log# 1104265 Pg1

Borehole Completion Report. Report Date: _____ Page: 1 of 1.

WELL No: MW 36 Project Name: GTE Topaz Site. Douglas Co., Nv.

Location: NW 1/4; NE 1/4; NE 1/4; Sec 23, Twp 10N, Rge 21E, and 299.80 ft N/S, 944.07 ft E/W of NE cor 26.

Description: MONITORING WELL

Drilling Summary

Spud Date:	9 June 98
Completion Date:	19 June 98
Drlg Contractor:	HARRIS
Rig Type:	Schramm R-3
Hole Diameter:	8 in.
Casing Diameter:	4 in.
Tot. Drld Depth:	144 ft.
Wtr Entry Depth:	ft.
Static Wtr Depth:	ft.
Casing Lip Elev:	7364.78 ft.

Prepared by: R. CREWDSON

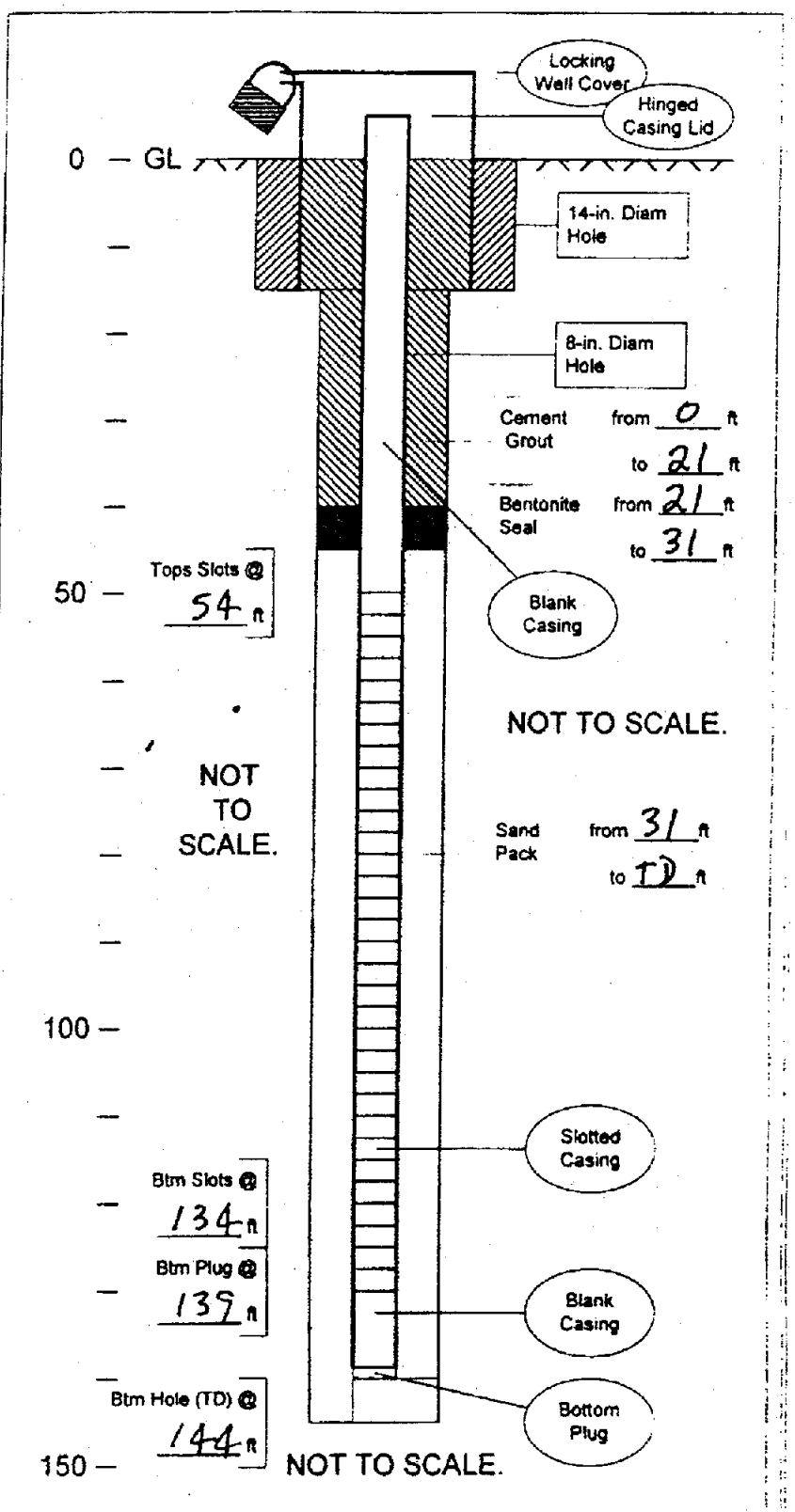
Completion Record

	Diam (in)	Depth Top	Depth Btm	Length (ft)
Conductor	10	-1	9	10
Blank Csg	4	0	54	54
Slot'd Csg	4	54	134	80
Blank Csg	4		139	5
Btm Plug			139	
TD Drld:			144	
1st Water Entry:		100		
Static Water Level:		68.1		

Legend.

Lithology:

GL to TD; Metasedimentary rocks; Mostly fractured gray slates, alteration to clays in fractures from surface to about 110-120 ft-depth, then fresh rock.



Sierra Scientific Services.
(661) 872-4221.

Log# 104265 Pg 2

Time (0-2400)	OVA (ppm)	HC Odor	HC Stain	DESCRIPTION Lith, properties, etc.	Depth (ft)	Sample No.	Core Only: Dip from Horiz. Bedding (deg)	Fractures (deg)	Diam: B:F Offset (in.clkwse)	
										Spud: 11:33
11:38	15	NO	NO	very dark grayish brown (2.5 Y 3/2) silty fine sand and fine to coarse ~~sand~~ gravel size slate and meta sand iron oxide stains, sub ang, dry (red + DK red).	5	5766				
11:41	30	NO	NO	Dark grayish brown (2.5 Y 4/2) fine to coarse sand and fine gravel size slate, ang., dry light & DK red iron oxide	10	5767				- install casing
13:30	0	NO	NO	Grayish brown (2.5 Y 5/2) fine to coarse sand size and some fine gravel size slate and meta sand sub ang. and ang., dry.	15	5768				
13:33	0	NO	NO	Dark grayish brown (2.5 Y 4/2) fine to coarse sand and fine to coarse gravel (up to 4 cm long) size slate, sub ang, dry, red iron oxide stains	20	5769				slowest rate drilling. using 8" instead of 6" for sampling
14:00	0	NO	NO	gravel color is grayish brown (2.5 Y 5/2) uncleaned. A lot of iron oxide - orange + red.	25	5770				
14:48	1	NO	NO	25 - Grayish brown (2.5 Y 5/1) fine to coarse sand size and fine to coarse gravel size slate, ang to sub ang, dry Iron oxide stains, and meta sand (light + DK red)	30	5771				- hose gets plugged. - Increase in gravel
15:23	15	NO	NO	30 - Dark bluish gray (5 B 4/1) slate medium to coarse sand size and fine to coarse gravel size slate, ang., dry, some fines, meta sand & gravel pieces dark greenish gray (10 BG 4/1) iron oxide stains	35	5772				Problem with getting retrieves again Driller sees - Damp clay at 35'
15:26	35	NO	NO	35 - Dark grayish brown (2.5 Y 4/2) fine to coarse sand and fine gravel size slate, ang., slightly damp small round to sub rd clay and fine sand iron oxide stains red. white (round silt and sand usually around piece of slate).	40	5773				Plugged - have to clean hose again. - Damp clay and gravel.
16:30	0	NO	NO	40 - Grey (2.5 Y 5/1)/DK blue gray slate medium to coarse sand size slate and fine to coarse gravel size slate, ang., dry ~~[illegible]~~ red oxide in fracture, orange, TC rd clayey fine sand. ~~of medium~~ to coarse 45 - DK bluish gray (10 B 4/1) medium to coarse sand and fine gravel size slate, ang, dry, lt + DK red iron oxide, silt and fine sand, ~~white clay~~ in fracture etc)	45	5774				

Location: ____ft ____(N/S), ____ft ____(E/W) of _____ (ref pt).

Location: ____1/4, ____1/4, Sec____, Twp____, Rge____, ____BM.

Surface Elev: _____ Total Depth: 144

Hole Diam: 8" Water Entry Depth: 100'

Date Drilled: 6/9/88 First Static Water Level: 75'

Logged By: Greg Berg

Try to go in with 8" bit first 927 hose plugged a few times.

Sierra Scientific Services.
(805) 872-4221.

Location: _____

Figure ____. Page 1 of 3.

Drilling Log of Hole No. MW-36

Log# 104265 Pg3

Time (0-2400)	OVA (ppm)	HC Odor	HC Stain		DESCRIPTION Lith, properties, moisture content, etc	Depth (ft)	Sample No.	Core Only: Dip from Horiz. Bedding (deg)	Fractures (deg)	Diam: B:F Offset (in.clkwse)	
16:40	0	NO	NO		Dark bluish gray (10B 4/1) fine to coarse gravel slate, ang., dry, yellow and ~~red~~ light + dark oxides, meta sand, + (green), some medium to coarse sand size slate and meta sand, TC silt and fine sand.	50	5775				hose proble again - mat in line
17:20	0	NO	NO		55 - DK bluish gray (10B 4/1) fine to coarse gravel slate, ~~ang~~ and some meta sand, some medium to coarse sand size slate & meta sand minor amounts of fine sand and silt, dry greenish white and red oxide.	55	5776				
18:20	0	NO	NO		60 - DK gray (2.5Y 4/1) and DK bluish gray (10B 4/1) fine to coarse gravel and medium to coarse sand slate and meta sand, ang, dry, some fine sand and silt	60	5777				
18:28	2	NO	NO		65 - Gray (2.5Y 5/1) fine to coarse sand size slate, some silt and fine gravel slate, sub ang sand ang gravel, dry, red iron oxide.	65	5778				- Decrease gravel at 65
18:32	2	NO	NO		70 - Grayish brown (2.5Y 5/2) fine to coarse sand and fine to coarse gravel slate, ang., dry, lt + DK red and green oxide	70	5779				Drilling change
18:35	2	NO	NO		75 - Same as above at 70'	75	5780				Dry - wait 10 min. due to change in drilling small amount of water. Drill to 80 ft. wait 10 m
18:48	2	NO	NO		very dark gray (2.5Y 3/1) medium to coarse sand and fine to coarse gravel size slate, ang. wet, TC qrtz, red iron oxide	80	5781				wet at Satur
19:06 ~~07:45~~	3	v.f.	NO		Same as 80 ft.	85	5782				Some water standing over
6/10 07:45	2	NO	NO		Dark grayish brown (2.5Y 4/2) medium to coarse sand size and fine to coarse gravel size slate ang., wet, iron oxide stains.	90	5783				Sample is wet drill to 90' wait Some water drill to 95' wait
08:20	2	NO	NO		Same as 90'	95	5784				- Pull some pipe clean hole Some water at 95' drill to 100' Driller wants to add water to clean lines will clean hole out before each test.

Logged By: Greg Berg Date: 6/9/98

Sierra Scientific Services.
(805) 872-4221.

Location:

Figure ____. Page 2 of 3.

Field Log of Hole No. MW-36

Log# 104265 Pg4

Time (0–2400)	OVA (ppm)	HC Odor	HC Stain		DESCRIPTION Lith, properties, moisture content, etc	Depth (ft)	Sample No.	Core Only: Dip from Horiz. Bedding (deg)	Fractures (deg)	Diam: B:F Offset (in.clkwse)	
9:25	8	f.	NO		very dk gray (2.5y 3/1) fine to medium sand size slate and TC fine gravel TC medium sand size qrtz	100	5785				A lot water [illegible] continued drill.
9:35	3	m.	NO		Sub ang gravel with some silt, wet. 105 - Black (2.5y 2.5/1) fine to coarse sand size and fine gravel slate, ang., wet, minor amounts of qrtz	105	57[illegible]				
9:40	7	NO	NO		110 - Black (2.5y 2.5/1) - same as 105' with fine to medium white clay, red and green oxide in fractures	110	5787				
9:47	25	NO	NO		115 - Same as 110. increase in qrtz and yellowish white clay, wet.	115	5788				
9:55	1	NO	NO		very dark gray (2.5y 3/1) fine to coarse sand and fine gravel size slate, sub ang to ang, fine qrtz (TC) and some white clay, wet	120	5789				
10:00	0	NO	NO		very dark gray (2.5y 3/1) fine to coarse sand and fine to coarse gravel size slate, ang. iron oxide stains, wet. Increase in coarse sand and gravel.	125	5790				
10:10	0	NO	NO		same as above - 130' - gravel up to 4cm.	130	5791				
10:20	0	NO	NO		135 - very dk gray (2.5y 3/1) fine to medium sand and some coarse sand and fine gravel slate, sub ang to ang, wet, red iron oxide, TC qrtz, white clay	135	579[illegible]				
10:25	0	NO	NO		Black (2.5y 2.5/1) fine to coarse sand and fine gravel slate, ang, wet, iron oxide stains.	[illegible]0	5793				
10:30	0	NO	NO		144 - very dark gray (2.5y 3/1) medium to coarse sand size and fine gravel size slate, ang, wet	144	5794				

no = no odor	pr = present	rock type, color, etc;
vf = very faint	abs = absent	clay, rust, qtz, other, if any.
f = faint	tr = trace	sed. type, gr. size, color, etc;
m = moderate	min = minor	dry = dusty
str = strong	mod = moderate	damp = some water
vs = very strong	abd = abundant	moist= more water
		wet = free water

Sample # 23075b = hole 23, depth 75 ft, 2nd split from top.
Dip & B:F offset assume core is vertical, shallow end up.
B:F offset is distance measured along core circumference from axis of Bedding apex to axis of Fracture apex.

Location: _____

Logged By: G. Berg Date: 6/9-10/98

Figure ____. Page 2 of 2.

Field Log of Hole No. [illegible]

Sierra Scientific Services.
(805) 872-4221.

Log# 104265 Pg 5

MW-36

Iron Conductor Pipe with locking cover.

Diameter 10 in.

Lip at 12 in. above GL.

Length: 10 ft; 0 to 9 ft Depth.

Note: opposing drain holes @ GL;
Note: 2x2 ft surface slab, sloping away;

Conductor Hole.
14 in. Diam.

Bore Hole.
8 in. Diam.

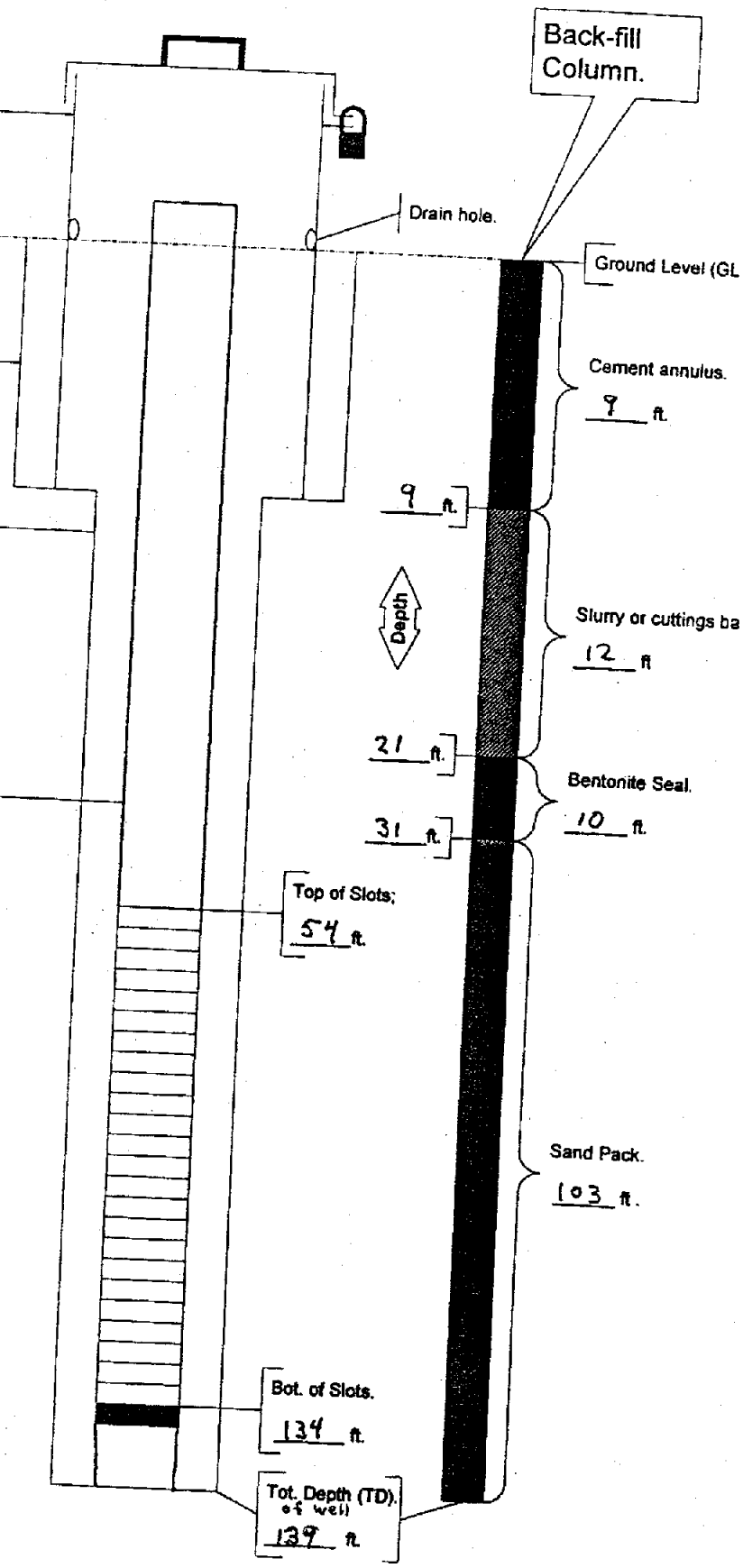
Schedule-40 PVC Casing with cap.

Diameter 4 in.

Csg Lip at 1/2 in. above GL.

	Length	Interval
Blank:	___ ft;	___ to 54 ft
Slotted:	80 ft;	54 to 134 ft;
Blank:	5 ft;	134 to 139 ft;

Bottom Plug at 139'2" ft.



GTE Topaz Site.
Completion Diagram.