.74
GROUND ELEVATION (ft. MSL): 8012.31
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Bayless Bros
DATE STARTED: 10/24/89
DATE COMPLETED: 10/24/89
FIELD REP.: E Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
24 JAN 90	1254	102.05

LOCATION DESCRIPTION ~ 50 ft northeast of well 621, west of dirt road
SITE CONDITION ~ Semi-flat, sage brush-covered surface

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0								ML	Ash flow tuff, buff to lt. brown to white, degree of welding and presence of fractures, roots, caliche not known; trace fine sand,
					01				
5								GC	Clayey Gravel, yellowish brown (10YR 5/3) clay matrix, 10-20% dark (mali) minerals, quartz and feldspars present making up to 50% of sample cuttings
					02				
10								GL	
					03				
15								GL	as above.
					04				
20								GL	as above
					05				
25								GM	as above, except more than less clay matrix
					06				
30									

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" OD 138" ID drive sample
U - 3" OD 242" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 2 of 9

LOCATION MAP:

See page 1



SITE ID: GUN-08 LOCATION ID: 704
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: Boyle Bros
DATE STARTED: 10/24/89
DATE COMPLETED: 10/24/89
FIELD REP.: E. Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
30								GC	as above except clay content in matrix increased.
					03				
35								GC	
					04				
40								GC	
					05				
45								GC	
					10				
50								GC	At 47', cuttings Lehigh Breccia Lava sequence, dk olive gray (5Y4/2) to dk gray (5Y4/1), black, mafic frags present representing 10-30% of cuttings, trace (< 5%) gtc and feldspar.
					11				
55								GC	
					12				

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" OD 1 3/8" I.D. drive sample
U - 3" OD 2 1/2" I.D. tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



See page 1

SITE ID: 6UN-05 LOCATION ID: 704
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros
DATE STARTED: 10/24/84
DATE COMPLETED: 10/24/84
FIELD REP.: E. Mignardet

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMARKS	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
60								GC/CL	as above.
					13				
65								CL/CL	as above
					14				
70									
					15			GC/CL	as above
75									
					16			GC/CL	as above except color change to dk olive gray (SY 3/2) to red gray (10YR 5/2) matrix
80									
					17			GC/CL	as above except only dk olive gray (SY 3/2) matrix.
85									
					18			GC/CL	
90									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" OD 1.38" ID drive sample
U - 3" OD 2.42" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



See page 1

SITE ID: GUN-08 LOCATION ID: 704
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros
DATE STARTED: 10/24/89
DATE COMPLETED: 10/24/89
FIELD REP.: E. Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
90									
					19	SRM GC		GC/GC	as above.
95									
					20			GC	as above except less clay matrix; harder interval from ~ 92' to 105'.
100									
					21			GC/GC	as above except larger amount of clay matrix
105									
					22			GC/GC	as above.
110									
					23			GC/GC	as above except color change in matrix material to dk olive gray (5Y 3/2) to red gray (10YR 5/2) --
115									
					24			GC/GC	as above; also trace biotite (?) and muscovite fragments in clay matrix
120									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
B - 2" OD 138" ID drive sample
U - 3" OD 242" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



See page 1

SITE ID: GUN-08 LOCATION ID: 704
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyle Bros
DATE STARTED: 10/24/89
DATE COMPLETED: 10/26/89
FIELD REP.: E. Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
120									
125					25			GCCL	as above
130					26			SP/6P	Sand with gravel and cobbles, yellowish brown to dk brown clayey silt matrix, essentially equal amounts of feldspar mafic rock fragments making up 10-30% of cuttings, minor light green rock fragments (Soapstone?)
135					27			SP/6P	
140					28			SP/6P	as above.
145					29			SP/6P	as above.
150					30			SP/6P	as above except color change to dk brown to red brown silt matrix

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 3" OD 1 3/8" ID drive sample
U - 3" OD 2 1/2" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



See page 1

SITE ID: GUN-88 LOCATION ID: 704
SITE COORDINATES (N.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyer Bros
DATE STARTED: 10/24/89
DATE COMPLETED: 10/24/89
FIELD REP.: E. Mignardo

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE -RETAINED	TYPE	ID	BLOWS PER 8 in.	N VALUE	USCS	VISUAL CLASSIFICATION
150									
					31			SP16P	as above.
155									
					32			SP16P	as above.
160									
					33			SP16P	as above.
165									
					34			SC16C	clayey sand, some gravel, grayish-brown matrix, trace feldspar mafic pk fragments, trace glass shards
170								SC16C	as above
					35				
175									
					36			SC16C	as above
180									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
B - 2" OD 1.38" I.D. drive sample
U - 3" OD 2.42" I.D. tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

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LOCATION MAP:



See page 1

SITE ID: GUN-08 LOCATION ID: 704
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bro.
DATE STARTED: 10/24/89
DATE COMPLETED: 10/24/89
FIELD REP.: E. Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
180									
					37			SL/CL	as above
185									
					38			SL/CL	as above except also some silt.
190									
					39			SL/CL	as above except color change to reddish-brown to gray brown matrix; also no glass shards apparent.
195									
					40			SL/CL	as above.
200									
					41			SL/CL	as above.
205									
					42			SL/CL	as above except glass shards present.
210									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
B - 2" OD 1.25" ID drive sample
U - 3" OD 2.42" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 2 of 9

LOCATION MAP:



See page 1

SITE ID: GUN 08 LOCATION ID: 704
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Hand Rotary
DRILLING CONTR.: Byles Bros.
DATE STARTED: 10/24/87
DATE COMPLETED: 10/24/87
FIELD REP.: E. Mignardet

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	VALUE	USCS	VISUAL CLASSIFICATION
210					43			SC/GC	as above.
215					44			SC/GC	Drilling rate slowed at ~215'.
220					45			SC/GC	
225					46			CL	Sandy clay, trace gravel, light brownish gray (10YR 6/2) matrix, 0-20% qtz, feldspar pk fragments, 0-10% clay clasts
230					47			CL	as above.
235					48			CL	as above.
240									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" OD 1.38" ID drive sample
U - 3" OD 2.42" ID tube sample
T - 3" OD thin-walled Shelby tube



BOREHOLE LOG (SOIL)

LOCATION MAP:

See page 1

A
B
C

SITE ID: Guay 08 LOCATION ID: 704

SITE COORDINATES (ft.):

N _____ E

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: Mud Rotary

DRILLING CONTR.: Boyle Bros.

DATE STARTED: 10/24/89

DATE COMPLETED: 10/26/89

FIELD REP.: E. M. M. M. M.

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
------	------	-------------

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION _____

[illegible]

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 705JOB NO. GUN08DATE 10/15/85

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0			G				SM/ GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, medium to fine grained, brown.
5			G						
10			G						
15			G						
20			G						
25			G						
30			G						
35			G						
40			G						
45			G						
50			G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 705JOB NO. GUN08DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								Failing 25	10" RGB	8,050.68'	MSL		
55			G									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
60			G										Note: Trace of clay at 60.0 feet.
65			G										
70			G									Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobbles, well rounded, brown.
75			G										
80			G										
85			G										
90			G									Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, considerable more fines than above, occasional cobbles, brown.
95			G										
100			G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 705

JOB NO. GUN08 DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
105			G					Tg	<u>TERTIARY GRAVEL</u> (Cont.)
110			G						
115			G						
120			G						
125			G				GM/ GC	Tg	<u>TERTIARY GRAVEL: Clayey Silty Sand and Gravel, subrounded to well rounded, brown.</u>
130			G						
135			G					Tg	<u>TERTIARY GRAVEL: Gravelly Sand, rounded, light brown.</u>
140			G						
145			G						
150			G						
155			G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 705JOB NO. GUN08DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Failing 25</u>	
								BORING TYPE <u>10" RGB</u>	<u>N16,120.0 - L13,260.0</u>
								SURFACE ELEV. <u>8,050.68'</u>	
								DATUM <u>MSL</u>	
160			G					Tg	<u>TERTIARY GRAVEL: (Cont.)</u>
165			G					Tg	<u>TERTIARY GRAVEL: Clayey Sand with Gravel, medium brown.</u>
170			G					Tg	<u>TERTIARY GRAVEL: Clayey Gravel, angular, brown.</u>
175			G				GM		
180			G						
185			G						
190			G						
195			G						
200			G					Tg	<u>TERTIARY GRAVEL: Clayey Gravel, brown.</u>
205			G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

Page 5 of 7

LOG OF TEST BORING NO. 705

JOB NO. GUN08 DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Failing 25	10" RGB	N16,120.0 E13,260.0	MSL		
210			x	G									Tg	<u>TERTIARY GRAVEL:</u>
215			x	G										
220			x	G										
225			x	G										
230			x	G				GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, brown.
235			x	G										
240			x	G										
245			x	G				CL					Tg	<u>TERTIARY GRAVEL:</u> Gravelly Clay, considerable sand, brown.
250			x	G										
255			x	G										
260			x											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

Page 6 of 7

LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 705JOB NO. GUN08DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
260				G					Failing 25	10" RGB	8,050.68'	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265				G										
270				G										
275				G										
280				G										
285				G										
290				G										
295				G										
300				G										
305				G										
310				G				SS					Jm	<u>MORRISON FORMATION:</u> Sandstone, Siltstone, red, yellow, and green.

GROUNDWATER

SAMPLE TIME

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

Page 7 of 7

LOG OF TEST BORING NO. 705JOB NO. GUN08 DATE 10/15/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
315			x	G					Jj	<u>JUNCTION CREEK SANDSTONE:</u>
320			x	G						
325			x	G						
330			x	G						
335			x	G						
340			x	G					Jj (?)	<u>JUNCTION CREEK SANDSTONE: (?)</u> (Basal Conglomerate?) Silty Sand and gravel, considerable andesite.
345			x	G						
350			x							
355										Stopped drilling at 350.0 feet when lost circulation. Installed 6" PVC casing with 90.0 feet of screen with bottom of screen at 235.0 feet below land surface.
360										

GROUNDWATER

SAMPLE TYPE

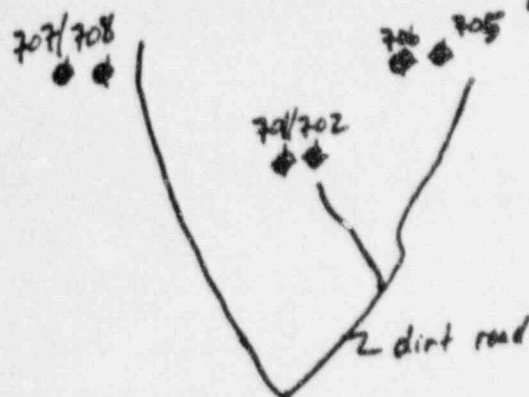
DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.



BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: GUN 08 LOCATION ID: 706
SITE COORDINATES (N. I.):
N 16070.69 E 13187.03
GROUND ELEVATION (N. I. MSL): 8050.00
DRILLING METHOD: Hand Rotary
DRILLING CONTR.: Bayles Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-19-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (N. I.)
24 JAN 90	1405	149.45

LOCATION DESCRIPTION Approx. 62 ft west of 6" well (705?).

SITE CONDITION Shale - covered, some flat terrain.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0						N/A	N/A		
					01			GM	Silty gravel, lt yellow-brown (2.5Y6/14), some (5-20%) fine sands, fine-med gravel, sand & gravel rk fragments of mixed lithologies.
5					02			GM	
10					03			GM	as above
15					04			GM	as above
20					05			GM	as above also trace (0-10%) yellow-brown (2.5Y6/14) clay made pipe connection.
25					06			GM	as above.

COMMENTS: mixed lithologies = metamorphic, volcanic sedimentary, plumbic, & felsic rocks. This borehole log was recorded during the training from 5 1/2 inch to 6 inch and supplements the 60 Holquist log dated 10/2 to 10/4/89.

SAMPLE TYPE
A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 2 of 2

LOCATION MAP:

A
[]

See page 1

SITE ID: GUA' 08 LOCATION ID: 706
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Rodex Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-18-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCB	VISUAL CLASSIFICATION
30					07			6m	as above.
35					08			6m	as above.
40					09			5m/6m	Silty Sand, coarse grained, lt yellow-brown (2.54/4), some (5 to 15%) fine gravel, & frags of mixed lithologies, trace clay.
45					10			5m	as above
50					11			5m	as above, stopped drilling at 50 ft at 1600 on 11-18-89.
55					12			5m	as above
60									
65									
70									
75									
80									
85									
90									
95									
100									
105									
110									
115									
120									
125									
130									
135									
140									
145									
150									
155									
160									
165									
170									
175									
180									
185									
190									
195									
200									

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 3 of 8

LOCATION MAP:

A
N

See Page 1

SITE ID: GUN 08 LOCATION ID: 706
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 1-19-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	R PE	S I	N VALUE	UBCS	VISUAL CLASSIFICATION
60										
					13				sm	as above
65										
					14				sm/GC	Silty and clayey gravel, yellow-brown (2.5Y 4/4), some (5-10%) sand, rk fragments of mixed lithologies,
70									sm/GC	as above.
					15					
75									sm/GC	as above.
					16					
80										
					17				sm/GC	as above except slightly less gravel content.
85										
					18				sm/GC	as above
90										

COMMENTS: _____

SAMPLE TYPE

- A - Auger cuttings
- S - 2" O.D. 1.58" I.D. drive sample
- U - 3" O.D. 2.42" I.D. tube sample
- T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 4 of 8

LOCATION MAP:



See Page 1

SITE ID: GUN 08 LOCATION ID: 706
SITE COORDINATES (N.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-19-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 8 in.	N VALUE	USCS	VISUAL CLASSIFICATION
90									
					19			Gm/Gl	as above.
95									
					20			Gm/Gl	as above
100									
					21			Gm/Gl	as above
105									
					22			Gm/Gl	as above.
110									
					23			Gm/Gl	as above
115									
					24			SM	Silty Sand, yellow-brown (2.574/4), coarse sand, some (5-15%) gravel, etc frags of mixed lithologies
120									

COMMENTS: _____

SAMPLE TYPE

- A - Auger cuttings
- B - 3" O.D. 1.38" I.D. drive sample
- U - 3" O.D. 2.42" I.D. tube sample
- T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 5 of 8

LOCATION MAP:



See Page 1

SITE ID: GUN 18 LOCATION ID: 706
SITE COORDINATES (N.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-18-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE IN / REVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCB	VISUAL CLASSIFICATION
120					25			Sm	as above
125					26			Sm	as above
130					27			Gm	Silty Gravel, yellow-brown, some coarse sand, mixed lithology of rk fragments
135					28			Gm	as above
140					29			Gm	as above
145					30			Gm	as above except reddish-brown matrix
150									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 2" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 6 of 8

LOCATION MAP:



See Page 1

SITE ID: GUN 08 LOCATION ID: 706
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 1-18-89
DATE COMPLETED: 11-19-89
FIELD REP.: EL Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	FLOW PER 6 IN.	N VALUE	USCB	VISUAL CLASSIFICATION
150					31			GM	as above.
155					32			GM	as above
160					33			GM	as above
165					34			GRAVEL	Silty / Clayey Gravel, reddish-brown matrix, some (5-15%) coarse sand, rk fragments of mixed lithologies.
170					35			GRAVEL	
175					36			CL/GM	Clay / Silty Gravel, yellow brown matrix, some sand, rk fragments of mixed lithologies
180									

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 2" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 7 of 8

LOCATION MAP:



See Page 1

SITE ID: GUN 08 LOCATION ID: 706
SITE COORDINATES (N. E.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-19-89
FIELD REP.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

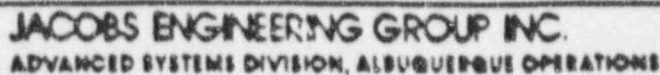
LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
180									
					32			GM/GC	silty Gravel, grayish-brown (2.515%), some (5-15%) sand and clay, re fragments of mixed lithologies.
185									
					38			GM/GC	
190									
					39			GM/GC	as above
195									
					40			GM/GC	as above
200									
					41			GM/GC	as above
205									
					42			GM/GC	as above
210									

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube



BOREHOLE LOG (SOIL)

Page 8 of 8

LOCATION MAP:



See Page 7

SITE ID: 64N 08 LOCATION ID: 706
SITE COORDINATES (N.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Mud Rotary
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-18-89
DATE COMPLETED: 11-19-89
FIELD REF.: Ed Mignardot

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
210	X				43			Gm/GC	as above except only trace clay as matrix.
215	X				44			Gm/GC	as above
220	X				45			Gm/GC	as above
225	X				46			GC	Clayey Gravel, grayish-brown (2.5YR 5/2) trace silt, rk fragments in gravel of mixed lithologies. Stopped drilling at 230 ft at 1515 on 11-19-89.
230	X								

COMMENTS:

SAMPLE TYPE

- A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thermal-shielded Shelby tube

JOB NO. GUN08

DATE 09/30/89

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
RIG TYPE <u>INGERSOIL BAUD</u>										
BORING TYPE <u>Rotary/Air</u> N16,210.6 E12,479.6										
SURFACE ELEV. <u>8,048.67'</u>										
DATUM <u>MSL</u>										
0				G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, medium to coarse gravels, occasional cobbles to 10 inches, low plasticity, tan to light -brown. Note: Lithology of gravels are mixed.
5				G						
10				G						
15				G				CL	Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, considerable gravels, subrounded, low plasticity, yellowish brown.
20				G						
25				G					Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, some fine gravel, low plasticity, brown.
30				G				CL		
35				G						
40				G				GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, some cobbles, low plasticity, light brown.
45				G				SW		Note: Clay possible reworked tuff, brown.
50				G					Tg	<u>TERTIARY GRAVEL:</u> Sandy Gravels, trace of clay, occasional basalt cobbles, brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
55			*					INGERSOIL BAUD Rotary/Air 8,048.67' MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
60			*	G						
65			*	G						
70			*	G						
75			*	G					Note: Slightly damp at 75 feet.	
80			*	G						
85			*							
90			*	G			CL		Tg	<u>TERTIARY GRAVEL: Sandy, Gravelly Clay</u> , low plasticity, light brown. Note: Possible reworked ash flow with altered green tuff.
95			*	G						
100			*	G			GM		Tg	<u>TERTIARY GRAVEL: Silty Sand and Gravel</u> , fine to medium sand and gravels, tan.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - "X" or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	INGER 4011 BAUD
									BORING TYPE	Rotary/Air
									SURFACE ELEV.	8,048.67' N16,210.8 E12,479.6
									DATUM	MSL
									REMARKS	VISUAL CLASSIFICATION
105			x	G					Tg	<u>TERTIARY GRAVEL:</u>
			x							(Cont.)
110			x	G						Note: changed from downhole hammer to 7 3/8 rock bit at 110 feet.
			x							
115			x	G						
			x							
120			x	G						
			x							
125			x	G						
			x							
130			x	G						
			x							
135			x	G						
			x							
140			x							
			x							
145			x	G						
			x							
150			x	G						
			x							
155			x	G						
			x							

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
								INGERSOIL BAUD Rotary/Air 8,048.67 MSL		
160			x	G			GC		Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165			x	G					Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, gravels are mixed lithology, brown. Note: Began injecting water into airstream while drilling at 160 feet.
170			x	G						
175			x	G						
180			x	G						
185			x	G			GM		Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, predominantly medium grained sand and gravels, grey to grey brown.
190			x	G						
195			x	G						
200			x	G			GM		Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, predominantly coarse grained sand and fine gravels, trace to some reworked and altered tuff.
205			x	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Sample Type Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	INGERSOIL BAUD	
								RIG TYPE	BORING TYPE
								Rotary/Air	
								8,048.67'	
								MSL	
								REMARKS	VISUAL CLASSIFICATION
210				G				Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
215				G					
220				G					
225				G			GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, predominantly fine gravels, grey brown.
230				G					
235				G					
240				G			GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, fine to medium gravels with medium plasticity clay, reddish brown gravels and grey clay (reworked tuff?).
245				G					
250				G					
255				G					
260									

GROUNDWATER		
DEPTH	HOUR	DATE

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphic Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
260			G					Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265			G						
270			G						
275			G						
280			G				CL	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Clay, gravels predominantly andesite clay are medium plasticity and grey green, possible reworked and altered tuff.
285			G						
290			G				SW	Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, considerable sand, occasional cobbles, grey brown.
295			G						
300			G						
305			G						
310			G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LOG OF TEST BORING NO. 707

JOB NO. GUN08 DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	
									INGERSOIL BAUD	
									BORING TYPE	Rotary/Air
									SURFACE ELEV.	8,048.67
									DATUM	MSL
									REMARKS	VISUAL CLASSIFICATION
315			*						Ig	<u>TERTIARY GRAVEL:</u> (Cont.)
			*	G						
320			*							
			*	G						
325			*							
			*	G						
330			*							
			*	G						
335			*							
			*	G						
340			*							
			*	G						
345			*							
			*	G						
350			*							
			*	G						
355			*							
			*	G						
360			*							
			*	G						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - RX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 707JOB NO. GUN08DATE 09/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
365			G				SW	Jj (?)	(Cont.) <u>JUNCTION CREEK</u> <u>SANDSTONE(?)</u> Basalt Flow or Basal Conglomerate, Basalt Gravels, dark brown to reddish brown cemented cobbles, boulders or fractured rock very hard drilling. (see also log of hole 705)
370			G						
375									
380									
385									
390									
395									
400									
405									
410									
415									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE INGERSOIL BAUD	BORING TYPE ROTARY/AIR	SURFACE ELEV. 8,050.99'	DATUM MSL
								REMARKS	VISUAL CLASSIFICATION		
0			G				GM	Tg	<u>TERTIARY GRAVELS:</u> Silty Sand and Gravels, medium to coarse grained sand, gravels are of mixed lithology, occasional cobbles, brown. Note: Some lime coating on gravels in first sample.		
5			G								
10			G								
15			G								
20			G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, trace to some clay, occasional cobbles, brown. Note: Trace to some greenish brown clayey pebbles and gravels are of mixed lithology.		
25			G								
30			G								
35			G								
40			G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, well rounded, brown (gravels are of mixed lithology).		
45			G								
50											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
142.6		06/12/89
142.9		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 708

JOB NO. GUN08 DATE 10/18/89

Depth, in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30 free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	
									INGERSOIL BAUD	
BORING TYPE									ROTARY/AIR	
SURFACE ELEV.									8,050.99'	
DATUM									MSL	
REMARKS									VISUAL CLASSIFICATION	
Tg									(Cont.)	
Tg									TERTIARY GRAVELS: Silty Sand and Gravel, occasional cobbles, sand is predominantly coarse to medium grained, well rounded, gravels are of mixed lithology, (andesite, granite, etc.).	
GM										
GC									Tg	
Tg									TERTIARY GRAVEL: Clayey Sand and Gravels, fine grained sand with grey and green tuffaceous clay.	
GM									Tg	
Tg									TERTIARY GRAVEL: Silty Sand and Gravel, well to subrounded, occasional cobbles, brown.	
Tg									Note: Trace to some grey tuffaceous clay 90 to 95 feet.	

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
142.6		06/12/89
142.9		24/01/90

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>INGERSOIL BAUD</u> BORING TYPE <u>ROTARY/AIR</u> <u>N162093 E123112</u> SURFACE ELEV. <u>8,050.99'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
105									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110										
115										
120								GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobble, gravel are of mixed lithology, reddish brown.
125										
130										
135										
140								GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, increasing fines, brown.
145										
150								GC	Tg	Note: moist at 150 feet. <u>TERTIARY GRAVEL:</u> Clayey, Silty Sand and Gravel, considerable cobbles, reddish brown.
155										

GROUNDWATER		
DEPTH	HOUR	DATE
142.6		06/12/89
142.9		24/01/90

SAMPLE TYPE
 RX - Rock Coring - WX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/18/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									INGERSOIL BAUD	ROTARY/AIR	8,050.99'	MSL		
160													Tg	<u>TERTIARY GRAVEL:</u> (Cont.) Note: Saturated cuttings at 158 feet.
165														
170														
175														Stopped drilling at 170 feet. Set 4 inch diameter PVC well with bottom at 170 feet, and screened at 153 to 168 feet.
180														
185														
190														
195														
200														
205														

GROUNDWATER		
DEPTH	HOUR	DATE
142.6		06/12/89
142.9		24/01/90

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/ft 140 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>Failing 25</u> BORING TYPE <u>7 7/8 RGB</u> <u>N17,090.0 E10,200.0</u> SURFACE ELEV. <u>7,926.74'</u> DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION
0			G				CL	Qped	<u>SOIL</u> : Sand Clay, considerable gravel, medium plasticity, light brown.
5			G				SC	Tg	<u>TERTIARY GRAVEL</u> : Clayey Sand with Gravel, low to medium plasticity, light brown.
10			G						
15			G				SM	Tg	<u>TERTIARY GRAVEL</u> : Silty Sand, predominantly fine to medium grained, some gravel, occasional cobbles, some clay, low plasticity, tan, mixed lithology clasts.
20			G						
25			G				GC	Tg	<u>TERTIARY GRAVEL</u> : Clayey Sand and Gravel, occasional cobble, low to medium plasticity, brown.
30			G						
35			G						
40			G						
45			G						
50			G				GC	Tg	<u>TERTIARY GRAVEL</u> : Note: Increasing gravel at 50.0 feet.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
21.5	08:40	10/26/89
21.7	13:45	10/26/89

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN98 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM
								Failing 25	7 7/8 RGB	N17,090.0 E10,200.0	MSL
REMARKS								VISUAL CLASSIFICATION			
55			G					Tg	Clayey Gravel, some sand mixed feldspar and andesite gravels, light brownish grey.		
60			G					Tg	TERTIARY GRAVEL: Clayey Silty Gravel, trace sand, light grey to greenish brown, possibly reworked Lahar Breccia.		
65			G					Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
70			G					Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
75			G					Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
80			G				GC/ GM	Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
85								Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
90			G					Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
95			G					Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		
100			G				CL	Tg	TERTIARY GRAVEL: Silty Clay, trace sand, light grey with trace green and red clay.		

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
21.5	08:40	10/26/89
21.7	13:45	10/26/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATE	REMARKS	VISUAL CLASSIFICATION
									Falling 25	7 7/8 RGB	N17,000.0 E10,200.0			
										7,926.74'				
										MSL				
105			*	G									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110			*	G										
115			*	G										
120			*	G										
125			*	G										
130			*	G				ML					Tg	<u>TERTIARY GRAVEL:</u> Clayey Silt, trace very fine sand, mixed lithology, light grey.
135			*	G										
140			*											
145			*	G				SM/ SC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Silty Sand, fine grained, light grey.
150			*	G										
155			*	G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
21.5	08:40	10/26/89
21.7	13:45	10/26/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.33" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
160			G					Failing 25	7 7/8 RGB	N17,090.0 E10,200.0	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165			G										
170			G				GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, some coarse sand, light grey.
175			G										
180			G										
185			G										
190			G										
195			G										
200			G									Jm	<u>MORRISON FORMATION:</u> Shale, Claystone, soft, occasionally laminated, yellowish brown to green.
205			G										

GROUNDWATER			SAMPLE TYPE		
DEPTH	HOUR	DATE			
21.5	08:40	10/26/89	RX	-	Rock Coring - NX or HX
21.7	13:45	10/26/89	S	-	2" O.D. 1.38" I.D. tube sample.
			U	-	3" O.D. 2.42" I.D. tube sample.
			T	-	3" O.D. thin-walled Shelby tube.
			OX	-	ODX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 709

JOB NO. GUN08 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE Failing 25	BORING TYPE 7 7/8 RGB	SURFACE ELEV. 7,926.74'	DATUM MSL	REMARKS	VISUAL CLASSIFICATION
210				G									Jm	<u>MORRISON FORMATION:</u> (Cont.)
215				G										
220				G										
225				G									Jj	<u>JUNCTION CREEK</u> <u>SANDSTONE:</u> Sandstone, medium to coarse grained, light green to white.
230				G										
235				G										
240				G										
245				G										
250				G										
255				G										
260														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
21.5	08:40	10/26/89
21.7	13:45	10/26/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - COEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
260			X	G					Jj	(Cont.)
265			X	G						Andesite or PE bedrock, black to dark grey, very hard.
270									Stopped drilling at 276.0 feet. Set 4 inch diameter PVC well with 10 feet screen with bottom of screen set at 198.0 feet below land surface.	
275										
280										
285										
290										
295										
300										
305										
310										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
21.5	08:40	10/26/89
21.7	13:45	10/26/89

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30 free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE		
									BORING TYPE	Rotary/Air	
									SURFACE ELEV.		8,069.42'
									DATUM		MSL
									REMARKS	VISUAL CLASSIFICATION	
0				G				SM	Qped/Qal	<u>SOIL</u> : Silty Sand, predominantly fine, some gravel, nonplastic, light brown.	
								GM			
5				G					TaF	<u>ASH FLOW TUFF</u> : Sand and Gravel, basaltic fragments, occasional cobbles, medium plasticity, white.	
10				G				GM	Tb-I	<u>LAHAR BRECCIA</u> : Silty Sand, Gravel and Cobbles, size fragments, subangular, nonplastic, light greenish grey.	
15				G					Tb-I	<u>LAHAR BRECCIA</u> : Clayey Sand, predominantly fine to medium grained, 30% gravel size fragments, medium plasticity, light brown. Note: Cutting damp at 20.0 feet.	
20				G				SC			
25				G							
30				G					Tb-I	<u>LAHAR BRECCIA</u> : Clayey Sand and Gravel, considerable more fragments, low to medium plasticity, light greenish brown. Note: Possible reworked Lahar deposit from 45.0 to 60.0 feet.	
35				G							
40				G				GC			
45				G							
50				G							

GROUNDWATER

SAMPLE TYPE

	DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM
									Rotary/Air	N13,585.0 E12,655.0	MSL
								REMARKS	VISUAL CLASSIFICATION		
55			G				GM	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)		
60			G					Tb-1	<u>LAHAR BRECCIA: Sand Gravel</u> and Cobble size fragments with 20% ash, low plasticity, grey green.		
65			G					Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, with cobble size fragments, subangular, low to medium plasticity, light grey.		
70			G				GC	Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, with cobble size fragments, subangular, low to medium plasticity, light grey.		
75			G					Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		
80			G					Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		
85								Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		
90			G					Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		
95			G				GC	Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		
100			G					Tb-1	<u>LAHAR BRECCIA: Clayey</u> Sand, Gravel and Cobble, subangular to subrounded, low to medium plasticity, greenish grey.		

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

LOG OF TEST BORING NO. 710

JOB NO. GUN08

DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	Boring Data	
									BORING TYPE	SURFACE ELEV.
									Rotary/Air	-N13,585.0 E12,685.0
									8,069.42'	
									MSL	
REMARKS									VISUAL CLASSIFICATION	
105			*	G					Tb-1	<u>LAHAR BRECCIA:</u> (Cont.) Note: Geophysical logging suggests intercolated clay and gravel lenses 100.0 to 150.0 feet.
			*							
			*							
			*							
110			*	G						
			*							
			*							
			*							
115			*	G						
			*							
			*							
			*							
120			*	G						
			*							
			*							
			*							
125			*	G						
			*							
			*							
130			*	G						
		*								
		*								
135		*	G							
		*								
		*								
140		*								
		*								
		*								
145		*	G							
		*								
		*								
150		*	G							
		*								
		*								
155		*	G							

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Core - RX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
QX - CDEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITE

LOG OF TEST BORING NO. 710JOB NO. GUN08DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
160			G						Rotary/Air	N13,585.0 E12,685.0	MSL	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.) Note: Becoming very damp at 155.0 feet, also decrease in gravels, coarse fragments.
165			G										
170			G										
175			G										
180			G										
185			G										
190			G										
195			G										
200			G				CH					Tb-1	<u>LAHAR BRECCIA:</u> Sandy Clay, considerable fine gravel fragments, medium to high plasticity.
205			G										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - OCEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 710

JOB NO. GUN08

DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
210			*	G						Rotary/Air	N13,585.0 E12,685.0	MSL	Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
215			*	G				GC					Tt-1	<u>LAHAR BRECCIA: Clayey</u> Sand and Gravel, occasional cobble size fragments, medium to high plasticity, light greenish grey.
220			*	G										
225			*	G										
230			*	G										
235			*	G										
240			*	G										
245			*	G										
250			*	G										
255			*	G										
260			*											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADOLANDFILL DISPOSAL SITEPage 6 of 8
LOG OF TEST BORING NO. 710JOB NO. GUN08DATE 10/26/89

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
260			*	G					Rotary/Air	N13,565.0 E12,685.0	MSL	Tb-I	<u>LAHAR BRECCIA:</u> (Cont.)
			*										
			*										
			*										
265			*	G									
			*										
			*										
270			*	G									
			*										
			*										
275			*	G								TaF	<u>TERTIARY ASH FLOW:</u> Sandy Ash, no basaltic fragment, slightly cemented.
			*										
			*										
280			*	G									
			*										
			*										
285			*	G									
			*										
			*										
290			*	G									
			*										
			*										
			*										
295			*	G									
			*										
			*										
300			*	G									
			*										
			*										
305			*	G									
			*										
			*										
			*										
310			*	G									
			*										
			*										
			*										
			*										
			*										
			*										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	
									BORING TYPE	
									Rotary/Air	N13,585.0 E12,685.0
									SURFACE ELEV.	8,069.42'
									DATUM	MSL
									REMARKS	VISUAL CLASSIFICATION
315			*	G					TaF	(Cont.)
320			*	G					Tg	TERTIARY GRAVEL: Gravel, mixed lithology, rounded particles.
325			*	G						
330			*	G						
335			*	G					PC	Precambrian Amphibolite: slightly weathered, moderately to very fractured, hard, greenish blue.
340			*	G						
345			*	G						
350			*	G						
355			*	G						
360			*	G						

GROUNDWATER			SAMPLE TYPE	
DEPTH	HOUR	DATE		
			RX - Rock Coring - NX or HX	
			S - 2" O.D. 1.38" I.D. tube sample.	
			U - 3" O.D. 2.42" I.D. tube sample.	
			T - 3" O.D. thin-walled Shelby tube.	
			OX - ODEX, downhole reverse circulation.	

JOB NO. GUN08 DATE 10/26/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
365			*	G						Rotary/Air	N43,565.0 E43,665.0			Note: Becoming very hard and slightly to moderately fractured at 365.0 feet.
370			*	G										
375			*	G										Note: NC core ran 373.0 to 378.0 feet.
380														Stopped drilling at 378.0 feet.
385														Installed 4 inch PVC casing with 10 feet of screen with bottom of screen set at 329.0 feet below land surface.
390														
395														
400														
405														
410														
415														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 711

JOB NO. GUN08 DATE 11/21/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
0									ROTARY	ROTARY/AIR	N14,280.0 E14,740.0		Qal	SOIL: (Colluvium)
5													Tb-1	LAHAR BRECCIA: Clayey Sand, with gravel and cobbles size basalt fragments, subangular, medium plasticity, grey brownish green.
10								SC/ GC						
15														
20														LAHAR BRECCIA: Sandy Clay, some gravel size fragments, grey to brownish green.
25													Tb-1	
30														
35													Tb-1	LAHAR BRECCIA: Clayey Sand, and gravel size fragments, brown green.
40														
45														
50													Tb-1	LAHAR BRECCIA: Silty Sand,

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or MX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 711

JOB NO. GUN08 DATE 11/21/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
55										Tb-1	with fine gravel size fragment, trace clay basaltic andesite ash, greyish green.
60											
65											
70											
75											
80											
85											
90											
95											
100											

LAHAR BRECCIA

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

KX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/21/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Slows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> N14,260.0 E14,740.0 SURFACE ELEV. <u>8,019.14'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
105										(Cont.)
110								SC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, mixed lithology, subrounded particles, medium plasticity, brown.
115										
120										
125										
130										
135									TaF	<u>ASH FLOW TUFF:</u> Altered Ash Sandy Clay, medium plasticity, light tan.
140								SM/ SC	Tg	<u>TERTIARY GRAVEL:</u> Silty Clayey Sand, some gravel, occasional cobbles, low plasticity, brown.
145										
150										
155								SC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, some gravel, occasional cobbles, variable clay content, low to medium plasticity, light brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 711

JOB NO. GUN08 DATE 11/21/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>ROTARY</u>	
								BORING TYPE <u>ROTARY/AIR</u>	<u>N14,260.0 E14,740.0</u>
								SURFACE ELEV. <u>8,019.14'</u>	
								DATUM <u>MSL</u>	
160								Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165									
170									
175									
180									
185									
190									
195									
200							CL		
205									
								Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, some gravel, occasional cobble.
								Jm	<u>MORRISON FORMATION:</u> Mudstone (Sandy Clay), soft, reddish brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

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LANDFILL DISPOSAL SITEPage 5 of 6
LOG OF TEST BORING NO. 711JOB NO. GUN08DATE 11/21/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
210								Jm	<u>MORRISON FORMATION:</u> (Cont.)
215									
220									
225									
230									
235									
240								Jj	<u>JUNCTION CREEK FORMATION:</u> Sandstone, fine to medium grained, moderately hard, light yellowish tan.
245									
250									
255								PC	<u>PRECAMBRIAN COMPLEX:</u> Amphibolite Metagneous, greenish grey.
260									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 711

JOB NO. GUN08 DATE 11/21/89

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 38" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	Remarks	Visual Classification
260									PC	<u>PRECAMBRIAN COMPLEX:</u> (Cont.)
265										
270										
275										Stopped drilling at 271.0 feet. Cased with 4 inch PVC casing.
280										
285										
290										
295										
300										
305										
310										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" tree-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N15,090.0 E10,500.0</u> SURFACE ELEV. <u>7,971.06'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
0								ML	Qal	<u>SOIL:</u> Gravelly Silt, low plasticity, medium brown.
5										
10								GC/ CL	Tb-1	<u>LAHAR BRECCIA:</u> Clayey Gravel to Gravelly Clay, dark greyish green.
15										
20										
25										
30										
35										
40										
45										
50								GC/		

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 712

JOB NO. GUN08 DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								CL	ROTARY	ROTARY/AIR	N45,000.0 E10,500.0			
										7,971.06'				
										MSL				
55													Tb-1	<u>LAHAR BRECCIA</u> (Cont.)
60														
65														
70														
75														
80														
85													Tg	<u>TERTIARY GRAVEL: Clayey</u> <u>Gravel</u> , clasts are subrounded, mixed of lithology, light brown.
90														
95														
100													Tg	<u>TERTIARY GRAVEL: Sandy</u> <u>Clay</u> , with fine gravel, medium greyish brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 712

JOB NO. GUN08 DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
105									ROTARY ROTARY/AJR 7,971.06' MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110											
115											
120											
125											
130											
135											
140											
145											
150											
155											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or MX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 712JOB NO. GUN08DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
160									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165										
170										
175										
180										
185										
190										
195										
200										
205										
									Tb-1	<u>LAHAR BRECCIA:</u> Gravelly Clay, sandy altered ash matrix, dark greyish green.
									Tb-1	
								ML	Tb-1	<u>LAHAR BRECCIA:</u> Sandy Silt, gravel size basalt clasts, dark grey green.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 712

JOB NO. GUN08 DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
210										Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
211											
212											
213											
214											
215											
216											
217											
218											
219											
220											
221											
222											
223											
224											
225											
226											
227											
228											
229											
230											
231											
232											
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245											
246											
247											
248											
249											
250											
251											
252											
253											
254											
255											
256											
257											
258											
259											
260											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO

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LANDFILL DISPOSAL SITELOG OF TEST BORING NO. 712JOB NO. GUN08DATE 10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u>	
								BORING TYPE <u>ROTARY/AIR</u>	<u>N15 490.0 540.500.0</u>
SURFACE ELEV. <u>7,971.36'</u>								DATUM <u>MSL</u>	
REMARKS								VISUAL CLASSIFICATION	
260								Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
265									
270									
275									
280									
285									
290									
295									
300									
305									
310								PC	<u>PRECAMBRIAN COMPLEX:</u> Amphibolite (Metaigneous), rock, greenish black.
								Stopped drilling at 287.0 feet.	

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTPA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 713

JOB NO. GUN08 DATE 11/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	ROTARY
								BORING TYPE	ROTARY/AIR
								SURFACE ELEV.	7,991.10'
								DATUM	MSL
REMARKS								VISUAL CLASSIFICATION	
							SM/ GM	Qal	<u>SOIL:</u> Silty Sand, some volcanic ash material, weathered alluvium colluvium of lahar, greenish brown.
10							SM	Tb-1	<u>LAHAR BRECCIA:</u> Silty Sand, some gravelly fragments of basalt andesite rock, dark greenish brown, variable sandy ash matrix of 50 to 80%.
15									
20									
25									
30									
35									
40									
45									
50									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

SAMPLE TYPE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N14,700.0 E15,400.0</u> SURFACE ELEV. <u>7,991.10'</u> DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION
105								Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
110									
115									
120									
125							GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, rounded clasts of mixed lithology, brown.
130									
135							SP	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Sand, trace clay, brown to brownish grey.
140									
145									
150							SM/ GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, clasts are rounded, mixed lithology, greyish brown.
155									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 713

JOB NO. GUN08 DATE 11/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
160								Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165									
170									
175									
180									
185							GC	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Clay, reddish brown to brownish grey.
190									
195									
200							GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, medium grained, light grey brown.
205									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 713

JOB NO. GUN08 DATE 11/30/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N14,700.0 E13,400.0</u> SURFACE ELEV. <u>7,991.10'</u> DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION
210								Tg	(Cont.)
215							GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, light brownish grey.
220									
225									
230							CL	Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, little gravel, mixed lithology.
235									
240									
245									
250							GC	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Clay, fine gravel, light greyish brown.
255									
260									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 713

JOB NO. GUN08 DATE 11/30/89

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density 100. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N14,700.0 E13,400.0</u> SURFACE ELEV. <u>7,991.10'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
260									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
265										
270										
275										
280										
285									PC	<u>PRECAMBRIAN COMPLEX:</u> Amphibolite, greenish black.
290										
295										
300										
305										
310										

Stopped drilling at 272.0 feet.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 714JOB NO. GUN08 DATE 12/04/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
0								SM	Qal	<u>SOIL</u> : Silty Sand, little fine gravel, light brownish grey.
5										
10										
15								SM	Tg	<u>TERTIARY GRAVEL</u> : Silty Sandy, little fine gravel, trace clay, reddish brown, clast are subrounded, mixed lithology, little shale fragments, possible from Morrison Formation.
20										
25										
30										
35										
40										
45										
50								SP	Tg	<u>TERTIARY GRAVEL</u> : Gravelly

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 714

JOB NO. GUN08 DATE 12/04/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
55								ROTARY ROTARY/AIK 7,889.24' MSL		Sand, very moist to wet, clast are rounded, mixed lithology.
60							GM/GC		Tg	<u>TERTIARY GRAVEL:</u> Silty Clayey Gravel, yellowish brown, mixed lithology.
65										
70										
75										
80									Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, yellowish brown.
85										
90										
95										
100							GM			

GROUNDWATER		
DEPTH	HOUR	DATE

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 714

JOB NO. GUN08 DATE 12/04/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
105									ROTARY	ROTARY/AIR	N15,380.0 E46,110.0	MSL		(Cont.)
110								GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, yellowish brown to light reddish brown, clast are rounded, mixed lithology.
115														
120														
125														
130													Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, alluvium colluvium from exposed precambrian dark grey.
135														
140														
145													PC	<u>PRECAMBRIAN COMPLEX:</u> Amphibolite, dark greenish grey, fractured, moderately weathered.
150														
155														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 714

JOB NO. GUN08 DATE 12/04/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	Remarks	Visual Classification
160									Cored with NX from 156.0 to 161.0'.	<u>PRECAMBRIAN COMPLEX:</u> (Cont.)
165										Stopped drilling at 161.0 feet.
170										
175										
180										
185										
190										
195										
200										
205										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 715

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N15,440.0 E14,330.0</u> SURFACE ELEV. <u>8,012.21'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
0								SM	Qped	<u>SOIL:</u> Silty Sand, loose, dry.
5								SM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, little fine gravel,
10										
15								SP	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Sand, clast are subrounded, mixed lithology, light brownish grey.
20										
25										
30										
35										
40										
45										
50										

GROUNDWATER		
DEPTH	HOUR	DATE

SAMPLE TYPE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55									ROTARY	ROTARY/AIR	N15,440.0 E14,330.0	MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
60								GC/ GM					Tb-1	<u>LAHAR BRECCIA:</u> Clayey Silty Gravel, volcanic fragments basalt and andesite, trace alluvial gravel, mixed, dark grey green.
65														
70														
75														
80														
85														
90														
95								GC					Tg	<u>TERTIARY GRAVEL:</u> Clayey Gravel, yellowish brown.
100														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 715

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	Remarks	Visual Classification
105								Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110									
115									
120									
125									
130									
135									
140									
145									
150							GC		
155									

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
									RIG TYPE <u>ROTARY</u>	
									BORING TYPE <u>ROTARY/AIR</u>	<u>N15,440.0 E14,330.0</u>
									SURFACE ELEV. <u>8,012.21'</u>	
									DATUM <u>MSL</u>	
160									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165										
170										
175										
180										
185										
190										
195										
200										
205										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 715

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
210								ROTARY ROTARY/AIR 8,012.21' MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
215										
220										
225										
230										
235										
240										
245										
250							CL		Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, medium to fine grained, light brownish gray.
255										
260										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08

DATE 12/20/89

GROUNDWATER

SAMPLE TYPE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - CODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 715

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
315											
320											
325											
330											Stopped drilling at 327.0 feet.
335											
340											
345											
350											
355											
360											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u>	
								BORING TYPE <u>ROTARY/AIR</u>	<u>N17,500.0 E13,270.0</u>
								SURFACE ELEV. <u>8,085.66'</u>	
								DATUM <u>MSL</u>	
								REMARKS	VISUAL CLASSIFICATION
0							SM	Qped	<u>SOIL:</u> Silty Sand, some fine gravel, slight plasticity, light brown.
5									
10							SM/ GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobble, tan to medium brown.
15									
20									
25									
30									
35									
40									
45									
50							SM/		

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
								GM	ROTARY	ROTARY/AIR	N17,500.0 E13,220.0	MSL		
55													Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
60														
65														
70														
75														
80														
85														
								CL/ SC					Tb-1	<u>LAHAR BRECCIA:</u> Gravelly Clay to Clayey Sandy, with gravel.
90														
95														
100								CL/ SC						

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/20/89

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	
									ROTARY	ROTARY/AIR	8,085.66'	MSL	
									REMARKS	VISUAL CLASSIFICATION			
105									Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)			
110									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
115									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
120									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
125									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
130									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
135								SC/ GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
140									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
145									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
150								SC/ GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			
155									Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, occasional cobble, medium brown.			

GROUNDWATER			SAMPLE TYPE	
DEPTH	HOUR	DATE		

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
160										Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165											
170											
175											
180											
185											
190											
195											Note: very moist to wet at 195.0 feet.
200											
205											

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N17,500.0 E13,226.0</u> SURFACE ELEV. <u>8,085.66'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
210									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
215										
220										
225								CL	Tg	<u>TERTIARY GRAVEL:</u> Sandy Clay, occasional cobble, reddish brown.
230										
235										
240									Changed to mud circulation at 240.0 feet.	
245										
250								SC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand and Gravel, light brown.
255										
260										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or TX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

DATE 12/20/89

GROUNDWATER			SAMPLE TYPE
DEPTH	HOUR	DATE	
			RX - Rock Coring - NX or HX
			S - 2" O.D. 1.38" I.D. tube sample.
			U - 3" O.D. 2.42" I.D. tube sample.
			T - 3" O.D. thin-walled Shelby tube.
			OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716

JOB NO. GUN08 DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	VISUAL CLASSIFICATION
315									T ₂	<u>TERTIARY GRAVEL:</u> (Cont.)
320										
325										
330										
335										
340										
345										
350										
355										
360										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

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LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 716JOB NO. GUN08DATE 12/20/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u>	
									BORING TYPE <u>ROTARY/AIR</u>	<u>N17,500.0 E13,220.0</u>
									SURFACE ELEV. <u>8,085.66'</u>	
									DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
365									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
370									Jm	<u>MORRISON FORMATION:</u> Mudstone, Sandy, Silty, Clay thickness, contact based on geophysical log.
375										
380										
385									PC	<u>PRECAMBRIAN COMPLEX:</u> Amphibolite, dark grey to black.
390										
395										
400										Stopped drilling at 395.0 feet.
405										
410										
415										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - COEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 717

JOB NO. GUN08

DATE 01/10/89

Depth in Feet	Continuous penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N16,390.0</u> <u>ET1,50.0</u> SURFACE ELEV. <u>8,017.88'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
0								SP	Qped	<u>SOIL:</u> Gravelly Sand, little silt, dry, loose to medium dense, mixed lithology, rounded clasts.
5										
10										
15								GM/ GP	Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, fine to coarse, mixed lithology of clasts (igneous, metamorphic, olconic), poorly consolidated.
20										
25										
30										
35										
40										
45										
50								SP	Tg	<u>TERTIARY GRAVEL:</u>

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - COEX, downhole reverse circulation.

JOB NO. GUN08 DATE 01/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									ROTARY	ROTARY/AIR	N16,390.0 E14,730.0	MSL		
55													Tg	Gravelly Sand, fine to medium grained, little silty, slightly moist, light yellowish brown.
60														
65														
70														
75														
80								GM					Tg	<u>TERTIARY GRAVEL:</u> Silty Gravel, fine to medium, some sand, mixed lithology of clasts, subrounded.
85														
90														
95														
100								GM						

GROUNDWATER			SAMPLE TYPE		
DEPTH	HOUR	DATE			

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

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LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. 717

JOB NO. GUN08 DATE 01/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 149 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
105									Tg	(Cont.)
								SP	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Sand, fine to medium.
110										
115										
120										
125										
130										
135										
140										
145										
150								SM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, light yellowish brown.
155										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08DATE 01/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE BORING TYPE SURFACE ELEV. DATUM	REMARKS	USUAL CLASSIFICATION
160								ROTARY ROTARY/AIR 8,047.83' MSL	Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
165							GM		Tg	<u>TERTIARY GRAVEL: Silty</u> Gravel, fine, moist, light yellowish brown, clast, mixed lithology, subrounded, to rounded.
170										
175										
180										
185							GP		Tg	<u>TERTIARY GRAVEL: Sandy</u> Gravel, fine to coarse, occasional cobble, little clay, moist, light reddish brown.
190										
195										
200										
205							GC		Tg	<u>TERTIARY GRAVEL: Clayey</u> Gravel, fine, some cobbles, light reddish brown, clasts are of mixed lithology.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 01/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
210								Tg	<u>TERTIARY GRAVEL:</u>
215									(Cont.)
220									
225									
230									
235									
240									
245									
250									
255							CL/ CH	Tg	<u>TERTIARY GRAVEL:</u> Gravelly Clay, medium to high plasticity.
260									

GROUNDWATER			SAMPLE TYPE	
DEPTH	HOUR	DATE	RX	OX
			S - 2" O.D. 1.38" I.D. tube sample.	
			U - 3" O.D. 2.42" I.D. tube sample.	
			Y - 3" O.D. thin-walled Shelby tube.	
			OX - ODEX, downhole reverse circulation.	

JOB NO. GUN08 DATE 01/10/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
315								Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
320									
325									
330									
335									
340									
345								PC	<u>PRECAMBRIAN COMPLEX:</u>
350									
355									Stopped drilling at 352.0 feet.
360									

GROUNDWATER			SAMPLE TYPE	
DEPTH	HOUR	DATE	RX	OX
			S - 2" O.D. 1.38" I.D. tube sample.	
			U - 3" O.D. 2.42" I.D. tube sample.	
			T - 3" O.D. thin-walled Shelby tube.	
			OX - ODEX, downhole reverse circulation.	

JOB NO. GU 708DATE 12/01/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	
									BORING TYPE	
SURFACE ELEV.									8,012.00'	
DATUM									MSL	
REMARKS									VISUAL CLASSIFICATION	
Tg <										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.
OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 12/01/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
55									ROTARY	ROTARY/AJR	N15,000.0	E12,600.0		Note: Although subrounded cobbles are included, the drab grey green matrix is typical of volcanic mud flow.
60													Tg	<u>TERTIARY GRAVEL: Clayey Gravel</u> , occasional cobble, matrix appears to be reworked altered ash, particular lithology is andesite, amphibolite, welded tuff fragment, some gravels are well rounded, clayey matrix is reddish brown with mixture of grey yellow to green sandy ash.
65														
70														
75														
80														
85														
90													Tg	<u>TERTIARY GRAVEL: Gravel and Cobble</u> , with yellow green ash matrix, mixed lithology clasts, subrounded particles.
95														
100														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. CUN08 DATE 12/01/89

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u> BORING TYPE <u>ROTARY/AIR</u> <u>N15,000.0</u> <u>E12,600.0</u> SURFACE ELEV. <u>8,012.00'</u> DATUM <u>MSL</u>	
									REMARKS	VISUAL CLASSIFICATION
105									Tg	<u>TERTIARY GRAVEL:</u> (Cont.)
110									Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, some fine gravel, subrounded, mixed lithology, reddish brown.
115										
120									Tg	<u>TERTIARY GRAVEL:</u> Gravel and Cobble, with some silty sand matrix, mixed lithology rounded particles.
125										Stopped drilling at 123.5 feet.
130										
135										
140										
145										
150										
155										

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08DATE 11/14/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type Blows/foot 140 lb. 30 free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE		
								ROTARY		
								BORING TYPE	7 7/8 ROTY	N15,050 E12,655
								SURFACE ELEV.	8012.77'	
								DATUM	MSL	
REMARKS								VISUAL CLASSIFICATION		
0								Qped	<u>SOIL:</u> Silty Sand and Gravel, fine, subrounded, low to nonplastic light brown.	
5							GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand, some fine gravel subrounded. Nonplastic brown.	
10							GP	Tg	<u>TERTIARY GRAVEL:</u> Sandy Gravel with cobbles, light brown.	
15							GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravel, occasional cobbles, low to nonplastic, light brown.	
20							SC GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, some gravel, occasional cobble, low plasticity, light brown.	
25							SC GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, some gravel, occasional cobble, low plasticity, light brown.	
30										
35										
40										
45										
50							SC GC	Tb-l	<u>LAHAR BRECCIA</u> Clayey Sand with gravel and cobble size fragments, low plasticity, greyish green.	

DEPTH	HOUR	DATE
72.6		11/20/87

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

Slightly moist to moist zone at
42-44 feet.

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LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. W1

JOB NO. GUN08 DATE 11/14/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE <u>ROTARY</u>	BORING TYPE <u>7 7/8 ROTY</u>	SURFACE ELEV. <u>8012.77'</u>	DATUM <u>MSL</u>	REMARKS	VISUAL CLASSIFICATION
55													Tb-1	<u>LAHAR BRECCIA:</u> (Cont.)
60								SC GC						
65														
70														
75														
80														
85														Total Depth at 80 feet. Installed 4 inch PVC Well Sandpocket from 61 to 80 feet.
90														
95														
100														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE
72.6		11/20/87

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/15/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
									RIG TYPE <u>Falling 1500</u>	
									BORING TYPE <u>7 7/8 Rotary</u>	<u>N15,185.4 E12,785.9</u>
									SURFACE ELEV. <u>8,017.5</u>	
									DATUM <u>MSL</u>	
0										
5								SC	Qped	<u>SOIL:</u> Clayey Sand, some to fine gravel, predominantly fine grained, medium plasticity, brown.
10								GP	Tg	<u>TERTIARY GRAVEL:</u> Sand, Gravel, and Cobbles, subangular, nonplastic, brown.
15										
20										
25								GC	Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, Gravel and Cobbles, subangular, low plasticity to nonplastic, brown.
30										
35										
40										
45										
50								GC	Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, Gravel and Cobbles, subrounded, low plasticity to nonplastic, brown.

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OK - ODEX, downhole reverse circulation.

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LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. W2

JOB NO. GUN08 DATE 11/15/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	RIG TYPE	BORING TYPE	SURFACE ELEV.	DATUM	REMARKS	VISUAL CLASSIFICATION
									Failing 1500		N15,185.4 E12,785.9			
									7 7/8 Roty		8,017.64'	MSL		
55			*										Tb-1	(Cont.)
			*	G									Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand and Gravel, low to medium plasticity, grey-green.
60			*											
			*	G										
65			*											
			*	G										
70			*											
			*	G										
75			*											
			*	G										
80			*											
			*	G										
85														Stopped drilling at 80.0'.
90														Installed 4" PVC casing with 10 feet of screen with the bottom of the screen at 78 feet blow the surface.
95														
100														

GROUNDWATER

SAMPLE TYPE

DEPTH	HOUR	DATE

RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

PROJECT UMTRA - GUNNISON, COLORADO
LANDFILL DISPOSAL SITE

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LOG OF TEST BORING NO. W3

JOB NO. GUN08 DATE 11/17/87

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample Type	Blows/foot 148 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
								RIG TYPE <u>Falling 1500</u>	
								BORING TYPE <u>7 7/8 Roty</u>	<u>N15,017.4 E12,830.4</u>
								SURFACE ELEV. <u>8,011.19'</u>	
								DATUM <u>MSL</u>	
0									
5			G				SC	Qped	<u>SOIL:</u> Clayey Sand, some to considerable gravel to 4", subangular to subrounded, predominantly fine grained, medium plasticity, brown.
10			G				GM	Tg	<u>TERTIARY GRAVEL:</u> Silty Sand and Gravels, cobbles, low plasticity to nonplastic, brown.
15			G						
20			G						
25			G				GC		
30			G						
35			G						
40			G						
45			G				GC	Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand, Gravel and Cobbles, low plasticity, brown.
50			G				GC	Tb-1	<u>LAHAR BRECCIA:</u> Clayey Sand and Gravel, occasional

GROUNDWATER		
DEPTH	HOUR	DATE
73.3		11/20/87

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.

JOB NO. GUN08 DATE 11/17/87

Depth in feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classifi- cation	REMARKS	VISUAL CLASSIFICATION
55										cobbles, low to medium plasticity, grey-green.
60				G						
65				G						
70				G						
75				G					Tg	<u>TERTIARY GRAVEL:</u> Clayey Sand, Gravel and Cobbles, low to medium plasticity, light brown to light grey.
80										Stopped drilling at 80.0'. Installed 4" PVC casing with 10 feet of screen with the bottom of the screen at 78 feet blow the surface.
85										
90										
95										
100										

GROUNDWATER		
DEPTH	HOUR	DATE
73.3		11/20/87

SAMPLE TYPE
 RX - Rock Coring - NX or HX
 S - 2" O.D. 1.38" I.D. tube sample.
 U - 3" O.D. 2.42" I.D. tube sample.
 T - 3" O.D. thin-walled Shelby tube.
 OX - ODEX, downhole reverse circulation.