Log# 104263 Pg1

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

WELL No: MW 32 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 174.08 ft ~~N~~ S, 1098.71 ft ~~E~~ W of NE cor 26.

Description: MONITORING WELL

Drilling Summary

Spud Date:	8 June 98
Completion Date:	20 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:	7366.35 ft.

Prepared by: R. CREWDSON

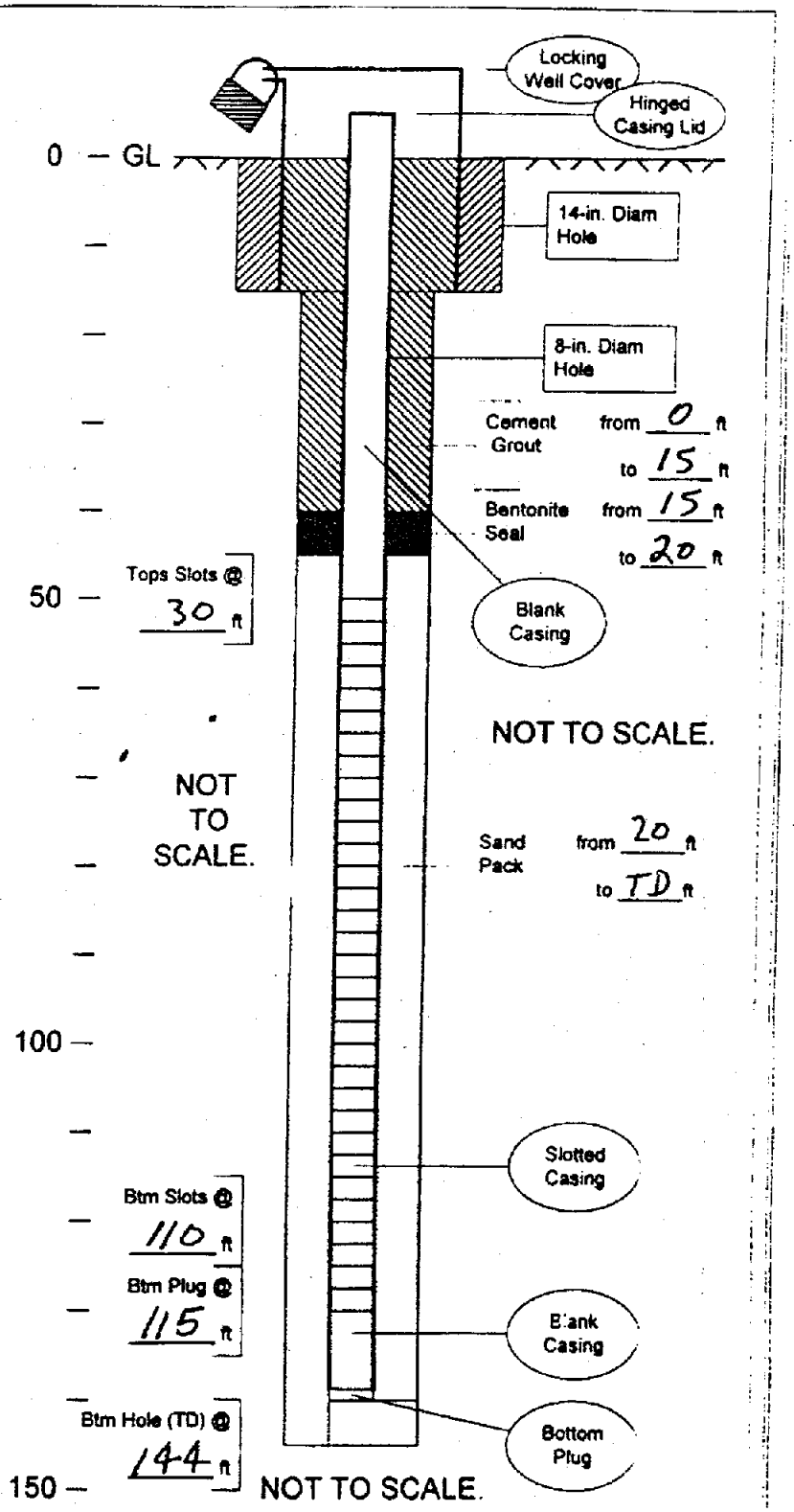
Completion Record

	Diam (in)	Depth Top	Depth Btm	Length (ft)
Conductor	10	-1	9	10
Blank Csg	4	0	30	30
Slot'd Csg	4	30	110	80
Blank Csg	4		115	5
Btm Plug			115	
TD Drld:			144	
1st Water Entry:		110		
Static Water Level:		69.9		

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.



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Log# 104263 Pg2

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)	
				Asphalt						
10:55	13	NO	NO	very dark gray (2.5 Y 3/1) well graded sand and gravel size slate, sub ang to ang, moist to dry, iron oxide stains. TC low plasticity clay (Black)	5	5708				
10:57	30	vf.	NO	fine sand of qrtz, mica, feldspar to medium	10	5709				
12:19	0	NO	NO	10 ft. very dark grayish brown (2.5 3/2). light and dark red stains (TC) TC wood & warm at 10 ft	15	5710				Sample is wet from adding water to SPT casing. By 20 ft sample is dry.
12:22	0	NO	NO	15 ft - very dark gray (2.5 Y 3/1) silt and fine sand, fine to coarse sand size and fine gravel size slate and meta sand with more iron oxide stains in fractures (TC) light & dark red, dry	20	5711				
12:50	20	NO	NO	20 ft - very dark grayish brown (2.5 Y 3/2) silty fine sand and fine to coarse sand size and fine to coarse gravel size slate, sub ang. to ang. iron oxide stains, dry.	25	5712				
12:54	8	NO	NO	25 ft - Gray (2.5 Y 5/1) medium to coarse sand size and fine to coarse gravel (up to 5 cm long) size slate, some silt and fine sand, sub ang. to ang., dry, dk red iron oxide.	30	5713				
12:57	3	NO	NO	30 ft - Same as 25. clean slate is (10B 4/1) - dk bluish gray, dry	35	5714				
13:02	1	NO	NO	Grayish brown (2.5 Y 5/2) silty well graded sand and fine gravel slate, ang., dry.	40	5715				
13:05	2	NO	NO	Dark gray (2.5 Y 4/1) silty well graded sand and fine to coarse gravel size slate, ang. dry. Increase in gravel at 40'	45	5716				
				Dark grayish brown (2.5 Y 4/2) silty well graded sand and fine to coarse gravel size slate, sub ang. to ang., dry						

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: 115

Date Drilled: 6/8/98 First Water Static Water Level: 75

Logged By: C. Berg

Sierra Scientific Services.
(805) 872-4221.

Location: _____

Figure ____. Page 1 of 3.

Drilling Log of Hole No. MW-32

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)	
13:09	0	NO	NO		Dark grayish brown (2.5 y 4/2) silty well graded sand and well graded gravel size slate, subang. to ang., dry. oxide stains - red, yellowish white	50	5717				
13:12	0	NO	NO		Grayish brown (2.5 y 5/2) silty wellgraded sand and gravel size slate, ~~sub~~ang, dry	55	5718				
13:15	0	NO	NO		same as above	60	5719				
13:20	0	NO	NO		Grayish brown (2.5 y 5/2) silt and fine to coarse sand and gravel (up to 4cm long) slate, subang., TC clay	65	5720				
13:24	0	NO	NO		increase in silt compared to 60 and 55'.	70	5721				
13:30	30	NO	NO		same as above. sand size is subang, gravel is ang., dry	75	5722				Drilled to 75' and wait to see material was dry. Decide to drill to 85' and wait.
13:47	1	NO	NO		Gray (2.5 y 5/1) fine to coarse gravel and coarse sand size slate with some silt and fine to medium sand size slate, ang., dry. iron oxide stains in fractures	80	5723	- [illegible]			Increase gravel
13:55	0	NO	NO		Same at 85'.	85	5724				waited 10 min. sample still dry. Drill to 90 and wait 10 min. Driller noticed in drilling. some water at 90' drill to 95 and wait 10
14:10	7				Dark gray (2.5 4/1) fine to coarse gravel and coarse sand size slate, some silt and fine to medium sand size slate, dry, ang.	90	5725				
14:30	2	f.	NO		medium to coarse sand and fine to coarse gravel size slate, ang., iron oxide stains quartz vein, wet	95	5726				some water drill to 100 and wait 10

Logged By: O. Berg Date: 6/8/98

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Location:

Figure ____. Page 2 of 3.

Field Log of Hole No. MW-32

Log# 104263 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)	
14:45	4	NO	NO		Dark grayish brown (2.5Y 4/2) medium to coarse sand size and fine to coarse gravel size slate, ang, wet, TC yellowish	100	5727				More water produced. Continue drilling
15:05	0	NO	NO		white medium sand size clay, iron oxide stains, some silt and fine sand size slate. 105' - same as above. up to 3 cm gravel size slate	105	5728				
15:10	0	v.f.	NO	110'	Black (N 2.5) fine to coarse sand size slate, fine to medium size qrtz and yellow clay, fine to coarse gravel size slate red iron oxide stains subang to ang. wet.	110	5729				Diesel order
15:15	35	NO	NO		115' - very dark gray (2.5Y 3/1) fine to coarse gravel and coarse sand size slate, ang., wet, red iron oxide stains.	115	5730				- Driller hits good fracture easier drilling produced a lot of water.
15:21	300	str			120' - Black (N 2.5) fine to medium sand size slate, qrtz and yellowish white clay, some coarse sand and fine gravel size slate subang, ~~iron oxide~~ to ang. iron oxide stains, wet.	120	5731				During re-drill lost circulation bring up big pieces water & foam shooting out of MW-15. Decide to try bentonite.
15:30	30	f.			125' - same as above - decrease in gravel, sub ang.	125	5732				
15:50	10	vf.			130' - Same ~~as~~ as above.	130	5733				
16:10	1	NO	NO		very dark gray (N 3/) fine to coarse sand size slate qrtz, and clay (white), fine to coarse gravel size slate sub ang. sand size, ang. gravel wet.	135	5734				
16:15	6	NO	NO		140 - Dark grey brown (2.5Y 4/2) fine to coarse sand and fine gravel size slate. more fine to medium sand. fine to medium clay and qrtz, ~~TC green~~ TC light green clay, ang, wet slate is dark bluish gray (10B 3/1) - more silt with water	140	5735				
16:22	0	NO	NO		144 - Same as above.	144	T.D. 5736				

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: C. Berg

Date: 6/8/98

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Location:

Figure ____. Page 3 of 3.

Field Log of Hole No. MW-32

Log # 104263 Pg5

MW-32

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.
6"/8" in. Diam.

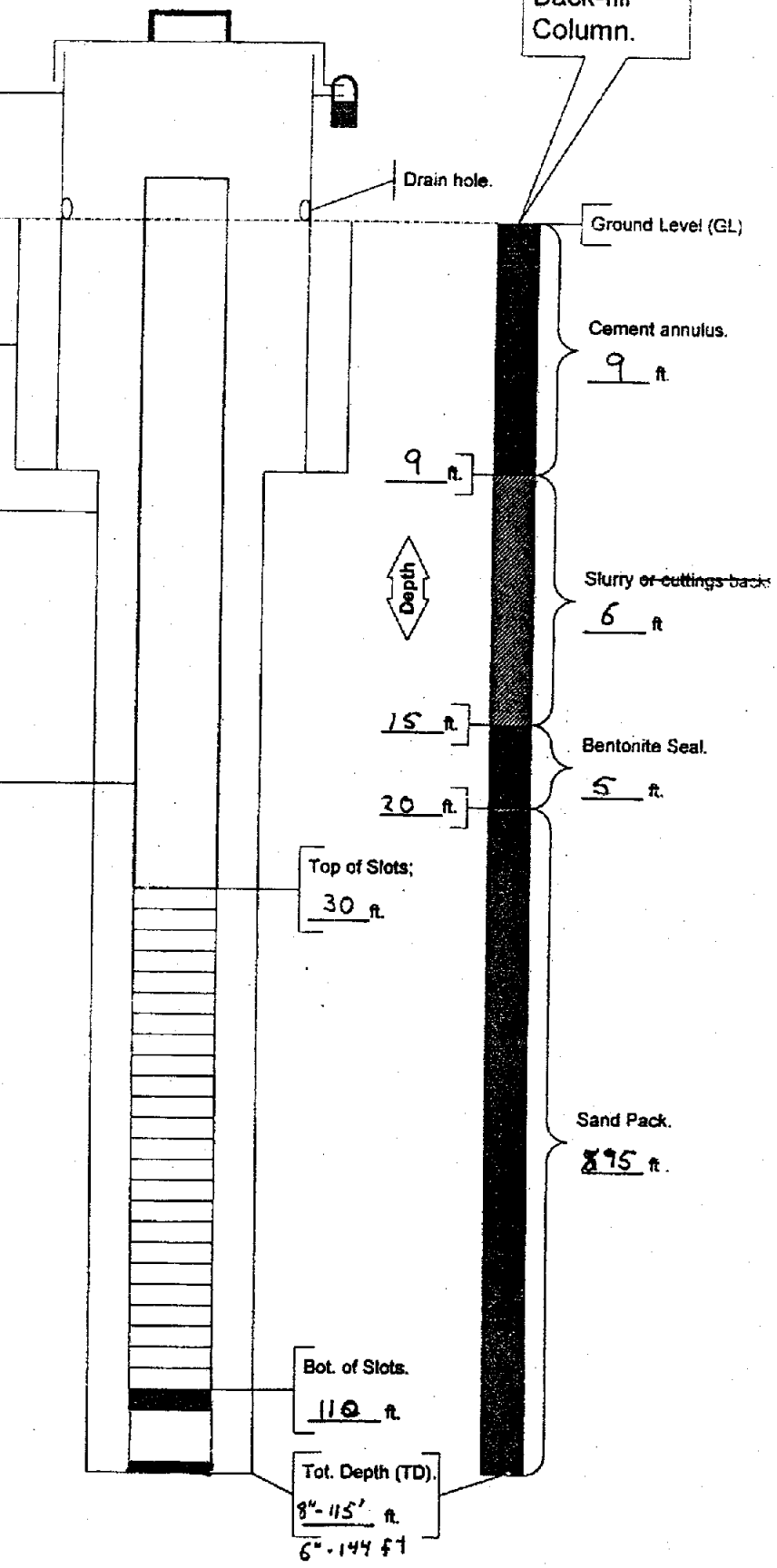
Schedule-40 PVC Casing with cap.

Diameter 4 in.

Csg Lip at 1/2 FT in. above GL.

	Length	Interval
Blank:	31 ft;	-1 to 30 ft
Slotted:	80 ft;	30 to 110 ft;
Blank:	5 ft;	110 to 115 ft;

Bottom Plug at 115'2" ft.



GTE Topaz Site.
Completion Diagram.