

GW - 40

REPORTS

YEAR(S):

1989

**DATA REPORT FOR
THE NORTHERN REFINERY AREA
GIANT BLOOMFIELD REFINERY**

JUNE 7, 1989

RECEIVED

JUN 23 1989

Prepared for:

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1.0 CHEMICAL DATA

All data available to GCL has been summarized in the following tables for the following wells:

GBR-17

GBR-18

GBR-24D

GBR-30

GBR-32

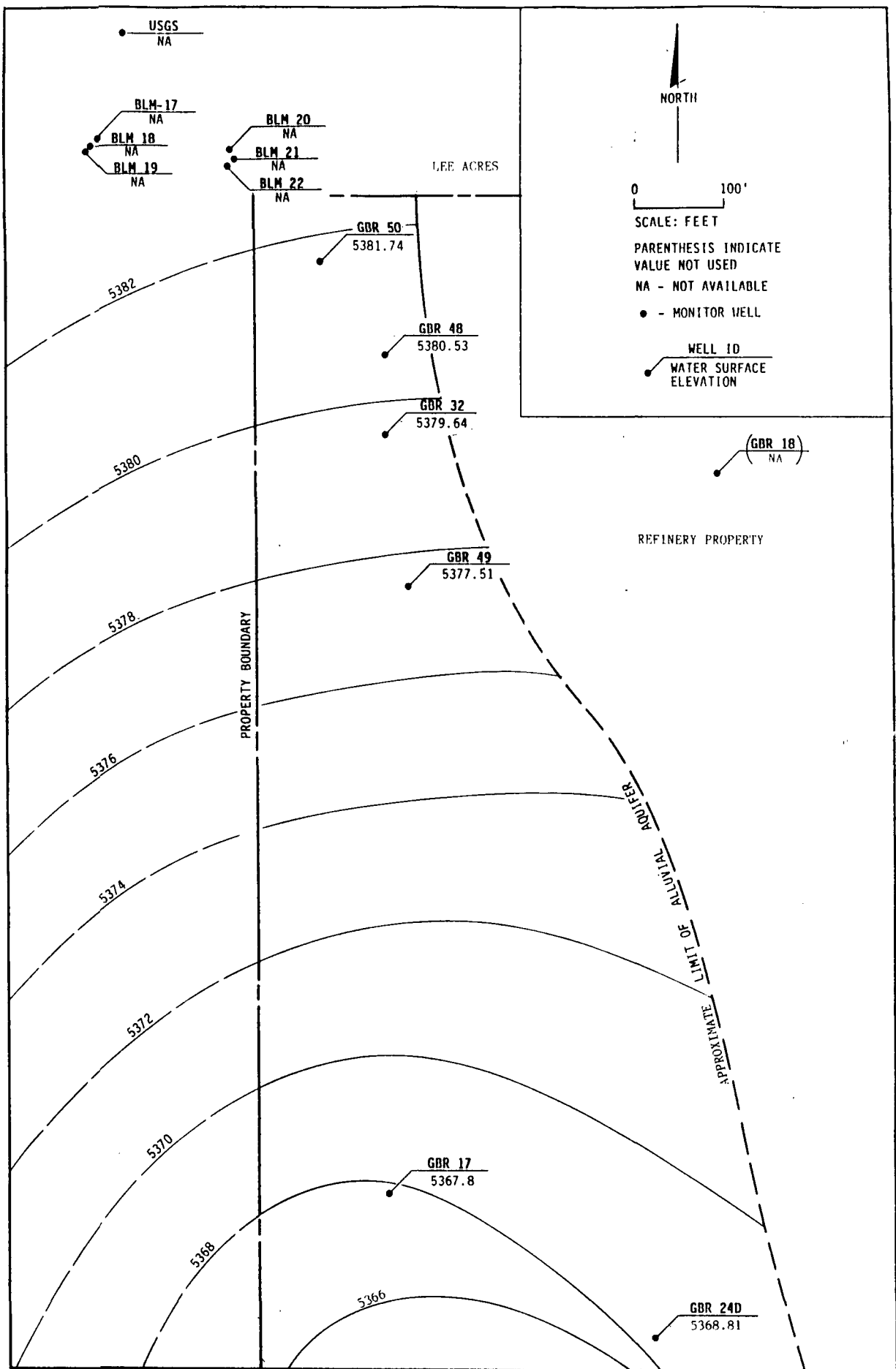
GBR-48

GBR-49

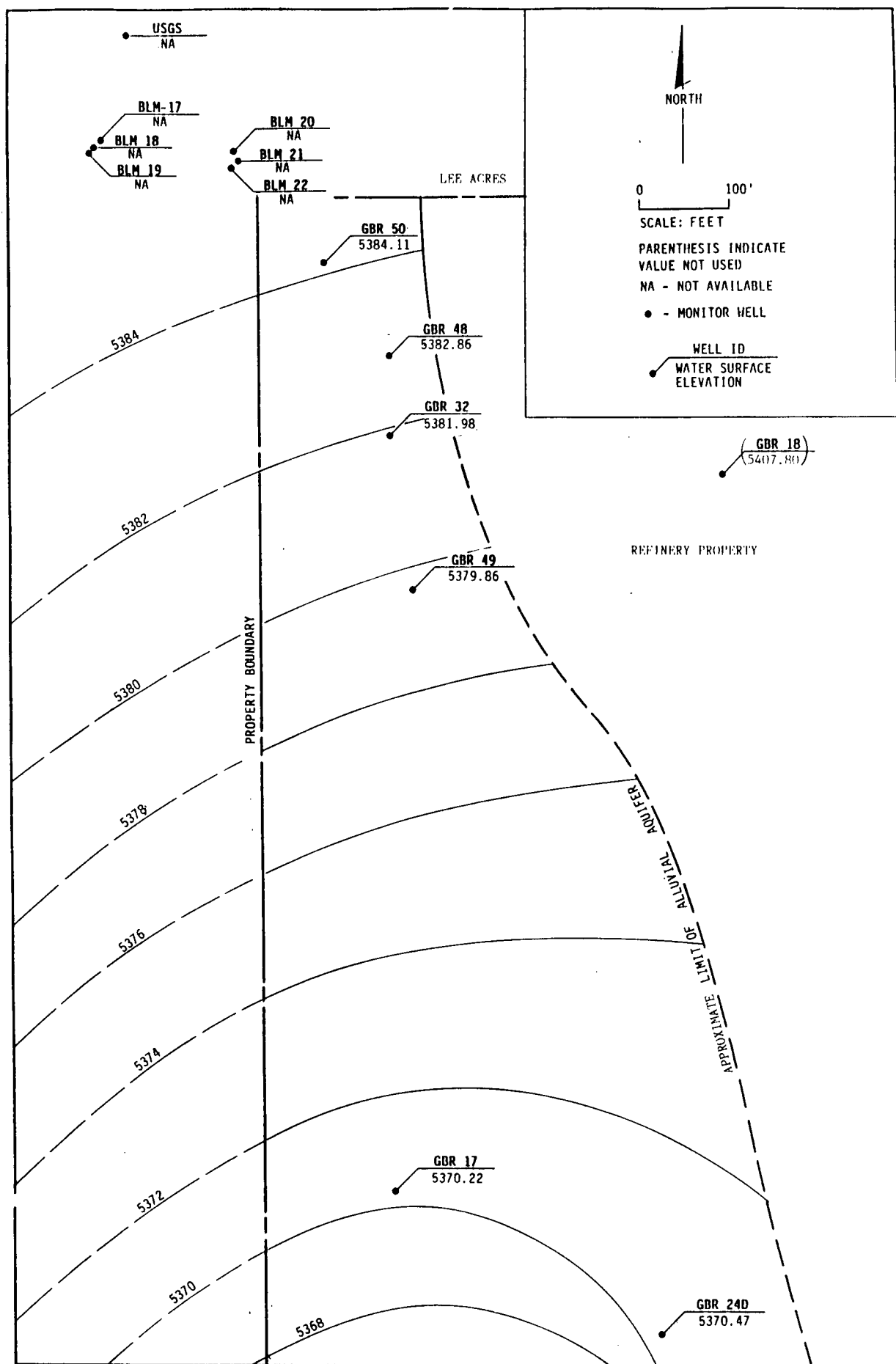
GBR-50

2.0 POTENTIOMETRIC SURFACE MAPS

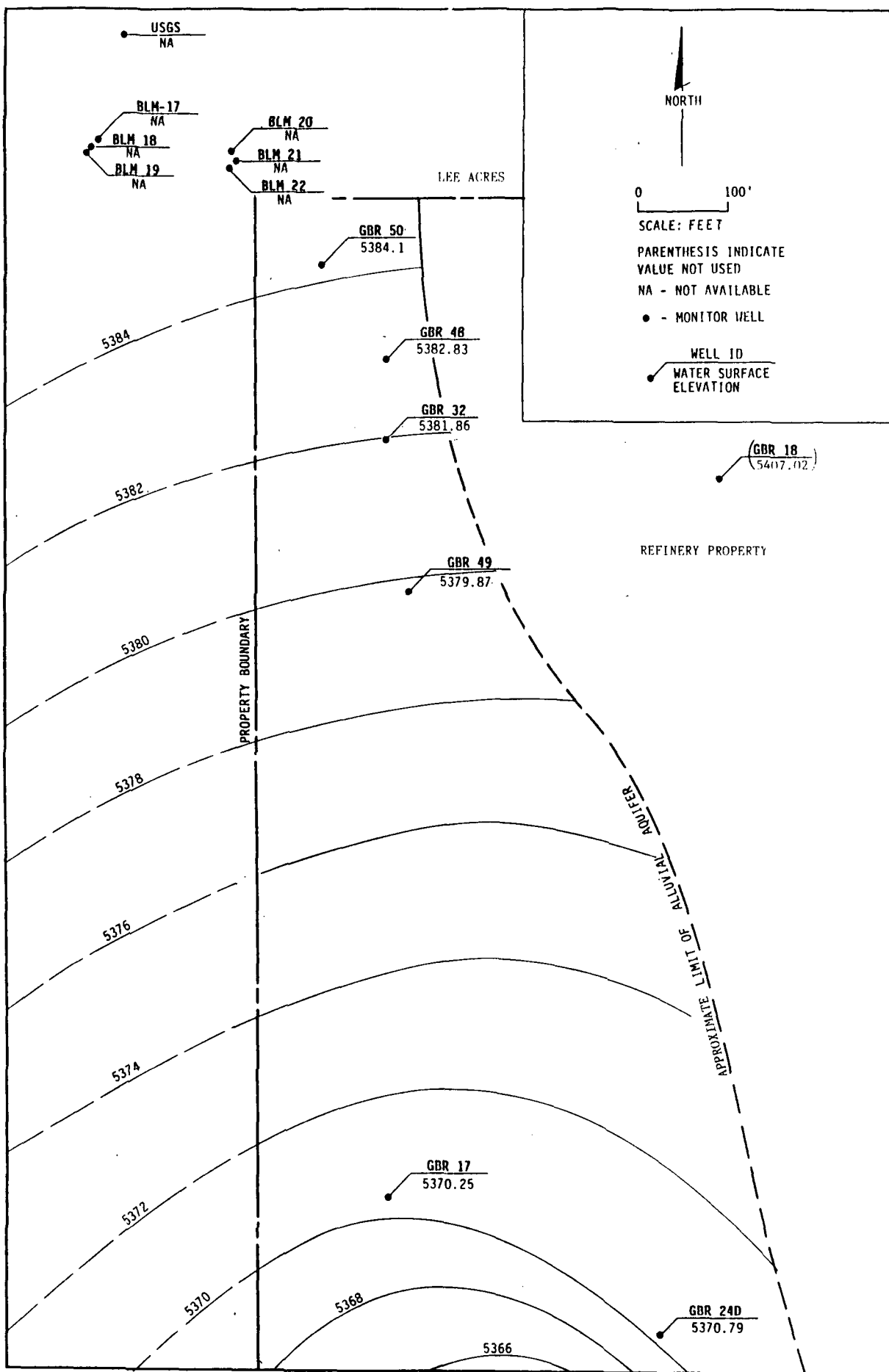
Potentiometric surface maps for the northern refinery area for November 1988 to March 1989 are included. Water level data prior to November 1989 is limited. Similar gradient for earlier dates is suggested by time series elevations observed in GBR 32, GBR 17 and GBR 24D.



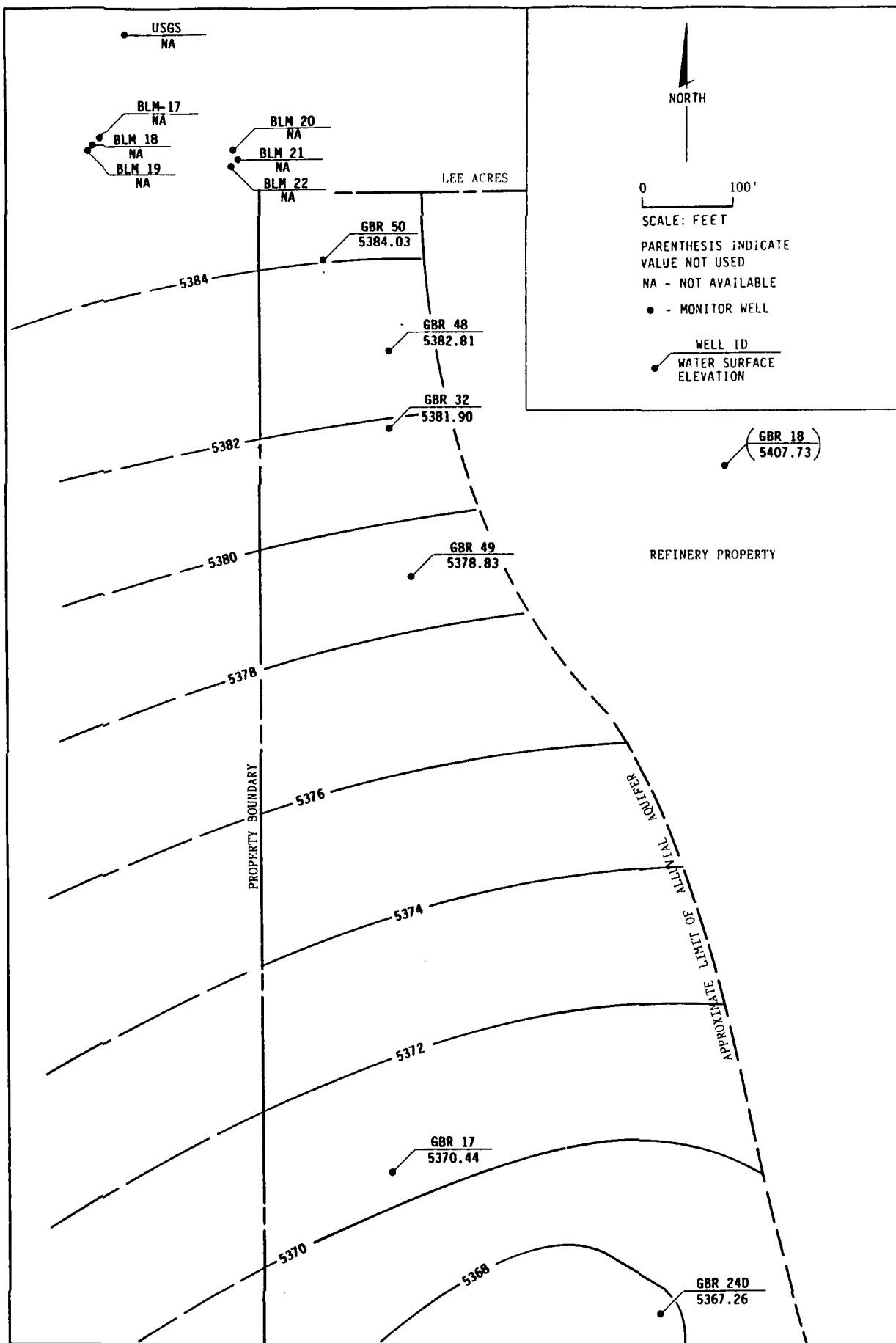
WATER SURFACE CONTOUR MAP GIANT-BLOOMFIELD REFINERY
MARCH, 1989



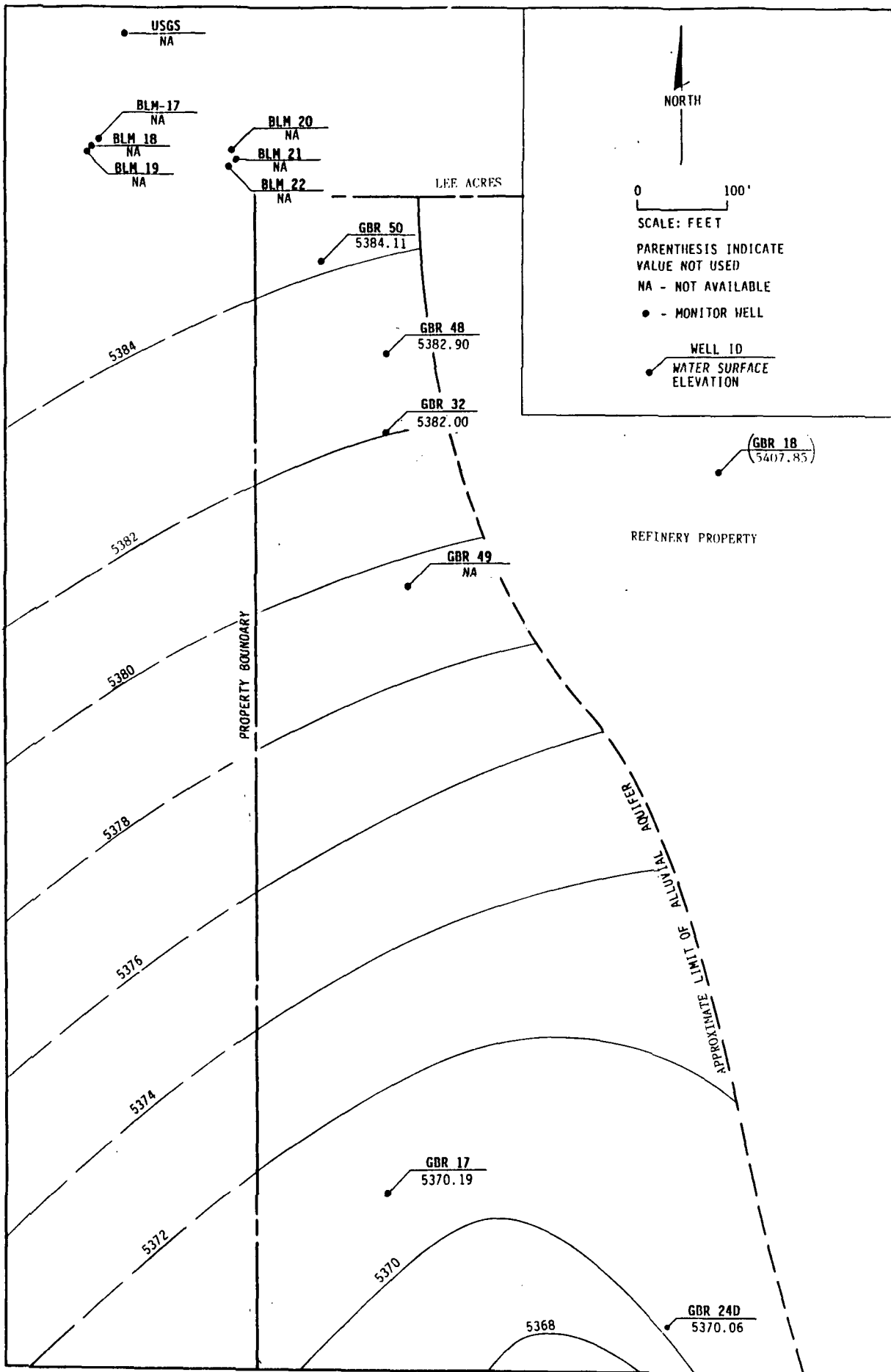
ALLUVIAL
WATER SURFACE CONTOUR MAP GIANT-BLOOMFIELD REFINERY
FEBUARY, 1989



ALLUVIAL
WATER SURFACE CONTOUR MAP GIANT-BLOOMFIELD REFINERY
JANUARY, 1989



ALLUVIAL
WATER SURFACE CONTOUR MAP GIANT-BLOOMFIELD REFINERY
DECEMBER, 1988



ALLUVIAL
WATER SURFACE CONTOUR MAP GIANT-BLOOMFIELD REFINERY
NOVEMBER, 1989

3.0 LITHOLOGIC LOGS

Lithologic logs and well completion information for the following wells are included herein:

GBR-17

GBR-18

GBR-24D

GBR-30

GBR-32

GBR-48

GBR-49

GBR-50

Client Montgomery & Andrews Well Number GBR 17

1/2 1/2 1/2 1/2 S 27 T 29 R 12 State New Mexico

County San Juan Contractor Beeman Bros. Drilling Co.

Spud Date 5/28/86 Completion Date 5/28/86

Logs Run Lith from cuttings Logged By NICHOLAS

Elevation 5401.24 Spud In (Fm.) QAL

Remarks Drilled With Air Rotary, completed as a 2" flush joint

PVC and SS Well N 11240.19 E 11141.69

Depth

Litho
Notes

0-5' (5') sand, mod yellowish brn (10YR 5/4), very fine to coarse grained sand

5

5-10' (5') clayey sand, dk yellowish brn (10YR 4/2) fine to coarse grained sand

10

with clay stringers

15

10-20' (10') clayey sand, mod yellowish brn (10YR 5/4) fine to med grained sand

20

with clay stringers

25

20-45' (25') silty sand, mod yellowish brn, (10YR 5/4) fine to med grained sand

30

grades coarser at 45'

35

45-60' (15') sand, mod yellowish brn (10YR 5/4) to lt olive grey (5Y 5/2), fine to

40

coarse grained sand with some cobbles

45

60-68' (8') silty sand, greenish grey (5GY 6/1), fine to coarse grained sand

50

w/some cobbles (1/2"-3"), 10-15%.

55

TD 68' to TOC, screened from 31'-51' ss screen, ss blanks on bottom,

60

PVC risers. Gravel packed to 28', 100 lb bag Bentonite @ 28', Backfill

65

to surface

33'-6" 5-29-86

Client Montgomery & Andrews Well Number GBR 18

_____ _____ _____ _____ S _____ T _____ R _____ State New Mexico

County San Juan Contractor Western Technologies

Spud Date _____ Completion Date _____

Logs Run Lith from cuttings and cores Logged By _____

Elevation ground 5420.28 Spud In (Fm.) OAL

Remarks drilled w/ HSA

Coordinates N 12021.64 E 11528.06

Depth

Litho
recov

0

5

10

15

20

25

30

35

40

45

50

0-10' (10') fill: very coarse cobbles, some sand and

gravel

10'-12.5' (2.5') sandy shale, yellowish brn

12.5-25' (12.5') sandstone: yellowish brn, med to fine grained

poorly sorted

25'-30' shale: brn gry to rd brn, fissile, clayey, damp

30-38' siltstone: gry brn to brn gry; clayey, same thin.

Irregular sand stringers 1/4"-1/2"; moist

38-50' silty sandstone: yel brn to yel gry, very fine grained,

poorly sorted, locally clayey

Completed as 2.0" galv, steel piezometer.

screen 35'-45'.

12'4"



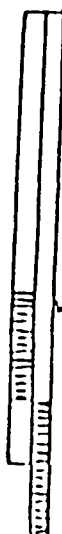
Client Montgomery A Andrews Well Number GDR 24
NW 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12 W State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 4/17/86 Completion Date 4/17/86
 Logs Run Lithology from cuttings Logged By Nicholas
 Elevation 5395' (Top) Spud In (Fm.) Nacimiento

Remarks

Drilled with HSA, continuous sampler used from 9'-49'

Depth

Litho



WL 24'4"

TD = 49'

0'-9' (9') SAND: Moderate yellowish brown, (10yr 5/4), med to coarse grained, No HIC Odor

9'-14' (5') SILTY SANDSTONE: Moderate yellowish brown (10yr 5/4) to olive gray (5y4/1) weathered, very fine to fine grained, No HIC Odor.

14'-49' (35') SANDSTONE: lt olive grey (5y 6/1), fine grained, contains minor gravels; 28' (1"-14"), HIC Odor at 29'

Dual Completion as 2" PVC Piezometer

Stickup 3'3" 1041'3" and 46'3" from top of casing

Screened intervals 23-33' and 33'-43'

Caved to 33', sand to 22', Bentonite 2/3 Bag

@22', Backfill to 6', Bentonite 1/3 Bag @ 6'.

GCL

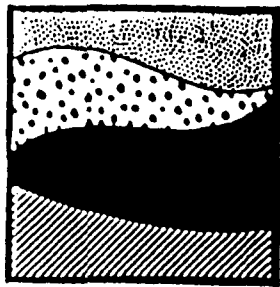
WELL LOGGING FORM

Page 1 of 2Client Montgomery & Andrews Well Number (X-1) GBR 301/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By MartinElevation ground 5394.26 Spud In (Fm.) QALRemarks Drilled with Hollow Stem AugerCoordinates N 11014.84 E 11382.06

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							0-5' <u>SAND</u> , med gr mod yelsh brn 10YR5/4
5							5-10' <u>SAND</u> , med-co gr mod yelsh brn 10YR5/4
10							10-15' <u>SAND</u> , w/1-2% gravels; med-co gr mod yelsh brn 10YR5/4
15							15-20' <u>SILTY SAND</u> , fn-med gr olive blk 5Y2/1; strong HC odor and stain
20							20-25' <u>SILTY SAND</u> , med gr, dk grnsh bry 5GY4/1; strong HC odor and stain
25							25-30' <u>CLAYEY SAND</u> , med-gr, olive blk 5Y2/1, strong HC odor and stain
30							30-33' <u>SANDY CLAY</u> , fn-med gr, olive gry 5Y4/1; faint HC odor; wet
35							33-45' <u>SANDY CLAY</u> , fn-med gr, lt olive gry 5Y5/2; faint HC odor; wet
40							
45							TD to 49'. Screened from 40' to 25', sand pack to 19'2"

GCL

WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number (X-1) GBR 301/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By MartinElevation ground 5394.26 Spud In (Fm.) QALRemarks Coordinates N 11014.84 E

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45	X						5' blank on bottom, bentonite plug to 13'11", cement grout w/5% bentonite to surface. Completed with 2" PVC.
50							
55							
60							
65							
70							
75							
80							
85							
90							

BOREHOLE LOG (WELL)

ECL

LOCATION MAP:

+ GBR-48

+ GBR-32

+ GBR-18

+ GBR-49

Page 1 of 2SITE ID: MONT & AND LOCATION ID: (NW) GBR-32

SITE COORDINATES (ft.):

N 12061.95 E 11143.06GROUND ELEVATION (ft. MSL): 5412 (TOPO)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER W/SPLIT SPOONSDRILLING CONTR.: WESTERN TECH.DATE STARTED: 4/21/87 DATE COMPLETED: 4/22/87FIELD REP.: J.P. KASZUBA, S.J. COLARULLO, R.T. HICKSCOMMENTS: 7" BOREHOLE, SPOONS WET AT 33'-36'.BEDROCK @ 37.5'. TD=45'1/4 1/4 1/4 SW 1/4 S22 T29N R12W

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	4.5	6.0				4.5-4.7' SAND, fn- to cs-gr, poor sorting, tan color.
										4.7-5.2' SAND, fn- to med-gr, mod sorting, tan color.
5										5.2-6.0' SAND, med- to cs-gr, mod sorting, tan color.
10				2	9.5	11.0				9.5-11.0' SAND, as above.
15				3	14.5	16.0				4.5-16.0' SAND, as above.
20				4	19.5	21.0				9.5-21.0' SAND, as above.
25				5	24.5	26.0				24.5-25.2' SILT, lt brn, includes ~10% fn-gr sand and ~10% clay.
										25.2-26.0' SAND, med- to cs-gr, mod sorting, lt brn
30				6	29.5	31.0				29.5-31.0' SAND, as above, includes ~10% silt

GCL

LOCATION MAP:

• GBR-49

1/4 1/4 1/4 SW 1/4 S22 T29N R12W

BEDROCK @ 37.5'. TD=45'

LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (SOIL)

BLM-18 BLM-21
BLM-19 BLM-22

+ GBR-50

+ GBR-48

Page 1 of 1

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-48

SITE COORDINATES (ft.):

N 12159.02 E 11142.65

GROUND ELEVATION (ft. MSL): 5416.14

STATE: New Mexico COUNTY: San Juan

DRILLING METHOD: Hollow Stem Auger/Continuous Sampler

DRILLING CONTR.: Western Technologies

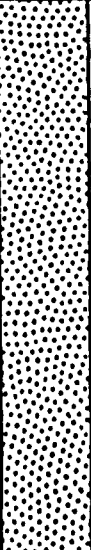
DATE STARTED: 17 Oct 1988 DATE COMPLETED: 18 Oct 1988

FIELD REP.: Martin Nee

COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-23' Sand - Mod yelsh brn, 10 YR 5/4, v fn to crs sand, uncons, subangular to subrounded, well sorted moist from 13-14', v minor grv at 23'.
5				2	3	8				
10				3	8	13				
15				4	13	18				
20				5	18	23				
25				6	23	28			SM	23'-26.5' Silty Sand - Mod yelsh brn, 10 YR 5/4, 75% v fn to med sand, 20% silt, 5% clay, uncons, subangular to subrounded, mod well sorted.
30				7	28	33			SC	26.5'-27.5' Clayey Sand - Mod yelsh brn, 10 YR 5/4, 70% v fn to med grained sand, 20% clay, 10% silt, uncons, subangular to subround, mod well sorted.
35				8	33	38			CL	27.5'-31' Silty Clay - Mod yelsh brn, 10 YR 5/4, 80% clay, 15% silt, 5% v fn sand.
40				9	38	43			SP	31'-35' Sand - Mod yelsh brn, 10 YR 5/4, fn to coarse grained sand, uncons, mod well sorted, subangular to subrounded, minor gravel <3%.
45										35'-37' Cobbles/Gravel Refusal - No core.
50										37'-44' Shale - Light olive grey, 5 YR 2/2. TD = 44.0', 2" ss blank 43.6' to 38.4', ss 20 slot screen 38.4-28.4', 2" ss to 3' above surface, 10-20 sand to 23', bentonite to 17.5', grout w/5% bentonite to surface, 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

Page 1 of 1

+ GBR-32

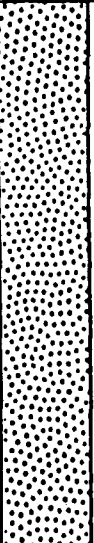
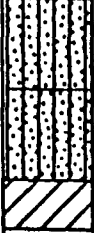
+ GBR-18

+ GBR-49

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-49
 SITE COORDINATES (ft.):
 N 11908.13 E 11168.02
 GROUND ELEVATION (ft. MSL): 5410.76
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger/Continuous Sampler
 DRILLING CONTR.: Western Technologies
 DATE STARTED: 17 Oct 1988 DATE COMPLETED: 17 Oct 1988
 FIELD REP.: Martin Nee
 COMMENTS: _____

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-22' Sand - Mod yelsh brn, 10 YR 5/4, v fn to coarse sand, uncons, sbang to sbrnrd, minor silt.
5				2	3	8				
10				3	8	13				7'-9' As above w/cobbles or boulders.
15				4	13	18				
20				5	18	23				15'-16' Same as 0-22 with 5% fn to med pebble gravel.
25				6	23	28			SM	22'-25' Silty Sand - Mod yelsh brn, 10 YR 5/4, 70% sand, v fn to coarse, moderately well sorted, uncons, sbang to sbrnrd, 20% silt, 10% clay, minor, v fn to med pebble gravel.
30				7	28	33			SC	25'-33' Clayey Silty Sand - Silty sand and stringers (6") of silty clay, mod yelsh brn, 10 YR 5/4, v fn to med grained sand, uncons, sbang to sbrnrd.
35										28' Appears moist.
40									SM	33'-36.5' Silty Sand - Dk yelsh or, 10 YR 6/6, 80% sand, v fn to crs, uncons, sbang to sbrnrd, well sorted, 20% silt, v minor clay.
45									SM	36.5'-40' Silty Sand - Lt olv brn, 5 YR 5/6, v fn to med grained sand, uncons, mod well sorted, sbang to sbrnrd, 5% clay, 15% silt.
50									SC	40'-42.5' Clay - Lt blsh grey, 5B 7/11.
										TO = 42.5', 2" ss blank 38.5' to 36.3', ss 20 slot screen 36.3' to 25.9' 2" ss blank to 2.1' above surface, 10-20 sand to 21.0', bentonite to 16.45', grout with 5% bentonite to surface. 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

Page 1 of 1

BLM-17.
 BLM-18
 BLM-19

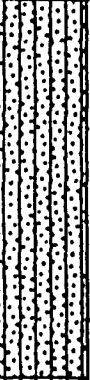
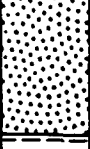
BLM-20
 BLM-21
 BLM-22

+ GBR-50

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-50
 SITE COORDINATES (ft.):
 N 12257.74 E 11067.82
 GROUND ELEVATION (ft. MSL): 5413.13
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger/Continuous Sampler
 DRILLING CONTR.: Western Technologies/Continuous Sampler
 DATE STARTED: 19 Oct 1988 DATE COMPLETED: 19 Oct 1988
 FIELD REP.: Martin Nee
 COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SM	0'-15' <u>Silty Sand</u> - Mod yelsh brn, 10 YR 5/4, v fn to coarse sand, <5% fn to med pebble gravel, approx 15% silt, uncons, well sorted, sbang to sbrndd.
				2	3	8				
5										
				3	8	13				
10										15'-23' Same as 0-15 with no gravel.
				4	13	18				
15										
				5	18	23				
20									CL	23'-31' <u>Clayey Sand</u> - Mod yelsh brn, 10 YR 5/4, 20% clay, 10% silt, v fn to coarse sand, uncons, well sorted, sbang to sbrndd.
				6	23	28				
25										
				7	28	33				
30									SP	31'-37' <u>Sand</u> - Mod yelsh brn, 10 YR 5/4, <5% silt, <5% gravel, fn to coarse sand, uncons, mod well sorted, sbang to sbrndd.
				8	33	38				
35										
				9	38	42.5				
40										37'-43.0' <u>Carbonaceous Shale</u> - dusty yelsh brn, 10 YR 2/2, mod well cons, minor Fe staining, <2% gravel.
45										
50										TD = 43.0', 2" ss blank 42.5' to 37.26', ss 20 slot screen 37.26' to 26.91' 2" ss blank to 4.14' above surface, 10-20 sand to 20.19', bentonite to 15.44', grout with 5% bentonite to surface, 5"x6' cement filled steel guard pipe, 4'x4' concrete slab.

ATTACHMENT 2

**Borehole Logs for
GBR-1 through 38
GBR-40 through 52
and
SHS-1 and 2**

Page 1 of 1

1/4 NE 1/4 NW 1/4 NW 1/4 S 27 T 29 R 12 State New Mexico

Spud Date 12/20/85 Completion Date 12/20/85

Logs Run Lithology from cuttings Logged By J.C. Hunter

Elevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.

Remarks Drilled With Hollow-Stem Auger (CME-55)

Depth

Litho
recov

Samples/Footage

Lithology/Remarks

0.0-10.0 (10.0') FILL: very coarse cobbles and small boulders of quartzite w/sand and gravel; dark gray; dark hydrocarbon stain and odor below 2.5'; damp.

8512200850/10.0'

10.0-20.0' (20.0') SANDSTONE : yellow-gray brown; silty and poorly sorted; fine-med grained; damp' faint hydrocarbon odor 10.0-15.0' dryer with no odor 15.0'-20.0'.

8512200900/15.0'

dryer with no odor 15.0'-20.0'.

8512200916/20.0'

Borehole located on N side of old burn pit; 90.0' 165° to south
fire hydrant' borehole backfilled w/cuttings and bentonite plug

85122000850 : 1 VOA, cuttings

8512200900 : 1 VOA, 1 Whirlpack, split spoon

8512200916 : 1 VOA, 1 Whirlpack, split spoon

Client Montgomery & Andrews Well Number GBR-2

1/4 NE 1/4 NW 1/4 NW 1/4 S 27 T 29 R 12 State New Mexico

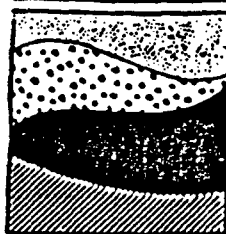
County San Juan Contractor Western Technology

Spud Date 12/20/85 Completion Date 12/20/85

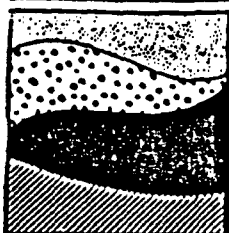
Logs Run Lithology from cuttings Logged By J.C. Hunter

Elevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.

Remarks Drilled with Hollow-Stem Auger (CME 55)



		Elevation	Spud In (Fm.)	FRT and/or Airmas Fm.
Depth	Litho Recor	Remarks Drilled with Hollow-Stem Auger (CME_55)		
		Samples/Footage	Lithology/Remarks	
0			0.0'-15.0' (15.0') Fill; very coarse cobbles and small boulders of quartzite w/sand and gravel; faint hydrocarbon odor 5.0'-10.0'; strong hydrocarbon odor 10.0'-15.0'; free water level encountered @ 10.0'; Hydrocarbon stains 5.0'-15.0'.	
5				
10				
		8512201046/12.5'		
15			15.0'-25.0' (10.0') SANDSTONE : grades from medium gray (15.0-17.5') to yellow gray (17.5'-25.0'); strong hydrocarbon odor and some stains 15.0'-17.5'; faint odor and no stain 17.5'-25.0'; sand is fine-med grained, poorly sorted, silty; wet to 25.0'.	
20				
TD=25.0 * 25				
30			Borehole located in center of old burn pit; 73.0', 148° to south hydrant; borehole backfilled with cuttings and bentonite plug @ bottom and @ top of water.	
			8512201046 : 1 VOA, 1 whirlpack, cuttings	



Client Montgomery & Andrews Well Number GBR-3
1/4 NE 1/4 NW 1/4 NW 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technology
Spud Date 12/20/85 Completion Date 12/20/85
Logs Run Lithology from cuttings Logged By J.C. Hunter
Elevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.
Remarks Drilled with Hollow- Stem Auger (CME-55)

Depth

Litho
recor

Samples/footage

Lithology/remarks

0

0.0'-5.0' (5.0') FILL: very coarse cobbles and small boulder
of quartzite; some sand and gravel; gray-gray brown; dry;
faint hydrocarbon odor.

5

5.0'-7.5' (2.5') SANDY FILL: sand & gravel with some cobbles
and boulders; brownish gray; damp; faint hydrocarbon odor.

10

7.5'-12.5' (5.0') SANDSTONE: yellow-brown; fine grained;
poorly sorted and silty; damp; very faint hydrocarbon odor;
no stain.

TD=12.5'

(Refused auger)

15

Borehole located 51.0', 136" to south hydrant; backfilled
w/ cuttings and bentonite plug @ bottom. Probably at or
near south edge of burn pit.

20

25

30

Client Montgomery & Andrews Well Number GBR-41/4 NE 1/4 NW 1/4 NW 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologySpud Date 12/20/85 Completion Date 12/20/85Logs Run Lithology from cuttings Logged By J.C. HunterElevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.Remarks Drilled with Hollow-Stem Auger (CME-55)

Depth

Litho
Recor

Samples/footage

Lithology/remarks

0

0.0'-5.0' (5.0') FILL: Very coarse cobbles and small boulder
brown-gray; dry, faint hydrocarbon odor; no stain.

5

5.0'-25.0' (20.0') SAND and STONE: gray-brown; soft and
loose 5.0'-13.0', becomes harder and consolidated 13.0'-25.0';
damp from 5.0'-10.0'; saturated 10.0'-25.0'; hydrocarbon odor
and some stain 5.0' - 25.0'; water level poorly defined, about
10.0'.

V?

10

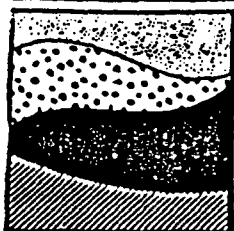
15

20

TD=25.0'
refused auger.

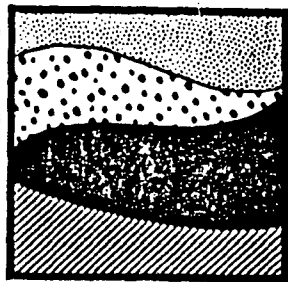
25

Located 97.0', 138° to south hydrant; backfilled with
cuttings and bentonite plug @ bottom.



Client Montgomery & Andrews Well Number GBR-5
1/4 NE 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
County San Juan Contractor Western Technology
Spud Date 12/20/85 Completion Date 12/20/85
Logs Run Lithology from cuttings Logged By J.C. Hunter
Elevation 5390' topo Spud In (Fm.) Fill and/or Animas Fm.
Remarks Drilled with Hollow-Stem Auger (CME-55)

Depth	Litho	recovery	Samples/footage	Lithology/remarks
0	0.0'-5.0'	0.0'-5.0'		
16	16.0'-20.0'	16.0'-20.0'		
20	20.0'-33.0'	20.0'-33.0'	8512201240/20.0'	5.0'-55.0' (50') SANDSTONE: dark gray-yellow gray; fine grained; poorly sorted; silty; strong hydrocarbon stain and odor 5.0'-25.0'; faint stain and some odor 25.5'- 55.0' ; water level at approximately 33.0', odor persists in saturated sand to total depth.
5/30/86 33'	33.0'-40.0'	33.0'-40.0'		
40	40.0'-55.0'	40.0'-55.0'		
50	55.0'-60.0'	55.0'-60.0'	8512201410/55.0'	
TD=55.0'	55.0'-60.0'	55.0'-60.0'		Borehole covered and left open for later ground water sampling. Located below SW corner of south pad.
refused auger				
60	60.0'-65.0'	60.0'-65.0'	8512201240 : 1VOA, 1 whirlpack, cuttings	
			8512201410 : 1VOA, 1 whirlpack, cuttings	
			TD 53'6" TOC, screened from 31'6" to 51'6"	
	65.0'-70.0'	65.0'-70.0'	gravel to 26'8", 50 lb. Bentonite @ 26'8"	
			Backfill to surface	

Client Montgomery & AndrewsWell Number GBR-61/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 9/9/86 Completion Date 9/9/86Logs Run Lith from cuttings Logged By MartinElevation Spud In (Fm.) Remarks Drilled with Air Rotary

DEPTH

LITHO.

RECOV.

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

0'

0'-very coarse-grained cobbles, sand and gravel; dark brown with hydrocarbon odor.

10'

10'-coarse-grained sand and gravel with some cobbles; dark brown with hydrocarbon odor.

20'

20'-fine-grained sand; well-sorted; medium brown with hydrocarbon odor.

30'

30'-fine-grained sand; well-sorted; dark brown-black; strong hydrocarbon odor.

35'-sandstone; mixed gray-green/yellow-brown with hydrocarbon odor.

40'

40'-sandstone; coarse-grained well-sorted; yellow-brown; faint hydrocarbon odor.

45'-sandstone; coarse-grained, poorly-sorted; yellow-brown with some clay.

50'

50'-fine-grained, poorly-sorted; gray yellow/brown; water present.

55'-shale; gray.

60'

60'-shale; minor medium-grained gravel, poorly-sorted; dark gray.

65'-shale; dark brown.

70'

TD of 65'4" from surface, screened from 60'4" to 20'4" gravel to 12', bentonite to 6'5", cement grout w/5% bentonite to surface. Completed as 6" PVC recovery well with identical casing of 1" PVC attached to outside.

Client Montgomery & Andrews Well Number GBR 71/4 1/4 1/4 1/4 S27 T29 R12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
							0-5' COBBLES AND SAND, 1/8"-5" in diam w/minor sand; fn-co gr; mod ylsb brn 10YR5/4
5							5-7.5' SAND AND GRAVEL, dusky hlsh brn 10YR2/2; med-co gr sand
							7.5-10' SAND AND GRAVEL, as above; at 10' hit hydrocarbon-stained sand; brnsh blk 5YR2/5
10							10-12.5' SAND, w/1-2% small gravel; 1/2"-1" in diam; olive gry 5Y4/1; fn-co gr; hydrocarbon odor and stain
							12.5-15' SAND, w/some gravels; 2-3% gravel, 1/4"-1 1/2" diam; sand olive gry 5Y4/1 and fn-co gr
15							15-16' SAND, lt olive gry 5Y5/2; v fn-fn gr; slight hydrocarbon odor
							16-17' SILTY SAND, olive gry 5Y4/1; v fn gr; hydrocarbon odor
20							17-17.5' SAND, olive gry 5Y4/1; v fn gr hydrocarbon odor
							17.5-18.0 SAND, lt olive gry 5Y5/2; v fn gr; slight hydrocarbon odor
							18-22.5' SAND, v fn gr w/some silt; lt olive gry 5Y5/2; slight hydrocarbon odor
25							22.5-25.0' SAND, as above, slight hydrocarbon odor
							25-27' GRAVEL AND SAND, hydrocarbon-stained
							27-30' SAND, hydrocarbon-stained; grades from olive blk 5Y2/1 to blk N1; 1/4"-1/2" diam cobbles; fn fr sand
30							
							33-35' SANDSTONE, weathered lt olive brn 5Y5/6; fn-med gr w/some silt; no hydrocarbon odor, no moisture
35							35-36' CLAY, olive gry 5Y3/2; hydrocarbon odor; moist; minor sand
							36-40' SAND AND SOME SILT, fn gr dusky yel 5Y6/4
40							40-41' SAND, w/some silt, fn gr dk yelsh orng 10YR6/6, some gravel and quartzite at 40'
							41-43.5' SAND, w/some silt, fn gr minor gravels, quartzite
							43.5-46' SAND, grades from med-co gr sand to fn silty sand, dk yelsh orng
45							



WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number GBR 71/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks _____



DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							
							46-47.5' SILTY SANDSTONE, lt gry to lt olive gry
							N7 to 5Y6/1
50							
							TD to 48' from surface, screened from 41'7.5" to 31'7.5",
							6' blank on bottom, gravel pack to 24'10", bentonite
							plug to 19'8" , cement grout w/5% bentonite to surface.
							Completed well with 2" PVC.
55							
60							
65							
70							
75							
80							
85							
90							

Client Montgomery & Andrews Well Number (P-4) GBR 8
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9/30/89 Completion Date 10-1-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							0-5' <u>SILTY SAND</u> , w/some cobbles, fn-med gr dk yelsh brn color 10YR4/2
5							5-10' <u>SAND</u> , med-co gr; dk yelsh brn color 10YR4/2
10							10-25' <u>COARSE-GRAINED SAND</u> , dk yelsh brn color 10YR4/2
15							
20							
25							25-30' <u>CLAYEY SAND</u> , fn-med gr; dk yelsh brn color 10YR4/2
30							30-35' <u>SANDY CLAY</u> , v fn-med gr, dk yelsh brn color 10YR4/2
35							35-38' <u>SANDY CLAY</u> , fn-med gr olive gry color 5Y4/1; strong hydrocarbon odor
40							38-38.33' <u>SANDY CLAY</u> , fn-med gr mixed color of mod yelsh brn 10YR5/4 and olive gry 5Y4/1; strong hydrocarbon odor
45							38.33-39.17' <u>SILTY SAND</u> , fn-med gr olive gry color 5Y4/1 strong hydrocarbon odor
							39.17-39.5' <u>SAND</u> , co gr olive gry color 5Y4/1, strong hydrocarbon odor

Well Number (P-4) GBR 8

1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico

Contractor Western Technologies

Completion Date 10-1-86

Logged By Martin

Spud In (Fm.)

Remarks



		Remarks					
DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
45							
							TD to 58' from surface. Screened from 53' to 38', 5'
							blank on bottom. Gravel pack to 30', bentonite plug
							to 25', cement grout to surface. Completed with 2" PVC.
50							
55							
60							
65							
70							
75							
80							
85							
90							

Client Montgomery & Andrews Well Number GBR 9
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9-29-86 Completion Date 9-30-86
 Logs Run Lithology Logged By Martin/Kaszuha
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-2.5'	SAND, med-fn gr w/rare pebbles; mod yelsh brn 10YR5/4
						2.5-5'	SAND, med-fn gr w/rare pebbles; mod yelsh brn 10YR5/4
5						5-7.5'	SAND, med-fn gr w/rare pebbles; mod yelsh brn 10YR5/4
						7.5-10'	CLAYEY SAND, med-fn gr; mod yelsh brn 10YR5/4
10						10-12.5'	CLAYEY SAND, co gr w/1-2% gravels; mod yelsh brn 10YR5/4
						12.5-15'	CLAYEY SAND, med-fn gr; mod yelsh brn 10YR5/4
15						15-17.5'	same as above
						17.5-20'	SAND, med gr; mod yelsh brn 10YR5/4
20						20-22.5'	SAND, med gr, w/occasional pebbles; mod yelsh brn 10YR5/4
						22.5-25'	same as above
25						25-27.5'	SAND, med gr, w/occasional pebbles; mod yelsh brn 10YR5/4
						27.5-30'	SANDY CLAY, med gr sand; dk yelsh brn 10YR4/2, faint HC odor
30						30-32.5'	CLAYEY SAND, fn-med gr; dk yelsh brn 10YR4/2, faint HC odor
						32.5-40'	SANDY CLAY, fn-med gr; olive gry 5Y4/1, strong HC odor
35							
						40-45'	CLAY AND SAND, fn gr sand, dk yelsh orng 10YR6/6; clay is lt olive gry 5Y5/2
40							
						45-47.5'	SANDY CLAY/CLAYEY SAND, dusky ye1 5Y6/4
45							



WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number GBR 91/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date 9-29-86 Completion Date 9-30-86Logs Run Lithology Logged By Martin/Kaszuba

Elevation _____ Spud In (Fm.) _____

Remarks _____

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							47.5-52.5' <u>SANDY CLAY</u> , med gr sand; lt olive gry 5Y5/2
50							52.5-52.9' <u>SILT</u> , olive gry 5Y4/1
							52.9-57.5' <u>SHALE</u> , grnsh gry 5GY6/1
55							57.5-62.5' <u>SILT</u> , grnsh gry 5GY6/1
60							TD of 65' from TOC. Completed with 2" PVC/ss flush joint. Sand pack to 37', bentonite to 18 1/2' (1.5 bags) cement grout w/5% bentonite to surface. Screened from 50-60', ss up to 35', PVC from 35' to TOC.
65							
70							
75							
80							
85							
90							

Client Montgomery & Andrews Well Number (P-2) GBR 101/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date 9/29/89 Completion Date 9-29-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

0

0-10' SAND, med gr poorly sorted w/some cobbles;
mod yelsh brn color 10YR5/4

5

10

10-15' SAND, co-med gr mod yelsh brn color 10YR5/4
poorly sorted

15

15-20' SAND, co-med gr poorly sorted; dk yelsh
brn color 10YR4/2

20

20-30' SAND, w/5% gravel co-med gr, poorly sorted;
dk yelsh brn color 10YR4/2, faint HC smell

25

30

30-33' SANDY CLAY, fn-med gr dk yelsh brn color
10YR4/2, faint HC odor

35

33-33.33' SILTY SAND, fn-med gr; olive gry color 5Y4/1
well sorted, strong HC color33.33-33.75' SAND, fn-med gr well sorted; lt olive gry
5Y5/2, strong HC odor33.75-34.67' SILTY SAND, fn-med gr olive gry color
5Y4/1; well sorted; strong HC odor

40

38-38.92' CLAYEY SAND, fn-med gr olive gry color
5Y4/1; strong HC odor38.92-39' SAND, fn-med gr grysh blk color N2; strong
HC odor39-39.67' CLAYEY SAND, fn-med gr olive gry color
5Y4/1, strong HC odor

45

39.67-39.83' CLAYEY SAND, co-med gr dusky yel color
5Y6/4; faint HC odor



Client Montgomery & Andrews Well Number (P-2) GBR 10
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date _____ Completion Date 9-29-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks

DEPTH	LITHO.	REC'D.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							TD to 45' from surface. Screened from 39' to 29' 5' blank on bottom. Gravel pack to 23' bentonite plug to 18.5'; cement grout to surface. Completed with 2" PVC.
50							
55							
60							
65							
70							
75							
80							
85							
90							



Client Montgomery & Andrews Well Number GBR-11

1/4 SW 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico

County San Juan Contractor Western Technologies

Spud Date 4/1/86 Completion Date 4/1/86

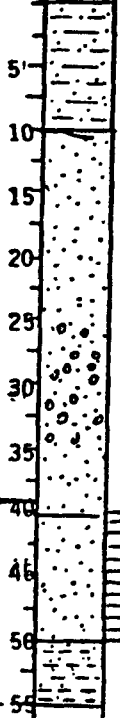
Logs Run Lithology from cuttings Logged By J.C. Hunter

Elevation 5388' (topog) Spud In (Fm.) Nacimiento (Tertiary)

Remarks Drilled w/HSA, completed as galv. steel piezometer (2.0")
80.7', 245 to N end of "GIANT" sign

Depth

Litho
Recov



0'-10' (10') SILTY SAND: mod. yellow-brown (10yr ⁵/₄); fine to med grained, poorly sorted, rounded to subrounded, no stain or odor.

10'-40' (30') SAND: med brown (5yr ⁴/₄); med to coarse grained, med. sorted, subround to angular, no stain or odor.

25'-35': Quartzite and granite pebbles, subrounded, ¹/₈" - 1".

40'-50' (10') SAND: Light olive gray (5y ⁶/₁) to olive gray (5y ⁴/₁) med grained, subangular, med sorted; distinct hydrocarbon stain and odor

50'-55' (5') CLAYEY SAND: Dark yellow brown (10yr ⁴/₂); med grained sand with streaks of blackish red (5r ²/₂) to med gray (NG) sticky wet clay; med hydrocarbon odor.

Completed as 2.0" galv steel piezometer

TD=57.2 from top of pipe, stickup=2.7

Screen from 40'-50', 5' blank on bottom

Screen packed w/washed sand, bentonite plug (1/2 sack) @30-35'

50' 7"

10' 1 1/2' H2O

W.L.
39.75
4/2/86

TD@ 55

Client Montgomery & Andrews Well Number GBR 12

1/2 1/2 1/2 1/2 S 1/2 T 1/2 R 1/2 State New Mexico

County San Juan Contractor Western Technologies

Spud Date 4/2/86 Completion Date 4/3/86

Logs Run Lithology from cuttings Logged By Nicholas

Elevation _____ Spud In (Fm.) _____

Remarks

Auger Refused @ 42"

Depth

Litho
recov

0

0-5' GRAVEL: $\frac{1}{4}$ " - 12" cobbles predominately gaurtzite poorly sorted, subrounded to sub-angular.

5

10

15

5'-15' SILTY SAND: moderate yellowish brown, (10yr 5/4), fine to med grained, moderately well sorted.

20

25

15'-25' CLAYED SILTY SAND: light olive gray, (5y6/1), fine to med. grained, moderately well sorted.

30

35

25'-35' SILTY CLAY: dark yellowish brown, (10yr 4/2)

40

TD=42'

No cuttings would come up hole after 35'

Auger Refused at 42'

Page _____ of _____

 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ S T R State New Mexico

Spud Date 4/2/86 Completion Date 4/4/86

Logs Run Lith. from cuttings and cores Logged By J. Hunter

Elevation 5392' topo Spud In (Fm.) Nacimiento

Remarks NW corner, South parking area

Depth

Litho
recov

D

5

10

15

20

25

30

35

37' 2"

40

45

TD=48'

50

0-20' sand: moderate yellowish brn, med to fine

grained

20-25' clayey sand: mod brown, very fine sand with stringers

of yellowish gray clay

25-30' sand: mod brown to yellowish brown, fine-med gr.,

poorly sorted, locally clayey

30-35' oil-stained (?) sand: mod gray to yel gray, fine

gr., faint HC odor, stain increases w/depth

35-48' sand/sandstone: mod yel brn to yel brn, very fine gr;

poorly sorted, silty

Completed as 2.0" PVC piezometer, screen

32'-42'.

Well Number GBR-14

County San Juan

Contractor Beeman Bros. Drilling Co.

Spud Date 9/10/86

Completion Date 9/10/86

Logs Run Lith from cuttings

Logged By Martin

Elevation

Spud In (Fm.)

Remarks Drilled with Air Rotary

DEPTH	LOG	RE	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0'							0'-coarse-grained, poorly-sorted sandy; medium brown.
10'							10'-coarse-grained, well-sorted clayey sand; mixed medium brown/dark gray-black; stained; strong hydrocarbon odor.
20'							20'-coarse-grained, poorly-sorted clayey sand; light gray brown, no hydrocarbon odor.
30'							30'-coarse-grained, well-sorted clayey sand; medium to dark gray; faint hydrocarbon odor.
40'							35'-poorly-sorted clayey sand and gravel; medium brown.
50'							40'-poorly-sorted sandy gravel; dark brown.
60'							45'-poorly-sorted clayey sand and gravel; gray-brown.
70'							50'-poorly-sorted gravel; light gray.
							55'-well-sorted clayey gravel; medium gray.
							60'-well-sorted coarse-grained gravel; medium gray-brown.
							65'-poorly-sorted sand and gravel; dark gray.
							TD to 65' from surface, screened from 60' to 20', gravel pack 10'10", bentonite plug to 4'4", cement grout w/5% bentonite to surface completed as 6" PVC recovery well with identical 1" PVC casing attached to side.

Client Montgomery & Andrews Well Number (P-1) GBR 15
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9/25/89 Completion Date 9-28-86
 Logs Run Lithology Logged By Martin
 Elevation Spud In (Fm.)

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-5'	SAND, med gr; mod brn color 5YR4/4
						5-7'	SAND, med gr; mod brn color 5YR4/4, HC stain
5							
						7-10'	SAND, med gr; blk N1; strong HC odor and stain
						10-15'	CLAYEY SAND, med gr, olive gry color 5Y4/1; HC odor
10							
						15-20'	CLAYEY SAND, med gr w/2-5% gravels; olive gry color 5Y4/1, HC odor
15							
						20-25'	SILTY SAND, med gr olive gry color 5Y4/1 faint HC odor
20							
						25-30'	CLAY, fine to med gr, dark greenish-gray color 5GY4/1, HC odor
25							
						30-35'	SANDY CLAY, fn-med gr olive gry 5Y3/2; HC odor
30							
						35-40'	CLAYEY, SILTY SAND, fn gr lt olive gry color 5Y5/2; HC odor
35							
						40-45'	CLAYEY SAND, fn-med gr; grysh olive color 10Y4/2; faint HC odor
40							
						45-60'	SANDY CLAY, fn-med gr; grnsh gry color 5GY6/1; HC odor
45							

Bedrock and water at 36.0'

Page _____ of _____

 $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ S T R State New Mexico

Spud Date 4/4/86 Completion Date 4/4/86

Logs Run Lith. from cuttings and cores Logged By J. Hunter

Elevation 5414 topo Spud In (Fm.) Fill

Remarks w end of burn pit

Depth

Litho
recov

0

5

10

12.25'

15

20

25

0-12' Fill: Gray to brn gry, very coarse boulders, cobbles

and sand, local HC stain & odor

12-25' Sandstone: mod yel brn, fine gr, very poor sorted,

subrounded, mod HC odor

Completed as 2.0" PVC piezometer,

screen 10-20'.

Client Montgomery & Andrews Well Number GBR 171/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 5/28/86 Completion Date 5/28/86Logs Run Lith from cuttings Logged By NICHOLAS

Elevation _____ Spud In (Fm.) _____

Remarks Drilled With Air Rotary, completed as a 2" flush joint
PVC and SS Well

Depth

Litho
Recov0-5' (5') sand, mod yellowish brn (10YR 5/4), very fine to coarse grained sand

5

5-10' (5') clayey sand, dk yellowish brn (10YR 4/2) fine to coarse grained sand

10

with clay stringers

15

10-20' (10') clayey sand, mod yellowish brn (10YR 5/4) fine to med grained sand

20

with clay stringers

25

20-45' (25') silty sand, mod yellowish brn, (10YR 5/4) fine to med grained sand

30

33'-6" 5-29-86

35

grades coarser at 45'

40

45-60' (15') sand, mod yellowish brn (10YR 5/4) to lt olive grey (5Y 5/2), fine to

45

coarse grained sand with some cobbles

50

60-68' (8') silty sand, greenish grey (5GY 6/1), fine to coarse grained sand

55

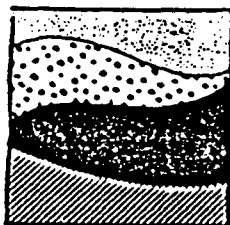
w/some cobbles (1/2"-3"), 10-15%.

60

TD 68' to TOC, screened from 31'-51' ss screen, ss blanks on bottom,

65

PVC risers. Gravel packed to 28', 100 lb bag Bentonite @ 28', Backfillto surface



WELL LOGGING FORM

Page _____ of _____

Client Montgomery & Andrews Well Number GBR 18

1/4 1/4 1/4 1/4 S 1/4 T 1/4 R 1/4 State New Mexico

County San Juan Contractor Western Technologies

Spud Date 4/4/86 Completion Date 4/17/86

Logs Run Lith from cuttings and cores Logged By J. Hunter

Elevation _____ Spud In (Fm.) _____

Remarks drilled w/ HSA

Depth

Litho
recov

0

5

10

12'4"

15

20

25

30

35

40

45

50

0-10' (10') fill: very coarse cobbles, some sand and
gravel

10'-12.5' (2.5') sandy shale, yellowish brn.

12.5-25' (12.5') sandstone: yellowish brn, med to fine grained
poorly sorted

25'-30' shale: brn gry to rd brn, fissile, clayey, damp

30-38' siltstone: gry brn to brn gry; clayey, same thin,

irregular sand stringers 1/4"-1/2"; moist

38-50' silty sandstone: yel brn to yel gry, very fine grained,
poorly sorted, locally clayey

Completed as 2.0" galv. steel piezometer.

screen 35'-45'.

Client Montgomery & Andrews Well Number (Obs W2) GBR 19
1/4 1/4 1/4 1/4 S27 T29 R12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 10-1-86 Completion Date 10-1-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							0-5' SAND, fn-med gr, mod yelsh brn color 10YR5/4
5							5-10' SAND, med-co gr; mod yelsh brn color 10YR5/4
10							10-20' CLAYEY SAND, med-co gr; mod yelsh brn color 10YR5/4
15							
20							20-25' SAND, med gr; mod yelsh brn color 10YR5/4
25							25-30' SANDY CLAY, v med-co gr; dk yelsh brn color 10YR4/2
30							30-33' CLAY, fn gr; dk yelsh brn color 10YR4/2
35							33-35' SILTY SAND, fn gr lt olive gry color 5Y5/2; HC odor
40							35-35.83' SILTY SAND, fn gr dk grnsh gry color 5GY4/1
45							35.83-36.17' SAND, med gr blk N1; wet w/HC strong HC odor
							36.17-36.5' SAND, med gr lt olive gry color 5Y5/2; faint HC odor
							36.83-38' SAND, co gr mod yelsh brn color 10YR5/4; no HC odor
							38-41.33' SANDY CLAY, fn gr dk yelsh brn color 10YR4/2
							41.33-41.67' SAND, fn-med gr; dk yelsh brn color 10YR4/2
							41.67-42.33' CLAYEY SAND, v fn-med gr w/some cobbles and gravels; dk yelsh brn color 10YR4/2



WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number GBR 191/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 10-1-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks

LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

45

42.92-43' SAND, co gr yelsh gry color 5Y7/2

50

43-48' CLAY, fn gr; olive gry color 5Y4/1; faint
HC odor

55

TD to 51' from surface. Screened from 46' to 31', 5'
blank on bottom. Gravel pack to 25', bentonite plug to
20' cement grout to surface. Completed with 2" PVC.

60

65

70

75

80

85

90



Client Montgomery & Andrews Well Number GBR 20
NW 1/4 SE 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 4/18/86 Completion Date 4/18/86
 Logs Run Lithology from cuttings Logged By Nicholas
 Elevation 5394'(topo) Spud In (Fm.) Nacimiento

Remarks Drilled with HSA, no continuous sampler used.

Depth

Litho
recor

0
5
10
15
20
25
30
35
40
45

0-20' (20') SAND & GRAVEL : Moderate yellowish brown (10yr 5/4), med to coarse grained sand with 5%-30% gravel (1/2"-2"), No HC Odor.

20-30' (10') SILTY CLAY: Med light gray (N6) to med dark grey (N4), fine to med grained with some silt, hard drilling at 34', no HC ODOR.

30-48.5' (18.5') SANDSTONE: Med lt grey (N6) to med dk grey (N4), fine to med grained with some silt, hard drilling at 34', No HC odor.

WL 5-1 38.0'

TD=48'

Completed as 2" PVC Piezometer
 Stickup 1' 10" TD 43'10" from top of casing
 Screened interval 27'-37'
 Sand to 25', Bentonite 2/3 Bag @ 25'
 Backfill to 6', Bentonite 1/3 Bag @ 6'

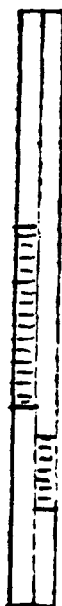
Client Montgomery & Andrews Well Number GBR 21
NE ¼ NW ¼ NW ¼ NW ¼ S 27 T 29N R 12W State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 4/15/86 Completion Date 4/16/86
 Logs Run Lithology from cuttings Logged By R Nicholas
 Elevation 5398' (topo) Spud In (Fm.) Nacimiento

Remarks

Drille with HSA, completed as 2' PVC Piezometer

Depth

Litho
recov



0

5

10

15

18' 3"

20

25

30

35

40

45

50

55

0'-5' (5') SAND: Brown, fine to med grained

5'-20' (15') SILTY SAND: Brown, med to coarse grained with minor small cobbles.

20'-38' (18') SANDY SHALE: Brown, fine grained, grades to yellowish brown at 25'.
HC ODOR.

38'-46' (8') SANDSTONE: Med. bluish gray (5B5/1), med to coarse grained with local
small cobbles (½"-1½") HC ODOR and sheen in sampler.

Dual Completion as 2" PVC Piezometer

Stickup 3'3" TD 40'3" and 41'3" from top of casing

Screened intervals 17-32' and 33-38'

Caved in snad to 6'. Bentonite (¾ Bag) @ 6'

Bentonite (½ Bag) @ 2'



Client Montgomery & Andrews Well Number GBR 22
NE 1/4 NW 1/4 NW 1/4 NW 1/4 S T R State New Mexico
County San Juan Contractor Western Technologies
Spud Date 4/15/86 Completion Date 4/16/86
Logs Run Lithology from cuttings Logged By Hicks/Nicholas
Elevation 5394.5" (topo) Spud In (Fm.) Nacimiento

Remarks

Drilled with HSA, continuous sampler and spit spoon used
completed as 2' PVC Piezometer

Depth

Litho
Recor

0	0-2.5' (2.5')	<u>SAND & GRAVEL FILL</u> : Brown, some HC odor from surface spills
5		
10	2.5'-15.0' (12.5')	<u>SAND</u> : Mod yellowish brown (10yr5/4) (2.5'-12.5') grades to Lt. brown at 12.5' (5yr5/6), med grained, well sorted contains gravels (12/5'-15.0') HC Odor
15		
20	15.0-22.5' (7.5)	<u>CLAYEY SAND</u> : Brown, grades to dark brown at 17.5', some clay balls increasing with depth, HC odor.
25		
30	22.5'-32.5' (10')	<u>SAND</u> : Brown, fine to med grained, well sorted, clean, some clay from (22.5'-27.5'), black stained sand at 30', HC Odor.
35		
40	32.5'-38.0' (5.5')	<u>SANDSTONE</u> : Green to yellow green, consolidated grades to yellow brown at 36.5'.
45	38'-43' (5')	No Returns.
50	43'-48'	<u>SANDSTONE</u> : gray, med to coarse grained, no HC odor

4/16 32'8"

TD=48'

Completed as 2' PVC Piezometer

Stickup 3'5" TD 49.5' from top of casing

Screen from 32'-42', 4' blank on bottom

Sand to 32', Backfill to 26', 3/4 Bag Bentonite @ 26'

Backfill to 2', 1/4 Bag Bentonite @ 2'



Client Montgomery & Andrews Well Number GBR 23
SW 1/4 NE 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 4/16/86 Completion Date 4/16/86
 Logs Run Lithology from cuttings Logged By Nicholas
 Elevation 5401' (topo) Spud In (Fm.) Nacimiento
 Remarks Drilled With Hsa, continous sampler used 22'-48.5'

Depth

Litho
Recov

4/16 WL24'4"

TD = 48.5'

0-15' (15') SILTY SAND: mod yellowish brown (10yr 5/4), very fine grained, with small amounts of cobbles (1/2"-1") , grades coarser at 10', HC Odor.

15'-22' (7') SAND & GRAVEL: Mod yellowish brown (10yr 5/4) to pale brown (5yr 5/2), med to coarse grained sand with cobbles (1/2"-3") , HC Odor

22'-26' (4') SHALE: Grayish Brown (5yr 3/2) to yellowish grey (5y7/2), localized sand lenses, some weathering in shale, no HC Odor.

26'-48.5' (22.5) SANDSTONE: Weathered, light olive gray (5y5/2) from 26-27', med lt gray (N6) to med gray (N5) , fine to med grained, slight HC odor(?) from 26'-27'.

Completed as 2" PVC Piezometer

Stickup 3' TD 41'10" from top of casing

Screen from 23'10" to 33'10" 5' Blank on Bottom

Sand to 23', 2/3 Bag Bentonite @ 23', Backfill to 5', 1/3 Bag Bentonite at 5'

Client Montgomery & Andrews Well Number GBR 24
NW ¼ NW ¼ NW ¼ NW ¼ S 27 T 29N R 12 W State New Mexico
County San Juan Contractor Western Technologies
Spud Date 4/17/86 Completion Date 4/17/86
Logs Run Lithology from cuttings Logged By Nicholas
Elevation 5395' (topo) Spud In (Fm.) Nacimiento

Remarks

Drilled with HSA, continuous sampler used from 9'-49'

Depth

Litho
Recov0'-9' (9') SAND: Moderate yellowish brown, (10yr 5/4), med to coarse grained, No HC Odor9'-14' (5') SILTY SANDSTONE: Moderate yellowish brown (10yr 5/4) to olive gray (5y4/1)
weathered, very fine to fine grained, No HC Odor.14'-49' (35') SANDSTONE: lt olive grey (5y 6/1), fine grained, contains minor gravels
28' (1"-1½"), HC Odor at 29'

Dual Completion as 2' PVC Piezometer

Stickup 3'3" TD 41'3" and 46'3" from top of casing

Screened intervals 23-33' and 33'-43'

Caved to 33', sand to 22', Bentonite 2/3 Bag

@ 22', Backfill to 6', Bentonite 1/3 Bag @ 6'.

WL 24'4"

TD = 49'

Client Montgomery & Andrews Well Number GBR 25
NE 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
County San Juan Contractor Western Technologies
Spud Date 4/17/86 Completion Date 4/18/86
Logs Run Lithology from cuttings Logged By Nicholas
Elevation 5395' (topo) Spud In (Fm.) Nacimiento
Remarks Drilled with HSA, used continous sampler from 17'-48'

Depth

WL 32'

TD = 48'

Litho
RECORD

0'-17' (17') SAND: Mod yellowish brown (10yr5/4), med to coarse grained with some small cobbles from 5'-17', HC Odor

17'-24' (7') SHALE: Dark yellowish brown, (10yr4/2), with pale yellowish orange stringers (10yr8/6) from 23'-24', soft, slight HC Odor

24'-28' SANDSTONE: Moderate yellowish brown (10yr5/4) with streaks of dark yellowish orange (10yr 6/6), fine to med grained, weathered, NO HC odor.

28'-48' SANDSTONE: Ranges in color from lt gray (N7), to moderate yellowish brown (10yr5/4) from 28-33', greenish gray (5G6/1) to dark yellowish orange (10yr6/6) from 33'-43', med to coarse grained, grades coarser at 38', grades to lt gray (N7) at 43', contains small cobbles from 28-43', shale stringers from 43-48', no HC odor

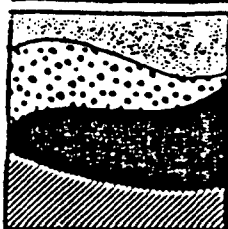
Completed as 2" PVC Piezometer

Stickup 2' 0" TD 50' to top of casing

Screened interval 33-43', caved to 35', sand to 23'

Bentonite 2/3 Bag @ 23', Backfill to 6'

Bentonite 1/3 Bag at 6'



Client Montgomery & Andrews Well Number GBR 26
NE 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12 W State New Mexico
County San Juan Contractor PSI Western Technologies
Spud Date 4/18/86 Completion Date 4/18/86
Logs Run lithology from cuttings Logged By Nicholas
Elevation 5396' (topo) Spud In (Fm.) Naco, oempt

Remarks Drilled with HSA, continuous sampler was not used.

Depth

Litho
RECOV0
5
10
15
20
25
30
35
40
45
50

4/23 WL 31'4"

TD = 50'

0-7' (7') SAND: moderate yellowish brown (10yr5/4), med to fine grained, well sorted,
no HC odor

7'-21' (14') SAND: HC stained, ranges from med dark gray (N4), grayish black (N2), to
med gray (N5), fine to med grained, contains cobbles at 15', clay lenses
from 12'-15' strong HC odor

21'-35' (14') CLAYEY SAND: HC stained, ranges in color from med gray (N5) to grayish
black (N2), very fine to fine grained, moist, HC odor.

35'-50' (15') SANDSTONE: med dark gray (N4), fine to med grained with some clay, wet HC
odor.

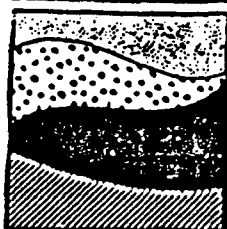
Completed as 2" PVC Piezometer

Stickup 1'6" TD 41'6" from top of casing

Screened interval 25-35', caved to 26'.

Sand to 23', Bentonite @23 2/3 Bag, Backfill to

5', Bentonite 1/3 Bag at 5'



Client Montgomery & Andrews Well Number GBR 27
NE 1/4 NW 1/4 NW 1/4 NW 1/4 S 27 T 29N R12W State New Mexico
County San Juan Contractor Beeman Brothers
Spud Date 4/23/86 Completion Date 4/23/86
Logs Run Lithology from cuttings Logged By Nicholas
Elevation 5397' (topo) Spud In (Fm.) Nacimiento
Remarks Drilled with Air Rotary, completed as 5" PVC Well

Depth

Litho
Recor

0

0-5' (5') SAND: Grayish orange (10yr7/4); fine to coarse grained, no HC odor

5

10

5-15' (10') SAND: Mod yellowish brown (10yr5/4); fine to med grained with some silt, contains some cobbles at 13', (2-3%)

15

20

15-20' (5') SAND & GRAVEL: Mod yellowish brown (10yr5/4); fine to med grained with some silt, contains 30% gravels

25

30

20-25' (5') SHALE: Dusky yellow (5y6/4)

WL 5/2 35'10"

35

40

25-67' (42') SANDSTONE: lt gray (N7), very fine to med grained, grades to mod yellowish brown (10yr5/4) from 32'-34'

45

50

Completed as 5" PVC well

55

Stickup 1'4" TD 68'4" from top of casing

60

Screen from 22-62', 5' Blank on Bottom

65

Sand to 18', Bentonite (lsack) 1 18'

TD=67'

70

Client Montgomery & Andrews Well Number GBR 281/2 1/2 1/2 1/2 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 5/27/86 Completion Date 5/27/86Logs Run Lith from cuttings Logged By NICHOLAS

Elevation _____ Spud In (Fm.) _____

Remarks Drilled With Air Rotary, completed as 6" PVC recovery well

Depth

Litho

Recov

0-10' (10') sand, mod. yelish brn (10YR 5/4), med to coarse grainedw/some cobbles.10-20' (10') sand, mod. yelish brn (10YR 5/4), coarse to med grainedwith some cobbles and lt brn clay stringers20-29' (9') sand, mod. yelish brn (10YR 5/4), fine to coarse grained,grades coarser at 27'29-30' (1') silty clay, brown30-32' (2') sandy clay, brown, med. to fine grained sand.Silty Sand, greyish black, HC ODOR, fine to med. grained sand w/brn32-35' (3') clay stringers.35-38' (3') sandstone, lt olive grey (5Y 5/2)38-69' (31') sandstone, med. lt grey (N8), graded to dk greenish grey(5GY 4/1) at 58', grades to dk grey (N3) at 63', fine to coarse grainedsandstone with some cobbles, grading coarser from 55-57'TD 68' 6" stickup 2', screened from 23'6" to 63'6", Bentonite @ 16'(100 lb bag), gravel packed to 16', TD from TOC 70'6"

35' 1 1/2" 5-29-86

Client Montgomery & Andrews Well Number GBR 291/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 5/29/86 Completion Date 5/30/86Logs Run Lith from cuttings Logged By NICHOLAS

Elevation _____ Spud In (Fm.) _____

Remarks Drilled With Air Rotary, completed as a 6" PVC recovery well

Depth

Litho
recovery

0-5' (5') sand and gravel, pale yellowish brn (10YR 6/2), gravels (1/4"-1'),

5 sand; fine to coarse grained

10 5-15' (10') sand, greyish orange (10YR 7/4), med. to coarse grained

15 w/some cobbles

20 15-35' (20') clayey sand, dk yellowish brn (10YR 4/2), fine to coarse grained

25 sand with increasing clay content from 30-35'

30 35-40' (5') sandstone, greenish grey (5GY 6/1), H.C. ODOR, fine to coarse

35 grained with some silt,

40 40-50' (10') sandstone, mod. yellowish brn (10YR 5/4), fine to coarse grained sand,

43' 5-30-86

45 grades med. to coarse at 45'

50 50-60' (10') silty clay, lt olive grey (5Y 6/1) from 50-55', brownish grey (5YR 4/1)

55 from 55-60, increasing clay content at 55'

60 60-70' (10') sandstone, greenish grey (5 GY 6/1) to med. lt grey (N6), fine to med.

65 grained

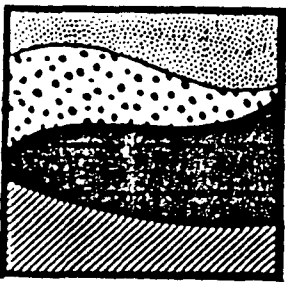
70 TD 72' from TOC, screened interval from 25'-65', gravel packed to 15', 100 lb

bag Bentonite @ 15', backfill to the surface

Client Montgomery & Andrews Well Number (X-1) GBR 30
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9/24/86 Completion Date 9-24-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							0-5' <u>SAND</u> , med gr mod yelsh brn 10YR5/4
5							5-10' <u>SAND</u> , med-co gr mod yelsh brn 10YR5/4
10							10-15' <u>SAND</u> , w/1-2% gravels; med-co gr mod yelsh brn 10YR5/4
15							15-20' <u>SILTY SAND</u> , fn-med gr olive blk 5Y2/1; strong HC odor and stain
20							20-25' <u>SILTY SAND</u> , med gr, dk grnsh bry 5GY4/1; strong HC odor and stain
25							25-30' <u>CLAYEY SAND</u> , med-gr, olive blk 5Y2/1, strong HC odor and stain
30							30-33' <u>SANDY CLAY</u> , fn-med gr, olive gry 5Y4/1; faint HC odor; wet
35							33-45' <u>SANDY CLAY</u> , fn-med gr, lt olive gry 5Y5/2; faint HC odor; wet
40							
45							TD to 49'. Screened from 40' to 25', sand pack to 19'2"



Page 2 of 2

1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico

County San Juan **Contractor** Western Technologies

Spud Date _____ Completion Date 9-24-86

Logs Run Lithology _____ Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks

Client Montgomery & Andrews Well Number (X-2) GBR 31
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9-24-86 Completion Date 9-25-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
0							0-5' SAND, med gr, mod yelsh brn 10YR5/4
5							5-10' CLAYEY SAND, med-co gr, dk yelsh brn 10YR4/2
10							10-20' SILTY SAND, med-co gr, dk yelsh brn 10YR4/2
15							
20							20-25' CLAYEY SAND, med-co gr, dk yelsh brn 10YR4/2 HC odor (?), v v faint
25							25-30' CLAY, fn gr, dk yelsh brn 10YR4/2
30							30-33' SANDY CLAY, fn-med gr, lt olive gry 5Y5/2
33							33-37' GRAVEL LAYER
35							37-45' SANDY CLAY, fn-med gr lt olive gry 5Y5/2
40							TD to 45', screened from 39'7" to 24'7", 5' blank on bottom, sand pack to 19.33', bentonite plug to 13'4" cement grout w/5% bentonite to surface. Completed with 2" PVC.
45							

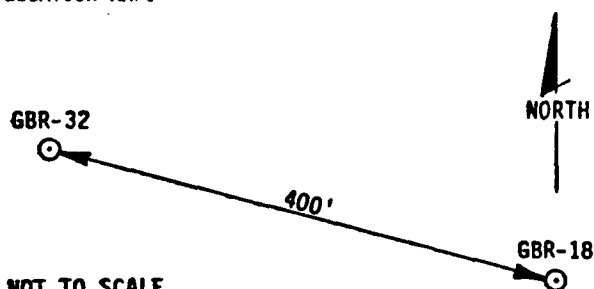
Water level
@ 33'

Bedrock
@ 37'

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:



Page 1 of 2

SITE ID: MONT & AND LOCATION ID: (NW) GBR-32

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5412 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER W/SPLIT SPOONS.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/21/87 DATE COMPLETED: 4/22/87

FIELD REP.: J.P. KASZUBA, S.J. COLARULLO, R.T. HICKS

COMMENTS: 7" BOREHOLE, SPOONS WET AT 33'-36'.

BEDROCK @ 37.5'. TD=45'

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	4.5	6.0				4.5-4.7' SAND, fn- to cs-gr, poor sorting, tan color.
										4.7-5.2' SAND, fn- to med-gr, mod sorting, tan color.
5										5.2-6.0' SAND, med- to cs-gr, mod sorting, tan color.
10				2	9.5	11.0				9.5-11.0' SAND, as above.
15				3	14.5	16.0				14.5-16.0' SAND, as above.
20				4	19.5	21.0				19.5-21.0' SAND, as above.
25				5	24.5	26.0				24.5-25.2' SILT, lt brn, includes ~10% fn-gr sand and ~10% clay.
										25.2-26.0' SAND, med- to cs-gr, mod sorting, lt brn
30				6	29.5	31.0				29.5-31.0' SAND, as above, includes ~10% silt

GCL

Page 2 of 2



400.

GBR-18

NOT TO SCALE

1/4 1/4 1/4 SW 1/4 S22 T29N R12W

SITE ID: MONT & AND LOCATION ID: (NW) GBR-32

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5412 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER W/SPLIT SPOONS.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/21/87 DATE COMPLETED: 4/22/87

FIELD REP.: J.P. KASZUBA, S.J. COLARULLO, R.T. HICKS

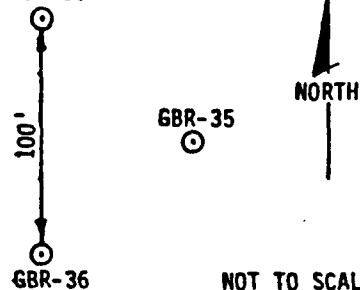
COMMENTS: 7" BOREHOLE. SPOONS WET AT 33'-36'.

BEDROCK @ 37.5'. TD=45'

LOCATION DESCRIPTION:

[illegible]

GCL

Page 1 of 2

NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

COMMENTS: CUTTINGS FROM AUGER 0'-5'. BEGIN CONTINUOUS

SAMPLING AT 8'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0										0-2' <u>GRAVEL</u> , & sand fill
										-2-5' <u>SAND</u> , med-gr, minor fn and cs, mod sorting, tan brn color. No odor.
5										
10				1	8	13				8.0-11.0' No Returns.
										11.0-11.5' <u>SAND</u> , as above, minor 1 cm dia, rounded pebbles.
										11.5-12.3' <u>SAND</u> , fn- to med- gr, mod sorting, brn color. No odor.
										12.3-13.0' <u>SAND</u> , fn- gr, 10-20% silt, very minor clay, mod sorting, brn color. No odor.
15				2	13	18				13.0-15.5' No Returns.
										15.5-17.2' <u>SAND</u> , med-gr, minor fn and cs, mod sorting, tan brn color. No odor.
										17.2-18.0' <u>SAND</u> , fn- to med-gr, minor 1 cm dia pebbles, poor sorting, brn color. No odor.
				3	18	23				18.0-20.3' No Returns.
20										20.3-20.8' <u>SAND</u> , med-gr, minor fn- and cs, minor 1-5 cm dia pebbles, poor sorting, lt brn color. No odor.
										20.8-21.1' <u>SAND</u> , fn- to med- gr, mod sorting, brn color. No odor.
										21.1-21.4' <u>SAND</u> , as @ 20.3'-20.8'.
										21.4-22.0' <u>SANDY CLAY</u> , brn, sand is fn- gr, well sorted. No odor.
25				4	23	28				22.0-23.0' <u>SAND</u> , as @ 20.3'-20.8'.
										23.0-25.7' No Returns.
										25.7-26.1' <u>SAND</u> , as @ 20.3'-20.8', but pebbles common. No odor.
										26.1-26.2' <u>CLAY</u> , brn, no odor.
										26.2-26.8' <u>CLAYEY SAND</u> , lt olive brn color, sand is fn- to med- gr, well-sorted.
30				5	28	33				26.8-28.0' <u>CLAY</u> , brn, no odor.
										28.0-30.3' No Returns.

GCL

1/4 1/4 1/4 1/4 S T R

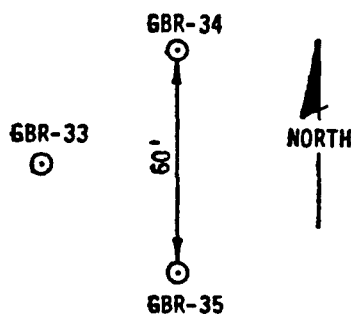
COMMENTS: SATURATED @ ~36'. BEDROCK @ 41.2' (~40' BY DRILLER'S RECKONING). TD=49.5'. NO DIESEL NOTED DURING DRILLING.

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:



NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

Page 1 of 2

SITE ID: MONT & AND LOCATION ID: (EX-2) GBR-34

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/23/87 DATE COMPLETED: 4/24/87

FIELD REP.: J.P. KASZUBA

COMMENTS: CLAY @ 15.5-16.0', SATURATED @ 30-31', BEDROCK @ 37'. TD=48'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0										
				1	3.0	4.5				3.0-4.5' SAND, tan, fn-to med- gr, mod sorting. Minor cs- gr sand & pebbles up to 0.5 cm. No HC odor.
5										
				2	8.0	9.5				8.0-8.5' No Returns.
										8.5-9.1' SAND, as above except pebbles more common & up to 3.0 cm dia.
10										9.1-9.5' SAND, brn, fn- gr, well-sorted. Minor silt & clay. Rare cs- gr. No HC odor.
				3	13.0	14.5				13.0-13.3' SAND, as above, but significant silt.
										13.3-13.8' SAND, lt brn, med- to fn- gr, minor cs- gr. Poor sorting.
										13.8-14.1' SAND, as @ 13.0'-13.3'.
15										14.1-14.5' SAND, lt brn, fn- gr, minor med- gr, minor silt, rare cs- gr, poorly sorted. No HC odor.
				4	18.0	19.5				18.0-18.3' SAND, as above, but cs- gr more abundant.
										18.3-18.7' CLAY, olive brn color, minor silt & fn- gr sand. No HC odor.
20										18.7-19.5' SAND, tan, fn- to med- gr, poorly sorted. No HC odor.
				5	23.0	24.5				23.0-23.3' CLAYEY SAND, brn, sand is med- to cs- gr, poorly sorted
										23.3-23.5' SAND, as @ 18.7'-19.5'.
25										23.5-24.5' CLAY, olive brn color, minor silt & fn- gr sand. No HC odor.
				6	28.0	29.5				28.0-28.3' CLAY, as above. No HC odor.
30										28.3-29.5' SAND, dk brn, fn- to med- gr, well-sorted. No HC odor.

GCL

___1/4 ___1/4 ___1/4 ___1/4 S___ T___ R___

COMMENTS: DIESEL ON SPLIT SPOONS IN SATURATED ZONE

LOCATION DESCRIPTION:

[illegible]

GCL

GBR-33

Page 1 of 2

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO) _____

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/24/87 DATE COMPLETED: 4/24/87

FIELD REP.: J.P. KASZUBA

COMMENTS: SATURATED @ ~ 33.8', BEDROCK @ 38'. TD=50.

DIESEL ON SPLIT SPOONS FROM SATURATED ZONE.

LOCATION DESCRIPTION:

[illegible]

GCL

GBR-33

GBR-35

NORTH

GBR-36

1/4 1/4 1/4 1/4 S T R

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: SAME DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS:

LOCATION DESCRIPTION:

[illegible]

GCL

GBR-33

GBR-35

NORTH

NOT TO SCALE

GBR-36

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

SITE ID: MONT & AND LOCATION ID: (X5)GBR-36

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY, 10" BOREHOLE.

DRILLING CONTR.: BEEMAN BROTHERS

DATE STARTED: 4/29/87 DATE COMPLETED: 4/30/87

FIELD REP.: J.P. KASZUBA

COMMENTS: BEGIN USING WATER FOR LUBRICATION @ 25'.

SATURATED @ ~33'. POOR RETURNS PAST 45'. TD=75'.

LOCATION DESCRIPTION:

[illegible]

GCL

GBR-33

Page 2 of 2

SITE ID: MONT & AND LOCATION ID: (X5)GBR-36

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: SAME

DATE STARTED: SAME DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: SAME

LOCATION DESCRIPTION:

[illegible]

GCL

Page 1 of 3

CONTAMINATION @ ~34.

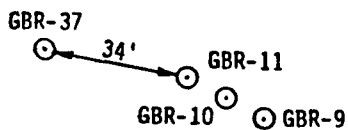
LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:

Page 2 of 3SITE ID: MONT & AND LOCATION ID: (X1)GBR-37

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5388 (TOPO)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: SAMEDRILLING CONTR.: SAMEDATE STARTED: SAME DATE COMPLETED: SAMEFIELD REP.: SAMECOMMENTS: SATURATION @ ~ 34'. BEDROCK @ 54'. TD=73'.

NOT TO SCALE

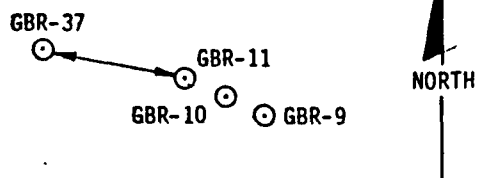
1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
30				7	30	35				30-35' <u>SAND</u> , as above, but fn- gr more abundant. Pebbles (30%) now sub-rounded to sub-angular. Brn clay nod (<5%), some (<1%) w/HC odor & stain. Saturated (?).
35				8	35	40				35-40' <u>SAND</u> , as above, but grey HC stain & strong HC odor. Sub-rounded pebbles (~30%). ~0.5 cm dia, rare 3 cm dia. No clay.
40				9	40	45				40-45' <u>SAND</u> , as above, but lt grey HC stain, faint HC odor.
45				10	45	50				45-50' <u>SAND</u> , as above, but abundant fn- & med- gr, poorly sorted. Sub-rounded pebbles (20%), 0.5 cm dia. Lt brn color, no HC stain or odor.
50				11	50	55				50-54' <u>SANDY CLAY</u> , golden brn, sand is fn- gr, minor med- gr, mod sorting. No HC odor.
55				12	55	60				54-55' <u>SANDSTONE</u> , grey brn, med- to cs- gr, mod sorting. Poorly cemented, friable. No HC odor.
60										55-60' <u>CLAYSTONE</u> , blue grey, minor fn- gr sand. Poorly cemented, friable. No HC odor.

GCL

Page 3 of 3



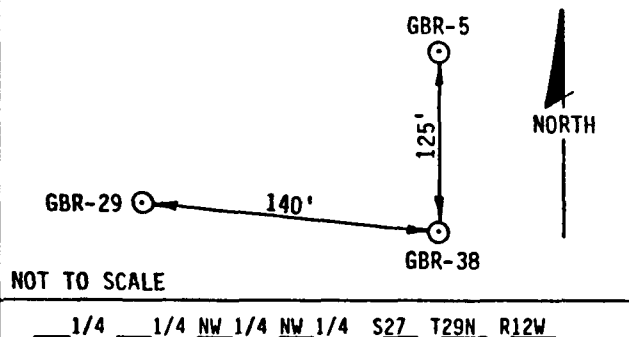
COMMENTS: SAME

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

[illegible]

GCL

Page 1 of 3

SATURATED @ ~37', BEDROCK @ 49'. TD=75'.

LOCATION DESCRIPTION:

[illegible]

GCL

Page 2 of 3



1/4	1/4	1/4	1/4	S	T	R
-----	-----	-----	-----	---	---	---

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5393 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: SAME

DATE STARTED: SAME DATE COMPLETED: SAME

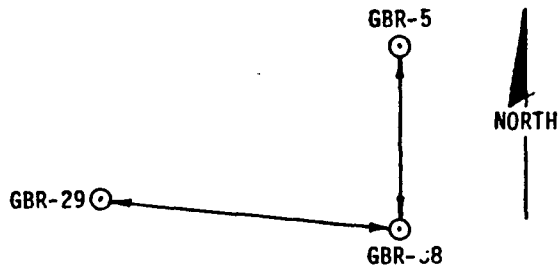
FIELD REP.: SAME

COMMENTS: SAME

LOCATION DESCRIPTION:

[illegible]

GCL

Page 3 of 3

___1/4 ___1/4 ___1/4 ___1/4 S___ T___ R___

COMMENTS: SAME

[illegible]

LITHOLOGIC LOG

Page 1 of 11

LOCATION MAP:



BOREHOLE #1

BOREHOLE #2



SITE ID: GBR LOCATION ID: BOREHOLE #1

SITE COORDINATES (ft.):

W _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER, 7" BIT

DRILLING CONTR.: WESTERN TECH

DATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87

FIELD REP.: J.P. KASZUBA

COMMENTS: SPLIT SPOONS & CUTTINGS. BEDROCK @ 12 1/2' (?)

TD=20'. SATURATION @ BOTTOM OF BOREHOLE.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	• • • • • 7 + 0	[stippled pattern]	23, 50	5'0"-5'2"	<u>0 - 7'6" SAND:</u> lt brn, fn to coarse-minor silt, clay. Rounded and angular cobbles to 2" dia. Poorly sorted. HC stain & odor begins @ - 0'6".
10	• • + + + + + 0 0 // // //	[diagonal hatching] [cross-hatching]	9, 6, 13	10'0"-11'6"	<u>7'6" - 10'9" SANDY CLAY:</u> gray, sand is fn-grained, mod sorted. Pebbles rounded & angular from drilling, up to 1" diam. HC stain & odor.
15	• • • • • • • • •	[stippled pattern]	50	15'0"-15'5"	<u>10'9" - 12'6" SILTY CLAY:</u> gray, minor fn-grained sand. HC stain & odor.
20	// // // // // // //	[vertical hatching]	20, 50	20'0"-20'5"	<u>12'6" - 18'0" SAND:</u> lt brn; med-gr, minor fn, silt; shrdd to shang; mod well sorted. No HC stain or odor. Lithified (?). <u>18'0" - 20'5" SILTSTONE:</u> mottled tan & gray. Minor fn sand. No HC stain or odor.
25					Plug w bentonite @ 17' to 20', native fill 4' to 17', bentonite 4' to 1', native fill to surface.
30					
35					
40					
45					
50					

LITHOLOGIC LOG

Page 2 of 11

LOCATION MAP:

EVAPORATION
POND

BOREHOLE #1

BOREHOLE #2

NORTH

SITE ID: GDR LOCATION ID: BOREHOLE #2

SITE COORDINATES (ft.):

N

E

GROUND ELEVATION (ft. MSL):

STATE: NEW MEXICOCOUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87FIELD REP.: J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -23'.TD=28 1/2'. SATURATED @ -20'.

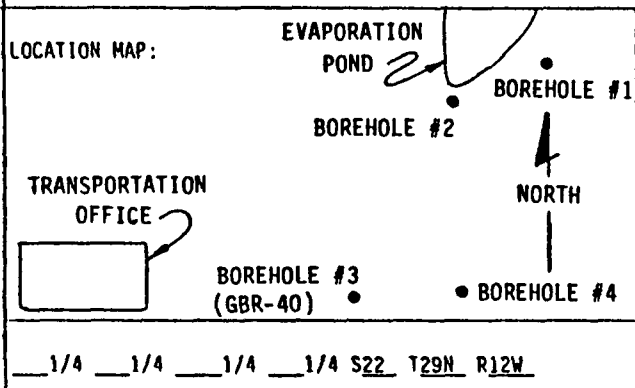
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
				grab @ -2.5'	0 - -5.0" SAND: lt brn, fn- to med-grained; (cobbles, to 2") poor sorting. No HC odor.
5	••••••••••		11, 11, 12	5'0"-5'3"	5'0" - 5'3" SILT: reddish brn, minor fn sand. Mod well sorted. No HC odor.
10	••••••••••		5, 12, 8	10'0"-11'6"	5'3" - 10'0" SAND: lt brn, med-grained, minor clay, fn, coarse, silt. Minor cobbles to 4" dia. Poorly sorted. No HC odor.
15	••••••••••		5, 6, 7	15'0"-15'6"	10'0" - 10'3" SAND: as above. No HC odor.
20	••••••••••		2, 2, 1	20'0"-21'6"	10'3" - 10'5" CLAY: lt gray, HC stain & odor.
25	••••••••••		27, 50	25'0"-25'11"	10'5" - 10'7" SAND: blk, fn- to med-grained, well sorted. HC stain and odor.
30	••••••••••		27, 50	28'6"-28'9 1/4"	10'7" - ~12'6" SAND: blk, fn-grained, minor med, silt, angular cobbles to 1" dia. Poor sorting. HC stain & odor.
35					12'6" - ~17'6" SAND: blk to dk gray, fn-grained, minor silt, med-grained. Well sorted. HC stain & odor.
40					17'6" - 23'0" CLAY: gray, minor fn sand & silt. HC stain & odor. Saturated.
45					23'0" - 28'6" SILTSTONE: blue-gray, minor fn sand. Moderately consolidated, well-sorted. No HC odor. No saturation.
50					28'6" - 28'9 1/4" SANDSTONE: mottled lt brn and blue-gray fn- to med-grained, minor silt, mod sorting. No HC stain or odor. Not saturated.
					Plugged w bentonite 25' - 28', native backfill 13' - 25', bentonite 10' - 13', native fill to surface.

LITHOLOGIC LOG

Page 3 of 11

LOCATION MAP:

SITE ID: GBR M&A LOCATION ID: BOREHOLE #3 GBR-40

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87FIELD REP.: J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -30 1/2'.TD=40'. SATURATED @ -23 1/2'. CONTAMINATED W/HC @ -32' - 35'.

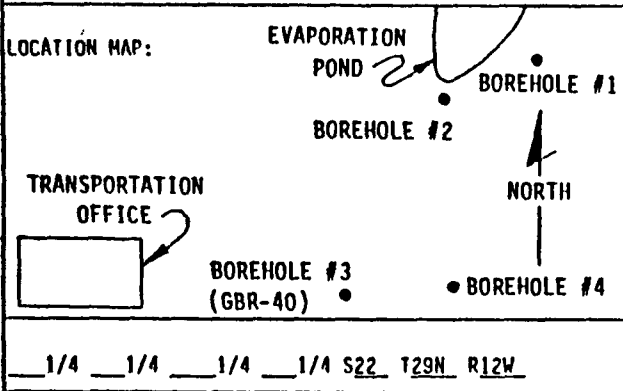
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••		3, 2, 4	5'0"-6'6"	0'0" - 5'5" SAND: brn; med-grained, minor fn-, crs-, silt; shrndd; well-sorted. No HC stain or odor.
10	••••••••••		3, 3, 5	10'0"-11'6"	5'5" - 7'6" SAND: dk brn; fn-grained, minor silt, well sorted. No HC stain or odor.
15	••••••••••		3, 3, 2	15'0"-16'6"	7'6" - 17'6" SAND: lt brn; med- to fn-grained; shrndd, mod sorting.
20	••••••••••		2, 3, 4	20'0"-21'6"	17'6" - 23'6" SILTY SAND: brn, sand ls fn-grained, well sorted. No HC odor.
25	••••••••••		50	25'0"-25'3"	23'6" - 27'0" SILTY SAND: as above, but more silt, saturated. Pebbles & cobbles up to 1" dia @ -25'.
30	••••••••••		7, 9, 5	30'0"-31'6"	27'0" - -30'6" CLAY: dk brn; minor fn sand. No HC stain or odor. Saturated.
35	••••••••••		50	35'0"-35'3"	30'6" - 35'0" SAND: brn; med-grained; minor fn, crs-, silt; shrndd; mod well sorted; lithified(?), saturated; HC stain, @ -32' - 35'. Faint HC odor?
40					35'0" - 35'3" SANDSTONE: mottled tan-brn, med- to crs-, minor fn-, silt. Poorly sorted. Lithified, friable. Not saturated. No HC odor.
45					TD 40'. Completed W2" PVC. Blank 36' - 39', 020 screen 26' - 36', blank to surface. Sand (10/40) 39' - 22', bentonite 17' - 22', sand (10/40) 16' - 17', cement grout w 5% bentonite to surface.
50					

LITHOLOGIC LOG

Page 4 of 11

LOCATION MAP:



SITE ID: GBR LOCATION ID: BOREHOLE #4

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL):

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER, 7" BIT

DRILLING CONTR.: WESTERN TECH

DATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87

FIELD REP.: J.P. KASZUBA

COMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ 2'.

TD=10'. NO SATURATION. NO HC CONTAMINATION.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5			28, 50	5'0"-5'11"	0' - 2' SAND: brn; fn-grained, minor med-, coarse-, silt; med sorting. No HC stain or odor.
10			45, 50	10.0"-10'9"	2'0" - ~7'0" SILTY SANDSTONE: lt brn; fn-grained; med well sorted. Minor Fe-staining. Lithified. No HC stain or odor.
15					~7'0" - 10'9" SANDSTONE: tan, med-grained, minor fn-, crs-, silt; shang to shrd; moderately well sorted; lithified. No HC stain or odor.
20					Plug w bentonite 7' - 10', native fill 3' - 7', bentonite to surface.
25					
30					
35					
40					
45					
50					

LITHOLOGIC LOG

Page 5 of 11

LOCATION MAP:

TRANSPORTATION
OFFICE• BOREHOLE #3
(GBR-40)BOREHOLE #5 •
(GBR-41)

BOREHOLE #6 •

NORTH

SITE ID: GBR M&A LOCATION ID: BOREHOLE #5GBR-41

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICOCOUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/6/87DATE COMPLETED: 10/7/87FIELD REP.: J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ ~30 1/2'.TD=35'. SATURATED @ ~27'.

LOCATION DESCRIPTION:

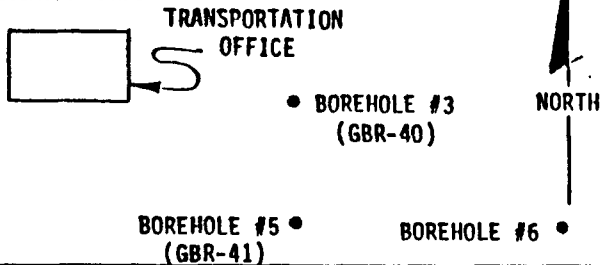
Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••		2, 4, 4	5'0"-6'6"	0' - 5'6" SAND: lt brn; fn- to med- grain, minor coarse-, granules to 1/8"; mod sorting. No HC stain or odor.
10	••••••••••		3, 5, 4	10'0"-11'6"	5'6" - 10'5" SAND: brn; fn- to med- grain, minor silt; mod sorting. No HC stain or odor.
15	••••••••••		3, 3, 3	15'0"-16'6"	10'5" - 12'6" SAND: lt brn (grysh), fn-grain, minor silt. Med. sorted. No HC stain or odor.
20	••••••~•••••		3, 3, 5	20'0"-21'6"	12'6" - 30'0" SAND: brn, fn-grain w/minor med. grain. Mod sorting. No HC stain or odor.
25	••••••~•••••		5, 5, 6	25'0"-26'6"	20'0" - 21'3" SAND: greenish gray. Fn- to med-grain. Minor clay, mod sorting. Faint HC odor (?).
30	••••••~•••••		50	30'0"-30'5 1/2"	21'3" - 22'6" SAND: brn, med-grain w/minor fn & crs grains. Mod sorting. Faint HC odor (?).
35	••••••~•••••		18, 50	35'0"-36'1"	22'6" - 26'4" SAND: dk gray, med-grained w minor fn-, crs-; mod sorting; HC stain and odor.
40					26'4" - ~27'6" SAND: brnsh gray; med-grained, minor crs- mod sorting. HC stain & odor.
45					~27'6" - 30'3" SAND: mottled gray & brn, fn-grained w minor crs, clay; mod sorting. HC stain, faint HC odor. Saturated.
50					30'3" - ~32'6" SANDSTONE: mottled gray and brn; fn-grained, minor med-brn clay lenses; mod sorting; lithified, poorly cemented. Faint HC odor no HC stain. Not saturated.
					32'6" - 35'1" SANDSTONE: lt brn, fn-grained, minor med-, crs-; mod sorting. No HC stain, no HC odor. Lithified, poorly cemented. Not saturated.
					35'1" - 35'8" SANDSTONE: lt brn, fn-grained, well sorted, lithified. Moderately cemented. Minor Fe-oxide stain. Minor black, carbon stain. No HC stain or odor. Not saturated.

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
50					<u>35'8" - 36'1" SANDSTONE:</u> mottled gray & brn, fn- to med-grained, minor crs-; poorly sorted; lithified, mod cemented. No HC stain or odor. Not saturated. TD=35'. Completed w 2" PVC & stainless steel. PVC blank 32'-35', D20 stainless steel screen 2'6"-32', PVC blank to surface sand (10/40) 16'6" - 35', bentonite 11'6" - 16'6", sand (10/40) 11'0" - 11'6", cement grout w 5% bentonite to surface.
55					
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					
115					

LITHOLOGIC LOG

Page 7 of 11

LOCATION MAP:



SITE ID: GBR LOCATION ID: BOREHOLE #6

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL):

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER, 7" BIT

DRILLING CONTR.: WESTERN TECH

DATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87

FIELD REP.: J.P. KASZUBA, J.F. KIRBY

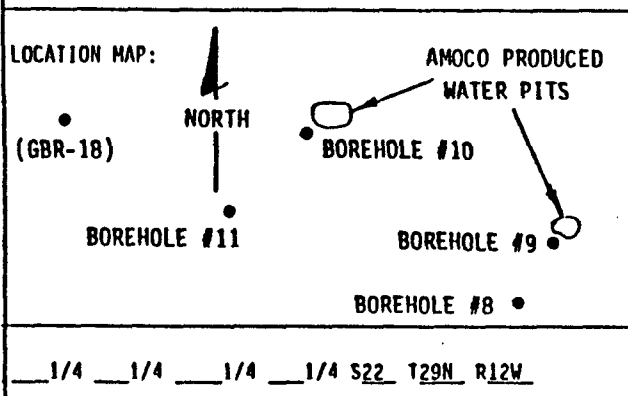
COMMENTS: SPLIT SPOONS AND CUTTINGS, BEDROCK @ 2'.

TD=10'. NO SATURATION. NO HC CONTAMINATION

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	100	SAND	5.0	5'0"-5'6"	0' - 2' SAND: lt brn; med-grain, minor fn-, coarse-; minor granules to 1/4" dia; mod sorting. No HC stain or odor.
10	100	SANDSTONE	5.0	10.0"-10'6"	2'0" - 7'6" SANDSTONE: lt brn, fn- to med-grain. Well sorted. No HC stain or odor.
15					7'6" - 10'6" SANDSTONE: lt brn, med-grain w/minor silt. Well sorted. No HC stain or odor. Lithified, but poorly cemented.
20					Plugged w/bentonite 7' - 10', native fill 3' - 7', bentonite to surface.
25					
30					
35					
40					
45					
50					

LITHOLOGIC LOG

Page 8 of 11SITE ID: GBR LOCATION ID: BOREHOLE #8

SITE COORDINATES (FL.):

N _____ E _____

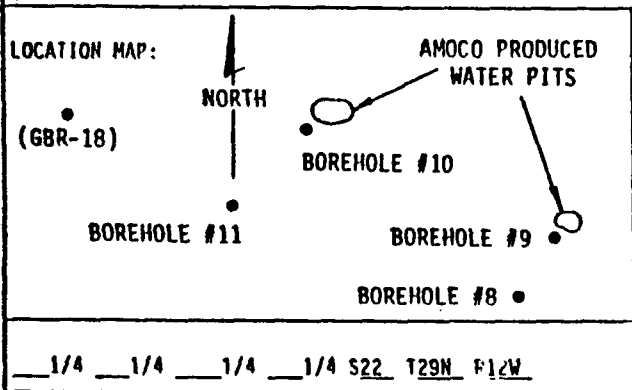
GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICOCOUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/8/87 DATE COMPLETED: 10/8/87FIELD REP.: JACK KIRBY; J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ 6 1/2'-7'.10=18', NO HC CONTAMINATION

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••		19, 23, 29	5'0"-6'6" (no return)	0' - 2' SAND: lt brn; med-grain, minor fn-, coarse-; minor granules to 1/4" dia; mod sorting. No HC stain or odor.
10	+++++		34, 50	10'0"-10'10"	2'0" - 7'6" SANDSTONE: lt brn, fn- to med-grain. Well sorted. No HC stain or odor.
15	••••••••••		50	15'0"-15'5"	0'0" - 6'6" SAND: fn grain w/minor med, coarse; brn color, mod sorting. No HC stains or odor, minor clay nodules.
20	+++++		41, 50	18'0"-18'10 1/2"	6'6" - ~7'6" SAND: fn grain, dk brn, minor coarse clay nodules. No HC stain or odor.
25					7'6" - ~12'6" CLAYSTONE: dk brn; minor fn-, coarse-grain sand; lithified, poorly-cemented; moist, not saturated. No HC stain or odor.
30					12'6" - 18'0" SANDSTONE: lt brn; fn-grain, minor clay (<5%), well sorted; lithified, poorly cemented. Moist, not saturated. No HC stain or odor.
35					18'0" - 18'10 1/2" CLAYSTONE: grysh brn; interspersed lenses of finger sandstone stained in Fe-oxide; claystone is fissile, lithified. Moist, not saturated. No HC stain or odor.
40					
45					
50					Plugged w/bentonite 15' - 18', native fill 3' - 15', bentonite to surface.

LITHOLOGIC LOG

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SITE ID: GDR LOCATION ID: BOREHOLE #9

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER, 7" BIT

DRILLING CONTR.: WESTERN TECH

DATE STARTED: 10/8/87 DATE COMPLETED: 10/8/87

FIELD REP.: JACK KIRBY; J.P. KASZUBA

COMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -5'.

TD=20'. NO IIC CONTAMINATION

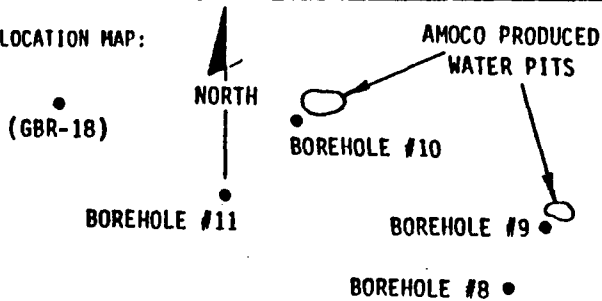
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••••••••		8, 11, 15	5'0"-6'6"	0' - -5' SAND: lt brn; med-grain, minor fn-, coarse-; mod sorting. No IIC stain or odor.
10	••••••••••••••••		4, 6, 8	10.0"-11'6"	5'0" - 6'2" SANDSTONE: brn; med-grain, minor crs-, clay; mod sorting; lithified but poorly-cemented. Moist but not saturated; some iron oxide staining's interspersed zones of white/clear calcite(?), gypsum(?). No IIC stain or odor.
15	+++++		24, 24, 50	15'0"-16'4"	6'2" - -7'6" SANDSTONE: lt brn; med-grain, minor crs-, clay (10%); mod sorted; poorly cemented; moist, not saturated. No IIC stain or odor.
20	+++++		50	20'0"-20'5 1/2"	-7'6" - -10'6" SANDSTONE: as above, but brn, clay 20% clay.
25					10'6" - -12'6" SANDY CLAYSTONE: dk brn; lithified but poorly-cemented, fissile; sand is lt brn; med-grained; mod sorted; also poorly cemented. Moist, not saturated. No IIC stain or odor.
30					-12'6" - -17'6" CLAYSTONE: grysh brn poorly-cemented; fissile; interspersed lenses of silt w/Fe-oxide stains, <5%. Not saturated; no IIC stain or odor.
35					-17'6" - 20'5 1/2" CLAYSTONE: as above, but dark gray, friable.
40					Plug w/bentonite 17' - 20', native fill 3' - 17', bentonite to surface.
45					
50					

LITHOLOGIC LOG

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LOCATION MAP:



SITE ID: GBR LOCATION ID: BOREHOLE #10

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL):

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HOLLOW STEM AUGER, 7" BIT

DRILLING CONTR.: WESTERN TECH

DATE STARTED: 10/8/87 DATE COMPLETED: 10/8/87

FIELD REP.: JACK KIRBY; J.P. KASZUBA

COMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -1'.

TD=15'. NO HC CONTAMINATION.

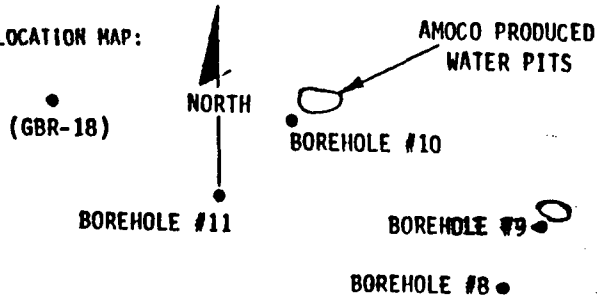
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••		50	5'0"-5'5"	0' - 1' SAND: lt brn; med- to crs-grain; shndd; moderately well-sorted. No HC stain or odor.
10	•••••••••• 		37, 43, 37	10.0"-11'6"	1'0" - 7'6" SANDSTONE: lt brn; med-grain, w/minor fines and coarses, mod sorting, poorly cemented, no hydrocarbon stain or odor.
15	 +++++		23, 29, 50	15'0"-16'1"	-7'6" - 10'6" SANDSTONE: As above, w/minor clays (<10%).
20					10'6" - 12'6" CLAYSTONE: dk brn; minor silt & fn-grain sand; lithified, friable; Fe-oxide staining in layers interspersed throughout; moist, not saturated; no HC stain or odor.
25					12'6" - 16'1" SANDY CLAYSTONE: minor silt, fn-grain sand; lithified, friable, fissile; interspersed Fe-oxide seams common; interspersed fn-grain sandstone lenses (<5%); moist not saturated; no HC stains or odor.
30					Plug w/bentonite 12' - 15', native fill 3' - 12', bentonite to surface.
35					
40					
45					
50					

LITHOLOGIC LOG

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LOCATION MAP:

SITE ID: GBR LOCATION ID: BOREHOLE #11

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/7/87 DATE COMPLETED: 10/7/87FIELD REP.: J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -24'.TD=20'. NO SATURATION; NO IIC CONTAMINATION.1/4 1/4 1/4 1/4 S22 T29N R12W

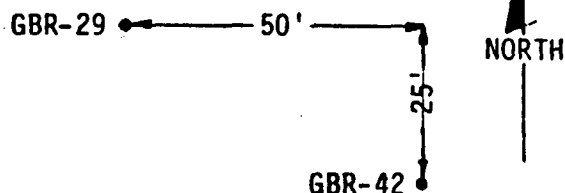
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5			27, 50	5'0" - 5'11"	0' - -24' SAND: lt brn; fn- to crs-grain, minor silt, clay; shbrdd to shang; poorly sorted. No IIC stain or odor.
10			31, 50	10'0"-11'0"	-24'7 1/2' - 7'6" SANDSTONE: mottled tan & beige; fn- to med-grain, minor silt, clay, crs-shbrdd to shang; mod sorting; lithified but poorly-cemented (weathered?). No IIC stain or odor.
15			37, 50	15.0"-15'10"	-7 1/2' - 20'4" SILTSTONE: brn, contains clay (?); lithified; friable from 7 1/2' to 15', mod well-cemented 15' to 20'; friable @ 20'; interspersed w/fn-grain sandstone lensed (<5%); Fe-oxide stained lenses of siltstone @ 20'0"-20'4". No IIC stain or odor.
20			50	20'0"-20'4"	
25					Plugged w/bentonite 17' - 20', native fill 3' - 17', bentonite to surface.
30					
35					
40					
45					
50					

LITHOLOGIC LOG

Page 1 of 1

LOCATION MAP:



SITE ID: GIANT LOCATION ID: GBR-42

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): 5293 (topo)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY W/ CASING DRIVER

DRILLING CONTR.: BEEHAN BROTHERS DRILLING COMPANY

DATE STARTED: 12/15/87 DATE COMPLETED: 12/15/87

FIELD REP.: J.P. KASZUBA, J.F. KIRBY

COMMENTS: STEAM CLEAN ALL DRILLING EQUIP. BOREHOLE = 9 7/8".

BEGAN USING WATER @25'. CONTAMINATION @38'. BEDROCK @57'.

LOCATION DESCRIPTION:

TD = 63'

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
5				0' - 63' cuttings	0' - 10' SAND - lt brn; med-grain, well sorted, uncons. minor clays (<10%). No hydrocarbon stain/odor.
10					10' - 15' CLAYEY SAND - lt brn, med-grain, mod sorting. Minor (<10%) crs grains. No. HC stain/odor.
15					15' - 25' CLAYEY SAND - lt to med brn, med-grain, well sorted. No HC stain/odor.
20					25' - 30' CLAY - lt brn, minor (<15%) sand. Sand is med- to fn-grain with moderate sorting. No HC stain/odor.
25					30' - 35' CLAY - lt brn, 30% cobbles up to 1" diam. No HC stain/odor.
30					35' - 40' SAND - blk, med grain, well to very well sorting. Hydrocarbon stain/strong hydrocarbon odor.
35					40' - 50' SAND - blk. fn grain, very well sorted, strong HC stain/odor.
40					50' - 57' GRAVELLY SAND - lt brn. fn to crs grain, poorly sorted. Gravels up to 1/2" diameter. No noticeable stain/odor.
45					57' - 63' CLAYSTONE - brnsh grey, cons. No HC stain/odor.
50					Completed as 6-inch recovery well with flush joint pipe. TD well = 62.6, SS blank 52.3' - 62.6', SS screen (020 slot) 36.6' - 52.3', SS blank 31.6' - 36.6', PVC blank 0' - 31.6'. SS centralizers @ 36.6' and 52.3'. Sand (10120) 27.8' - 63', bentonite powder 21.8' - 27.8', sand (10120) 21.0' - 21.8', cement grout w/5% bentonite to surface.

LITHOLOGIC LOG

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LOCATION MAP:

GBR-9

GBR-8 •

20'

8'

GBR-43

NORTH

1/4 SW1/4 NW1/4 NW1/4 S27 T29N R12W

SITE ID: GIANT LOCATION ID: GBR-43

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): 5389 (topo)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY W/ CASING DRIVER

DRILLING CONTR.: BEEMAN BROTHERS DRILLING COMPANY

DATE STARTED: 12/16/87 DATE COMPLETED: 12/17/87

FIELD REP.: J.P. KASZUBA,

COMMENTS: BOREHOLE = 9 7/8". BEGIN USING WATER @20'. HC

CONTAMINATION @ 33'. BOULDERS/COBBLES @ 38'. BEDROCK @55'.

TD = 62'

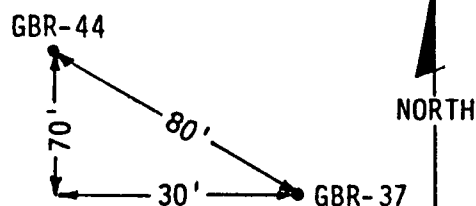
LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
5				0' - 62' cuttings	0' - 10' SAND - lt brn; fn- to med-grain, shrndd to sbang poorly sorted. Minor silt (<10%) pebbles (<10%) w/max. dia. 1 inch. Uncons. No HC stain/odor.
10					10' - 20' SAND - as above, but more tan in color and gravel fraction decreases w/depth.
15					20' - 28' SAND - tan, med-grain, rndd to sbang, mod sorting. Minor silt (<10%) and crs-grain sand (<10%). Unconsolidated. No HC stain or odor.
20					28' - 32' CLAY - brn, uncons. No HC stain/odor.
25					32' - 34' SAND - brn, fn- to med-grain, sbrndd, mod sorting. Uncons. HC stain and odor 33' - 34'.
30					34' - 37' CLAY - brn, unconsolidated. HC stain and odor 34' - 35'.
35					37' - 55' GRAVELLY SAND - olive brn crs-grain, sbrndd sand to ang pebble fragments w/1 inch max dia. Poorly sorted. Unconsolidated. Faint HC stain and odor (?).
40					55' - 62' CLAYSTONE - blue-gray, cons. No HC stain or odor.
45					Completed as 6-inch recovery well, with flush joint pipe. TD well = 60.5, SS blank 50.2' - 60.5'; SS screen (020 slot) 34.5' - 50.2', SS blank 29.5' - 34.5', PVC blank to surface. SS centralizers @ 34.5' and 50.2'. Sand (10/20) 50' - 62', sand (8/12) 29' - 50', bentonite powder 23' 29', native backfill 19.8 - 23', cement grout w/5% bentonite to surface.
50					

LITHOLOGIC LOG

Page 1 of 1

LOCATION MAP:



NOT TO SCALE

1/4 SW1/4 NW1/4 S27 T29N R12WSITE ID: GIANT LOCATION ID: GBR-44

SITE COORDINATES (ft.):

N _____ E _____

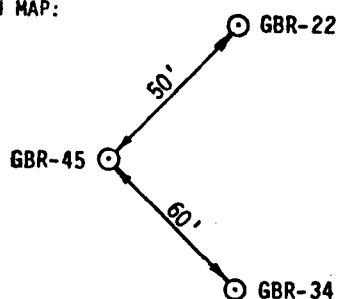
GROUND ELEVATION (ft. MSL): 5390 (topo)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: AIR ROTARY W/ CASING DRIVERDRILLING CONTR.: BEEMAN BROTHERS DRILLING COMPANYDATE STARTED: 12/17/87 DATE COMPLETED: _____FIELD REP.: J.P. KASZUBACOMMENTS: BOREHOLE = 9 7/8". BEGIN USING WATER @12'. HCCONTAMINATION @ 38'. BEDROCK @ 56. TD = 59'.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
5				0' - 59' cuttings	0' - 12' SAND - brn, fn- to med-grain, sbang to sbrndd, mod sorting. Uncons. No HC stain or odor. Becomes coarser-grained and poorly sorted w/depth.
10					12' - 30' GRAVELLY SAND - tan, fn-grain sand to pebbles w/max dia of 1 inch, sbrndd, poorly sorted. Unconsolidated. No HC stain or odor.
15					30' - 34' CLAY - brn, uncons. No Hc stain or odor.
20					34' - 38' SAND - brn, fn- to med-grain, sbrndd, mod sorting. Unconsolidated. HC odor and stain @37' - 38'.
25					38' - 40' CLAY - brn, unconsolidated. Faint HC stain and odor 38' - 39'.
30					40' - 45' GRAVELLY SAND - grysh tan, fn-grain sand to pebbles w/max dia of 1 inch sbrndd poorly sorted. Uncons. Faint HC stain and odor (?).
35					45' - 50' SAND - yelsh brn, fn- to med-grain sbrndd to sbang, mod sorting. Uncons. No HC stain or odor.
40					50' - 56' GRAVELLY SAND - tan, fn-grain sand to pebbles w/max dia of 1 inch, sbrndd, poorly sorted. Unconsolidated. No HC stain or odor.
45					56' - 59' CLAYSTONE - blueish gray, consolidated. No HC stain or odor.
50					Completed as 6-inch recovery well, with flush joint pipe. TD well = 58.6, SS blank 48.3' - 58.6'; SS screen (020 slot) 32.6' - 48.3', SS blank 27.6' - 32.6', PVC blank 0' - 27.6', SS centralizers @ 32.6' and 48.3'. Sand (8/12) 27' - 59', bentonite powder 21' 27', cement grout w/5% bentonite to surface.

GCL

Page 1 of 2



N _____ **E** _____

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE

DRILLING CONTR.: WESTERN TECH. _____

DATE STARTED: 4/23/87 DATE COMPLETED: PLUGGED 4/24/87

FIELD REP.: J.P. KASZUBA

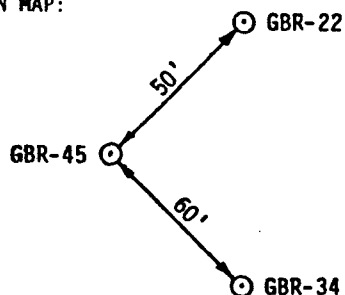
COMMENTS: BOREHOLE NOT COMPLETED AS A WELL. GRAVELS @ 32'.

SATURATED @ ~ 33.5'. BEDROCK @ ~ 38'. TD=43'.

LOCATION DESCRIPTION:

[illegible]

GCL

Page 2 of 2

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: SAME DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: NO DIESEL NOTED DURING DRILLING.

1/4 1/4 1/4 1/4 S T R

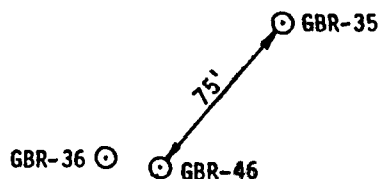
LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:



NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

Page 1 of 2

SITE ID: MONT & AND LOCATION ID: (EX-5)GBR-46

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS. 7" BOREHOLE.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/24/87 DATE COMPLETED: PLUGGED 4/24/87

FIELD REP.: J.P. KASZUBA

COMMENTS: BOREHOLE NOT COMPLETED AS A WELL. SATURATED @

33.0-34.5'. TD=38'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	3.0	4.5				3.0-3.3' Road Gravel. 3.3-4.5' SAND, tan, med- to cs- gr, mod sorting. No HC odor.
5				2	8.0	9.5				8.0-9.5' No Returns.
10				3	13.0	14.5				13.0-13.6' SAND, lt brn, med- to cs- gr, mod sorting. No HC odor. 13.6-14.5' SAND, lt brn, fn- to med- gr, minor cs- gr, mod sorting. No HC odor.
15				4	18.0	19.5				18.0-18.9' SAND, brn, med- to cs- gr, mod sorting. Angular pebble fragments (up to 2 cm across) @ 18.7-18.9'. No HC odor. 18.9-19.5' SAND, lt brn, fn- to med- gr, mod sorting. No HC odor.
20				5	23.0	24.5				23.0-23.5 SAND, lt brn, fn- to cs- gr, minor silt & pebbles (up to 2 cm across), poorly sorted, no HC odor. 23.5-24.1' SAND, tan, fn- to med- gr, minor silt & cs- gr, mod sorting. No HC odor.
25										24.1-24.5' SAND, tan, med- to cs- gr, minor fn- gr, well-sorted. No HC odor.
30				6	28.0	29.5				28.0-29.5' CLAY, olive brn. No HC odor.

GCL

Page 2 of 2

___1/4 ___1/4 ___1/4 ___1/4 S___ T___ R___

COMMENTS: MINOR DIESEL ON SPLIT SPOONS FROM SATURATED ZONE.
BEDROCK @ 39'.

LOCATION DESCRIPTION:

[illegible]

[illegible]

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-47
 SITE COORDINATES (ft.): _____
 N _____ E _____
 GROUND ELEVATION (ft. MSL): _____
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Technologies
 DATE STARTED: 17 Oct 1988 DATE COMPLETED: _____
 FIELD REP.: Martin Nee
 COMMENTS: Abandoned

BOREHOLE LOG (SOIL)

BLM-19 BLM-18 BLM-21
BLM-22

+ GBR-50

+ GBR-48

1/4 1/4 1/4 1/4 S T R

Page 1 of 1

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-48

SITE COORDINATES (ft.):

N 12159.02 E 11142.65

GROUND ELEVATION (ft. MSL): 5416.14

STATE: New Mexico COUNTY: San Juan

DRILLING METHOD: Hollow Stem Auger/Continuous Sampler

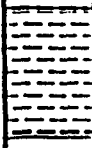
DRILLING CONTR.: Western Technologies

DATE STARTED: 17 Oct 1988 DATE COMPLETED: 18 Oct 1988

FIELD REP.: Martin Nee

COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-23' Sand - Mod yelsh brn, 10 YR 5/4, v fn to crs sand, uncons, subangular to subrounded, well sorted moist from 13-14', v minor grv at 23'.
5				2	3	8				
10				3	8	13				
15				4	13	18				
20				5	18	23				
25				6	23	28			SM	23'-26.5' Silty Sand - Mod yelsh brn, 10 YR 5/4, 75% v fn to med sand, 20% silt, 5% clay, uncons, subangular to subrounded, mod well sorted.
30				7	28	33			SC	26.5'-27.5' Clayey Sand - Mod yelsh brn, 10 YR 5/4, 70% v fn to med grained sand, 20% clay, 10% silt, uncons, subangular to subround, mod well sorted.
35				8	33	38			CL	27.5'-31' Silty Clay - Mod yelsh brn, 10 YR 5/4, 80% clay, 15% silt, 5% v fn sand.
40				9	38	43			SP	31'-35' Sand - Mod yelsh brn, 10 YR 5/4, fn to coarse grained sand, uncons, mod well sorted, subangular to subrounded, minor gravel <3%.
45										35'-37' Cobbles/Gravel Refusal - No core.
50										37'-44' Shale - Light olive grey, 5 YR 2/2. 1D = 44.0', 2" ss blank 43.6' to 38.4', ss 20 slot screen 38.4-28.4', 2" ss to 3' above surface, 10-20 sand to 23', bentonite to 17.5', grout w/5% bentonite to surface, 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

+ GDA-32

+ GBR-18

+ GBR-49

Page 1 of 1

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-49

SITE COORDINATES (ft.):

N 11908.13 E 11168.02GROUND ELEVATION (ft. MSL): 5410.76STATE: New Mexico COUNTY: San JuanDRILLING METHOD: Hollow Stem Auger/Continuous SamplerDRILLING CONTR.: Western TechnologiesDATE STARTED: 17 Oct 1988 DATE COMPLETED: 17 Oct 1988FIELD REP.: Martin Nee

COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-22' <u>Sand</u> - Mod yelsh brn, 10 YR 5/4, v fn to coarse sand, uncons, sbang to sbrndd, minor silt.
5				2	3	8				
10				3	8	13				7'-9' As above w/cobbles or boulders.
15				4	13	18				
20				5	18	23				15'-16' Same as 0-22 with 5% fn to med pebble gravel.
25				6	23	28			SM	22'-25' <u>Silty Sand</u> - Mod yelsh brn, 10 YR 5/4, 70% sand, v fn to coarse, moderately well sorted, uncons, sbang to sbrndd, 20% silt, 10% clay, minor, v fn to med pebble gravel.
30				7	28	33			SC	25'-33' <u>Clayey Silty Sand</u> - Silty sand and stringers (6") of silty clay, mod yelsh brn, 10 YR 5/4, v fn to med grained sand, uncons, sbang to sbrndd.
35										28' Appears moist.
40									SM	33'-36.5' <u>Silty Sand</u> - Dk yelsh or, 10 YR 6/6, 80% sand, v fn to crs, uncons, sbang to sbrndd, well sorted, 20% silt, v minor clay.
45									SM	36.5'-40' <u>Silty Sand</u> - Lt olv brn, 5 YR 5/6, v fn to med grained sand, uncons, mod well sorted, sbang to sbrndd, 5% clay, 15% silt.
50									SC	40'-42.5' <u>Clay</u> - Lt blsh grey, 5B 7/11. 10' = 42.5', 2" as blank 38.5' to 36.3', as 20 slot screen 36.3' to 25.9' 2" as blank to 2.1' above surface, 10-20 sand to 21.0', bentonite to 16.45', grout with 5% bentonite to surface. 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

BLM-17. BLM-20
BLM-19 BLM-18 BLM-21
BLM-22.

◆ GBR-50

1/4 1/4 1/4 1/4 S 1 R

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-50
 SITE COORDINATES (ft.):
 N 12257.74 E 11067.82
 GROUND ELEVATION (ft. MSL): 5413.13
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger/Continuous Sampler
 DRILLING CONTR.: Western Technologies/Continuous Sampler
 DATE STARTED: 19 Oct 1988 DATE COMPLETED: 19 Oct 1988
 FIELD REP.: Martin Nee
 COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SM	0'-15' <u>Silty Sand</u> - Mod yelsh brn, 10 YR 5/4, v fn to coarse sand, <5% fn to med pebble gravel, approx 15% silt, uncons, well sorted, sbang to sbrndd.
5				2	3	8				
10				3	8	13				
15				4	13	18				
20				5	18	23				
25				6	23	28				
30				7	28	33				
35				8	33	38				
40				9	38	42.5				
45									CL	23'-31' <u>Clayey Sand</u> - Mod yelsh brn, 10 YR 5/4, 20% clay, 10% silt, v fn to coarse sand, uncons, well sorted, sbang to sbrndd.
50										
										37'-43.0' <u>Carbonaceous Shale</u> - dusty yelsh brn, 10 YR 2/2, mod well cons, minor Fe staining, <2% gravel.
										TD = 43.0', 2" ss blank 42.5' to 37.26', ss 20 slot screen 37.26' to 26.91' 2" ss blank to 4.14' above surface, 10-20 sand to 20.19', bentonite to 15.44', grout with 5% bentonite to surface, 5"x6' cement filled steel guard pipe, 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

Page 1 of 2

GBR-13

GRW-08

GBR-51

GBR-20

GRW-06

GBR-06

GBR-11

GBR-10

GBR-05

GRW-03

GRW-1

GBR-09

GRW-04

GBR-08

1/4 1/4 1/4 1/4 S T R

Giant Bloomfield

SITE ID: Refinery

LOCATION ID: GBR-51

SITE COORDINATES (ft.):

N 10265.77

E 11304.3

GROUND ELEVATION (ft. MSL): 5388.72

STATE: New Mexico

COUNTY: San Juan

DRILLING METHOD: Air Rotary-Casing Driver

DRILLING CONTR.: Beeman Brothers

DATE STARTED: 12 Sept 1988

DATE COMPLETED: 13 Sept 1988

FIELD REP.: Martin Nee

COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	5			SW	0'-10' Sand - Mod yelsh br, 10 YR 5/4, 95% med to v fn sand, well graded, abrndd, uncons, 5% silt.
5				2	5	10				
10				3	10	15			SW	10'-15' Sand - Mod yelsh br, 10 YR 5/4, 90% med to v fn sand, well graded, abrndd, uncons, 5% med to fn pebble gravel, 5% silt.
15				4	15	20			SW	15'-35' Sand - Mod yelsh br 10 YR 5/4, med to v fn grained, well graded, abrndd, uncons.
20				5	20	25				
25				6	25	30				
30				7	30	35				
35				8	35	40			SC	35'-50' Clayey Sand - Mod yelsh br 10 YR 5/4, med to v fn sand, well graded, abrndd, uncons. 85% sand, 10% clay, 5% silt.
40				9	40	45				
45				10	45	50				
50				11	50	55			SC	50'-62' Silty, Clayey Sand - Lt olive gray, 5 Y 5/2, 90% med sand to clay, well graded, abang to abrndd. 10% med to v fn pebble gravel, uncons.

BOREHOLE LOG (SOIL)

Page 2 of 2

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-51
 SITE COORDINATES (ft.):
 N 10265.77 E 11304.3
 GROUND ELEVATION (ft. MSL): 5388.72
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Air Rotary-Casing Driver
 DRILLING CONTR.: Beeman Brothers
 DATE STARTED: 12 Sept 1988 DATE COMPLETED: 13 Sept 1988
 FIELD REP.: Martin Nee
 COMMENTS:

1/4 1/4 1/4 1/4 S Y R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
50				12	50	55			SC	50'-62' Silty, Clayey Sand - Lt olive gray, 5 Y 5/2, 90% med sand to clay, well graded, abang to abrndd. 10% med to v fn pebble gravel, uncons.
55				13	55	60				
60				14	60	65				
65				15	65	70				TD = 62', 6" ss blank 59.5' to 54.25', 6" ss 20 slot 54.25 to 38.50' 6" blank 38.5' to 28.5', 6" PVC blank to surface, 6"x3' ss finish w/cap 8-12 sand to 32.5', bentonite to 27.42' cement with 5% bentonite to surface 10"x12' cement filled steel guard pipe, 4'x4' concrete slab.
70				16	70	75				
75				17	75	80				
80				18	80	85				
85				19	85	90				
90				20	90	95				
95				21	95	100				
100				22	100	105				

BOREHOLE LOG (SOIL)

Page 1 of 1

GBR-13

GBR-52

GRW-07

GBR-20

GRW-06

GBR-06

GBR-11

GBR-10

GBR-05

GRW-03

GBR-09

GRW

Site ID Giant Bloomfield

LOCATION ID: GBR-52

SITE COORDINATES (ft.):

W 10267.32

E 11215.25

GROUND ELEVATION (ft. MSL): -5383

STATE: New Mexico

COUNTY: San Juan

DRILLING METHOD: Air Rotary-Casing Driver

DRILLING CONTR.: Beeman Brothers

DATE STARTED: 13 Sept 1988 DATE COMPLETED: 14 Sept 1988

FIELD REP.: Martin Nee

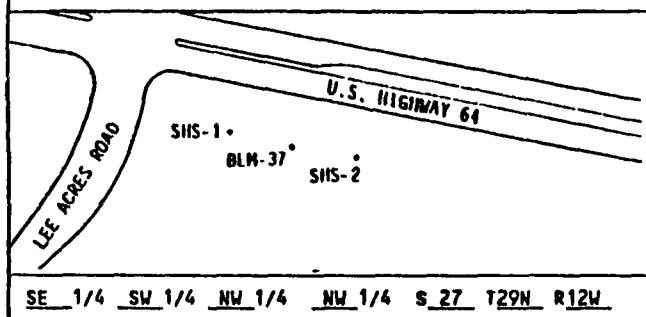
COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	5			SW	0'-30' Sand - Mod yelsh br 10 YR 5/4 90% med to v fn sand, sbang to sbrndd, well graded, uncons, 10% pebble gravel, crs to fn, uncons.
5				2	5	10				
10				3	10	15				
15				4	15	20				
20				5	20	25				
25				6	25	30				
30				7	30	35			SW	30'-45' Clayey Sand - Mod yelsh br 10 YR 5/4, 80% sand, med to fn grained, 10% clay, 5% fn pebble gravel, sbang to sbrndd, uncons, mod well graded.
35				8	35	40				
40				9	40	45				
45				10	45	50			SC	45'-54' Silty, Clayey Sand - Lt olive gray 5 Y 5/2 70% med sand to clay well graded, sbang to sbrndd, uncons, 10% med to fn pebble gravel.
50				11	50	54				TD = 54', 6" as blank 50.78 to 45.75, 6" as 20 slot screen 45.75 to 30.08', 6" as blank 30.08 to 20.08, 6" PVC blank to surface, 6" x 3' as finish w/cap/B-12 sand to 45' .16", 10-20 sand to 24.5, bentonite to 18.33', cement w/5% bentonite to surface, 10" x 12' cement filled steel guard pipe, 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

Page 1 of 1



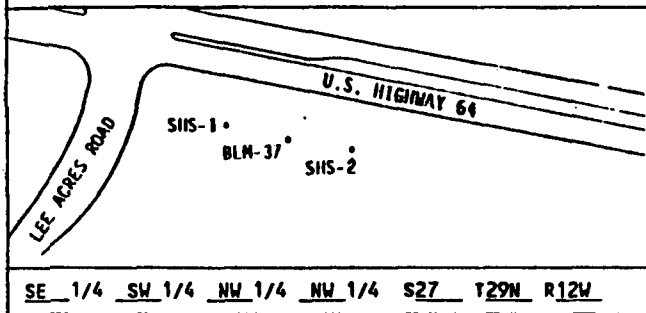
SITE ID: Lee Acres Community LOCATION ID: SHS-1
 SITE COORDINATES (ft.): Coordinates are local to GBR
 N 9896-34 E 11406.67
 GROUND ELEVATION (ft. MSL): Approximately 5381
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Tech
 DATE STARTED: 7/31/89 DATE COMPLETED: 8/1/89
 FIELD REP.: M. Nee
 COMMENTS: _____

LOCATION DESCRIPTION: South of Giant's Bloomfield refinery on NMSR 64 right of way, 100 ft west of BLM-37

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0			2	1	0	3			SW	0-28' <u>Sand</u> Mod Brn, 10 YR 4/4, v fine to fine grained, well sorted, unconsol., slightly moist at approx. 13'. Minor pebble gravel at 11'-13'.
5			5	2	3	8			CL	Silty clayey sand stringer, moderate brown, 10 YR 4/4, at approx. 15'-15.5'.
10			3	3	8	13			GP	Minor small pebble gravel 22-28'.
15			3	4	13	18			SW	28'-30' <u>Clay</u> , moderate olive brn, 5 Y 4/4, minor fine to coarse sand.
20			0	5	18	23			CL	30'-30.5' <u>Sand</u> as above (0'-28'), no gravel.
25			3	6	23	28			CL	6" clay to 31' grading to v fine sand at 33' olive gray, 5 Y 3/2.
30			5	7	28	33			SC	33'-36' <u>Silty Sandy Clay</u> , moderate olive brn, 5 Y 4/4, approx. 33% clay, 33% sand, 33% silt.
35			0	8	33	38				36'-37' as above only stained, olive gray, 5 Y 3/2. Fine to coarse sand interval 37' to 37-1/2' then to <u>silty clay</u> olive gray, 5 Y 3/2.
40			2	9	38	43			CL	37'-1/2-39' <u>Silty clay</u> , olive gray 5 Y 3/2.
45			0	10	43	48			SH	39'-40' Silty sand, olive gray, 5 Y 3/2 unconsol., MW sorted.
50			3	11	48	52			CL	40'-41.5' <u>Clay</u> , mottled, mod yllsh brn, 10 YR 5/4 - olive gray. 5 YR 3/2.
									SW	41.5'-42.5' <u>Sand</u> , mod. olive brn 5 Y 4/4, f-m sand, unconsol., MW sorted.
									SC	42.5'-43.5' <u>Sandy clay</u> , mod brn, 5 YR 4/4.
									SW	43'-50' <u>Sand</u> , mod yllsh brn, 10 YR 5/4, fine to med sand. unconsol. MW sorted, saturated
									NA	50'-51.5' mudstone/claystone, dusky yellow 5 Y 6/4 to light olive brn, 5 Y 5/6 mod well consolidated, carbonaceous shale present, weathered, shale present.
									NA	51.5'-52' <u>Sandstone</u> , dusky yellow, 5 Y 6/4 to light olive brn, 5 Y 5/6, fine to med grained, well consolidated, well sorted.

BOREHOLE LOG (SOIL)

Page 1 of 1



SITE ID: Lee Acres Community LOCATION ID: SHS-2
 SITE COORDINATES (ft.): Coordinates are local to GBR
 N 9854.92 E 11609.55
 GROUND ELEVATION (ft. MSL): Approx. 5382
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Technology
 DATE STARTED: 8/2/89 DATE COMPLETED: 8/2/89
 FIELD REP.: M. Nee
 COMMENTS:

LOCATION DESCRIPTION: South of Glants Bloomfield Refinery on NMSR 64 right of way, 100 ft east of BLM-37

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3.5				0-1' Soil, Silty sand w/organics, mod. yllsh, brn 10 YR 5/4, 40% silt, 60% f sand, unconsolidated, mod well sorted, sub angular to sub rounded.
			3.5	2	3.5	3.5				
5			2	3	8.5	13.5				1'-26' Gravelly Sand, Dark yellowish orange, 10 YR 6/6, 90% v fine - fine pred. quartz, unconsol., well sorted, sub ang to sub rounded, 10% gravel is fine to coarse pebble gravel, rounded.
10				4	13.5	18.5				26'-30' Sandy gravel, Dark yllsh orange, 10 YR 6/6, unconsol., rounded, pebble gravel to cobbles.
15			3	5	18.5	23.5				30'-33.5' Clayey Silty Sand, mod yllsh brn, 10 YR 5/4. Clay to fine sand, unconsol. poorly sorted.
20			3	6	23.5	28.5				33.5'-36' Sand, mod yllsh brn, 10 YR 5/4, fine to mod sand, unconsol. sub ang to sub rounded, mod well.
25			0	7	28.5	33.5				36'-37' Clayey Silt, dark yllsh brn, 10 YR 4/4, unconsol. MW sorted.
30			0	8	33.5	38.5				37'-39.5' Gravelly Sand, dark yllsh brn, 10 YR 4/2, to olive black, 5 Y 2/1, at 38.5'.
35			2.5	9	38.5	43.5				80% Fine sand, 20% small cobbles, ps, unconsol. sand is sub ang to sub rounded, cobbles are rounded.
40			5	10	43.5	48.5				39.5'-40.5' Sandstone, olive black 5 Y 2/1, MW consolidated, stained, appears to be Nacimiento.
45			5	11	48.5	53.5				40.5'-40.8' Claystone, olive gray, 5 Y 4/1, mod well consolidated.
50										40.8'-41.1' Sandstone, dark yllsh orange, 10 YR 6/6, med sand, MW sorted, unconsolidated.
										41.1'-41.3' Claystone, olive gray, 5 Y 4/1. mod well consolidated.
										41.8'-42' Sandstone, grayish orange, 10 YR 7/4, med sand, mod consol., subang, calcium cement, moist.

Sampling

DATE	VOC	PAH	CAT/AN	TDS
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Water Levels & Product measurements 1988



	GBR 1	GBR 2	GBR 3	GBR 4	GBR 5	GBR 6	* GBR 7	* GBR 8	GBR 9
Jan									
Feb									
March									
April									
May									
June									
July									
Aug									
Sept									
Oct									
Nov					5361.90 0.17	5356.62 0.08	5361.85 0.00	5347.91 0.00	5342.29 0.00
Dec					5362.04 5361.76 5361.00 5361.16	5356.68 5356.83 5356.11 5356.9	5361.85 5361.80 5361.00 5361.80	5347.91 5347.91 5348.05 5348.27	5342.29 5342.41 5342.00 5342.61

* monthly measurements, all others measured quarterly
 measurements recorded in order of :
 Water Elevation
 Product Thickness
 Corrected Water Elevation

Water Levels & Fluxes in measure 55 Measurement 19



	* GBR 10	GBR 11	GBR 12	* GBR 13	GBR 14	* GBR 15	GBR 16	* GBR 17	GBR 18
Jan									
Febr.									
March									
April									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.	5345.29 5347.73	5346.43 5348.33	5352.64 5352.85	5352.64 5352.84	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91
Dec.	5345.41 5347.83	5346.68 5348.40	5352.84 5353.04	5352.84 5353.04	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91	5364.91 5364.91

Water Levels & Product Measurements



* GBR 19 GBR 20 GBR 21 GBR 22 GBR 23 GBR 24 GBR 25 GBR 26 GBR 27

	Jan	Febr	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
* GBR 19											5355.52	No Record
GBR 20											5353.96	5353.63
* GBR 21	D	B									5348.67	5349.75
* GBR 22											5342.91	5341.76
GBR 23											5341.37	5341.89
* GBR 24											5340.06	5347.26
* GBR 25											5339.47	5349.89
GBR 26											5344.31	5345.02
GBR 27												

Water Level & Probed Measurements Measurements 19

*

	GBR 28	GBR 29	GBR 30	GBR 31	GBR 32	GBR 33	GBR 34	GBR 35	GBR 36
Jan									
Febr									
March									
April									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.			5364.15	5361.88	5382.00	5362.28	5381.84	5359.10	
			5364.23						
Dec.			5344.96	5362.18	5381.90	5360.57	5360.61	5359.98	

Water Levels & Product Measurements

Measurements 19

GBR 37 GBR 38 GBR 39 GBR 40 GBR 41 GBR 42 GBR 43 GBR 44 GBR 45

Jan
Febr.
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec

5367.64
5368.57
5366.61
5365.07
5368.78
5366.67

Water Levels & Precipitation Measurements 19

GBR 46 GBR 47 GBR 48 GBR 49 GBR 50 GBR 51 GBR 52 * Rch 44 GPR 45

Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
										5382.90	5384.16
										5382.81	5384.03

GRW 1 GRW 2 GRW 3 GRW 4 GRW 5 GRW 6 GRW 7 GRW 8 GRW 9

Jan

Feb

March

April

May

June

July

Aug

Sept

Oct

Nov

Dec

5336.05	5342.74	5344.49	5338.02	5348.44	5345.44	5350.70	5351.41
		2.19					
		5346.24					
5353.55	5347.82	5346.59	5346.52	5348.83	5347.67	5351.02	5351.41
		1.23	1.02				
		5337.57	5346.54				

GRW 10 GRW 11 GRW 12 GRW 13

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
										5358.02 3.82 5356.07	5359.85
										5362.74	5363.93
										5378.96	5378.96
										5355.27	5355.27

Water Levels & Product Thickness Measurements 19

GBR 1	GBR 2	GBR 3	GBR 4	GBR 5	GBR 6	GBR 7	* GBR 8	* GBR 9
Jan								
Febr								
March								
April								
May								
June								
July								
Aug								
Sept								
Oct								
Nov								
Dec								

* monthly measurements, all others measured quarterly

* GBR 10	GBR 11	GBR 12	* GBR 13	GBR 14	* GBR 15	GBR 16	* GBR 17	GBR 18
----------	--------	--------	----------	--------	----------	--------	----------	--------

2/20/22

Febr.

March

Apr 1

1204

date

5014

Acq.

Sept

Q. 1

161

2

GBR 13

GBR 20

*

GBR 21

*

GBR 22

GBR23

*

GBR 24

*

GBR 25

GP 26

9/27

John

12/6/81

March

Part 1

May

done

6/26/14

Ref:

328

100

2/02

100

Water Level & Product Thickness
Measurements 19

*

GBR 28 GBR 29 GBR 30 GBR 31 GBR 32 GBR 33 GBR 34 GBR 35 GBR 36

Jan

Febr.

March

April

May

June

July

Aug.

Sept.

Oct.

Nov.

Dec.

GBR 37 GBR 38 GBR 39 GBR 40 GBR 41 GBR 42 GBR 43 GBR 44 GBR 45

class

Feb.

March

Apr. 1

May

Done

20/4

Ag.

Sept.

1

Wool

12

Rec Well

GBR 52

51

GR 50

GR 49

GBR 48

CBR 4/7

CBR 46

Jan.

Feb

March

1206

May

June

10/14

Ag.

5407

304

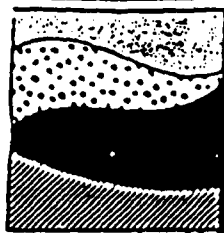
2021

100

~~APPENDIX B~~

LITHOLOGIC LOGS AND COMPLETION DIAGRAMS
OF WELLS INSTALLED BY GIANT INDUSTRIES

In 80 Thru 2/28/90



Client Montgomery & Andrews Well Number GBR-1
NE NW NW S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technology
Spud Date 12/20/85 Completion Date 12/20/85
Logs Run Lithology from cuttings Logged By J.C. Hunter
Elevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.
Remarks Drilled With Hollow-Stem Auger (CME-55)

Depth

Litho
Recov

Samples/Footage

Lithology/Remarks

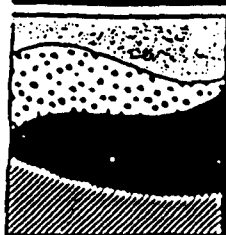
0.0-10.0 (10.0') FILL: very coarse cobbles and small boulders
of quartzite w/sand and gravel; dark gray; dark hydrocarbon
stain and odor below 2.5'; damp.

8512200850/10.0' 10.0-20.0' (20.0') SANDSTONE: yellow-gray brown; silty and poorly
sorted; fine-med grained; damp' faint hydrocarbon odor 10.0-15.0'
8512200900/15.0' dryer with no odor 15.0'-20.0'.

8512200916/20.0' Borehole located on N side of old burn pit; 90.0' 165° to south
fire hydrant' borehole backfilled w/cuttings and bentonite plug

85122000850 : 1 VOA, cuttings
8512200900 : 1 VOA, 1 Whirlpack, split spoon
8512200916 : 1 VOA, 1 Whirlpack, split spoon

TD=20.0'



WELL LOGGING FORM

Page 1 of 1

Client Montgomery & Andrews Well Number GBR-2

NE 1/4 NW 1/4 S 27 T 29 R 12 State New Mexico

County San Juan Contractor Western Technology

Spud Date 12/20/85 Completion Date 12/20/85

Logs Run Lithology from cuttings Logged By J.C. Hunter

Elevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.

Remarks Drilled with Hollow-Stem Auger (CME 55)

Depth	Lithology	Recovery	Samples/Footage	Lithology/Remarks
0				
5				0.0'-15.0' (15.0') <u>Fill</u> ; very coarse cobbles and small boulders of quartzite w/sand and gravel; faint hydrocarbon odor 5.0'-10.0'; strong hydrocarbon odor 10.0'-15.0'; free water level encountered @ 10.0'; Hydrocarbon stains 5.0'-15.0'.
10				
15			8512201046/12.5'	
20				15.0'-25.0' (10.0') <u>SANDSTONE</u> : grades from medium gray (15.0' to 17.5') to yellow gray (17.5'-25.0'); strong hydrocarbon odor and some stains 15.0'-17.5'; faint odor and no stain 17.5'-25.0'; sand is fine-med grained, poorly sorted, silty; wet to 25.0'.
25				
30				Borehole located in center of old burn pit; 73.0', 148° to south hydrant; borehole backfilled with cuttings and bentonite plug @ bottom and @ top of water.
				8512201046 : 1 VOA, 1 whirlpack, cuttings

TD=25.0' 25

Client Montgomery & Andrews Well Number GBR-31/4 NE 1/4 NW 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologySpud Date 12/20/85 Completion Date 12/20/85Logs Run Lithology from cuttings Logged By J.C. HunterElevation 5414' topo Spud In (Fm.) Fill and/or Animas Fm.Remarks Drilled with Hollow- Stem Auger (CME-55)

Depth

Litho
recor

Samples/footage

Lithology/remarks

0

0.0'-5.0' (5.0') FILL: very coarse cobbles and small boulder
of quartzite; some sand and gravel; gray-gray brown; dry;
faint hydrocarbon odor.

5

5.0'-7.5' (2.5') SANDY FILL: sand & gravel with some cobbles
and boulders; brownish gray; damp; faint hydrocarbon odor.

10

7.5'-12.5' (5.0') SANDSTONE: yellow-brown; fine grained;
poorly sorted and silty; damp; very faint hydrocarbon odor;
no stain.

TD=12.5'

(Refused auger)

15

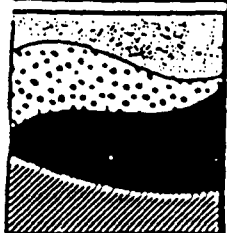
Borehole located 51.0', 136° to south hydrant; backfilled
w/ cuttings and bentonite plug @ bottom. Probably at or
near south edge of burn pit.

20

25

30

Remarks Drilled with Hollow-Stem Auger (CME-55)



Depth

Litho
recov

Samples/footage

Lithology/remarks

0

0.0'-5.0' (5.0') FILL: Very coarse cobbles and small boulders, brown-gray; dry, faint hydrocarbon odor; no stain.

5

5.0'-25.0' (20.0') SAND and STONE : gray-brown; soft and loose 5.0'-13.0', becomes harder and consolidated 13.0'-25.0'; damp from 5.0'-10.0'; saturated 10.0'-25.0'; hydrocarbon odor and some stain 5.0' - 25.0'; water level poorly defined, about 10.0'.

15

20

TD=25.0'25"
refused auger

Located 97.0', 138° to south hydrant; backfilled with cuttings and bentonite plug @ bottom.

Client Montgomery & Andrews Well Number GBR-5

1/2 1/2 1/2 1/2 S 1 T 1 R 1 State New Mexico

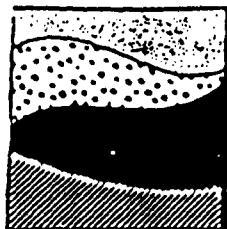
County San Juan Contractor Western Technology

Spud Date 12/20/85 Completion Date 12/20/85

Logs Run Lithology from cuttings Logged By J.C. Hunter

Elevation 5390'topo Spud In (Fm.) Fill and/or Animas Fm.

Remarks Drilled with Hollow-Stem Auger (CME-55)



Litho
RECORD

Depth

Samples/footage

Lithology/remarks

0

10

20

30

5/30/86 33'

40

50

TD=55.0'
refused auger

60

8512201240/20.0'

5.0'-55.0' (50') SANDSTONE: dark gray-yellow gray; fine grained; poorly sorted; silty; strong hydrocarbon stain and odor 5.0'-25.0'; faint stain and some odor 25.5'- 55.0' ; water level at approximately 33.0', odor persists in saturated sand to total depth.

8512201410/55.0'

Borehole covered and left open for later ground water sampling. Located below SW corner of south pad.

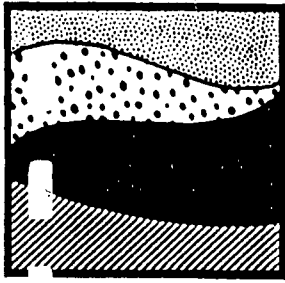
8512201240 : 1VOA, 1 whirlpack, cuttings

8512201410 : 1VOA, 1 whirlpack, cuttings

TD 53'6" TOC, screened from 31'6" to 51'6"

gravel to 26'8", 50 lb. Bentonite @ 26'8"

Backfill to surface



Page _____ of _____

Remarks Drilled with Air Rotary

[illegible]

Client Montgomery & Andrews Well Number GBR 71/4 1/4 1/4 1/4 S27 T29 R12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-5'	COBBLES AND SAND, 1/8"-5" in diam w/minor sand; fn-co gr; mod yish brn 10YR5/4
5						5-7.5'	SAND AND GRAVEL, dusky hlsh brn 10YR2/2; med-co gr sand
						7.5-10'	SAND AND GRAVEL, as above; at 10' hit hydrocarbon-stained sand; brnsh blk 5YR2/5
10						10-12.5'	SAND, w/1-2% small gravel; 1/2"-1" in diam; olive gry 5Y4/1; fn-co gr; hydrocarbon odor and stain
						12.5-15'	SAND, w/some gravels; 2-3% gravel, 1/4"-1 1/2" diam; sand olive gry 5Y4/1 and fn-co gr
15						15-16'	SAND, lt olive gry 5Y5/2; v fn-fn gr; slight hydrocarbon odor
						16-17'	SILTY SAND, olive gry 5Y4/1; v fn gr; hydrocarbon odor
20						17-17.5'	SAND, olive gry 5Y4/1; v fn gr hydrocarbon odor
						17.5-18.0	SAND, lt olive gry 5Y5/2; v fn gr; slight hydrocarbon odor
						18-22.5'	SAND, v fn gr w/some silt; lt olive gry 5Y5/2; slight hydrocarbon odor
25						22.5-25.0'	SAND, as above, slight hydrocarbon odor
						25-27'	GRAVEL AND SAND, hydrocarbon-stained
						27-30'	SAND, hydrocarbon-stained; grades from olive blk 5Y2/1 to blk N1; 1/4"-1/2" diam cobbles; fn fr sand
30						33-35'	SANDSTONE, weathered lt olive brn 5Y5/6; fn-med gr w/some silt; no hydrocarbon odor, no moisture
35						35-36'	CLAY, olive gry 5Y3/2; hydrocarbon odor; moist; minor sand
						36-40'	SAND AND SOME SILT, fn gr dusky yel 5Y6/4
40						40-41'	SAND, w/some silt, fn gr dk yelsh orng 10YR6/6, some gravel and quartzite at 40'
						41-43.5'	SAND, w/some silt, fn gr minor gravels, quartzite
45						43.5-46'	SAND, grades from med-co gr sand to fn silty sand, dk yelsh orng

GCL

WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number GBR 71/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-24-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks _____

DEPTH

LITHO.

RECOV.

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

45

46-47.5' SILTY SANDSTONE, lt gry to lt olive gry
N7 to 5Y6/1

50

TD to 48' from surface, screened from 41'7.5" to 31'7.5",
6' blank on bottom, gravel pack to 24'10", bentonite
plug to 19'8", cement grout w/5% bentonite to surface.
Completed well with 2" PVC.

55

60

65

70

75

80

85

90

GCL

WELL LOGGING FORM

Page 1 of 2

Client Montgomery & Andrews Well Number (P-4) GBR 8
1/4 1/4 1/4 1/4 S27 T29 R12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date _____ Completion Date 10-1-86
Logs Run Lithology Logged By Martin
Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

0

0-5' SILTY SAND, w/some cobbles, fn-med gr dk
yelsh brn color 10YR4/2

5

5-10' SAND, med-co gr; dk yelsh brn color 10YR4/2

10

10-25' COARSE-GRAINED SAND, dk yelsh brn color
10YR4/2

15

20

25

25-30' CLAYEY SAND, fn-med gr; dk yelsh brn color
10YR4/2

30

30-35' SANDY CLAY, v fn-med gr, dk yelsh brn color
10YR4/2

35

35-38' SANDY CLAY, fn-med gr olive gry color
5Y4/1; strong hydrocarbon odor

40

38-38.33' SANDY CLAY, fn-med gr mixed color of mod
yelsh brn 10YR5/4 and olive gry 5Y4/1;
strong hydrocarbon odor38.33-39.17' SILTY SAND, fn-med gr olive gry color 5Y4/1
strong hydrocarbon odor

45

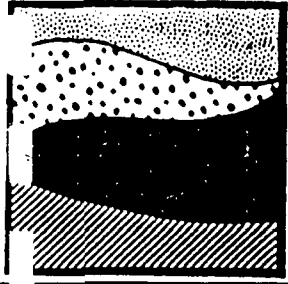
39.17-39.5' SAND, co gr olive gry color 5Y4/1, strong
hydrocarbon odor

GCL

WELL LOGGING FORM

Page 2 of 2

Client Montgomery & Andrews Well Number (P-4) GBR 8
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date _____ Completion Date 10-1-86
Logs Run Lithology Logged By Martin
Elevation _____ Spud In (Fm.) _____
Remarks _____



LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

45

TD to 58' from surface. Screened from 53' to 38', 5'
blank on bottom. Gravel pack to 30', bentonite plug
to 25', cement grout to surface. Completed with 2" PVC.

50

55

60

65

70

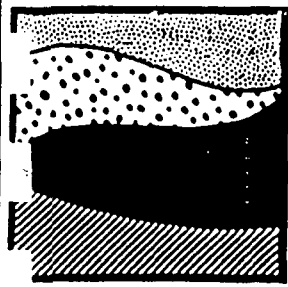
75

80

85

90

Client Montgomery & Andrews Well Number GBR 9
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date 9-29-86 Completion Date 9-30-86
 Logs Run Lithology Logged By Martin/Kaszuba
 Elevation _____ Spud In (Fm.) _____
 Remarks Drilled with Hollow Stem Auger



LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

0

0-2.5' SAND, med-fn gr w/rare pebbles; mod yelsh
brn 10YR5/42.5-5' SAND, med-fn gr w/rare pebbles; mod yelsh
brn 10YR5/45-7.5' SAND, med-fn gr w/rare pebbles; mod yelsh
brn 10YR5/4

7.5-10' CLAYEY SAND, med-fn gr; mod yelsh brn 10YR5/4

10-12.5' CLAYEY SAND, co gr w/1-2% gravels; mod
yelsh brn 10YR5/4

12.5-15' CLAYEY SAND, med-fn gr; mod yelsh brn 10YR5/4

15-17.5' same as above

17.5-20' SAND, med gr; mod yelsh brn 10YR5/4

20-22.5' SAND, med gr, w/occasional pebbles; mod
yelsh brn 10YR5/4

22.5-25' same as above

25-27.5' SAND, med gr, w/occasional pebbles; mod
yelsh brn 10YR5/427.5-30' SANDY CLAY, med gr sand; dk yelsh brn
10YR4/2, faint HC odor30-32.5' CLAYEY SAND, fn-med gr; dk yelsh brn
10YR4/2, faint HC odor32.5-40' SANDY CLAY, fn-med gr; olive gry 5Y4/1,
strong HC odor40-45' CLAY AND SAND, fn gr sand, dk yelsh orng
10YR6/6; clay is lt olive gry 5Y5/2

45-47.5' SANDY CLAY/CLAYEY SAND, dusky yel 5Y6/4

40

45

GCL

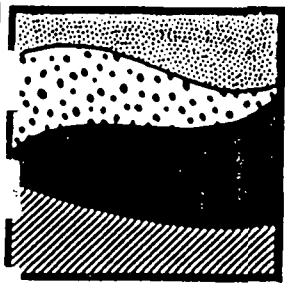
WELL LOGGING FORM

Page 2 of 2

Client Montgomery & Andrews Well Number GBR 9
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date 9-29-86 Completion Date 9-30-86
Logs Run Lithology Logged By Martin/Kaszuba
Elevation _____ Spud In (Fm.) _____
Remarks _____

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							47.5-52.5' <u>SANDY CLAY</u> , med gr sand; lt olive gry 5Y5/2
50							52.5-52.9' <u>SILT</u> , olive gry 5Y4/1
							52.9-57.5' <u>SHALE</u> , grnsh gry 5GY6/1
55							57.5-62.5' <u>SILT</u> , grnsh gry 5GY6/1
60							TD of 65' from TOC. Completed with 2" PVC/ss flush joint. Sand pack to 37', bentonite to 18 1/2' (1.5 bags) cement grout w/5% bentonite to surface. Screened from 50-60', ss up to 35', PVC from 35' to TOC.
65							
70							
75							
80							
85							
90							

Client Montgomery & Andrews Well Number (P-2) GBR 10
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date _____ Completion Date 9-29-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____
 Remarks Drilled with Hollow Stem Auger



DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							0-10' <u>SAND</u> , med gr poorly sorted w/some cobbles; mod yelsh brn color 10YR5/4
5							
10							10-15' <u>SAND</u> , co-med gr mod yelsh brn color 10YR5/4 poorly sorted
15							15-20' <u>SAND</u> , co-med gr poorly sorted; dk yelsh brn color 10YR4/2
20							20-30' <u>SAND</u> , w/5% gravel co-med gr, poorly sorted; dk yelsh brn color 10YR4/2, faint HC smell
25							
30							30-33' <u>SANDY CLAY</u> , fn-med gr dk yelsh brn color 10YR4/2, faint HC odor
35							33-33.33' <u>SILTY SAND</u> , fn-med gr; olive gry color 5Y4/1 well sorted, strong HC color
							33.33-33.75' <u>SAND</u> , fn-med gr well sorted; lt olive gry 5Y5/2, strong HC odor
							33.75-34.67' <u>SILTY SAND</u> , fn-med gr olive gry color 5Y4/1; well sorted; strong HC odor
							38-38.92' <u>CLAYEY SAND</u> , fn-med gr olive gry color 5Y4/1; strong HC odor
							38.92-39' <u>SAND</u> , fn-med gr grysh blk color N2; strong HC odor
							39-39.67' <u>CLAYEY SAND</u> , fn-med gr olive gry color 5Y4/1, strong HC odor
45							39.67-39.83' <u>CLAYEY SAND</u> , co-med gr dusky yel color 5Y6/4; faint HC odor

GCL

WELL LOGGING FORM

Page 2 of 2Client Montgomery & AndrewsWell Number (P-2) GBR 101/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San JuanContractor Western Technologies

Spud Date _____

Completion Date 9-29-86Logs Run LithologyLogged By Martin

Elevation _____

Spud In (Fm.) _____

Remarks _____

LITHO.

RECOV.

DEPTH

RUN

FROM

TO

SAMPLE
DEPTH

REMARKS

45

TD to 45' from surface. Screened from 39' to 29' 5'
blank on bottom. Gravel pack to 23' bentonite plug to
18.5'; cement grout to surface. Completed with 2" PVC.

50

55

60

65

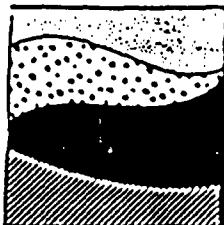
70

75

80

85

90

Client Montgomery & Andrews Well Number GBR-111/4 SW 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date 4/1/86 Completion Date 4/1/86Logs Run lithology from cuttings Logged By J.C. HunterElevation 5388' (top of) Spud In (Fm.) Nacimiento (Tertiary)Remarks Drilled w/HSA, completed as galv. steel piezometer (2.0")
80.7', 245 to N end of "GIANT" sign

Depth

Litho
Recor0'-10' (10') SILTY SAND: med. yellow-brown (10yr ⁵/₄); fine to med grained, poorly sorted,
rounded to subrounded, no stain or odor.10'-40' (30') SAND: med brown (5yr ⁴/₄); med to coarse grained, med. sorted, subround
to angular, no stain or odor.25'-35': Quartzite and granite pebbles, subrounded, ¹/_{8"} - 1".40'-50' (10') SAND: Light olive gray (5y ⁶/₁) to olive gray (5y ⁴/₁) med grained,
subangular, med sorted; distinct hydrocarbon stain and odor50'-55' (5') CLAYEY SAND: Dark yellow brown (10yr ⁴/₂); med grained sand with streaks
of blackish red (5r ²/₂) to med gray (NG) sticky wet clay; med hydrocarbon
odor.

Completed as 2.0" galv steel piezometer

TD=57.2 from top of pipe, stickup=2.7

Screen from 40'-50', 5' blank on bottom

Screen packed w/washed sand, bentonite plug (1/2 sack) @ 30-35'

50' 7"

10' 1 1/4' H2O

W.L.
39.75
4/2/86

TD@ 55

Client Montgomery & Andrews Well Number GBR 12

1/4 1/4 1/4 1/4 S 1/4 T 1/4 R 1/4 State New Mexico

County San Juan Contractor Western Technologies

Spud Date 4/2/86 Completion Date 4/3/86

Logs Run Lithology from cuttings Logged By Nicholas

Elevation _____ Spud In (Fm.) _____

Remarks

Auger Refused @ 42"

Depth

Litho
RECOV

0
5
10
15
20
25
30
35
40
45
48

0-5' GRAVEL: 1/2" - 12" cobbles predominately gaurtzite. poorly sorted, subrounded to sub-angular.

5'-15' SILTY SAND: moderate yellowish brown, (10yr 5/4), fine to med grained, moderately well sorted.

15'-25' CLAYED SILTY SAND: light olive gray, (5y6/1), fine to med. grained, moderately well sorted.

25'-35' SILTY CLAY: dark yellowish brown, (10yr 4/2)

TD=42'

No cuttings would come up hole after 35'

Auger Refused at 42'

Page _____ of _____

____ $\frac{1}{2}$ ____ $\frac{1}{2}$ ____ $\frac{1}{2}$ ____ $\frac{1}{2}$ S ____ T ____ R ____ State ____ New Mexico

Spud Date _____ Completion Date _____

Logs Run Lith. from cuttings and cores Logged By J. Hunter

Elevation 5392' topo Spud In (Fm.) Nacimiento

Remarks NW corner, South parking area

Depth

Litho.
recov

0

5

10

15

20

25

30

35

37' 2"

40

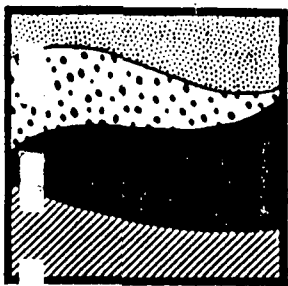
45

TD=48'

50

Completed as 2.0" PVC piezometer, screen

32'-42'.



Client Montgomery & Andrews Well Number GBR-14
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Beeman Bros. Drilling Co.
 Spud Date 9/10/86 Completion Date 9/10/86
 Logs Run Lith from cuttings Logged By Martin
 Elevation _____ Spud In (Fm.) _____
 Remarks Drilled with Air Rotary

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0'							0'-coarse-grained, poorly-sorted sandy; medium brown.
10'							10'-coarse-grained, well-sorted clayey sand; mixed medium brown/dark gray-black; stained; strong hydrocarbon odor.
20'							20'-coarse-grained, poorly-sorted clayey sand; light gray brown, no hydrocarbon odor.
30'							30'-coarse-grained, well-sorted clayey sand; medium to dark gray; faint hydrocarbon odor.
35'							35'-poorly-sorted clayey sand and gravel; medium brown.
40'							40'-poorly-sorted sandy gravel; dark brown.
45'							45'-poorly-sorted clayey sand and gravel; gray-brown.
50'							50'-poorly-sorted gravel; light gray.
55'							55'-well-sorted clayey gravel; medium gray.
60'							60'-well-sorted coarse-grained gravel; medium gray-brown.
65'							65'-poorly-sorted sand and gravel; dark gray.
70'							TD to 65' from surface, screened from 60' to 20', gravel pack 10'10", bentonite plug to 4'4", cement grout w/5% bentonite to surface completed as 6" PVC recovery well with identical 1" PVC casing attached to side.

Client Montgomery & Andrews Well Number (P-1) GBR 15
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date _____ Completion Date 9-28-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-5'	SAND, med gr; mod brn color 5YR4/4
						5-7'	SAND, med gr; mod brn color 5YR4/4, HC stain
5							
						7-10'	SAND, med gr; blk N1; strong HC odor and stain
10						10-15'	CLAYEY SAND, med gr, olive gry color 5Y4/1; HC odor
						15-20'	CLAYEY SAND, med gr w/2-5% gravels; olive gry color 5Y4/1, HC odor
15							
						20-25'	SILTY SAND, med gr olive gry color 5Y4/1 faint HC odor
20							
						25-30'	CLAY, fine to med gr, dark greenish-gray color 5GY4/1, HC odor
25							
						30-35'	SANDY CLAY, fn-med gr olive gry 5Y3/2; HC odor
30							
						35-40'	CLAYEY, SILTY SAND, fn gr lt olive gry color 5Y5/2; HC odor
35							
						40-45'	CLAYEY SAND, fn-med gr; grysh olive color 10Y4/2; faint HC odor
40							
						45-60'	SANDY CLAY, fn-med gr; grnsh gry color 5GY6/1; HC odor
45							

Enclosed
 and water
 at 36.0'



WELL LOGGING FORM

Page 2 of 2Client Montgomery & Andrews Well Number GBR 151/4 1/4 1/4 1/4 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date _____ Completion Date 9-28-86Logs Run Lithology Logged By Martin

Elevation _____ Spud In (Fm.) _____

Remarks

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							TD to 60' from surface. Screened from 55' to 45', 5' blank on bottom. Gravel pack to 35', bentonite plug to 30', cement grout to surface. Completed with 2" PVC.
50							
55							
60							
65							
70							
75							
80							
85							
90							



Client Montgomery & Andrews Well Number GBR 16

1/4 1/4 1/4 1/4 S 1/4 T 1/4 R 1/4 State New Mexico

County San Juan Contractor Western Technologies

Spud Date _____ Completion Date _____

Logs Run Lith. from cuttings and cores Logged By _____

Elevation 5414 topo Spud In (Fm.) Fill

Remarks w end of burn pit

Depth

Litho
Recor

0

0-12' Fill: Gray to brn gry, very coarse boulders, cobbles

5

and sand, local HC stain & odor

10

12.25'

12-25' Sandstone: mod yel brn, fine gr, very poor sorted,

15

subrounded, mod HC odor

20

25

Completed as 2.0" PVC piezometer,

screen 10-20'.

Client Montgomery & Andrews Well Number GBR 171/2 1/2 1/2 1/2 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 5/28/86 Completion Date 5/28/86Logs Run Lith from cuttings Logged By NICHOLASElevation 5401.24 Spud In (Fm.) QALRemarks Drilled With Air Rotary, completed as a 2" flush joint
PVC and SS Well N 11240.19 E 11141.69

Depth

Litho
Recor0-5' (5') sand, mod yellowish brn (10YR 5/4), very fine to coarse grained sand5-10' (5') clayey sand, dk yellowish brn (10YR 4/2) fine to coarse grained sandwith clay stringers10-20' (10') clayey sand, mod yellowish brn (10YR 5/4) fine to med grained sandwith clay stringers20-45' (25') silty sand, mod yellowish brn, (10YR 5/4) fine to med grained sandgrades coarser at 45'45-60' (15') sand, mod yellowish brn (10YR 5/4) to lt olive grey (5Y 5/2), fine tocoarse grained sand with some cobbles60-68' (8') silty sand, greenish grey (5GY 6/1), fine to coarse grained sandw/some cobbles (1/2"-3"), 10-15%.

TD 68' to TOC, screened from 31'-51' ss screen, ss blanks on bottom,

PVC risers. Gravel packed to 28', 100 lb bag Bentonite @ 28', Backfill

to surface

33'-6" 5-29-86

Client Montgomery & Andrews Well Number GBR 18

1 1 1 1 S 1 T 1 R 1 State New Mexico

County San Juan Contractor Western Technologies

Spud Date _____ Completion Date _____

Logs Run lith from cuttings and cores Logged By _____

Elevation ground 5420.28 Spud In (Fm.) OAL

Remarks drilled w/ HSA

Coordinates N 12021.64 E 11528.06

Depth

Litho

Remarks

0

5

10

15

20

25

30

35

40

45

50

0-10' (10') fill: very coarse cobbles, some sand and

gravel

10'-12.5' (2.5') sandy shale, yellowish brn

12.5-25' (12.5') sandstone: yellowish brn, med to fine grained

poorly sorted

25'-30' shale: brn gry to rd brn, fissile, clayey, damp

30-38' siltstone: gry brn to brn gry; clayey, same thin.

irregular sand stringers 1/4"-1/2"; moist

38-50' silty sandstone: yel brn to yel gry, very fine grained,

poorly sorted, locally clayey

Completed as 2.0" galv. steel piezometer.

screen 35'-45'.

12'4"

Client Montgomery & Andrews Well Number (Obs W2) GBR 19
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date _____ Completion Date 10-1-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-5'	SAND, fn-med gr, mod yelsh brn color 10YR5/4
5						5-10'	SAND, med-co gr; mod yelsh brn color 10YR5/4
10						10-20'	CLAYEY SAND, med-co gr; mod yelsh brn color 10YR5/4
15							
20						20-25'	SAND, med gr; mod yelsh brn color 10YR5/4
25						25-30'	SANDY CLAY, v med-co gr; dk yelsh brn color 10YR4/2
30						30-33'	CLAY, fn gr; dk yelsh brn color 10YR4/2
						33-35'	SILTY SAND, fn gr lt olive gry color 5Y5/2; HC odor
35						35-35.83'	SILTY SAND, fn gr dk grnsh gry color 5GY4/1
						35.83-36.17'	SAND, med gr blk N1; wet w/HC strong HC odor
40						36.17-36.5'	SAND, med gr lt olive gry color 5Y5/2; faint HC odor
						36.83-38'	SAND, co gr mod yelsh brn color 10YR5/4; no HC odor
						38-41.33'	SANDY CLAY, fn gr dk yelsh brn color 10YR4/2
						41.33-41.67'	SAND, fn-med gr; dk yelsh brn color 10YR4/2
45						41.67-42.33'	CLAYEY SAND, v fn-med gr w/some cobbles and gravels; dk yelsh brn color 10YR4/2

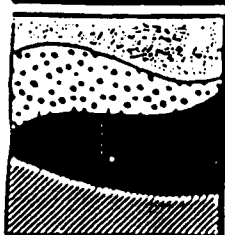


WELL LOGGING FORM

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Client Montgomery & Andrews Well Number GBR 19
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date _____ Completion Date 10-1-86
Logs Run Lithology Logged By Martin
Elevation _____ Spud In (Fm.) _____
Remarks _____

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45							42.92-43' <u>SAND</u> , co gr yelsh gry color 5Y7/2
							43-48' <u>CLAY</u> , fn gr; olive gry color 5Y4/1; faint HC odor
50							
							TD to 51' from surface. Screened from 46' to 31', 5' blank on bottom. Gravel pack to 25', bentonite plug to 20' cement grout to surface. Completed with 2" PVC.
55							
60							
65							
70							
75							
80							
85							
90							



Client Montgomery & Andrews Well Number GBR 20
NW 1/4 SE 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
County San Juan Contractor Western Technologies
Spud Date 4/18/86 Completion Date 4/18/86
Logs Run Lithology from cuttings Logged By Nicholas
Elevation 5394' (topo) Spud In (Fm.) Nacimiento
Remarks Drilled with HSA, no continuous sampler used.

Depth

Litho
recor0
5
10
15
20
25
30
35
40
45

0-20' (20') SAND & GRAVEL: Moderate yellowish brown (10yr 5/4), med to coarse grained sand with 5%-30% gravel (1/4"-2"), No HC Odor.

20-30' (10') SILTY CLAY: Med light gray (N6) to med dark grey (N4), fine to med grained with some silt, hard drilling at 34', no HC ODOR.

30-48.5' (18.5') SANDSTONE: Med lt grey (N6) to med dk grey (N4), fine to med grained with some silt, hard drilling at 34', No HC odor.

WI 5-1 38.0'

TD=48'

Completed as 2" PVC Piezometer

Stickup 1' 10" TD 43'10" from top of casing

Screened interval 27'-37'

Sand to 25', Bentonite 2/3 Bag @ 25'

Backfill to 6', Bentonite 1/3 Bag @ 6'

Page 1 of 1

Elevation 5398' (topo) Spud In (Fm.) Nacimiento

Drille with HSA, completed as 2' PVC Piezometer

Litho
recovery

5'-20' (15') SILTY SAND : Brown, med to coarse grained with minor small cobbles.

38'-46' (8') SANDSTONE : Med. bluish gray (5B5/1), med to coarse grained with local small cobbles (4"-14") HC ODOR and sheen in sampler.

Dual Completion as 2" PVC, Piezometer

Stickup 3'3" TO 40'3" and 41'3" from top of casing

Screened intervals 17-32' and 33-38'

Caved in snad to 6', Bentonite (3/4 Bag) @ 6'

Bentonite (48 bag) @ 2'

Page 1 of 1

NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ S T R State New Mexico

Spud Date 4/15/86 Completion Date 4/16/86

Logs Run Lithology from cuttings Logged By Hicks/Nicholas

Elevation 5394.5" (topo) Spud In (Fm.) Nacimiento

Remarks

Drilled with HSA, continuous sampler and spit spoon used
completed as 2' PVC Piezometer

Depth

Litho
recov

0

0-2.5' (2.5') SAND & GRAVEL FILL: Brown, some HIC odor from surface spills

5

10-

2.5'-15.0' (12.5') SAND: Mod yellowish brown (10yr5/4) (2.5'-12.5')

15

grades to Lt. brown at 12.5' (5yr5/6), med grained, well sorted
contains gravels (12/5'-15.0') HC Odor

204

15 0-22 5' (7.5) CLAYEY SAND: Brown, grades to dark brown at 17.5', some clay balls increasing with depth, HC odor.

254

4/16 32'8"

304

22.5'-32.5' (10') SAND : Brown, fine to med grained, well sorted, clean , some clay from (22.5'-27.5'), black stained sand at 30', HC Odor.

354

40.

32.5'-38.0' (5.5') SANDSTONE: Green to yellow green, consolidated grades to yellow brown at 36.5'.

43

38'-43' (5') No Returns.

$$70 = 48'$$

50

43'-48' SANDSTONE: gray, med to coarse grained, no HC odor

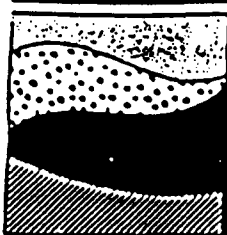
Completed as 2' PVC Piezometer

Stickup 3'5" TD 49.5' from top of casing

Screen from 32'-42', 4' blank on bottom

Sand to 32', Backfill to 26', 3/4 Bag Bentonite @ 26'

Backfill to 2', 1/4 Bag Bentonite @2'

Client Montgomery & Andrews Well Number GBR 23SW 1/4 NE 1/4 NW 1/4 S 27 T 29N R 12W State New MexicoCounty San Juan Contractor Western TechnologiesSpud Date 4/16/86 Completion Date 4/16/86Logs Run Lithology from cuttings Logged By NicholasElevation 5401' (top) Spud In (Fm.) NacimientoRemarks Drilled With Hsa, continous sampler used 22'-48.5'

Depth

Litho
RECORD

4/16 WL24'4"

TD = 48.5'

0-15' (15') SILTY SAND: mod yellowish brown (10yr 5/4), very fine grained, with small amounts of cobbles (1/4"-1"), grades coarser at 10', HC Odor.15'-22' (7') SAND & GRAVEL: Mod yellowish brown (10yr 5/4) to pale brown (5yr 5/2), med to coarse grained sand with cobbles (1/4"-3"), HC Odor.22'-26' (4') SHALE: Grayish Brown (5yr 3/2) to yellowish grey (5y 7/2), localized sand lenses, some weathering in shale, no HC Odor.26'-48.5' (22.5) SANDSTONE: Weathered, light olive gray (5y 5/2) from 26-27', med lt gray (N6) to med gray (N5), fine to med grained, slight HC odor(?) from 26'-27'.

Completed as 2" PVC Piezometer

Stickup 3' TD 41'10" from top of casing

Screen from 23'10" to 33'10" 5' Blank on Bottom

Sand to 23', 2/3 Bag Bentonite @ 23', Backfill to 5', 1/3 Bag Bentonite at 5'

Client Montgomery & Andrews Well Number GBR 24

NW 1/4 NW 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12 W State New Mexico

County San Juan Contractor Western Technologies

Spud Date 4/17/86 Completion Date 4/17/86

Logs Run Lithology from cuttings Logged By Nicholas

Elevation 5395' (topo) Spud In (Fm.) Nacimiento

Remarks Drilled with HSA, continous sampler used from 9'-49'

Depth

Litho
Recor

0'-9' (9') SAND: Moderate yellowish brown. (10yr 5/4), med to coarse grained, No HC Odor

9'-14' (5') SILTY SANDSTONE: Moderate yellowish brown (10yr 5/4) to olive gray (5y 4/1)
weathered, very fine to fine grained, No HC Odor.

14'-49' (35') SANDSTONE: Lt olive grey (5y 6/1), fine grained, contains minor gravels.
28' (1"-1 1/2"), HC Odor at 29'

Dual Completion as 2' PVC Piezometer

Stickup 3'3" TD 41'3" and 46'3" from top of casing

Screened intervals 23-33' and 33'-43'

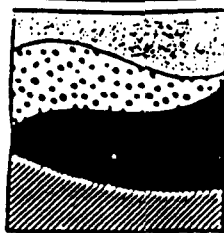
Caved to 33', sand to 22', Bentonite 2/3 Bag

@ 22', Backfill to 6', Bentonite 1/3 Bag @ 6'.

WL 24'4"

TD = 49'

Client Montgomery & Andrews Well Number GBR 25
NE 1/4 NW 1/4 NW 1/4 S 27 T 29N R 12W State New Mexico
County San Juan Contractor Western Technologies
Spud Date 4/17/86 Completion Date 4/18/86
Logs Run lithology from cuttings Logged By Nicholas
Elevation 5395'(topo) Spud In (Fm.) Nacimiento
Remarks Drilled with HSA, used continous sampler from 17'-48'



Depth

Litho
recor

WL 32'

TD = 48'

0'-17' (17') SAND: Mod yellowish brown (10yr5/4), med to coarse grained with some small cobbles from 5'-17', HC Odor

17'-24' (7') SHALE: Dark yellowish brown, (10yr4/2), with pale yellowish orange stringers (10yr8/6) from 23'-24', soft, slight HC Odor

24'-28' SANDSTONE: Moderate yellowish brown (10yr5/4) with streaks of dark yellowish orange (10yr 6/6), fine to med grained, weathered, NO HC odor.

28'-48' SANDSTONE: Ranges in color from lt gray (N7), to moderate yellowish brown (10yr5/4) from 28-33', greenish gray (5G6/1) to dark yellowish orange (10yr6/6) from 33'-43', med to coarse grained, grades coarser at 38', grades to lt gray (N7) at 43', contains small cobbles from 28-43', shale stringers from 43-48', no HC odor

Completed as 2" PVC Piezometer

Stickup 2' 0" TD 50' to top of casing

Screened interval 33-43', caved to 35', sand to 23'

Bentonite 2/3 Bag @ 23', Backfill to 6'

Bentonite 1/3 Bag at 6'



Client Montgomery & Andrews Well Number GBR 26

NE 1/4 NW 1/4 NW 1/4 S. 27 T. 29N R. 12 W. State New Mexico

County San Juan Contractor PSI Western Technologies

Spud Date 4/18/86 Completion Date 4/18/86

Logs Run Lithology from cuttings Logged By Nicholas

Elevation 5396' (topo) Spud In (Fm.) Nacimiento

Remarks Drilled with HSA, continuous sampler was not used.

Depth

Litho
RECORD

0
5
10
15
20
25
30
35
40
45
50

0-7' (7') SAND: moderate yellowish brown (10yr5/4), med to fine grained, well sorted, no HC odor

7'-21' (14') SAND: HC stained, ranges from med dark gray (N4), grayish black (N2), to med gray (N5), fine to med grained, contains cobbles at 15', clay lenses from 12'-15' strong HC odor

21'-35' (14') CLAYEY SAND: HC stained, ranges in color from med gray (N5) to grayish black (N2), very fine to fine grained, moist, HC odor.

35'-50' (15') SANDSTONE: med dark gray (N4), fine to med grained with some clay, wet HC odor.

4/23 WL 31'4"

TD = 50'

Completed as 2" PVC Piezometer

Stickup 1'6" TD 41'6" from top of casing

Screened interval 25-35', caved to 26',

Sand to 23', Bentonite @23 2/3 Bag, Backfill to

5', Bentonite 1/3 Bag at 5'

Client Montgomery & Andrews Well Number GBR 27

NE 1/4 NW 1/4 NW 1/4 NW 1/4 S 27 T 29N R12W State New Mexico

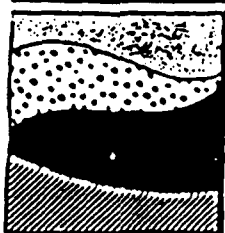
County San Juan Contractor Beeman Brothers

Spud Date 4/23/86 Completion Date 4/23/86

Logs Run Lithology from cuttings Logged By Nicholas

Elevation 5397' (topo) Spud In (Fm.) Nacimiento

Remarks Drilled with Air Rotary, completed as 5" PVC Well



Depth

Litho
Recor

0

0-5' (5') SAND: Grayish orange (10yr7/4); fine to coarse grained, no HC odor

5

10

5-15' (10') SAND: Mod yellowish brown (10yr5/4); fine to med grained with some silt, contains some cobbles at 13', (2-3%)

15

20

15-20' (5') SAND & GRAVEL: Mod yellowish brown (10yr5/4); fine to med grained with some silt, contains 30% gravels

25

30

20-25' (5') SHALE: Dusky yellow (5y6/4)

WL 5/2 35'10"

35

40

25-67' (42') SANDSTONE: Lt gray (N7), very fine to med grained, grades to mod yellowish brown (10yr5/4) from 32'-34'

45

50

Completed as 5" PVC well

55

Stickup 1'4" TD 68'4" from top of casing

60

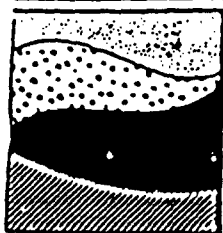
Screen from 22-62', 5' Blank on Bottom

65

Sand to 18', Bentonite (Isack) 1 18'

TD=67'

70



WELL LOGGING FORM

Page 1 of 1

Client Montgomery & Andrews

Well Number GBR 28

1 1 1 1 S 27 T 29 R 12 State New Mexico

County San Juan

Contractor Beeman Bros. Drilling Co.

Spud Date 5/27/86

Completion Date 5/27/86

Logs Run lith from cuttings

Logged By NICHOLAS

Elevation _____ Spud In (Fm.) _____

Remarks Drilled With Air Rotary, completed as 6" PVC recovery well

Depth

Litho
recovery

	0-10' (10')	sand, mod. velish brn (10YR 5/4), med to coarse grained
5		w/some cobbles.
10	10-20' (10')	sand, mod. velish brn (10YR 5/4), coarse to med grained
15		with some cobbles and lt brn clay stringers
20	20-29' (9')	sand, mod. velish brn (10YR 5/4), fine to coarse grained,
25		grades coarser at 27'
30	29-30' (1')	silty clay, brown
35	30-32' (2')	sandy clay, brown, med. to fine grained sand.
40	32-35' (3')	Silty Sand, greyish black, HC ODOR, fine to med. grained sand w/brn clay stringers.
45	35-38' (3')	sandstone, lt olive grey (5Y 5/2)
50	38-69' (31')	sandstone, med. lt grey (N8), graded to dk greenish grey
55		(5GY 4/1) at 58', grades to dk grey (N3) at 63', fine to coarse grained
60		sandstone with some cobbles, grading coarser from 55-57'
65	TD 68' 6"	stickup 2', screened from 23'6" to 63'6", Bentonite @ 16'
		(100 lb bag), gravel packed to 16', TD from TOC 70'6"

Client Montgomery & Andrews Well Number GBR 291/2 1/2 1/2 1/2 S 27 T 29 R 12 State New MexicoCounty San Juan Contractor Beeman Bros. Drilling Co.Spud Date 5/29/86 Completion Date 5/30/86Logs Run lith from cuttings Logged By NICHOLAS

Elevation _____ Spud In (Fm.) _____

Remarks Drilled With Air Rotary, completed as a 6" PVC recovery wellLitho
recovery

Depth

0-5' (5') sand and gravel, pale yellowish brn (10YR 6/2), gravels (1/4"-1'),

sand; fine to coarse grained

5-15' (10') sand, greyish orange (10YR 7/4), med. to coarse grained

w/some cobbles

15-35' (20') clayey sand, dk yellowish brn (10YR 4/2), fine to coarse grained

sand with increasing clay content from 30-35'

35-40' (5') sandstone, greenish grey (5GY 6/1), H.C. ODOR, fine to coarse

grained with some silt.

40-50' (10') sandstone, mod. yellowish brn (10YR 5/4), fine to coarse grained sand,

grades med. to coarse at 45'

50-60' (10') silty clay, lt olive grey (5Y 6/1) from 50-55', brownish grey (5YR 4/1)

from 55-60, increasing clay content at 55'

60-70' (10') sandstone, greenish grey (5GY 6/1) to med. lt grey (N6), fine to med.

grained

TD 72' from TOC, screened interval from 25'-65', gravel packed to 15', 100 lb

bag Bentonite @ 15', backfill to the surface

4 5-30-86

Client Montgomery & Andrews Well Number (X-1) GBR 30
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
 County San Juan Contractor Western Technologies
 Spud Date _____ Completion Date 9-24-86
 Logs Run Lithology Logged By Martin
 Elevation _____ Spud In (Fm.) _____

Remarks Drilled with Hollow Stem Auger

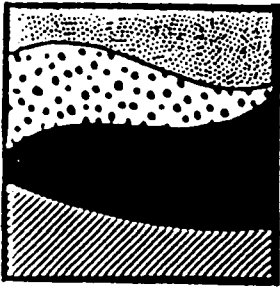
DEPTH	LITHO.	RECOV.	RUN	FROM	TO	SAMPLE DEPTH	REMARKS
0							
						0-5'	<u>SAND</u> , med gr mod yelsh brn 10YR5/4
5						5-10'	<u>SAND</u> , med-co gr mod yelsh brn 10YR5/4
10						10-15'	<u>SAND</u> , w/1-2% gravels; med-co gr mod yelsh brn 10YR5/4
15						15-20'	<u>SILTY SAND</u> , fn-med gr olive blk 5Y2/1; strong HC odor and stain
20						20-25'	<u>SILTY SAND</u> , med gr, dk grnsh bry 5GY4/1; strong HC odor and stain
25						25-30'	<u>CLAYEY SAND</u> , med-gr, olive blk 5Y2/1, strong HC odor and stain
30						30-33'	<u>SANDY CLAY</u> , fn-med gr, olive gry 5Y4/1; faint HC odor; wet
35						33-45'	<u>SANDY CLAY</u> , fn-med gr, lt olive gry 5Y5/2; faint HC odor; wet
40							
45							
							TD to 49'. Screened from 40' to 25', sand pack to 19'2"

GCL

WELL LOGGING FORM

Page 2 of 2

Client Montgomery & Andrews Well Number (X-1) GBR 30
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date _____ Completion Date 9-24-86
Logs Run Lithology Logged By Martin
Elevation ground 5394.26 Spud In (Fm.) QAL
Remarks Coordinates N 11014.84 E



DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
45	X						5' blank on bottom, bentonite plug to 13'11", cement grout w/5% bentonite to surface. Completed with 2" PVC.
50							
55							
60							
65							
70							
75							
80							
85							
90							



WELL LOGGING FORM

Page 1 of 1

Client Montgomery & Andrews Well Number (X-2) GBR 31
1/4 1/4 1/4 1/4 S 27 T 29 R 12 State New Mexico
County San Juan Contractor Western Technologies
Spud Date _____ Completion Date 9-25-86
Logs Run Lithology Logged By Martin
Elevation _____ Spud In (Fm.) _____
Remarks Drilled with Hollow Stem Auger

DEPTH	LITHO.	RECOV.					REMARKS
			RUN	FROM	TO	SAMPLE DEPTH	
0							0-5' SAND, med gr, mod yelsh brn 10YR5/4
5							5-10' CLAYEY SAND, med-co gr, dk yelsh brn 10YR4/2
10							10-20' SILTY SAND, med-co gr, dk yelsh brn 10YR4/2
15							
20							20-25' CLAYEY SAND, med-co gr, dk yelsh brn 10YR4/2 HC odor (?), v v faint
25							25-30' CLAY, fn gr, dk yelsh brn 10YR4/2
30							30-33' SANDY CLAY, fn-med gr, lt olive gry 5Y5/2
Water level @ 33'							33-37' GRAVEL LAYER
35							37-45' SANDY CLAY, fn-med gr lt olive gry 5Y5/2
Bedrock 37'							
40							TD to 45', screened from 39'7" to 24'7", 5' blank on bottom, sand pack to 19.33', bentonite plug to 13'4" cement grout w/5% bentonite to surface. Completed with 2" PVC.
45							

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:

Page 1 of 2

GBR-32

NORTH

400'

GBR-18

NOT TO SCALE

1/4 1/4 1/4 SW 1/4 S22 T29N R12WSITE ID: MONT & AND LOCATION ID: (NW) GBR-32

SITE COORDINATES (ft.):

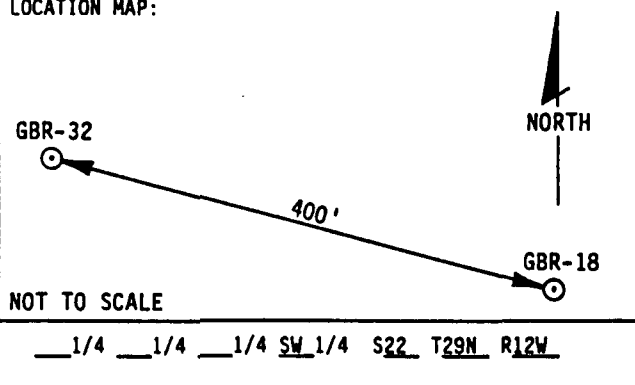
N _____ E _____

GROUND ELEVATION (ft. MSL): 5412 (TOPO)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER W/SPLIT SPOONS.DRILLING CONTR.: WESTERN TECH.DATE STARTED: 4/21/87 DATE COMPLETED: 4/22/87FIELD REP.: J.P. KASZUBA, S.J. COLARULLO, R.T. HICKSCOMMENTS: 7" BOREHOLE, SPOONS WET AT 33'-36'.BEDROCK @ 37.5'. TD=45'

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	4.5	6.0				4.5-4.7' <u>SAND</u> , fn- to cs-gr, poor sorting, tan color.
										4.7-5.2' <u>SAND</u> , fn- to med-gr, mod sorting, tan color.
5										5.2-6.0' <u>SAND</u> , med- to cs-gr, mod sorting, tan color.
10				2	9.5	11.0				9.5-11.0' <u>SAND</u> , as above.
15				3	14.5	16.0				14.5-16.0' <u>SAND</u> , as above.
20				4	19.5	21.0				19.5-21.0' <u>SAND</u> , as above.
25				5	24.5	26.0				24.5-25.2' <u>SILT</u> , lt brn, includes ~10% fn-gr sand and ~10% clay.
										25.2-26.0' <u>SAND</u> , med- to cs-gr, mod sorting, lt brn
30				6	29.5	31.0				29.5-31.0' <u>SAND</u> , as above, includes ~10% silt

GCL

Page 2 of 2

SITE ID: MONT & AND LOCATION ID: (NW) GBR-32
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5412 (TOPO)
STATE: NEW MEXICO COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW STEM AUGER W/SPLIT SPOONS.
DRILLING CONTR.: WESTERN TECH.
DATE STARTED: 4/21/87 DATE COMPLETED: 4/22/87
FIELD REP.: J.P. KASZUBA, S.J. COLARULLO, R.T. HICKS
COMMENTS: 7" BOREHOLE, SPOONS WET AT 33'-36'.
BEDROCK @ 37.5'. TD=45'

LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

Page 1 of 2

LOCATION MAP:

GBR-33

100'

GBR-35

NORTH

GBR-36

NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

SITE ID: MONT & AND

LOCATION ID: (EX-1) GBR-33

SITE COORDINATES (ft.):

N

E

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO

COUNTY: SAN JUAN

DRILLING METHOD: HSA W/CONTINUOUS SAMPLER, 7" BOREHOLE

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/22/87

DATE COMPLETED: 4/23/87

FIELD REP.: J.P. KASZUBA

COMMENTS: CUTTINGS FROM AUGER 0'-5'. BEGIN CONTINUOUS

SAMPLING AT 8'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0										0-2' GRAVEL, & sand fill
5										-2-5' SAND, med-gr, minor fn and cs, mod sorting, tan brn color. No odor.
10				1	8	13				8.0-11.0' No Returns.
15				2	13	18				11.0-11.5' SAND, as above, minor 1 cm dia, rounded pebbles. 11.5-12.3' SAND, fn- to med-gr, mod sorting, brn color. No odor. 12.3-13.0' SAND, fn- gr, 10-20% silt, very minor clay, mod sorting, brn color. No odor. 13.0-15.5' No Returns.
20				3	18	23				15.5-17.2' SAND, med-gr, minor fn and cs, mod sorting, tan brn color. No odor. 17.2-18.0' SAND, fn- to med-gr, minor 1 cm dia pebbles, poor sorting, brn color. No odor. 18.0-20.3' No Returns. 20.3-20.8' SAND, med-gr, minor fn- and cs, minor 1-5 cm dia pebbles, poor sorting, lt brn color. No odor.
25				4	23	28				20.8-21.1' SAND, fn- to med-gr, mod sorting, brn color. No odor. 21.1-21.4' SAND, as @ 20.3'-20.8'. 21.4-22.0' SANDY CLAY, brn, sand is fn- gr, well sorted. No odor. 22.0-23.0' SAND, as @ 20.3'-20.8'. 23.0-25.7' No Returns. 25.7-26.1' SAND, as @ 20.3'-20.8', but pebbles common. No odor.
30				5	28	33				26.1-26.2' CLAY, brn, no odor. 26.2-26.8' CLAYEY SAND, lt olive brn color, sand is fn- to med-gr, well-sorted. 26.8-28.0' CLAY, brn, no odor. 28.0-30.3' No Returns.

GCL

GBR-33

100'

GBR-36

NORTH

GBR-35

NOT TO SCALE

Page 2 of 2

SITE ID: MONT & AND

LOCATION ID: (EX-1) GBR-33

SITE COORDINATES (ft.):

N _____ **E**

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO

COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: SAME

DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: SATURATED @ -36'. BEDROCK @ 41.2' (~40' BY DRILLER'S RECKONING). TD=49.5'. NO DIESEL NOTED DURING DRILLING.

LOCATION DESCRIPTION:

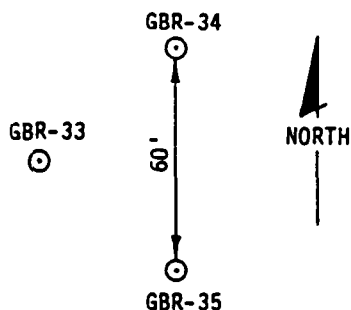
[illegible]

BOREHOLE LOG (WELL)

GCL

Page 1 of 2

LOCATION MAP:



NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12WSITE ID: MONT & ANDLOCATION ID: (EX-2) GBR-34

SITE COORDINATES (ft.):

N E GROUND ELEVATION (ft. MSL): 5394 (TOPO)STATE: NEW MEXICOCOUNTY: SAN JUANDRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLEDRILLING CONTR.: WESTERN TECH.DATE STARTED: 4/23/87DATE COMPLETED: 4/24/87FIELD REP.: J.P. KASZUBACOMMENTS: CLAY @ 15.5-16.0'. SATURATED @ 30-31'. BEDROCK @ 37'. TD=48'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0										
				1	3.0	4.5				3.0-4.5' <u>SAND</u> , tan, fn-to med- gr, mod sorting. Minor cs- gr sand & pebbles up to 0.5 cm. No HC odor.
5				2	8.0	9.5				8.0-8.5' No Returns. 8.5-9.1' <u>SAND</u> , as above except pebbles more common & up to 3.0 cm dia.
10				3	13.0	14.5				9.1-9.5' <u>SAND</u> , brn, fn- gr, well-sorted. Minor silt & clay. Rare cs- gr. No HC odor. 13.0-13.3' <u>SAND</u> , as above, but significant silt. 13.3-13.8' <u>SAND</u> , lt brn, med- to fn- gr, minor cs- gr. Poor sorting. 13.8-14.1' <u>SAND</u> , as @ 13.0'-13.3'. 14.1-14.5' <u>SAND</u> , lt brn, fn- gr, minor med- gr, minor silt, rare cs- gr, poorly sorted. No HC odor.
15				4	18.0	19.5				18.0-18.3' <u>SAND</u> , as above, but cs- gr more abundant. 18.3-18.7' <u>CLAY</u> , olive brn color, minor silt & fn- gr sand. No HC odor. 18.7-19.5' <u>SAND</u> , tan, fn- to med- gr, poorly sorted. No HC odor.
20				5	23.0	24.5				23.0-23.3' <u>CLAYEY SAND</u> , brn, sand is med- to cs- gr, poorly sorted 23.3-23.5' <u>SAND</u> , as @ 18.7'-19.5'. 23.5-24.5' <u>CLAY</u> , olive brn color, minor silt & fn- gr sand. No HC odor.
25										
30				6	28.0	29.5				28.0-28.3' <u>CLAY</u> , as above. No HC odor. 28.3-29.5' <u>SAND</u> , dk brn, fn- to med- gr, well-sorted. No HC odor.

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:

GBR-33

GBR-35

GBR-36

NORTH

NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

Page 1 of 2

SITE ID: MONT & AND LOCATION ID: (EX-4) GBR-35

SITE COORDINATES (ft.):

N

E

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/24/87

DATE COMPLETED: 4/24/87

FIELD REP.: J.P. KASZUBA

COMMENTS: SATURATED @ - 33.8', BEDROCK @ 38'. TD=50.

DIESEL ON SPLIT SPOONS FROM SATURATED ZONE.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	3.0	4.5				3.0-3.2' Road Gravel. 3.2-4.5' SAND, tan, med- gr, minor fn- and cs- gr, poor sorting. No HC odor.
5										
10				2	8.0	9.5				8.0-9.5' SAND, lt brn, med- to cs- gr, mod sorting. Pebbles up to 2 cm dia common. No HC odor.
15				3	13.0	14.5				13.0-13.2' No Returns. 13.2-14.5' SAND, lt brn, med- gr, minor cs- gr & pebbles up to 2 cm dia, well-sorted. No HC odor.
20				4	18.0	19.5				18.0-18.5' SAND, as above. 18.5-19.1' SAND, lt brn, fn- to med- gr, well-sorted. Minor clay. No HC odor. 19.1-19.6' CLAYEY SAND, lt brn, sand is fn- to med- gr, mod sorted. No HC odor.
25				5	23.0	24.5				23.0-23.4' SAND, brn, fn- gr, minor med- gr & clay, well-sorted. No HC odor. 23.4-23.9' SAND, tan, med- gr, minor fn-, cs- gr, & pebbles up to 2 cm dia, poorly sorted. No HC odor. 23.9-24.5' CLAY, olive brn, no HC odor. Sandy (fn- to med- gr) @ 24.1-24.2'.
30				6	28.0	29.5				28.0-28.5' CLAY, as above. 28.5-28.8' SAND, brn, fn- gr, well-sorted. Pebbles (up to 3 cm dia) @ 28.7-28.8'. No HC odor. 28.8-29.5' CLAYEY SAND, brn, sand is fn- gr, well-sorted. Minor silt. Faint HC odor(?).

GCL

GBR-33

GBR-35

NORTH

GBR-36

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

LOCATION ID: (X5)GBR-36

N _____ E _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY, 10" BOREHOLE.

DRILLING CONTR.: BEEMAN BROTHERS

DATE STARTED: 4/29/87 DATE COMPLETED: 4/30/87

FIELD REP.: J.P. KASZUBA

COMMENTS: BEGIN USING WATER FOR LUBRICATION @ 25'.

SATURATED @ -33'. POOR RETURNS PAST 45'. TD=75'.

LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:

GBR-33

GBR-35

GBR-36

NORTH

NOT TO SCALE

1/4 1/4 1/4 1/4 S T R

Page 2 of 2

SITE ID: MONT & AND

LOCATION ID: (X5)GBR-36

SITE COORDINATES (ft.):

N

E

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO

COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: SAME

DATE STARTED: SAME

DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: SAME

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
30				7	30	35				30-35' <u>SAND</u> , as above. Saturated (?). Faint HC odor (?). Olive brn clay nod (~15%).
35				8	35	40				35-40' <u>CLAY</u> , brn, black & grey HC stain, strong HC odor.
40				9	40	45				40-45' <u>CLAY</u> , as above.
45				10	45	50				45-50' <u>CLAY</u> , as above (50%), but slight grey HC stain in places, faint HC odor. Rounded pebbles (50%), ≤ 5 cm dia, various lith: qtzite, sandstone, granite.
50				11	50	55				50-55' <u>CLAY</u> , as above (30%), brn, no HC odor. Rounded pebbles (70%), as above.
55				12	55	60				55-60' <u>PEBBLES</u> , as above.
60										TD=75'. 6" PVC blank 65'-70', 20 slot PVC screen 25-65', PVC blank to surface. 1" PVC screen 25-65', PVC blank 0-25'. Pea gravel (3/8") to 20', bentonite plug to 15, cement grout w/5% bentonite to surface.

GCL

Page 1 of 3



1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5388 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY, 10" BOREHOLE.

DRILLING CONTR.: BEEMAN BROTHERS

DATE STARTED: 4/28/87 DATE COMPLETED: 4/28/87

FIELD REP.: J.P. KASZUBA, S.J. COLARULLO

COMMENTS: BEGIN USING WATER FOR LUBRICATION @ 20'.

CONTAMINATION @ -34.

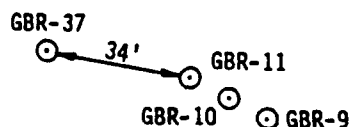
LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:



NOT TO SCALE

1/4 1/4 1/4 1/4 S T R

Page 2 of 3

SITE ID: MONT & AND LOCATION ID: (X1)GBR-37

SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL): 5388 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: SAME

DATE STARTED: SAME DATE COMPLETED: SAME

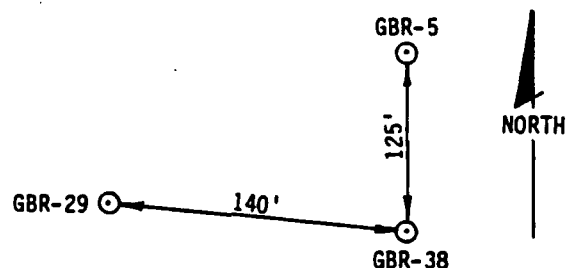
FIELD REP.: SAME

COMMENTS: SATURATION @ ~ 34'. BEDROCK @ 54'. TD=73'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
30				7	30	35				30-35' SAND, as above, but fn- gr more abundant. Pebbles (30%) now sub-rounded to sub-angular. Brn clay nod (<5%), some (<1%) w/HC odor & stain. Saturated (?).
35				8	35	40				35-40' SAND, as above, but grey HC stain & strong HC odor. Sub-rounded pebbles (~30%). ~0.5 cm dia, rare 3 cm dia. No clay.
40				9	40	45				40-45' SAND, as above, but lt grey HC stain, faint HC odor.
45				10	45	50				45-50' SAND, as above, but abundant fn- & med- gr, poorly sorted. Sub-rounded pebbles (20%), 0.5 cm dia. Lt brn color, no HC stain or odor.
50				11	50	55				50-54' SANDY CLAY, golden brn, sand is fn- gr, minor med- gr, mod sorting. No HC odor.
55				12	55	60				54-55' SANDSTONE, grey brn, med- to cs- gr, mod sorting. Poorly cemented, friable. No HC odor.
60										55-60' CLAYSTONE, blue grey, minor fn- gr sand. Poorly cemented, friable. No HC odor.

GCL

Page 1 of 3

NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5393 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: AIR ROTARY, 10" BOREHOLE.

DRILLING CONTR.: BEEMAN BROTHERS

DATE STARTED: 4/28/87 DATE COMPLETED: 4/29/87

FIELD REP.: J.P. KASZUBA

COMMENTS: BEGIN USING WATER FOR LUBRICATION @ 15'.

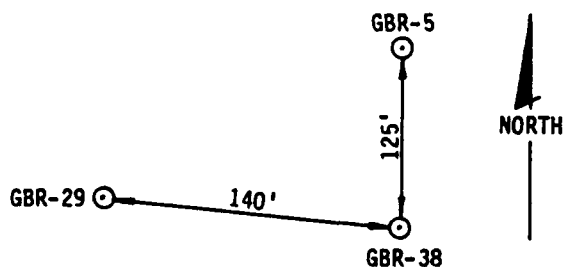
SATURATED @ -37', BEDROCK @ 49', TD=75'.

LOCATION DESCRIPTION:

[illegible]

GCL

Page 2 of 3



NOT TO SCALE

1/4 1/4 1/4 1/4 S T R

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5393 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: SAME

DATE STARTED: SAME DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: SAME

LOCATION DESCRIPTION:

[illegible]

GCL

Page 3 of 3

___1/4 ___1/4 ___1/4 ___1/4 S___ T___ R___

COMMENTS: SAME

LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:

⊙ GBR-39

NORTH

NORTH STORAGE TANK

NOT TO SCALE

Page 1 of 2SITE ID: MONT & AND LOCATION ID: (EX-3) GBR-39

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLEDRILLING CONTR.: WESTERN TECH.DATE STARTED: 4/23/87 DATE COMPLETED: PLUGGED 4/24/87FIELD REP.: J.P. KASZUBACOMMENTS: BOREHOLE NOT COMPLETED AS A WELL. GRAVELS @ 32'.SATURATED @ - 33.5'. BEDROCK @ - 38'. TD=43'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	3.0	4.5				3.0-4.5' <u>SAND</u> , tan, fn- to med- gr, minor cs- gr, mod sorting. No HC odor.
5				2	8.0	9.5				8.0-9.1' <u>SAND</u> , lt brn, fn- gr, minor med- gr, well-sorted. No HC odor. 9.1-9.4' <u>SAND</u> , brn, fn- gr, well-sorted. Abundant silt & clay. No HC odor.
10				3	13.0	14.5				9.4-9.5' <u>SAND</u> , as @ 8.0-9.1'. 13.0-13.4' No Returns. 13.4-13.8' <u>SAND</u> , lt brn, med- gr, poor sorting. Minor cs- gr. No HC odor.
15										13.8-14.1' <u>SAND</u> , brn, fn- to cs- gr, poorly sorted. Abundant silt & clay. No HC odor.
				4	18.0	19.5				14.1-14.2' <u>SAND</u> , lt brn, med- to cs- gr, poorly sorted. No HC odor.
20				5	23.0	24.5				14.2-14.5' <u>SAND</u> , brn, fn- gr, well-sorted. Abundant silt & clay. No HC odor.
										18.0-18.8' <u>CLAY</u> , brn, minor fn- gr sand. No HC odor.
										18.8-19.5' <u>SAND</u> , lt brn, fn- gr, well-sorted. No HC odor.
25										23.0-23.2' <u>CLAY</u> , brn, minor cs- gr sand & <0.5 cm dia pebbles. No HC odor.
										23.2-23.7' <u>SAND</u> , lt brn, med- to cs- gr, poor sorting. No HC odor.
										23.7-24.5' <u>CLAY</u> , as @ 23.0-23.2'. Sandy @ 24.2-24.3'. No HC odor.
30				6	28.0	29.5				28.0-29.5' <u>CLAY</u> , as @ 23.0-23.2', but lacks pebbles. No HC odor.

GCL

NORTH

© GBR-39

NORTH STORAGE TANK

NOT TO SCALE

Page 2 of 2

SITE ID: MONT & AND LOCATION ID: (EX-3) GBR-39

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: SAME

DRILLING CONTR.: WESTERN TECH.

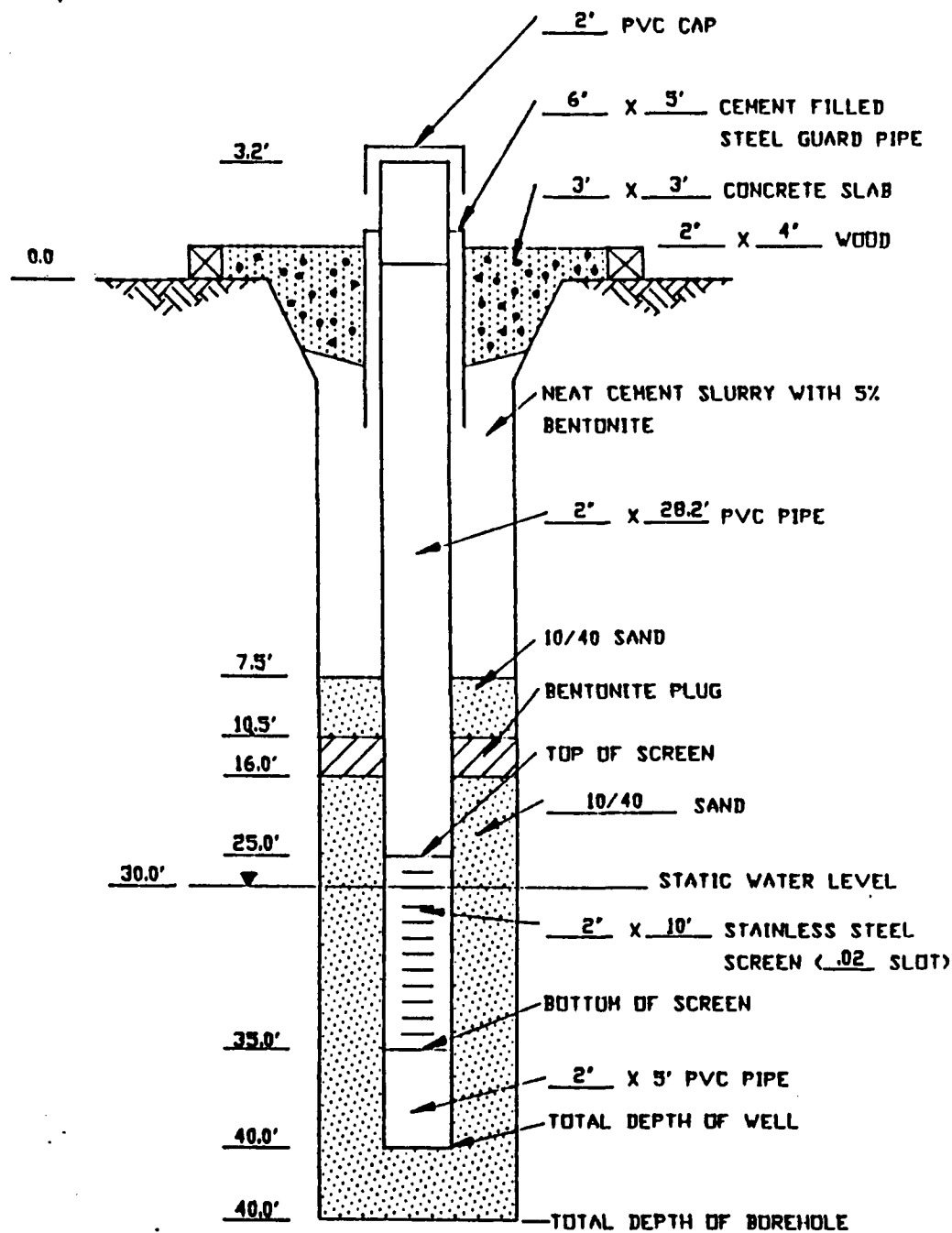
DATE STARTED: SAME DATE COMPLETED: SAME

FIELD REP.: SAME

COMMENTS: NO DIESEL NOTED DURING DRILLING.

LOCATION DESCRIPTION:

[illegible]

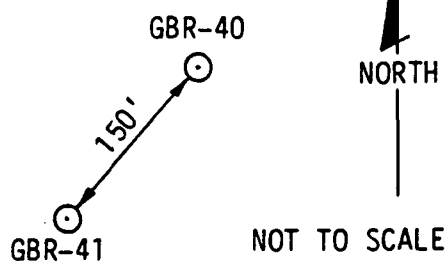


MONITOR WELL GBR-39 COMPLETION DIAGRAM
(FORMERLY STEEL WELL)

• well completed in existing well.
The dimensions of existing well casing is unknown
Boyer note Not same location as borehole
GBR-39!

GCL

Page 1 of 2



NOT TO SCALE

1/4 1/4 NW 1/4 NW 1/4 S27 T29N R12W

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)

STATE: NEW MEXICO COUNTY: SAN JUAN

DRILLING METHOD: HSA W/SPLIT SPOONS. 7" BOREHOLE.

DRILLING CONTR.: WESTERN TECH.

DATE STARTED: 4/24/87 DATE COMPLETED: PLUGGED 4/24/87

FIELD REP.: J.P. KASZUBA

COMMENTS: BOREHOLE NOT COMPLETED AS A WELL. SATURATED @

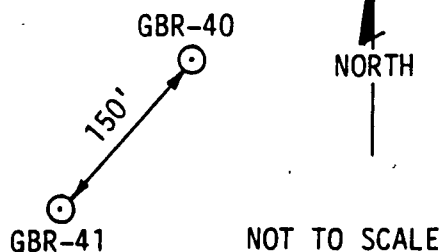
33.0-34.5', TD=38',

LOCATION DESCRIPTION:

[illegible]

GCL

Page 2 of 2



SITE ID: MONT & AND LOCATION ID: (EX-5) GBR-40
SITE COORDINATES (Ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5394 (TOPO)
STATE: NEW MEXICO COUNTY: SAN JUAN
DRILLING METHOD: SAME
DRILLING CONTR.: WESTERN TECH.
DATE STARTED: SAME DATE COMPLETED: SAME
FIELD REP.: SAME
COMMENTS: MINOR DIESEL ON SPLIT SPOONS FROM SATURATED ZONE
BEDROCK @ 39'

LOCATION DESCRIPTION:

[illegible]

LITHOLOGIC LOG

Page 5 of 11

LOCATION MAP:

TRANSPORTATION
OFFICE• BOREHOLE #3
(GBR-40)BOREHOLE #5 •
(GBR-41)

BOREHOLE #6 •

NORTH

1/4 1/4 1/4 1/4 S22 T29N R12WSITE ID: GBR-41 LOCATION ID: BOREHOLE #5

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HOLLOW STEM AUGER, 7" BITDRILLING CONTR.: WESTERN TECHDATE STARTED: 10/6/87 DATE COMPLETED: 10/7/87FIELD REP.: J.P. KASZUBACOMMENTS: SPLIT SPOONS AND CUTTINGS. BEDROCK @ -30'.ID-35'. SATURATED @ -27'.

LOCATION DESCRIPTION:

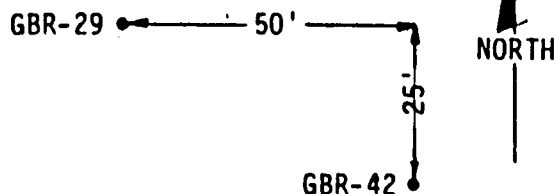
Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
5	••••••••••		2, 4, 4	5'0"-6'6"	0' - 5'6" SAND: lt brn; fn- to med- grain, minor coarse-, granules to 1/8"; mod sorting. No IC stain or odor.
10	••••••••••		3, 5, 4	10'0"-11'6"	5'6" - 10'5" SAND: brn; fn- to med- grain, minor silt; mod sorting. No IC stain or odor.
15	••••••~•••••		3, 3, 3	15'0"-16'6"	10'5" - 12'6" SAND: lt brn (graysh), fn-grain, minor silt. Mod. sorted. No IC stain or odor.
20	••••••~•••••		3, 3, 5	20'0"-21'6"	12'6" - 30'0" SAND: brn, fn-grain w/minor med. grain. Mod sorting. No IC stain or odor.
25	••••••~•••••		5, 5, 6	25'0"-26'6"	20'0" - 21'3" SAND: greenish gray. Fn- to med-grain. Minor clay, mod sorting. Faint IC odor (?).
30	••••••~•••••		50	30'0"-30'5 1/4"	21'3" - 22'6" SAND: brn, med-grain w/minor fn & crs grains. Mod sorting. Faint IC odor (?).
35	••••••~•••••		18, 50	35'0"-36'1"	22'6" - 26'4" SAND: dk gray, med-grained w minor fn-, crs-; mod sorting; IC stain and odor.
40					26'4" - 27'6" SAND: brnsh gray; med-grained, minor crs- mod sorting. IC stain & odor.
45					27'6" - 30'3" SAND: mottled gray & brn, fn-grained w minor crs, clay; mod sorting. IC stain, faint IC odor. Saturated.
50					30'3" - 32'6" SANDSTONE: mottled gray and brn; fn-grained, minor med-brn clay lenses; mod sorting; lithified, poorly cemented. Faint IC odor no IC stain. Not saturated.
					32'6" - 35'1" SANDSTONE: lt brn, fn-grained, minor med-, crs-; mod sorting. No IC stain, no IC odor. Lithified, poorly cemented. Not saturated.
					35'1" - 35'8" SANDSTONE: lt brn, fn-grained, well sorted, lithified. Moderately cemented. Minor Fe-oxide stain. Minor black, carbon stain. No IC stain or odor. Not saturated.

Depth	Visual %	Lith	Blow Counts	Sample Type and Interval	Lithologic Description
50					<u>35'8" - 36'1" SANDSTONE:</u> mottled gray & brn, fn- to med-grained, minor crs-; poorly sorted; lithified, mod cemented. No HC stain or odor. Not saturated.
55					TD=35'. Completed w 2" PVC & stainless steel. PVC blank 32'-35', 020 stainless steel screen 2'6"-32'. PVC blank to surface sand (10/40) 16'6" - 35', bentonite 11'6" - 16'6", sand (10/40) 11'0" - 11'6", cement grout w 5% bentonite to surface.
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					
115					

LITHOLOGIC LOG

Page 1 of 1

LOCATION MAP:



SITE ID: GIANT LOCATION ID: GBR-42
 SITE COORDINATES (ft.):
 N _____ E _____
 GROUND ELEVATION (ft. MSL): 5293 (topo)
 STATE: NEW MEXICO COUNTY: SAN JUAN
 DRILLING METHOD: AIR ROTARY W/ CASING DRIVER
 DRILLING CONTR.: BEEMAN BROTHERS DRILLING COMPANY
 DATE STARTED: 12/15/87 DATE COMPLETED: 12/15/87
 FIELD REP.: J.P. KASZUBA, J.F. KIRBY
 COMMENTS: STEAM CLEAN ALL DRILLING EQUIP. BOREHOLE = 9 7/8".
BEGAN USING WATER @25'. CONTAMINATION @38'. BEDROCK @57'.

LOCATION DESCRIPTION:

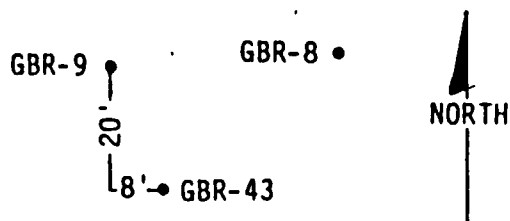
TD = 63'

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
0				0' - 63' cuttings	0' - 10' SAND - lt brn; med-grain, well sorted, uncons. minor clays (<10%). No hydrocarbon stain/odor.
5					10' - 15' CLAYEY SAND - lt brn, med-grain, mod sorting. Minor (<10%) cgs grains. No. HC stain/odor.
10					15' - 25' CLAYEY SAND - lt to med brn, med-grain, well sorted. No HC stain/odor.
15					25' - 30' CLAY - lt brn, minor (<15%) sand. Sand is med- to fn-grain with moderate sorting. No HC stain/odor.
20					30' - 35' CLAY - lt brn, 30% cobbles up to 1" diam. No HC stain/odor.
25					35' - 40' SAND - blk, med grain, well to very well sorting. Hydrocarbon stain/strong hydrocarbon odor.
30					40' - 50' SAND - blk. fn grain, very well sorted, strong HC stain/odor.
35					50' - 57' GRAVELLY SAND - lt brn. fn to cgs grain, poorly sorted. Gravels up to 1/2" diameter. No noticable stain/odor.
40					57' - 63' CLAYSTONE - brnsh grey, cons. No HC stain/odor.
45					
50					Completed as 6-inch recovery well with flush joint pipe. TD well = 62.6, SS blank 52.3' - 62.6', SS screen (020 slot) 36.6' - 52.3', SS blank 31.6' - 36.6', PVC blank 0' - 31.6'. SS centralizers @ 36.6' and 52.3'. Sand (10120) 27.8' - 63', bentonite powder 21.8' - 27.8', sand (10120) 21.0' - 21.8', cement grout w/5% bentonite to surface.

LITHOLOGIC LOG

Page 1 of 1

LOCATION MAP:

1/4 SW1/4 NW1/4 S27 T29N R12WSITE ID: GIANT LOCATION ID: GBR-43

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5389 (topo)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: AIR ROTARY W/ CASING DRIVERDRILLING CONTR.: BEEMAN BROTHERS DRILLING COMPANYDATE STARTED: 12/16/87 DATE COMPLETED: 12/17/87FIELD REP.: J.P. KASZUBACOMMENTS: BOREHOLE = 9 7/8", BEGIN USING WATER @20'. HCCONTAMINATION @ 33'. BOULDERS/COBBLES @ 38'. BEDROCK @55'.

LOCATION DESCRIPTION:

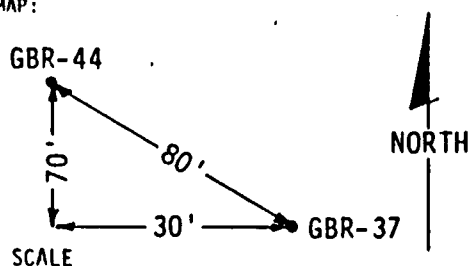
TD = 62'

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
5				0' - 62' cuttings	0' - 10' SAND - lt brn; fn- to med-grain, shrndd to shang poorly sorted. Minor silt (<10%) pebbles (<10%) w/max. dia. 1 inch. Uncons. No HC stain/odor.
10					10' - 20' SAND - as above, but more tan in color and gravel fraction decreases w/depth.
15					20' - 28' SAND - tan, med-grain, rndd to shang, mod sorting. Minor silt (<10%) and crs-grain sand (<10%). Unconsolidated. No HC stain or odor.
20					28' - 32' CLAY - brn, uncons. No HC stain/odor.
25					32' - 34' SAND - brn, fn- to med-grain, shrndd, mod sorting. Uncons. HC stain and odor 33' - 34'.
30					34' - 37' CLAY - brn, unconsolidated. HC stain and odor 34' - 35'.
35					37' - 55' GRAVELLY SAND - olive brn crs-grain, shrndd sand to ang pebble fragments w/1 inch max dia. Poorly sorted. Unconsolidated. Faint HC stain and odor (?).
40					55' - 62' CLAYSTONE - blue-gray, cons. No HC stain or odor.
45					Completed as 6-inch recovery well, with flush joint pipe. TD well = 60.5, SS blank 50.2' - 60.5'; SS screen (020 slot) 34.5' - 50.2', SS blank 29.5' - 34.5', PVC blank to surface. SS centralizers @ 34.5' and 50.2'. Sand (10/20) 50' - 62', sand (8/12) 29' - 50', bentonite powder 23' 29', native backfill 19.8 - 23', cement grout w/5% bentonite to surface.
50					

LITHOLOGIC LOG

Page 1 of 1

LOCATION MAP:

SITE ID: GIANT LOCATION ID: GBR-44

SITE COORDINATES (ft.):

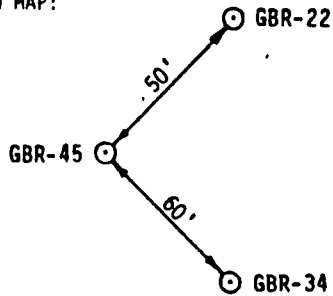
N _____ E _____

GROUND ELEVATION (ft. MSL): 5390 (topo)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: AIR ROTARY W/ CASING DRIVERDRILLING CONTR.: BEEHAN BROTHERS DRILLING COMPANYDATE STARTED: 12/17/87 DATE COMPLETED: _____FIELD REP.: J.P. KASZUBACOMMENTS: BOREHOLE = 9 7/8", BEGIN USING WATER @ 12', HCCONTAMINATION @ 38', BEDROCK @ 56'. TD = 59'.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale	Sample Type and Interval	Lithologic Description
				0' - 59' cuttings	0' - 12' SAND - brn, fn- to med-grain, shang to shrndd, mod sorting. Uncons. No HC stain or odor. Becomes coarser-grained and poorly sorted w/depth. 12' - 30' GRAVELLY SAND - tan, fn-grain sand to pebbles w/max dia of 1 inch, shrndd, poorly sorted. Unconsolidated. No HC stain or odor. 30' - 34' CLAY - brn, uncons. No HC stain or odor. 34' - 38' SAND - brn, fn- to med-grain, shrndd, mod sorting. Unconsolidated. HC odor and stain @ 37' - 38'. 38' - 40' CLAY - brn, unconsolidated. Faint HC stain and odor 38' - 39'. 40' - 45' GRAVELLY SAND - grysh tan, fn-grain sand to pebbles w/max dia of 1 inch shrndd poorly sorted. Uncons. Faint HC stain and odor (?). 45' - 50' SAND - yelsh brn, fn- to med-grain shrndd to shang, mod sorting. Uncons. No HC stain or odor. 50' - 56' GRAVELLY SAND - tan, fn-grain sand to pebbles w/max dia of 1 inch, shrndd, poorly sorted. Unconsolidated. No HC stain or odor. 56' - 59' CLAYSTONE - blueish gray, consolidated. No HC stain or odor. Completed as 6-inch recovery well, with flush joint pipe. TD well = 58.6, SS blank 48.3' - 58.6'; SS screen (020 slot) 32.6' - 48.3', SS blank 27.6' - 32.6', PVC blank 0' - 27.6', SS centralizers @ 32.6' and 48.3'. Sand (8/12) 27' - 59', bentonite powder 21' 27', cement grout w/5% bentonite to surface.

GCL

Page 1 of 2

SITE ID: MONT & AND LOCATION ID: (EX-3) GBR-45
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5394 (TOPO)
STATE: NEW MEXICO COUNTY: SAN JUAN
DRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE
DRILLING CONTR.: WESTERN TECH.
DATE STARTED: 4/23/87 DATE COMPLETED: PLUGGED 4/24/87
FIELD REP.: J.P. KASZUBA
COMMENTS: BOREHOLE NOT COMPLETED AS A WELL. GRAVELS @ 32'. SATURATED @ - 33.5'. BEDROCK @ - 38'. TD=43'.

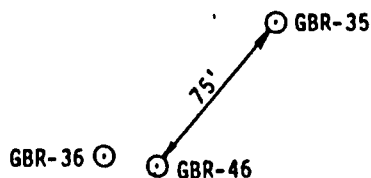
LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (WELL)

GCL

LOCATION MAP:



NOT TO SCALE

___ 1/4 ___ 1/4 NW 1/4 NW 1/4 S27 T29N R12W

Page 1 of 2SITE ID: MONT & AND LOCATION ID: (EX-5)GBR-46

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5394 (TOPO)STATE: NEW MEXICO COUNTY: SAN JUANDRILLING METHOD: HSA W/SPLIT SPOONS, 7" BOREHOLE,DRILLING CONTR.: WESTERN TECH.DATE STARTED: 4/24/87 DATE COMPLETED: PLUGGED 4/24/87FIELD REP.: J.P. KASZUBACOMMENTS: BOREHOLE NOT COMPLETED AS A WELL. SATURATED @ 33.0-34.5'. TD=38'.

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	3.0	4.5				3.0-3.3' Road Gravel. 3.3-4.5' SAND, tan, med- to cs- gr, mod sorting. No HC odor.
5										
10				2	8.0	9.5				8.0-9.5' No Returns.
15				3	13.0	14.5				13.0-13.6' SAND, lt brn, med- to cs- gr, mod sorting. No HC odor. 13.6-14.5' SAND, lt brn, fn- to med- gr, minor cs- gr, mod sorting. No HC odor.
20				4	18.0	19.5				18.0-18.9' SAND, brn, med- to cs- gr, mod sorting. Angular pebble fragments (up to 2 cm across) @ 18.7-18.9'. No HC odor. 18.9-19.5' SAND, lt brn, fn- to med- gr, mod sorting. No HC odor.
25				5	23.0	24.5				23.0-23.5' SAND, lt brn, fn- to cs- gr, minor silt & pebbles (up to 2 cm across), poorly sorted, no HC odor. 23.5-24.1' SAND, tan, fn- to med- gr, minor silt & cs- gr, mod sorting. No HC odor. 24.1-24.5' SAND, tan, med- to cs- gr, minor fn- gr, well-sorted. No HC odor.
30				6	28.0	29.5				28.0-29.5' CLAY, olive brn. No HC odor.

GCL

Page 2 of 2

___ 1/4 ___ 1/4 ___ 1/4 ___ 1/4 S ___ T ___ R ___

BEDROCK @ 39'.

[illegible]

BOREHOLE LOG (SOIL)			
		Page <u>1</u> of <u>1</u> Giant Bloomfield SITE ID: <u>Refinery</u> LOCATION ID: <u>GBR-47</u> SITE COORDINATES (ft.): _____ N _____ E _____ GROUND ELEVATION (ft. MSL): _____ STATE: <u>New Mexico</u> COUNTY: <u>San Juan</u> DRILLING METHOD: <u>Hollow Stem Auger</u> DRILLING CONTR.: <u>Western Technologies</u> DATE STARTED: <u>17 Oct 1988</u> DATE COMPLETED: _____ FIELD REP.: <u>Martin Nee</u> COMMENTS: <u>Abandoned</u>	

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-47
 SITE COORDINATES (ft.): _____
 N _____ E _____
 GROUND ELEVATION (ft. MSL): _____
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Technologies
 DATE STARTED: 17 Oct 1988 DATE COMPLETED: _____
 FIELD REP.: Martin Nee
 COMMENTS: Abandoned

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

[illegible]

BOREHOLE LOG (SOIL)

BLM-19 BLM-18 BLM-21
BLM-22

+ GBR-50

+ GBR-48

Page 1 of 1

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-48

SITE COORDINATES (ft.):

N 12159.02 E 11142.65

GROUND ELEVATION (ft. MSL): 5416.14

STATE: New Mexico COUNTY: San Juan

DRILLING METHOD: Hollow Stem Auger/Continuous Sampler

DRILLING CONTR.: Western Technologies

DATE STARTED: 17 Oct 1988 DATE COMPLETED: 18 Oct 1988

FIELD REP.: Martin Nee

COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-23' Sand - Mod yelsh brn, 10 YR 5/4, v fn to crs sand, uncons, subangular to subrounded, well sorted moist from 13-14', v minor grv at 23'.
5				2	3	8				
10				3	8	13				
15				4	13	18				
20				5	18	23				
25				6	23	28			SM	23'-26.5' Silty Sand - Mod yelsh brn, 10 YR 5/4, 75% v fn to med sand, 20% silt, 5% clay, uncons, subangular to subrounded, mod well sorted.
30				7	28	33			SC	26.5'-27.5' Clayey Sand - Mod yelsh brn, 10 YR 5/4, 70% v fn to med grained sand, 20% clay, 10% silt, uncons, subangular to subround, mod well sorted.
35				8	33	38			CL	27.5'-31' Silty Clay - Mod yelsh brn, 10 YR 5/4, 80% clay, 15% silt, 5% v fn sand.
40				9	38	43			SP	31'-35' Sand - Mod yelsh brn, 10 YR 5/4, fn to coarse grained sand, uncons, mod well sorted, subangular to subrounded, minor gravel <3%.
45										35'-37' Cobbles/Gravel Refusal - No core.
50										37'-44' Shale - Light olive grey, 5 YR 2/2. TD = 44.0', 2" ss blank 43.6' to 38.4', ss 20 slot screen 38.4'-28.4', 2" ss to 3' above surface, 10-20 sand to 23', bentonite to 17.5', grout w/5% bentonite to surface, 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

BOREHOLE LOG (SOIL)

Page 1 of 1

+ GBR-32

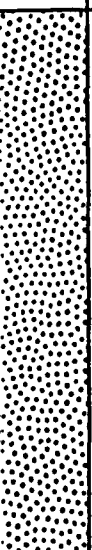
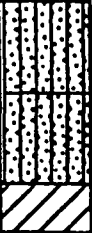
+ GBR-18

+ GBR-49

Giant Bloomfield
 SITE ID: Refinery LOCATION ID: GBR-49
 SITE COORDINATES (ft.):
 N 11908.13 E 11168.02
 GROUND ELEVATION (ft. MSL): 5410.76
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger/Continuous Sampler
 DRILLING CONTR.: Western Technologies
 DATE STARTED: 17 Oct 1988 DATE COMPLETED: 17 Oct 1988
 FIELD REP.: Martin Nee
 COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3			SP	0'-22' <u>Sand</u> - Mod yelsh brn, 10 YR 5/4, v fn to coarse sand, uncons, sbang to sbrnnd, minor silt.
5				2	3	8				
10				3	8	13				7'-9' As above w/cobblers or boulders.
15				4	13	18				
20				5	18	23				15'-16' Same as 0-22 with 5% fn to med pebble gravel.
25				6	23	28			SM	22'-25' <u>Silty Sand</u> - Mod yelsh brn, 10 YR 5/4, 70% sand, v fn to coarse, moderately well sorted, uncons, sbang to sbrnnd, 20% silt, 10% clay, minor, v fn to med pebble gravel.
30				7	28	33			SC	25'-33' <u>Clayey Silty Sand</u> - Silty sand and stringers (6") of silty clay, mod yelsh brn, 10 YR 5/4, v fn to med grained sand, uncons, sbang to sbrnnd.
35										28' Appears moist.
40									SM	33'-36.5' <u>Silty Sand</u> - Dk yelsh or, 10 YR 6/6, 80% sand, v fn to crs, uncons, sbang to sbrnnd, well sorted, 20% silt, v minor clay.
45									SM	36.5'-40' <u>Silty Sand</u> - Lt olv brn, 5 YR 5/6, v fn to med grained sand, uncons, mod well sorted, sbang to sbrnnd, 5% clay, 15% silt.
50									SC	40'-42.5' <u>Clay</u> - Lt blsh grey, 5B 7/11.
										TD = 42.5', 2" ss blank 38.5' to 36.3', ss 20 slot screen 36.3' to 25.9' 2" ss blank to 2.1' above surface, 10-20 sand to 21.0', bentonite to 16.45', grout with 5% bentonite to surface. 5"x6' cement filled steel guard pipe. 4'x4' concrete slab.

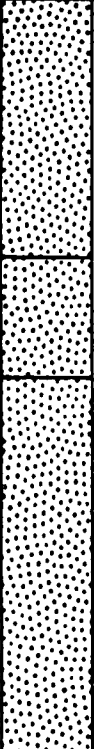
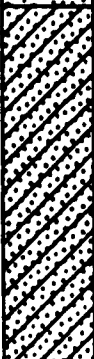
BOREHOLE LOG (SOIL)

Page 1 of 2

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-51
 SITE COORDINATES (ft.):
 N 10265.77 E 11304.3
 GROUND ELEVATION (ft. MSL): 5388.72
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Air Rotary-Casing Driver
 DRILLING CONTR.: Seeman Brothers
 DATE STARTED: 12 Sept 1988 DATE COMPLETED: 13 Sept 1988
 FIELD REP.: Martin Nee
 COMMENTS: _____

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	5			SW	0'-10' <u>Sand</u> - Mod yelsh br, 10 YR 5/4, 95% med to v fn sand, well graded, sbrndd, uncons, 5% silt.
5				2	5	10				
10				3	10	15			SW	10'-15' <u>Sand</u> - Mod yelsh br, 10 YR 5/4, 90% med to v fn sand, well graded, sbrndd, uncons, 5% med to fn pebble gravel, 5% silt.
15				4	15	20			SW	15'-35' <u>Sand</u> - Mod yelsh br 10 YR 5/4, med to v fn grained, well graded, sbrndd, uncons.
20				5	20	25				
25				6	25	30				
30				7	30	35				
35				8	35	40			SC	35'-50' <u>Clayey Sand</u> - Mod yelsh br 10 YR 5/4, med to v fn sand, well graded, sbrndd, uncons. 85% sand, 10% clay, 5% silt.
40				9	40	45				
45				10	45	50				
50				11	50	55			SC	50'-62' <u>Silty, Clayey Sand</u> - Lt olive gray, 5 Y 5/2, 90% med sand to clay, well graded, sbang to sbrndd. 10% med to v fn pebble gravel, uncons.

BOREHOLE LOG (SOIL)

Page 2 of 2

Giant Bloomfield

SITE ID: Refinery LOCATION ID: GBR-51

SITE COORDINATES (ft.):

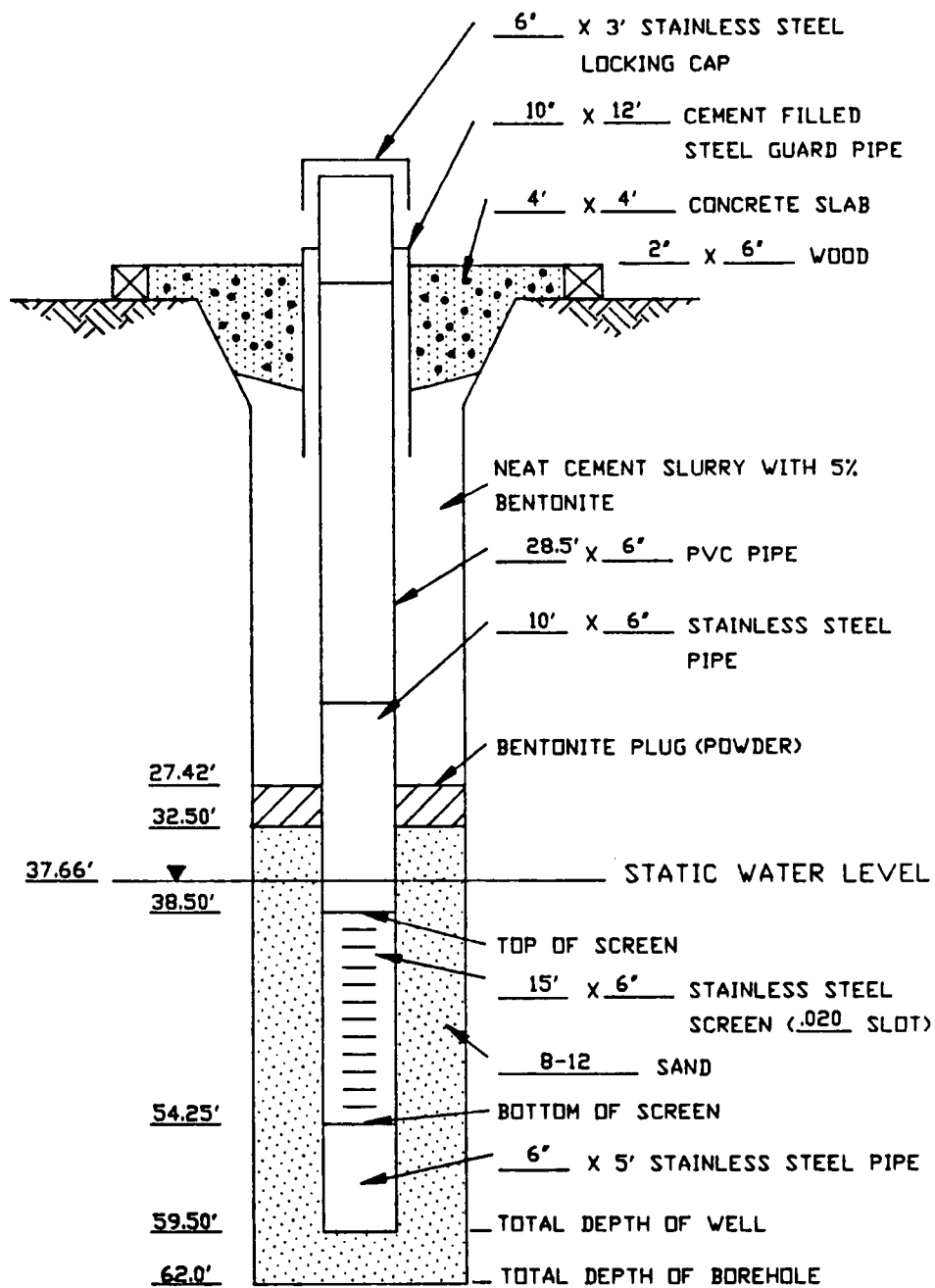
N 10265.77 E 11304.3GROUND ELEVATION (ft. MSL): 5388.72STATE: New Mexico COUNTY: San JuanDRILLING METHOD: Air Rotary-Casing DriverDRILLING CONTR.: Beeman BrothersDATE STARTED: 12 Sept 1988 DATE COMPLETED: 13 Sept 1988FIELD REP.: Martin Nee

COMMENTS:

1/4 1/4 1/4 1/4 S T R

LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
50				12	50	55			SC	50'-62' <u>Silty, Clayey Sand</u> - Lt olive gray, 5 Y 5/2, 90% med sand to clay, well graded, sbang to sbrnrd. 10% med to v fn pebble gravel, uncons.
55				13	55	60				
60				14	60	65				
65				15	65	70				TD = 62', 6" ss blank 59.5' to 54.25', 6" ss 20 slot 54.25 to 38.50' 6" blank 38.5' to 28.5', 6" PVC blank to surface, 6"x3' ss finish w/cap 8-12 sand to 32.5', bentonite to 27.42' cement with 5% bentonite to surface 10"x12' cement filled steel guard pipe, 4'x4' concrete slab.
70				16	70	75				
75				17	75	80				
80				18	80	85				
85				19	85	90				
90				20	90	95				
95				21	95	100				
100				22	100	105				



MONITOR WELL GBR-51 COMPLETION DIAGRAM

BOREHOLE LOG (SOIL)

Page 1 of 1

GBR-13

GBR-52

GRW-07

GBR-20

GRW-06

GBR-06

GBR-11

GBR-10

GBR-05

GRW-03

GBR-09

GRW

Giant Bloomfield

SITE ID Refinery LOCATION ID: GBR-52

SITE COORDINATES (ft.):

N 10267.32 E 11215.25

GROUND ELEVATION (ft. MSL): -5383

STATE: New Mexico COUNTY: San Juan

DRILLING METHOD: Air Rotary-Casing Driver

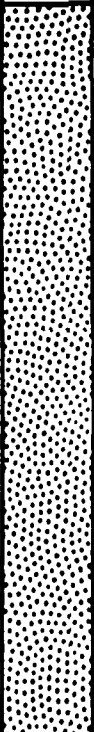
DRILLING CONTR.: Seeman Brothers

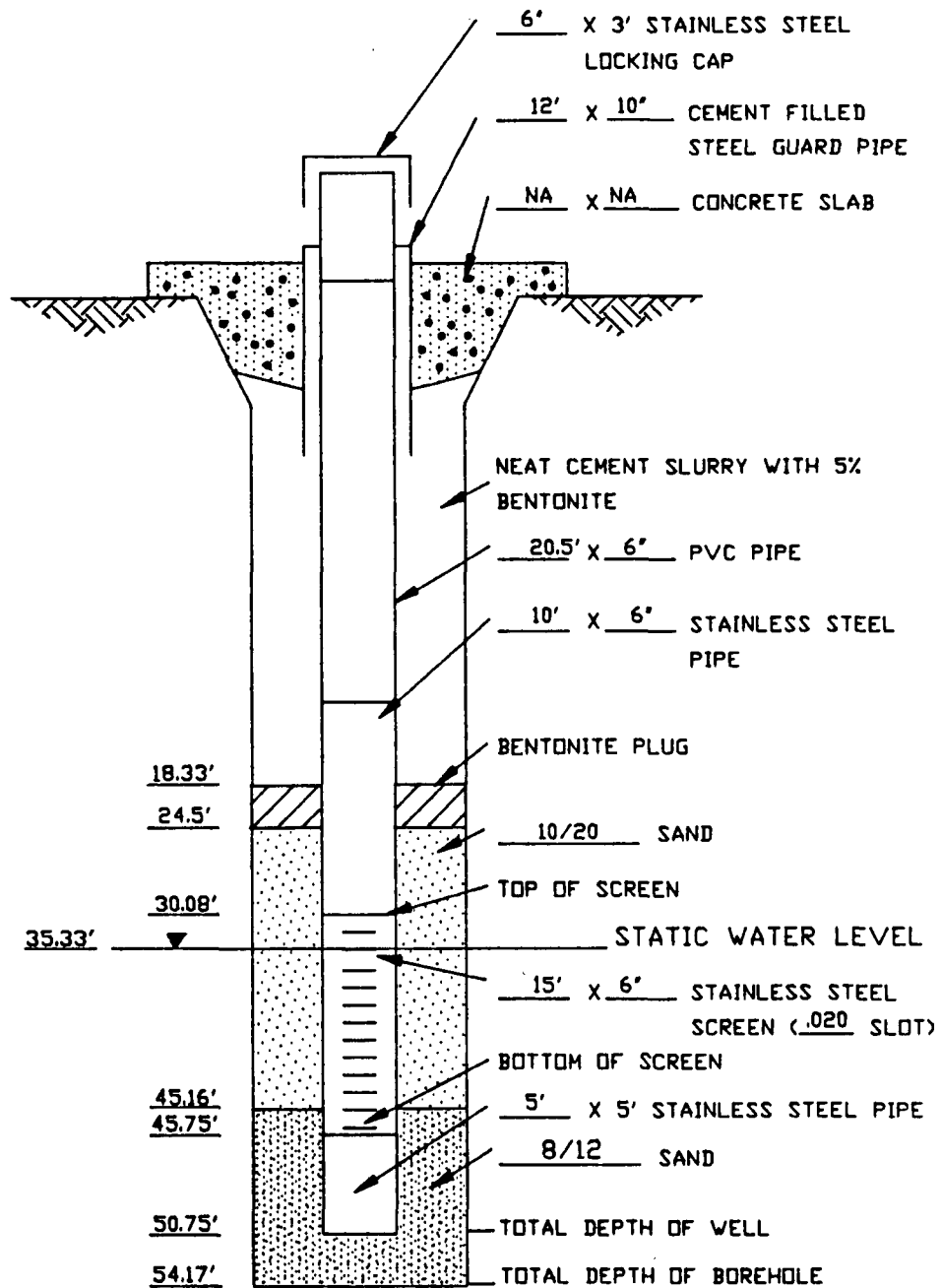
DATE STARTED: 13 Sept 1988 DATE COMPLETED: 14 Sept 1988

FIELD REP.: Martin Nee

COMMENTS:

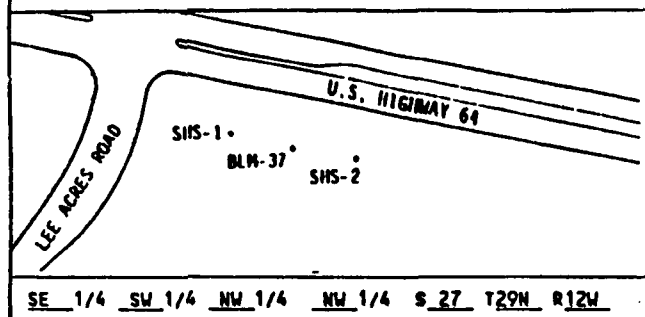
LOCATION DESCRIPTION:

DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	5			SW	0'-30' Sand - Mod yelsh br 10 YR 5/4 90% med to v fn sand, sbang to sbrndd, well graded, uncons, 10% pebble gravel, crs to fn, uncons.
5				2	5	10				
10				3	10	15				
15				4	15	20				
20				5	20	25				
25				6	25	30				
30				7	30	35			SW	30'-45' Clayey Sand - Mod yelsh br 10 YR 5/4, 80% sand, med to fn grained, 10% clay, 5% fn pebble gravel, sbang to sbrndd, uncons, mod well graded.
35				8	35	40				
40				9	40	45				
45				10	45	50			SC	45'-54' Silty, Clayey Sand - Lt olive gray 5 Y 5/2 70% med sand to clay well graded, sbang to sbrndd, uncons, 10% med to fn pebble gravel.
50				11	50	54				TD = 54', 6" ss blank 50.78 to 45.75, 6" ss 20 slot screen 45.75 to 30.08', 6" ss blank 30.08 to 20.08, 6" PVC blank to surface, 6" x 3' ss finish w/cap/8-12 sand to 45' .16", 10-20 sand to 24.5, bentonite to 18.33', cement w/5% bentonite to surface, 10" x 12' cement filled steel guard pipe, 4'x4' concrete slab.



MONITOR WELL GBR-52 COMPLETION DIAGRAM

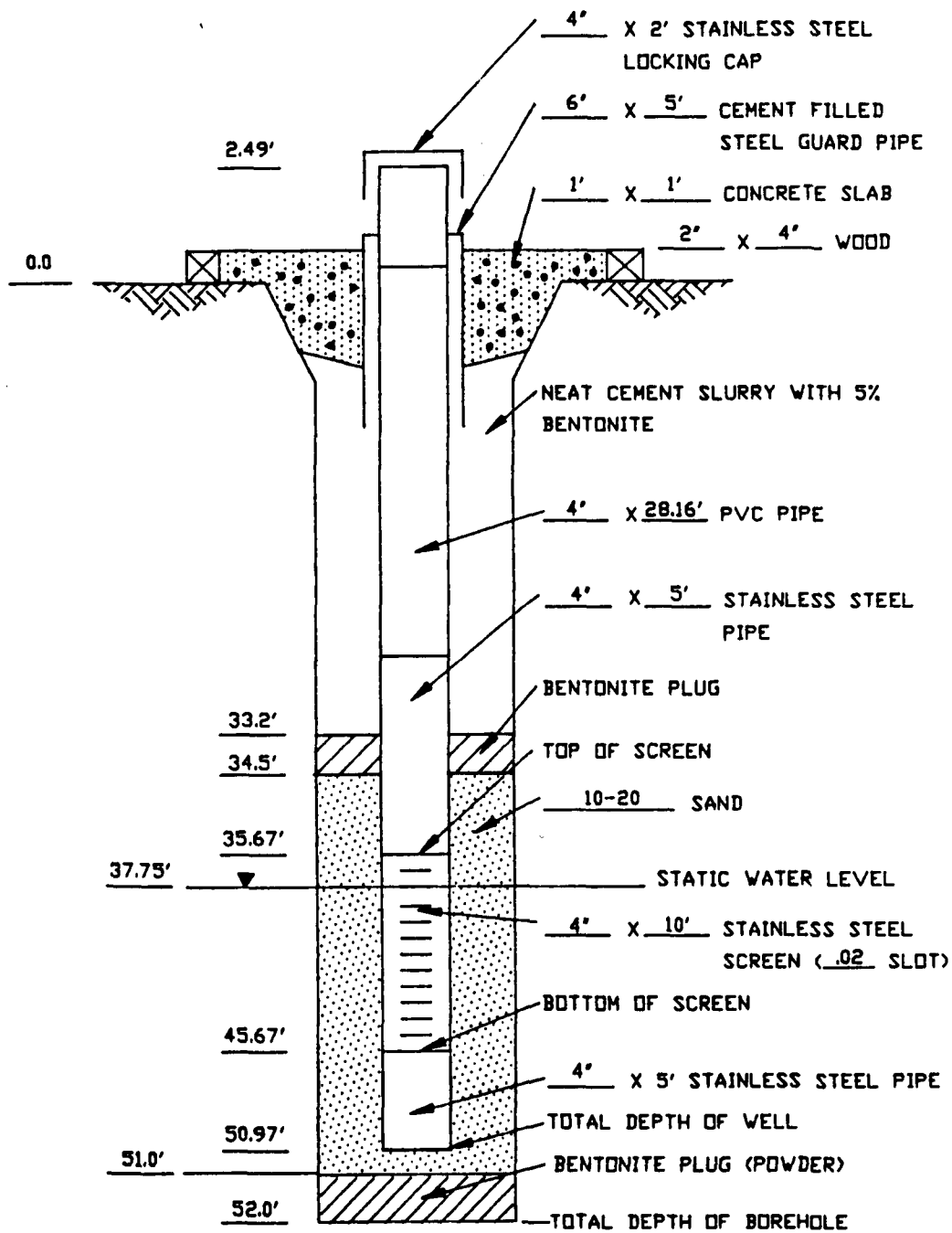
BOREHOLE LOG (SOIL)

Page 1 of 1

SITE ID: Lee Acres Community LOCATION ID: SHS-1
 SITE COORDINATES (ft.): Coordinates are local to GBR
 N 9896-34 E 11406.67
 GROUND ELEVATION (ft. MSL): Approximately 5381
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Tech
 DATE STARTED: 7/31/89 DATE COMPLETED: 8/1/89
 FIELD REP.: M. Nee
 COMMENTS: _____

LOCATION DESCRIPTION: South of Giant's Bloomfield refinery on NMSR 64 right of way, 100 ft west of BLM-37

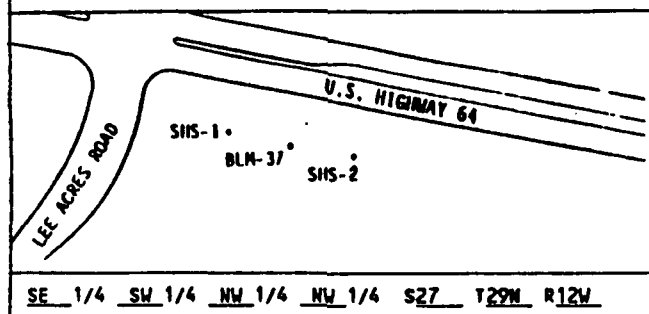
DEPTH	LITH.	R E C	S A M	RUN			SAMPLE		USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0			2	1	0	3			SW	0-28' <u>Sand</u> Mod Brn, 10 YR 4/4, v fine to fine grained, well sorted, unconsol., slightly moist at approx. 13'. Minor pebble gravel at 11'-13'.
5			5	2	3	8			CL	Silty clayey sand stringer, moderate brown, 10 YR 4/4, at approx. 15'-15.5'.
10			3	3	8	13			GP	Minor small pebble gravel 22-28'.
15			3	4	13	18			SW	28'-30' <u>Clay</u> , moderate olive brn, 5 Y 4/4, minor fine to coarse sand.
20			0	5	18	23			CL	30'-30.5' <u>Sand</u> as above (0'-28'), no gravel.
25			3	6	23	28			CL	6" clay to 31' grading to v fine sand at 33' olive gray, 5 Y 3/2.
30			5	7	28	33			SC	33'-36' <u>Silty Sandy Clay</u> , moderate olive brn, 5 Y 4/4, approx. 33% clay, 33% sand, 33% silt.
35			0	8	33	38				36'-37' as above only stained, olive gray, 5Y 3/2. Fine to coarse sand interval 37' to 37-1/2' then to <u>silty clay</u> olive gray, 5 Y 3/2.
40			2	9	38	43			CL	37'-1/2-39' <u>Silty clay</u> , olive gray 5 Y 3/2.
45			0	10	43	48			SH	39'-40' Silty sand, olive gray, 5 Y 3/2 unconsol., MW sorted.
50			3	11	48	52			CL	40'-41.5' <u>Clay</u> , mottled, mod yllish brn, 10 YR 5/4 - olive gray. 5 YR 3/2.
									SW	41.5'-42.5' <u>Sand</u> , mod. olive brn 5 Y 4/4, f-m sand, unconsol., MW sorted.
									SC	42.5'-43.5' <u>Sandy clay</u> , mod brn, 5 YR 4/4.
									SW	43'-50' <u>Sand</u> , mod yllish brn, 10 YR 5/4, fine to med sand. unconsol. MW sorted, saturated
									NA	50'-51.5' mudstone/claystone, dusky yellow 5 Y 6/4 to light olive brn, 5 Y 5/6 mod well consolidated, carbonaceous shale present, weathered, shale present.
									NA	51.5'-52' <u>Sandstone</u> , dusky yellow, 5 Y 6/4 to light olive brn, 5 Y 5/6, fine to med grained, well consolidated, well sorted.



MONITOR WELL SHS-1
SOUTH OF GIANTS BLOOMFIELD REFINERY

BOREHOLE LOG (SOIL)

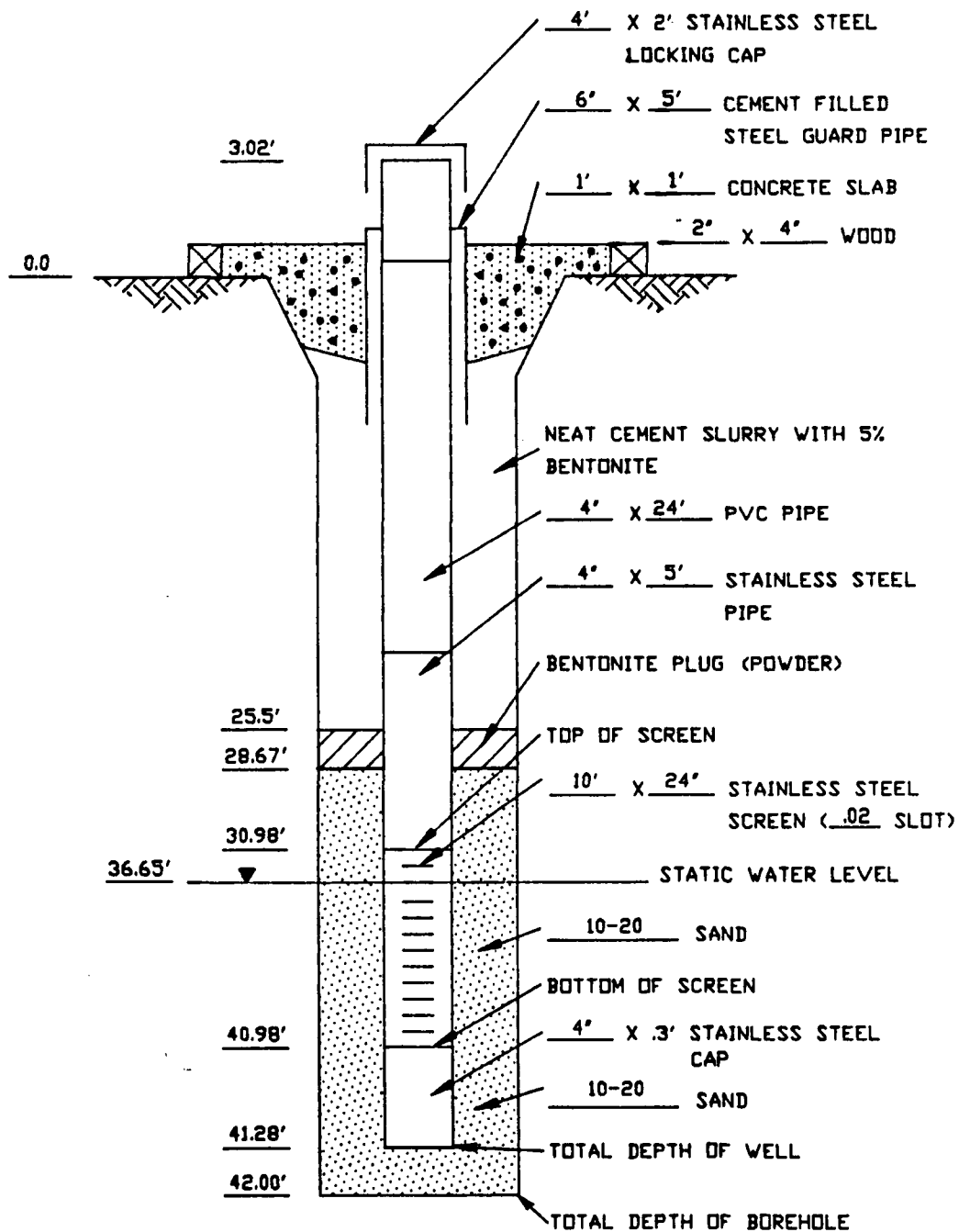
Page 1 of 1



SITE ID: Lee Acres Community LOCATION ID: SHS-2
 SITE COORDINATES (ft.): Coordinates are local to GBR
 N 9854.92 E 11609.55
 GROUND ELEVATION (ft. MSL): Approx. 5382
 STATE: New Mexico COUNTY: San Juan
 DRILLING METHOD: Hollow Stem Auger
 DRILLING CONTR.: Western Technology
 DATE STARTED: 8/2/89 DATE COMPLETED: 8/2/89
 FIELD REP.: M. Nee
 COMMENTS:

LOCATION DESCRIPTION: South of Giants Bloomfield Refinery on NMSR 64 right of way, 100 ft east of BLM-37

DEPTH	LITH.	R E C	S A M	RUN		SAMPLE			USCS	VISUAL CLASSIFICATION
				#	FROM	TO	I.D.	TYPE		
0				1	0	3.5				0-1' <u>Soil</u> , Silty sand w/organics, mod. yllsh, brn 10 YR 5/4, 40% silt, 60% f sand, unconsolidated, mod well sorted, sub angular to sub rounded.
			3.5	2	3.5	3.5				1'-26' <u>Gravelly Sand</u> , Dark yellowish orange, 10 YR 6/6, 90% v fine - fine pred. quartz, unconsol., well sorted, sub ang to sub rounded, 10% gravel is fine to coarse pebble gravel, rounded.
5			2	3	8.5	13.5				26'-30' <u>Sandy gravel</u> , Dark yllsh orange, 10 YR 6/6, unconsol., rounded, pebble gravel to cobbles.
10			3	4	13.5	18.5				30'-33.5' <u>Clayey Silty Sand</u> , mod yllsh brn, 10 YR 5/4. Clay to fine sand, unconsol. poorly sorted.
15										33.5'-36' <u>Sand</u> , mod yllsh brn, 10 YR 5/4, fine to mod sand, unconsol. sub ang to sub rounded, mod well.
20			3	5	18.5	23.5				36'-37' <u>Clayey Silt</u> , dark yllsh brn, 10 YR 4/4, unconsol. MW sorted.
25			0	6	23.5	28.5				37'-39.5' <u>Gravelly Sand</u> , dark yllsh brn, 10 YR 4/2, to olive black, 5 Y 2/1, at 38.5'.
30			0	7	28.5	33.5				80% Fine sand, 20% small cobbles, ps, unconsol. sand is sub ang to sub rounded, cobbles are rounded.
35			2.5	8	33.5	38.5				39.5'-40.5' <u>Sandstone</u> , olive black 5 Y 2/1, MW consolidated, stained, appears to be Maciamento.
40			5	9	38.5	43.5				40.5'-40.8' <u>Claystone</u> , olive gray, 5 Y 4/1, mod well consolidated.
45			5	10	43.5	48.5				40.8'-41.1' <u>Sandstone</u> , dark yllsh orange, 10 YR 6/6, med sand, MW sorted, unconsolidated.
										41.1'-41.3' <u>Claystone</u> , olive gray, 5 Y 4/1. mod well consolidated.
50			5	11	48.5	53.5				41.8'-42' <u>Sandstone</u> , grayish orange, 10 YR 7/4, med sand, mod consol., subang, calcium cement, moist.



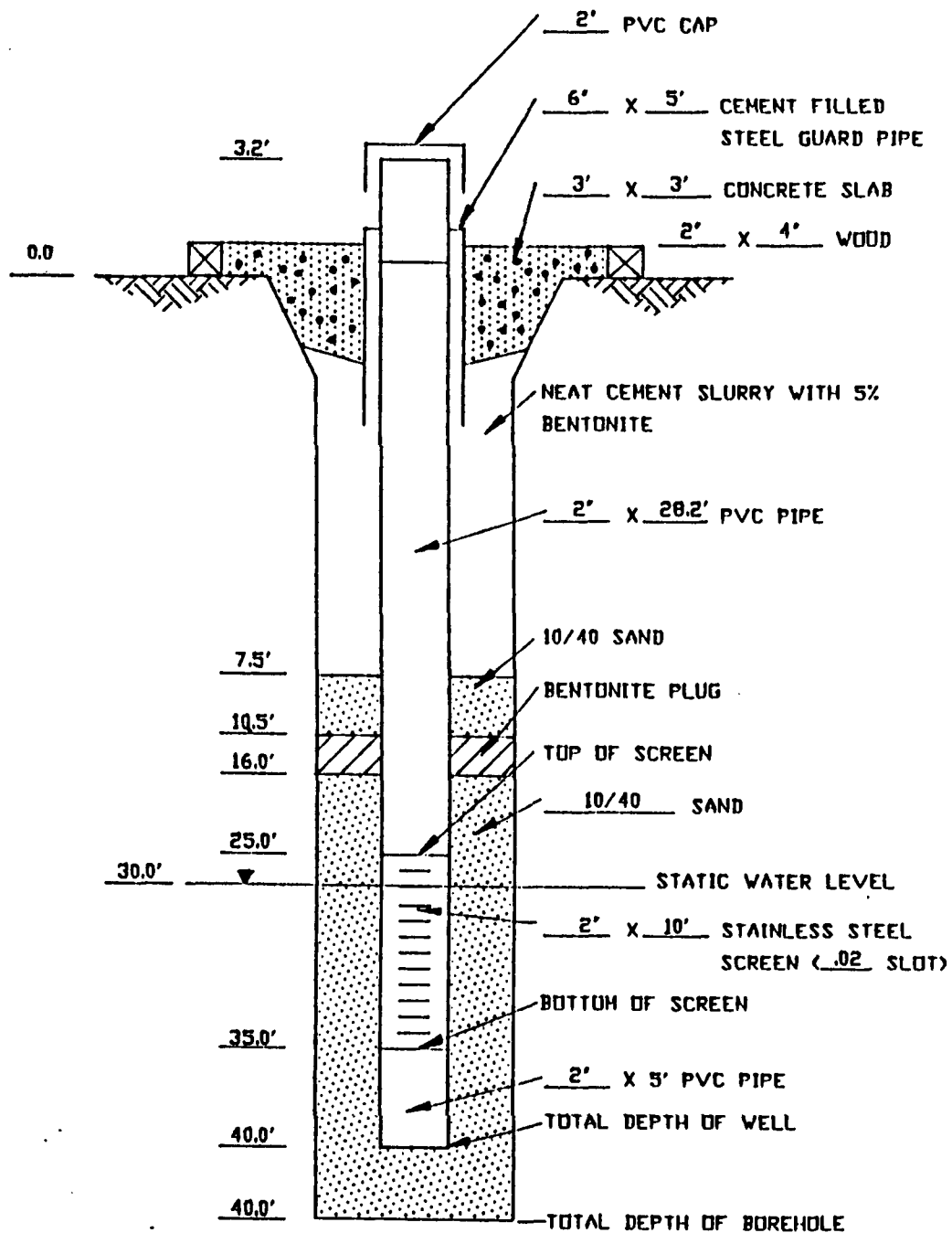
MONITOR WELL SHS-2

SOUTH OF GIANTS BLOOMFIELD REFINERY

ATTACHMENT 3

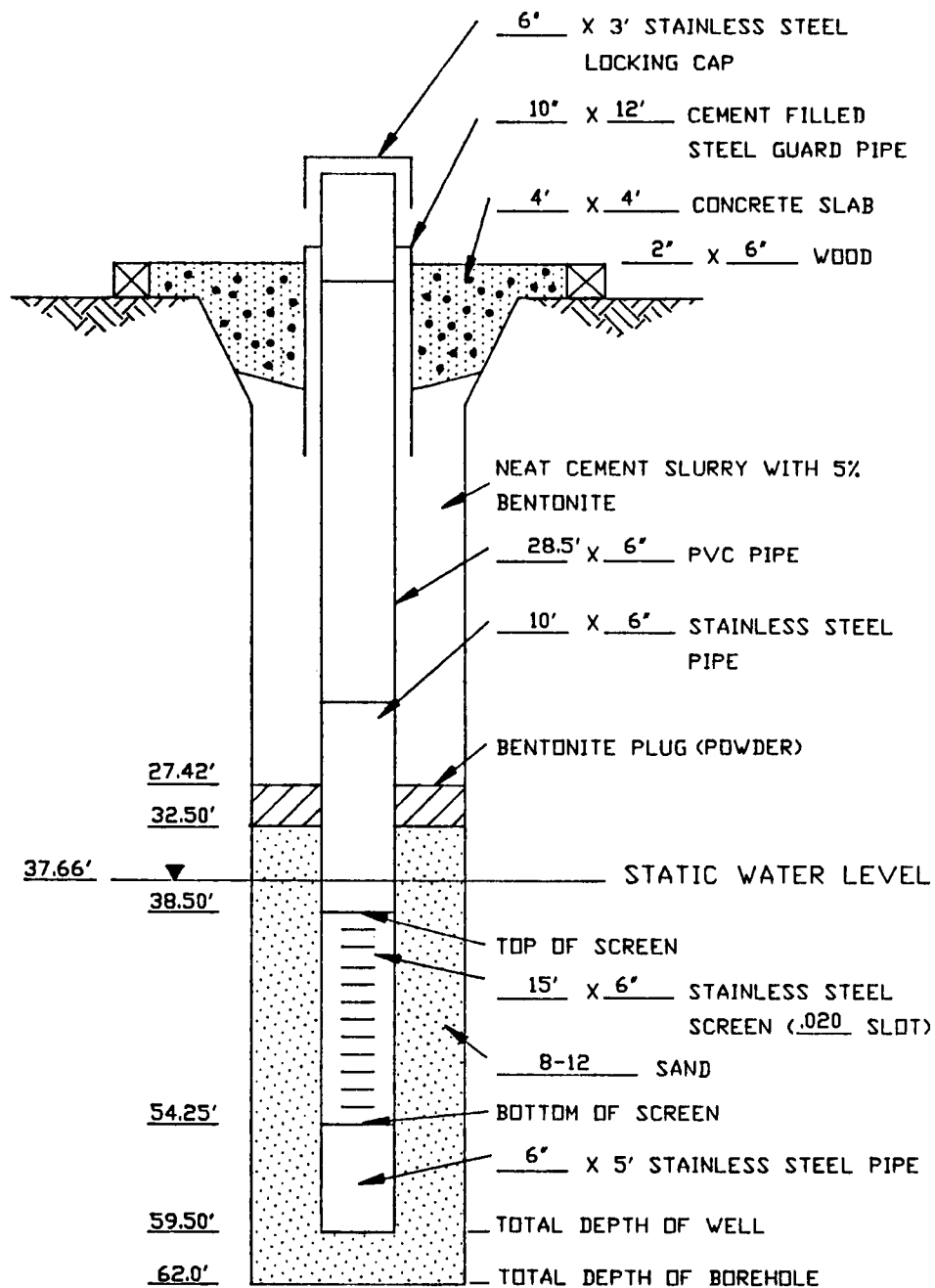
Completion Diagrams for
GBR-39, 51 and 52
and
SHS-1 and 2

copy Log Side
2/28/90
GWB

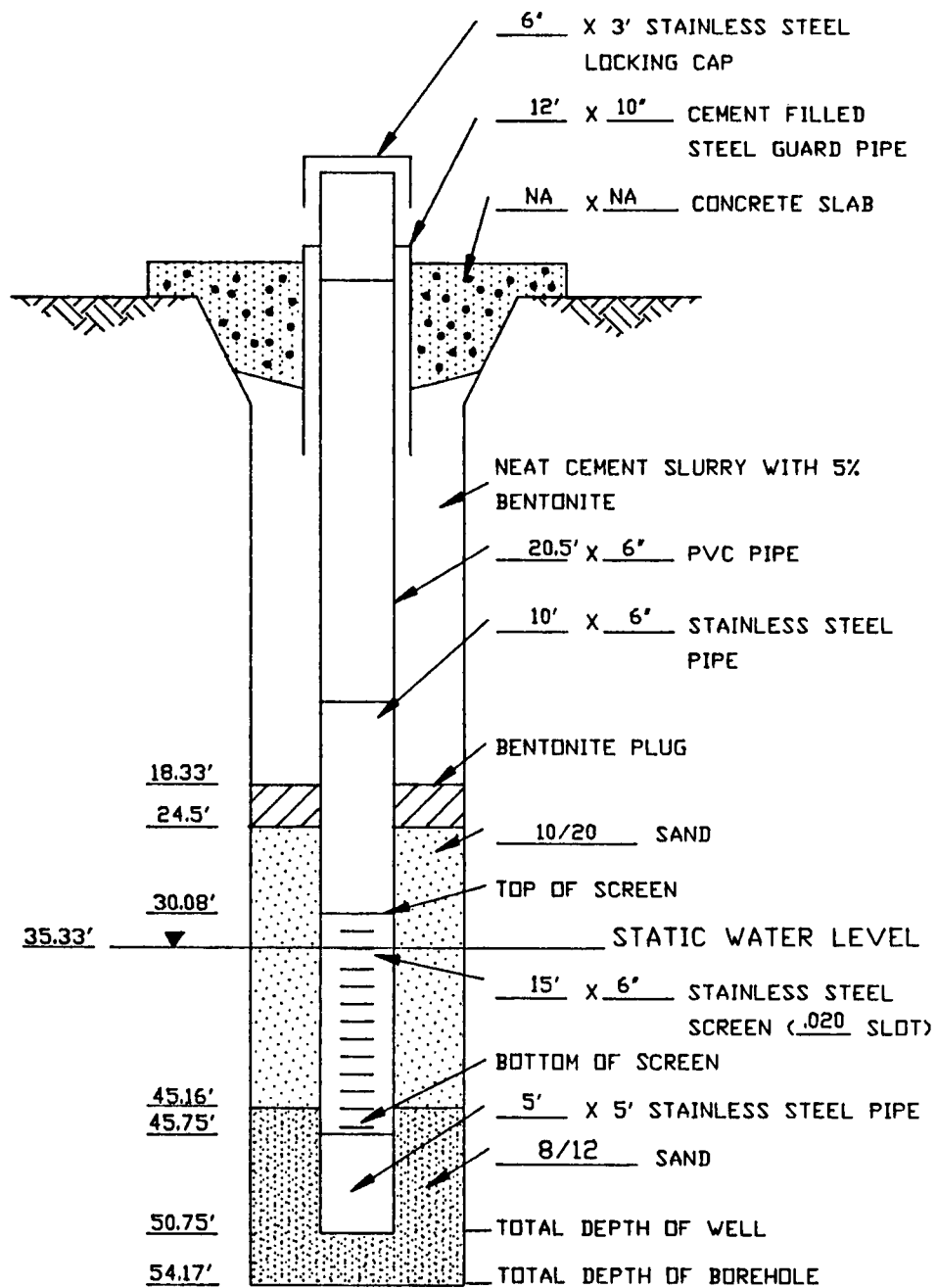


MONITOR WELL GBR-39 COMPLETION DIAGRAM
(FORMERLY STEEL WELL)

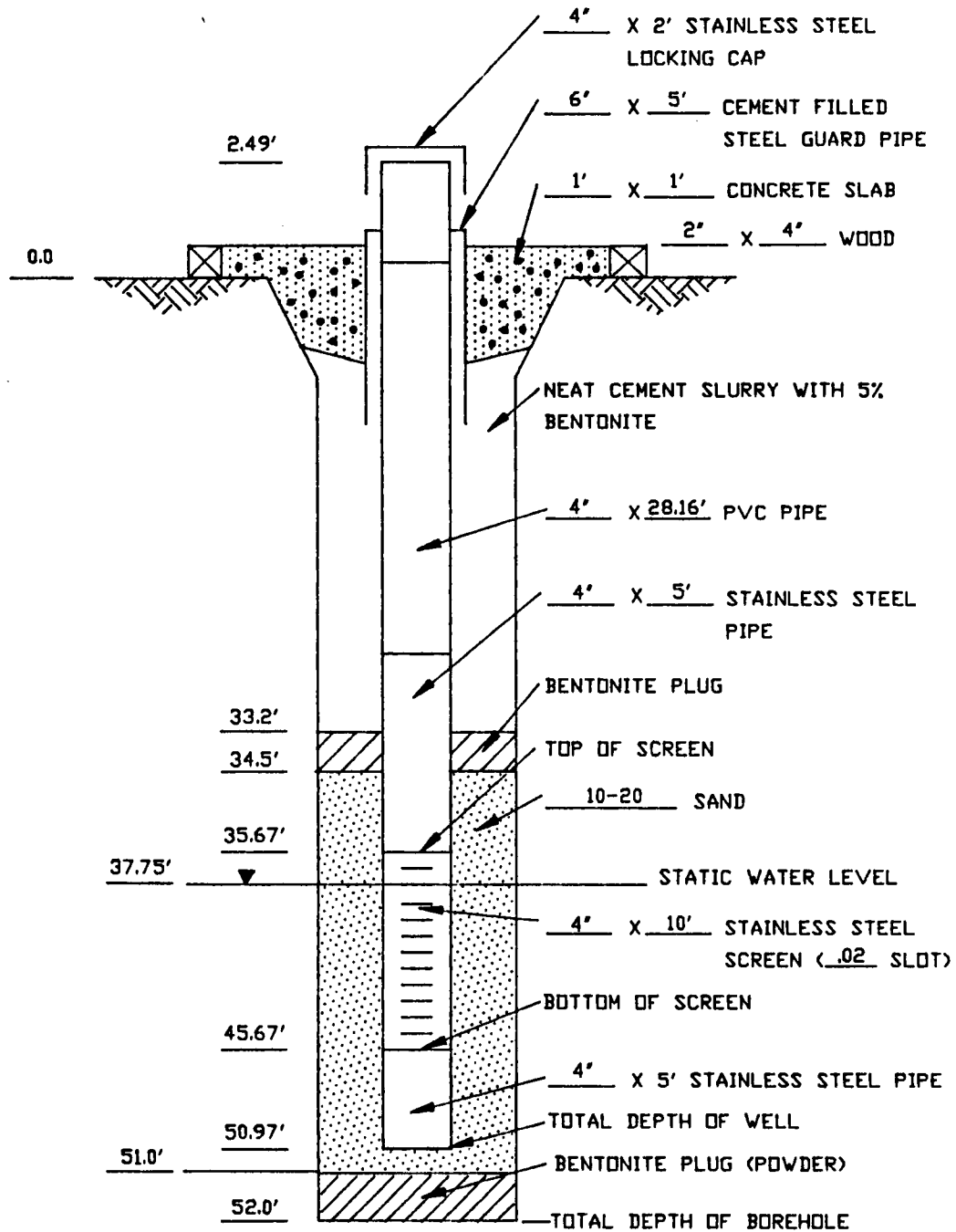
• & well completed in existing well.
The dimensions of existing well casing is unknown



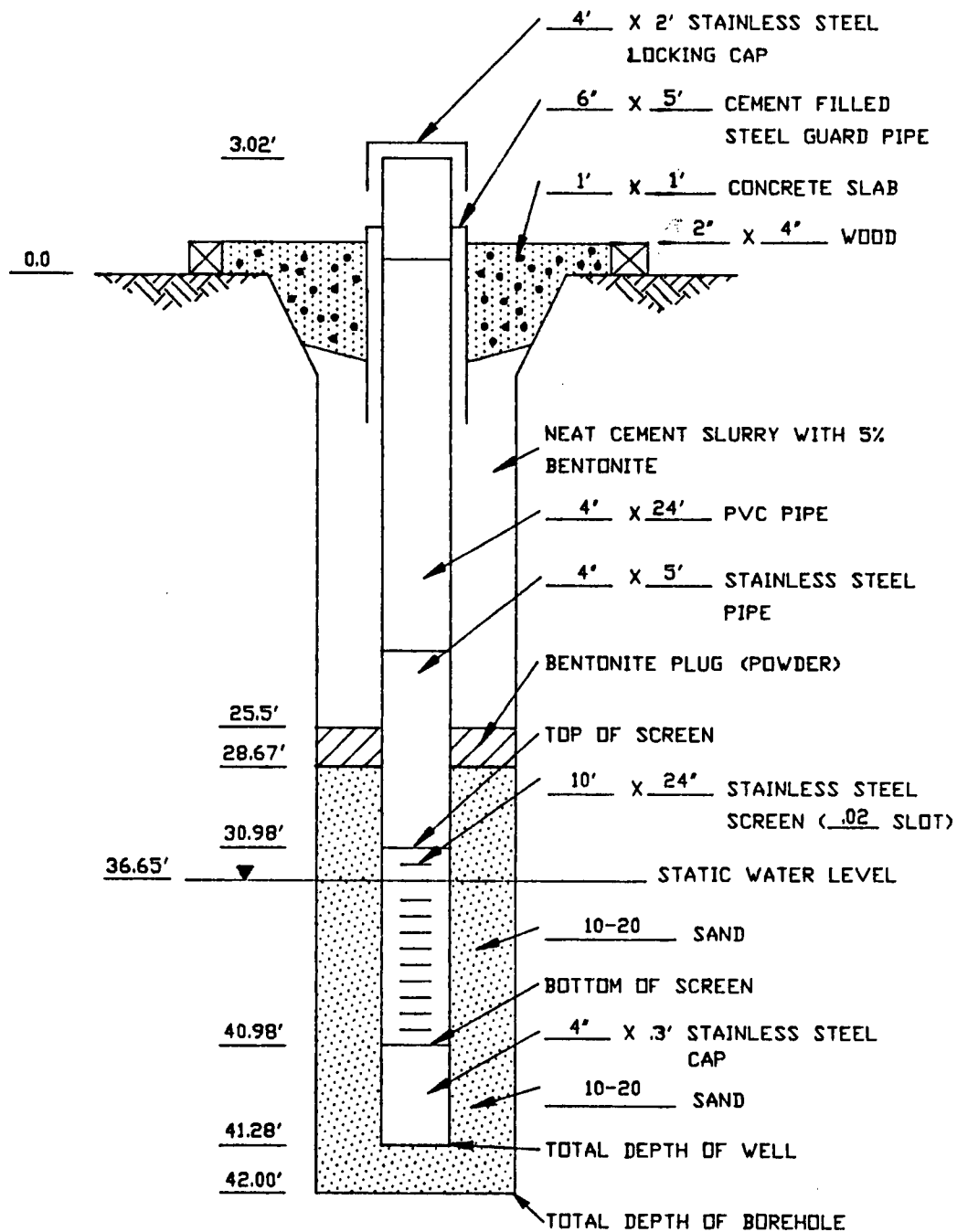
MONITOR WELL GBR-51 COMPLETION DIAGRAM



MONITOR WELL GBR-52 COMPLETION DIAGRAM



MONITOR WELL SHS-1
SOUTH OF GIANTS BLOOMFIELD REFINERY



MONITOR WELL SHS-2

SOUTH OF GIANTS BLOOMFIELD REFINERY