Log# 104264 Pg 1

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

WELL No: MW33 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 110.35 ft ~~N~~ S, 1107.92 ft ~~E~~ W of NE cor

Description: MONITORING WELL

Drilling Summary

Spud Date:	20 June 98
Completion Date:	21 June 98
Drlg Contractor:	HARRIS
Rig Type:	Schramm R-3
Hole Diameter:	8 in.
Casing Diameter:	4 in.
Tot. Drld Depth:	143 ft.
Wtr Entry Depth:	ft.
Static Wtr Depth:	ft.
Casing Lip Elev:	7367.06 ft.

Prepared by: R. CREWDSON

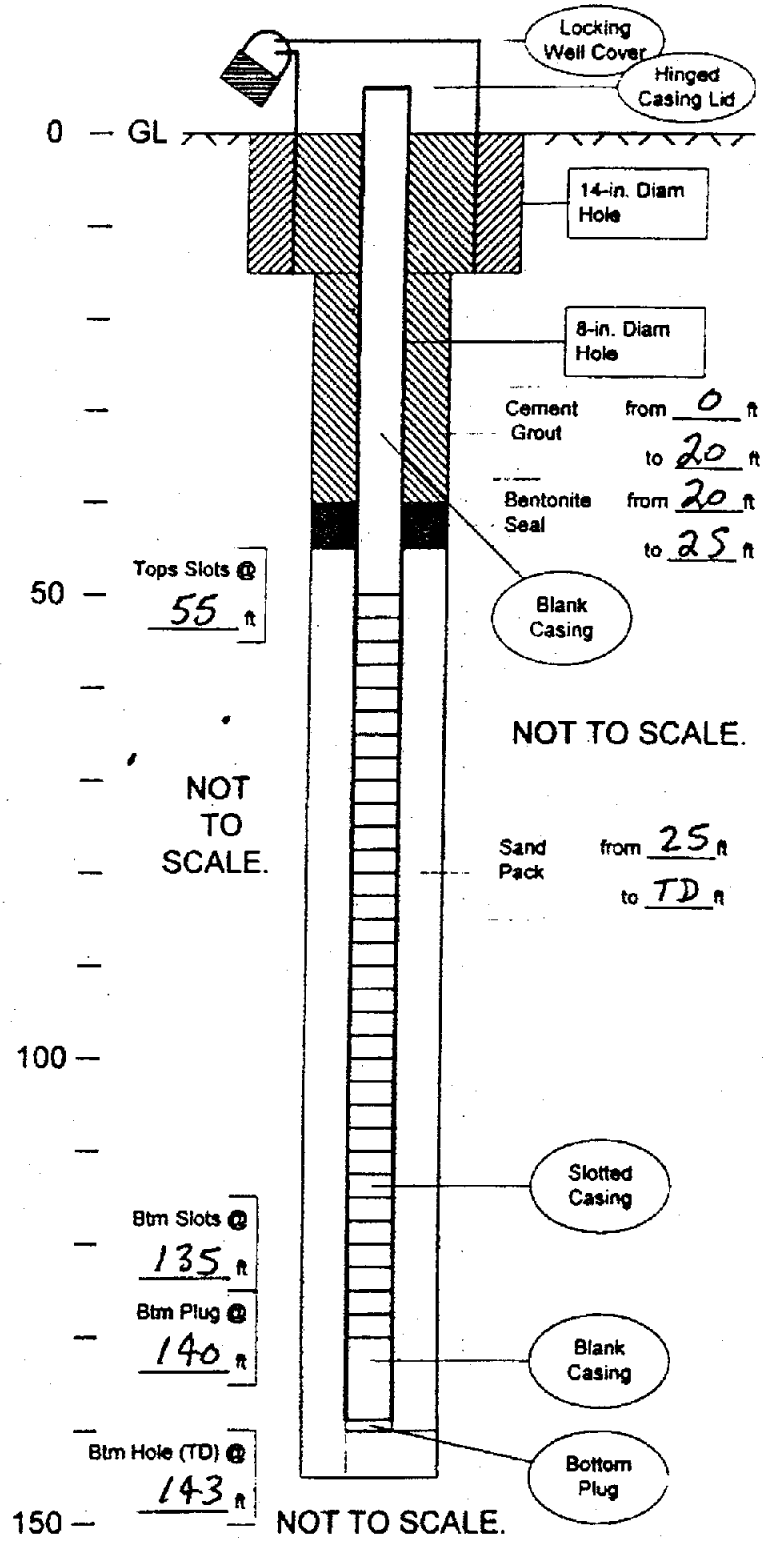
Completion Record

	Diam (in)	Depth Top	Depth Btm	Length (ft)
Conductor	10	-1	9	10
Blank Csg	4	0	55	55
Slot'd Csg	4	55	135	80
Blank Csg	4		140	5
Btm Plug			140	
TD Drld:			143	
1st Water Entry:		-		
Static Water Level:		70.5		

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# 104264 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)	
12:30 ~~8:07~~	up to 15	NO	NO	Dark grayish brown (2.5y 4/2) fine to coarse Sand and fine to coarse gravel, ang. elongated, dry, slate of dark bluish gray (10B 3/1), sand size qrtz, TC iron oxide	5	5737				First after-17 Strong Diesel order from hole from 9f 30ppm in hole. Easier drilling at 7f
12:40 ~~09:08~~	4	NO	NO	10'- very dark gray (2.5y 3/1) fine to coarse gravel and fine to coarse Sand, ang., elongated, slate, dry, minor light red yellow white oxide, black gravel pieces	10	5738			Increase gravel.	
14:22	up to 20	NO	NO	15'- Dark gray (2.5y 4/1) fine to coarse gravel and fine to coarse sand, ~~silt~~ minor silt, ang., blocky, dry TC red iron oxide, slate.	15	5739				
14:26	17	NO	NO	20'- very dark gray (2.5y 3/1) to black (2.5y 2.5/1) fine to coarse Sand, minor fine to coarse gravel, sub ang. to ang., blocky, slate, moist, TC white clay.	20	5740				
14:30	50	NO	NO	25- very dark gray (2.5y 3/1) fine to coarse Sand and fine to coarse gravel, some silt, sub. ang. to ang., blocky, slate, some meta sand	25	5741				
14:36	2	NO	NO	30- olive brown (2.5y 4/3) fine to coarse gravel and ~~fine~~ coarse sand, some fine to medium sand, sub. ang., blocky, dry, slate and meta sand.	30	5742				Increase in gravel at 30'
14:40	1	NO	NO	35- Gray (2.5y 5/1) fine to coarse ~~San~~ gravel and fine to coarse Sand, some silt, slate ang, elongated, dry.	35	5743				
14:45	8	NO	NO	40- Grayish brown (2.5y 5/2) fine to coarse gravel and fine to coarse sand, slate and meta sand, dry, ang., blocky, lt and DK red iron oxide.	40	5744				Decrease in gravel at 40'.
14:50	7	NO	NO	45- Same as above.	45	5745				

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

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

Surface Elev: _____ Total Depth: _____

Hole Diam: 6" / 8" Water Entry Depth: _____

Date Drilled: ~~6/7/98~~ 6/20/98 Static Water Level: _____

Logged By: G. Berg

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(805) 872-4221.

Location: _____

Figure ____. Page 1 of 3.

Drilling Log of Hole No. MW-33

Log# 104264 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)	
14:55	1	NO	NO		Grayish brown (2.5 y 5/2) silty fine to coarse sand, some fine gravel, sub ang to ang, blocky slate and meta sand, dry, yellow and red oxides.	50	5746				
14:57	1	NO	NO		55'- same as above with fine to coarse gravel.	55	5747				
15:02	1	NO	NO		60'- same as above.	60	5748				
15:30	1	NO	NO		65'- Gray (2.5 y 5/1) silty fine to coarse sand and fine to coarse gravel, sub ang to ang, blocky, dry slate and meta sand.	65	5749				
15:34	4	NO	NO		70'- Dark gray (2.5 y 4/1) silty fine to coarse sand and fine to coarse gravel. ang. elongated slate, dry, minor meta sand	70	5750				Slight increase in gravel.
15:37	2	NO	NO		75- Dark gray (2.5 y 4/1) fine to coarse gravel with some fine to coarse sand, minor silt, ang., elongated slate, dry, slate is dark bluish gray (10B 4/1).	75	5751				Increase in gravel. 1st Test Dry
15:52	1	NO	NO		80'- Gray (2.5 y 5/1) and dark bluish gray (10B 4/1) fine to coarse gravel (up to 3½ cm) and some medium to coarse sand, minor fine sand, TC silt, ang., elongated slate, dry.	80	5752			First water between 80'&85'.	2nd Test Drill ~~hole~~ turns on water by accident, so very wet.
16:13	0	NO	NO		85'- Black, (10B 2.5/1) fine to medium sand, ~~some~~ coa minor coarse sand, sub ang, elongated slate, some qrtz, wet	85	5753			wet, black and no gravel at 85'	3rd test after cleaning out boring some water
16:30	300	NO	NO		90'- very dark gray (2.5 3/1) fine to coarse gravel and fine to coarse sand ang. blocky, slate, wet, TC red iron oxide, meta sand.	90	5754			Increase gravel at 90'.	4th Test some water
16:46	300	NO	NO		95' Black (10 B 2.5/1) fine to medium sand, minor coarse sand and TC fine gravel, sub ang, elongated slate, some qrtz and minor white clay, wet.	95	5755			Producer	5th test Easier drilling Produces more water Continue Driller notices diesel odor

Logged By: G. Berg Date: 6/20/98

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Location: _____

Figure ____. Page 2 of 3.

Field Log of Hole No. MW-33

Log# 104264 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)	
17:10	30	f.	NO		Black (10B 2.5/1) fine to medium sand, some coarse sand and minor gravel, subang elongated slate, increase qrtz and white clay, wet, dk red iron oxide	100	5756				Fracture zone. Increase in qrtz in sample?
17:17	30	NO	NO		105 - Black (2.5 y 2.5/1) fine to coarse sand and fine to coarse gravel, TC qrtz and white clay, dark red iron oxide (TC), ang., blocky, slate wet.	105	5757			color change	Increase in gravel at 105.
17:20	350	v.f.	NO		110' - Black (2.5 y 2.5/1) fine to medium sand, minor coarse sand and gravel, subang, slate and some qrtz, dark red iron oxide (TC)	110	5758				
17:22	50	NO	NO		115' - Black (10B 2.5/1) fine to medium sand, some coarse sand, TC fine gravel, ang, slate, wet, TC qrtz.	115	5759			color change	Decrease in gravel.
17:26	90	v.f.	NO		120' - very dark grayish brown (2.5 y 3/2) fine to coarse gravel, some fine to coarse sand, ang., blocky, slate, wet, slate is dk bluish gray (10B 4/1) green on fracture (TC).	120	5760			color change	Increase in gravel
17:33	195	v.f.	NO		125 - Black (2.5 y 2.5/1) fine to coarse sand and some fine to coarse gravel, subang. to ang., blocky slate, some qrtz, TC white clay, lt and dk red iron oxide and fracture, wet.	125	5761				
17:43	15	NO	NO		130' - Black (2.5 y 2.5/1) fine to medium sand, some coarse sand and fine to coarse gravel, ang, elongated slate, some qrtz and white clay TC - iron oxide.	130	5762				Fracture
17:47	13	NO	NO		135' - Same as above. Decrease in qrtz and white clay.	135	5763				
17:50	15	NO	NO		140' - Black (2.5 y 2.5/1) fine to coarse sand and fine to coarse gravel, ang. elongated and blocky slate, wet, lt red and green oxide in fractures	140	5764				Increase gravel.
17:53	10	NO	NO		143' - Black (2.5 y 2.5/1) fine to medium sand and some coarse sand and gravel, ang., blocky slate, wet, minor qtz and clay, red and green oxide.	143	5765				

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.

Logged By: G. Berg Date: 6/20/98

Location:

Figure ____. Page 3 of 3.

Field Log of Hole No. MW-33

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hog # 104264 Pg 5

MW-33

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.

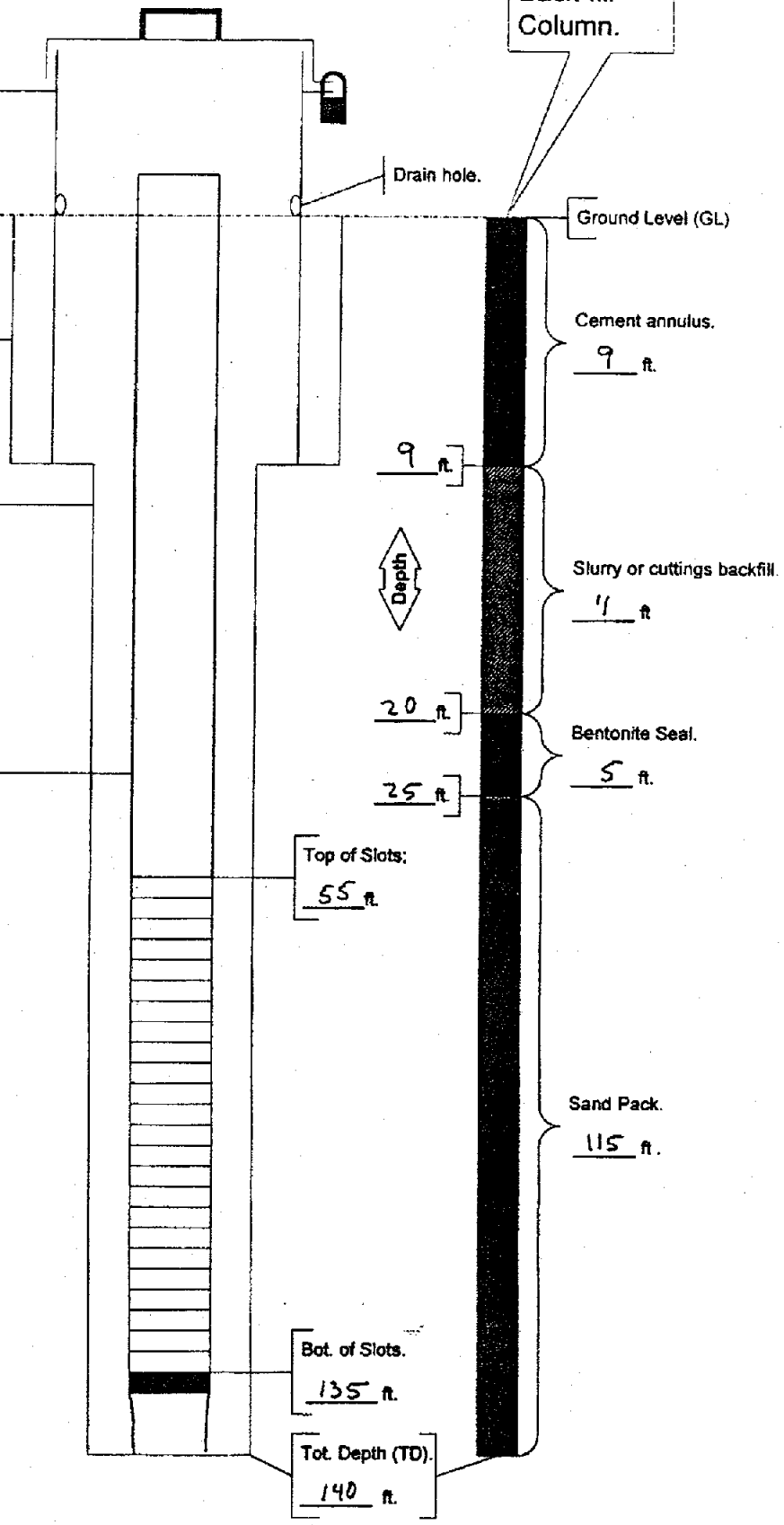
Schedule-40 PVC Casing with cap.

Diameter 4 in.

Csg Lip at ½ in. above GL.

	Length	Interval
Blank:	56 ft;	-1 to 55 ft
Slotted:	80 ft;	55 to 135 ft;
Blank:	5 ft;	135 to 140 ft;

Bottom Plug at 140.2 ft.



GTE Topaz Site.
Completion Diagram.