Log# 104266 Pg 1

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

WELL No: MW37 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 272.65 ft N., 1037.33 ft E of NE cor 2

Description: MONITORING WELL

Drilling Summary

Spud Date:	22 June 98
Completion Date:	22 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:	7365.06 ft.

Prepared by: R. CREWDSON

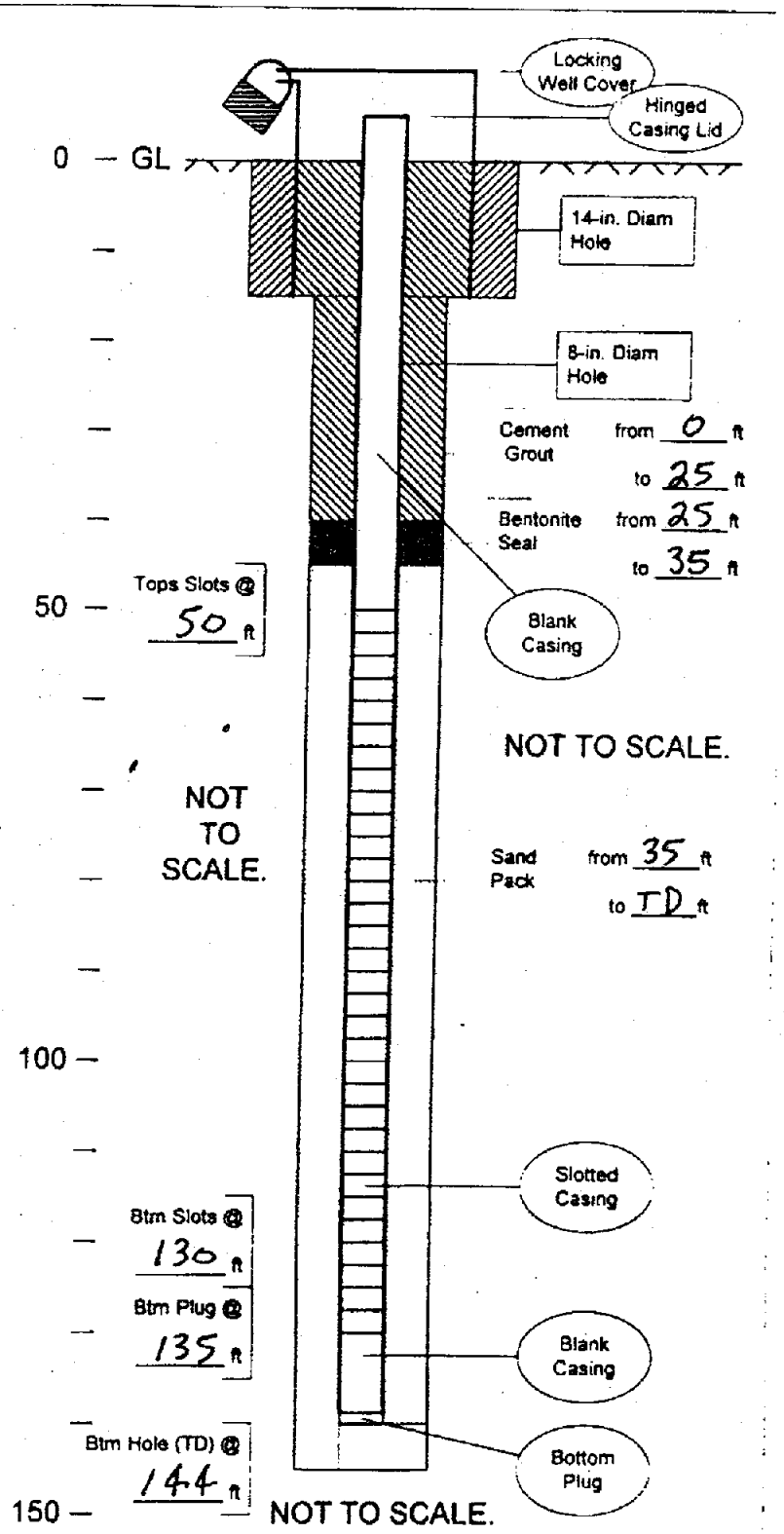
Completion Record

	Diam (in)	Depth Top	Depth Btm	Length (ft)
Conductor	10	-1	9	10
Blank Csg	4	0	50	50
Slot'd Csg	4	50	130	80
Blank Csg	4		135	5
Btm Plug			135	
TD Drld:			144	
1st Water Entry:		100		
Static Water Level:		68.9		

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 # 104266 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)	
11:40	0	NO	NO	5'- very dark grayish brown (2.5Y 3/1) fine to coarse sand and minor fine to coarse gravel, minor lean clay, sub ang., TC mica and qtz, elongated slate, moist to dry. red iron oxide stains. light and dark.	5	5911				NOTE: Hard drill
11:44	0	NO	NO	10'- Same as 5'.	10	5912				
13:03	0	NO	NO	15'- very dark grayish brown (2.5Y 3/1) fine to coarse sand and fine to coarse gravel, sub ang to ang., black, minor clay, TC qtz, slate and meta sand, dry.	15	5913				
13:08	0	NO	NO	20'- Dark grayish brown (2.5Y 4/2) fine to coarse sand, some fine gravel, increase in medium to coarse sand, ang, elongated and blocky slate and meta sand, TC qtz and red iron oxide, dry.	20	5914				
13:13	0	NO	NO	25'- Dark bluish gray (10B 4/1) fine to coarse gravel and fine to coarse sand, ang., elongated slate, TC red iron oxide, white oxide.	25	5915				
13:15	0	NO	NO	30'- Dark gray (2.5Y 4/1) fine to coarse sand, minor fine gravel, silt, sub ang. to ang., elongated slate, light red and white oxide (TC),	30	5916				
13:17	0	NO	NO	35'- Same as 30'- slight increase in gravel (fine to coarse).	35	5917				
13:20	5	NO	NO	40'- Same as above. Increase in fine to coarse gravel, to and well graded sand and gravel, TC - black lean clay, dry.	40	5918				
13:22	15	NO	NO	45'- Same as 30', TC black clay with yellow, red oxide.	45	5919				

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: 6"/8" Water Entry Depth: 75

Date Drilled: 6/22/98 Static Water Level: _____

Logged By: C. Berg

Sierra Scientific Services.
(805) 872-4221.

Location: _____

Figure ____. Page 1 of 3.

Drilling Log of Hole No. MW-37

Log# 104266 Pg 3

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)	
13:30	6	NO	NO	Dark bluish gray (10B 4/1) fine to coarse Gravel (up to 4.5 cm long) and ~~fin~~ some fine to coarse sand, blocky gravel with abundant iron oxide on fractures, elongated sand size slate, blocky gravel size slate and meta sand, dry.	50	5920				Har Dri
13:35	5	NO	NO	55' - Same as above.	55	5921				
13:45	1	NO	NO	60' - Same as above. Slight decrease in iron oxide stains	60	5922				
14:04	20	NO	NO	65' - Dark bluish gray (10B 4/1) fine to coarse Sand with some fine gravel, TC white clay, slate, ang, elongated, some red iron oxide, dry.	65	5923			Decrease in gravel	
14:10	20	NO	NO	70' - Dark bluish gray (10B 4/1) and grayish brown (2.5Y 5/2) fine to coarse Sand with some fine to coarse gravel, red iron oxide, ang. and elongated slate, dry, minor silt.	70	5924				
14:15	4	NO	NO	75' - Dark bluish gray (10B 4/1) fine to coarse gravel and fine to coarse Sand, ang., blocky slate, minor red iron oxide stains, white and green oxide (TC)	75	5925			Increase in gravel.	2 st wa Test Dry.
14:48	1	NO	NO	80' - Gray (2.5Y 5/1) and Dark bluish gray (10B 4/1) fine to coarse gravel and some fine to coarse silty Sand, ang., elongated slate, red and white oxide stains in fractures, dry.	80	5926				
15:03	1	NO	NO	85' - Same as above. Increase in Sand.	85	5927				2nd Test Dry
15:19	1	NO	NO	90' - Dark gray (2.5Y 4/1) fine to coarse gravel and fine to coarse Sand, ang coarse material blocky slate, TC qtz, red and white oxide, dry.	90	5928				3rd Test. little water.
15:35	1	NO	NO	95' - Dark bluish gray (10B 4/1) fine to coarse gravel and fine to coarse sand, ang., elongated and blocky slate and meta sand, minor red iron oxide TC white clay, dry.	95	5929				4th Test little water

Logged By: Greg Bell Date: 6/22/98

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Location:

Figure ____. Page 2 of 3.

Field Log of Hole No. MW-37

Log#104266 Pg 4

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)	
15:49	1	vf ? ~~vo~~	NO	Dark gray (2.5Y 4/1) fine to coarse silty sand with minor fine gravel, ang, elongated slate, wet, TC white clay	100	5930				Easier drilling between 100' product water contin drilling
16:05	1	vf ~~vo~~	NO	105'- Black (2.5Y 2.5/1) fine to medium sand with minor coarse sand and fine gravel sub ang to ang, elongated slate, minor qtz and white clay, wet, TC coarse gravel	105	5931				
16:10	1	f ~~vo~~	NO	110'- Same as 105. Slight increase in coarse sand and gravel, red iron oxide (TC).	110	5932				
16:21	1	vf	NO	115'- Black (5B 2.5/1) fine to medium sand with minor coarse sand and gravel, sub ang to ang, elongated slate, minor qtz and white clay, wet, TC iron oxide	115	5933			Color change	
16:25	1	NO	NO	120'- Black (2.5Y 2.5/1) fine to coarse sand and minor fine gravel, ang, elongated and blocky slate, TC qtz, TC iron oxide, wet.	120	5934			Increase in coarse material	
16:29				125'- Very dark gray (2.5Y 3/1) - Same as 120'.	125	5935				
16:34				130'- Same as above. (2.5Y 3/1). Slight increase in coarse sand and gravel, and red iron oxides.	130	5936				
16:38				135'- Very dark gray (2.5Y 3/1) fine to coarse sand with some fine gravel, minor qtz, some red iron oxide, ang, elongated slate qtz up to fine gravel size, wet.	135	5937				
16:42				140'- Black (5B 2.5/1) fine to coarse sand and fine to coarse gravel, ang, elongated slate, TC qtz + white clay, minor red and white oxide, wet.	140	5938				
16:45				144'- Grayish brown (2.5Y 5/2) with dark bluish gray (10B 4/1) slate, fine to coarse gravel and some fine to coarse sand, silt, some white clay, meta sand, TC qtz, ang, blocky, wet.	144	5939				

no = no odor
vf = very faint
f = faint
m = moderate
str = strong
vs = very strong

pr = present
abs = absent
tr = trace
min = minor
mod = moderate
abd = abundant

rock type, color, etc; clay, rust, qtz, other, if any.

sed. type, gr. size, color, etc;

dry = dusty
damp = some water
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.

Logged By: G. Bell

Date: 6/22/98

Location:

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Figure ____. Page 3 of 3.

Field Log of Hole No. MW-37

Log# 1042666 Pg5

MW-37

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.

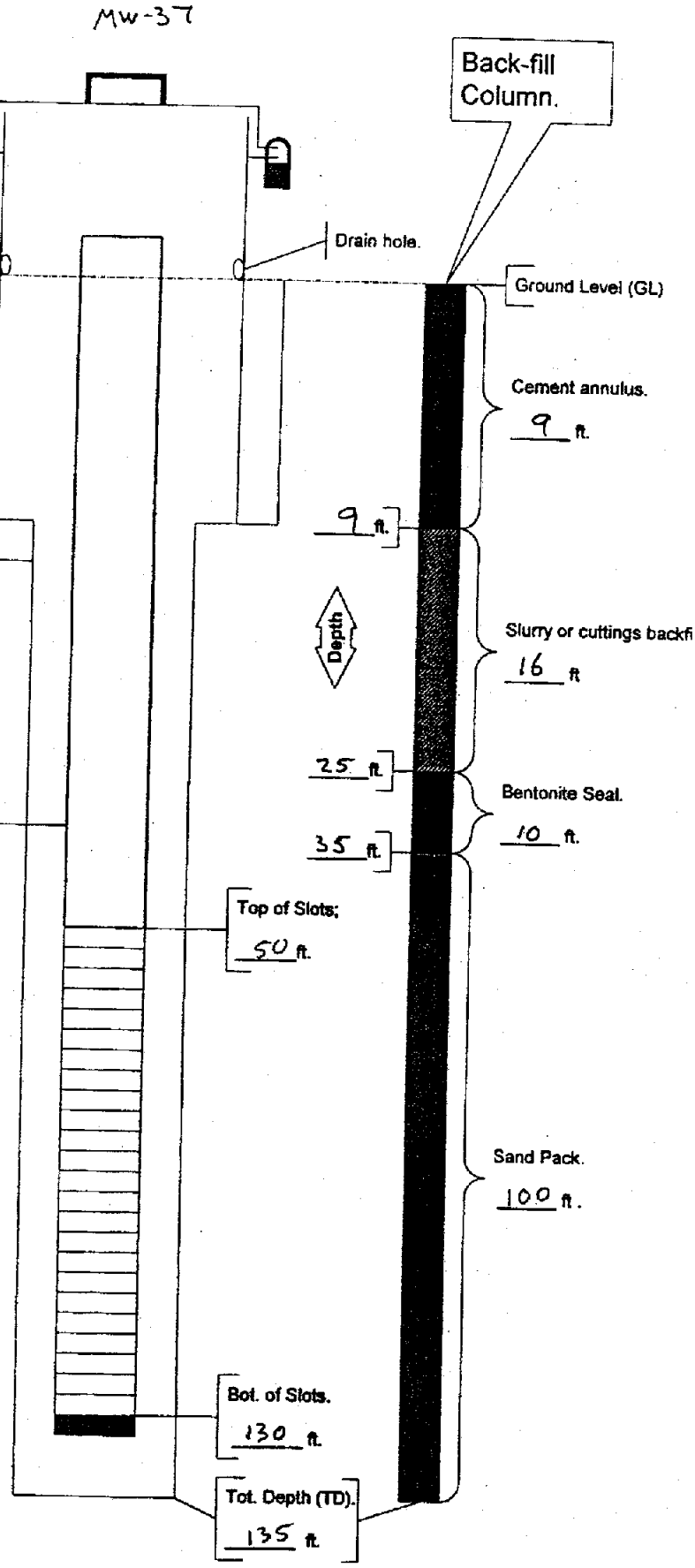
Schedule-40 PVC Casing with cap.

Diameter 4 in.

Csg Lip at 1/2 in. above GL.

	Length	Interval
Blank:	51 ft;	-1 to 50 ft
Slotted:	80 ft;	50 to 130 ft;
Blank:	5 ft;	130 to 135 ft;

Bottom Plug at 135'2" ft.



GTE Topaz Site.
Completion Diagram.