

Date Started: 03/29/2019	Surface Elevation: 459.46 ft amsl	Well ID: MW-90-031
Date Completed: 04/13/2019	Shallow Well Elevation: 459.27 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: NA ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101904.19	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616366.13	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: Gantt Jeffers	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 4/4/2019	
Total Depth: 43 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
1		Topock - Fill	NR		(+0.1 - 3.0') Surface Completion		(+0.1 - 3.0') 9 bags Note: 2.5 x 2.5 ft concrete pad with 18" diameter lockable vault, King Kon-Crete 4000 PSI	
2					(0.2 - 21.5') 2" PVC Sch 40 Casing	(0.0 - 3.0') 10" Borehole		
3		Topock - Fluvial Deposits	SP-SM					
4								
5		Topock - Fluvial Deposits	SP					
6								
7								
8								
9	MW-W-VAS-7-12 (<0.17 U ppb) 3/27/2019 16:55							
10					(2.5 - 16.0') Portland Cement 5% Bentonite Type I, II and V with Hydrogel	(2.5 - 16.0') 19 gallons	(2.5 - 16.0') 55 gallons (289%) Note: Grout seal. Used >20% of the calculated volume due to potential voids that formed during drilling and grout migration into the formation	
11		Topock - Fluvial Deposits	SP					
12								
13					(12.0 - 13.0') Centralizer	(3.0 - 43.0') 6" Borehole		
14								
15								
16								
17					(16.0 - 18.0') Bentonite seal chips Halliburton Holeplug 3/8"	(16.0 - 18.0') 0.5 bags	(16.0 - 18.0') 0.5 bags (100%) Note: Seal between filter pack and grout seal	
18								
19					(18.0 - 35.0') Cemex #3 MESH (8x20) Lapis Lustré Sand	(18.0 - 35.0') 5.7 bags	(18.0 - 35.0') 5.5 bags (96%) Note: Filter Pack	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value; Notes: depth to water measured post development; installed in MW-90

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11_18_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 22:23


Date Started: 03/29/2019	Surface Elevation: 459.46 ft amsl	Well ID: MW-90-031
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Drilling Method: Sonic Drilling	Northing (NAD83): 2101904.19	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616366.13	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: Gantt Jeffers	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 4/4/2019	
Total Depth: 43 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21		Topock - Fluvial Deposits	SP		(0.2 - 21.5') 2" PVC Sch 40 Casing		
22					(21.5 - 31.5') 2" Sch 40 PVC (20-slot) Screen		
23							
24	MW-W-VAS-22-27 (0.266 J ppb) 3/28/2019 13:00						
25							
26							
27		Topock - Fluvial Deposits	SM		(18.0 - 35.0') Cemex #3 MESH (8x20) Lapis Lustrre Sand	(18.0 - 35.0') 5.7 bags	(18.0 - 35.0') 5.5 bags (96%) Note: Filter Pack
28							
29							
30		Topock - Weathered Bedrock - conglomerate	SM		(3.0 - 43.0') 6" Borehole		
31							
32							
33					(32.0 - 33.0') Centralizer		
34					(31.5 - 33.8') Sump and PVC End Cap		
35		Topock - Competent Bedrock - conglomerate					
36							
37					(35.0 - 43.0') Bentonite seal chips Halliburton Holeplug 3/8"	(35.0 - 43.0') 2.2 bags	(35.0 - 43.0') 2 bags (91%) Note: Decommissioned rathole
38							
39							

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Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
41		Topock - Competent Bedrock - conglomerate			(35.0 - 43.0') Bentonite seal chips Halliburton Holeplug 3/8"	(3.0 - 43.0') 6" Borehole	(35.0 - 43.0') 2.2 bags
42							
43					End of Boring at 43.0 ft bgs.		
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							

Final - Revised 4/29/20

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 22:23

Date Started:	03/27/2019	Surface Elevation:	459.5 ft amsl	Boring No.: MW-90	
Date Completed:	03/28/2019	Northing (NAD83):	2101904.2		
Drilling Co.:	Cascade	Easting (NAD83):	7616366.1	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	43 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	4.8 ft bgs		
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	Gantt Jeffers	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
1	60			Topock - Fill	NR		(0.0 - 5.0') Topock - Fill; (NR); Hand auger cuttings not logged	(0.0 - 5.0') Hand augered for utility clearance	(0.0 - 12.0') 50 gallons of water used; 0 gallons of water recovered; 50 gallons of water lost
2									
3									
4									
5									
6	24			Topock - Fluvial Deposits	SP-SM		(5.0 - 6.5') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); brown (7.5YR 5/4); very fine grained to fine grained, subangular to subround; little silt; trace granules to small pebbles, round; trace round; trace mica; moist to wet; larger clasts consist of granodiorites	(5.0 - 12.0') Soft drilling (5.0') Approximate depth to water table	
7									
8	60	No Sieve Samples Collected	MW-W-VAS-7-12 (<0.17 U ppb) 3/27/2019 16:55	Topock - Fluvial Deposits	SP		(6.5 - 26.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (10YR 5/3); very fine grained to fine grained, subangular to subround; little mica; moist to wet; iron oxide staining		
9									
10									
11									
12									
13	156			Topock - Fluvial Deposits	SP		(8') very fine grained to medium grained; no iron oxide staining	(12.0 - 27.0') Soft drilling and compaction of sands. Casing settled in sand when sample screen was being set for 7 to 12 ft interval.	(12.0 - 27.0') 50 gallons of water used; 0 gallons of water recovered; 50 gallons of water lost
14									
15									
16									
17									
18									
19									
20									

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SOIL BORING LOG - PG&E - TOPOCK - C:\USERS\SMCGRANE\DOCUMENTS\PG&E - TOPOCK\DRIFT BORING LOGS\4.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 04/29/20 15:01

Date Started:	03/27/2019	Surface Elevation:	459.5 ft amsl	Boring No.: MW-90	
Date Completed:	03/28/2019	Northing (NAD83):	2101904.2		
Drilling Co.:	Cascade	Easting (NAD83):	7616366.1	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	43 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	4.8 ft bgs		
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	Gantt Jeffers	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
21	156		MW-W-VAS-22-27 (0.266 J ppb) 3/28/2019 13:00	Topock - Fluvial Deposits	SP				
22									
23									
24									
25	60	No Sieve Samples Collected		Topock - Fluvial Deposits	SM		(26.0 - 29.2') Topock - Fluvial Deposits; Silty sand (SM); grayish brown (2.5Y 5/2); very fine grained to fine grained, subangular to subround; little silt; little mica; little organics; wet		(27.0 - 43.0') No water used
26									
27									
28	24			Topock - Weathered Bedrock - conglomerate	SM		(29.2 - 31.0') Topock - Weathered Bedrock - conglomerate; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); very fine grained to coarse grained, angular to subangular; and silt; little granules to very large pebbles, angular to subangular; trace very coarse grained sand; trace mica; wet; larger clasts consist of metadiorite and granodiorites		(31.0 - 34.0') Rough drilling
29									
30									
31									
32	72			Topock - Competent Bedrock - conglomerate			(31.0 - 43.0') Topock - Competent Bedrock - conglomerate; dark reddish brown (2.5YR 3/4); dry; moderate cementation; friable		(34.0 - 40.0') Core was hot
33									
34									
35									
36									
37									
38									
39									
40									

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Date Completed:	03/28/2019	Northing (NAD83):	2101904.2		
Drilling Co.:	Cascade	Easting (NAD83):	7616366.1	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	43 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	4.8 ft bgs		
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	Gantt Jeffers	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
41	36	No Sieve Samples Collected		Topock - Competent Bedrock - conglomerate					
42									
43									

End of Boring at 43.0 ft bgs.

Final - Revised 4/29/20

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