

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	Project Number: RC000753.0051
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
0					(0.0 - 24.2') 2" PVC Sch 40 Casing (+0.5 - 1.0') Concrete Pad		(+0.5 - 1.0') 24 bags Note: 30-inch Diameter Concrete Pad with 18-inch Diameter Lockable Vault, Quickcrete Concrete Mix with Buff dye
1							
2							
3							
4							
5							
6							
7							
8							
9			NR				
10					(3.0 - 17.1') Portland Cement 6% Bentonite (9.5 - 10.5') Centralizer	(3.0 - 17.1') 60.7 gallons	(3.0 - 17.1') 100 gallons (65%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential voids forming during drilling
11							
12							
13							
14	MW-X-VAS-12-17 (<0.033 U ppb) 6/25/2019 15:10						
15							
16							
17							
18			NR		(17.1 - 22.0') Bentonite seal chips	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips
19							

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, NR = no recovery, groundwater data was collected from MW-91d

WELL CONSTRUCTION DETAILS_PG&E TOPOCK TOPOCK DRAFT BORING LOGS\GINT FILES\123119\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

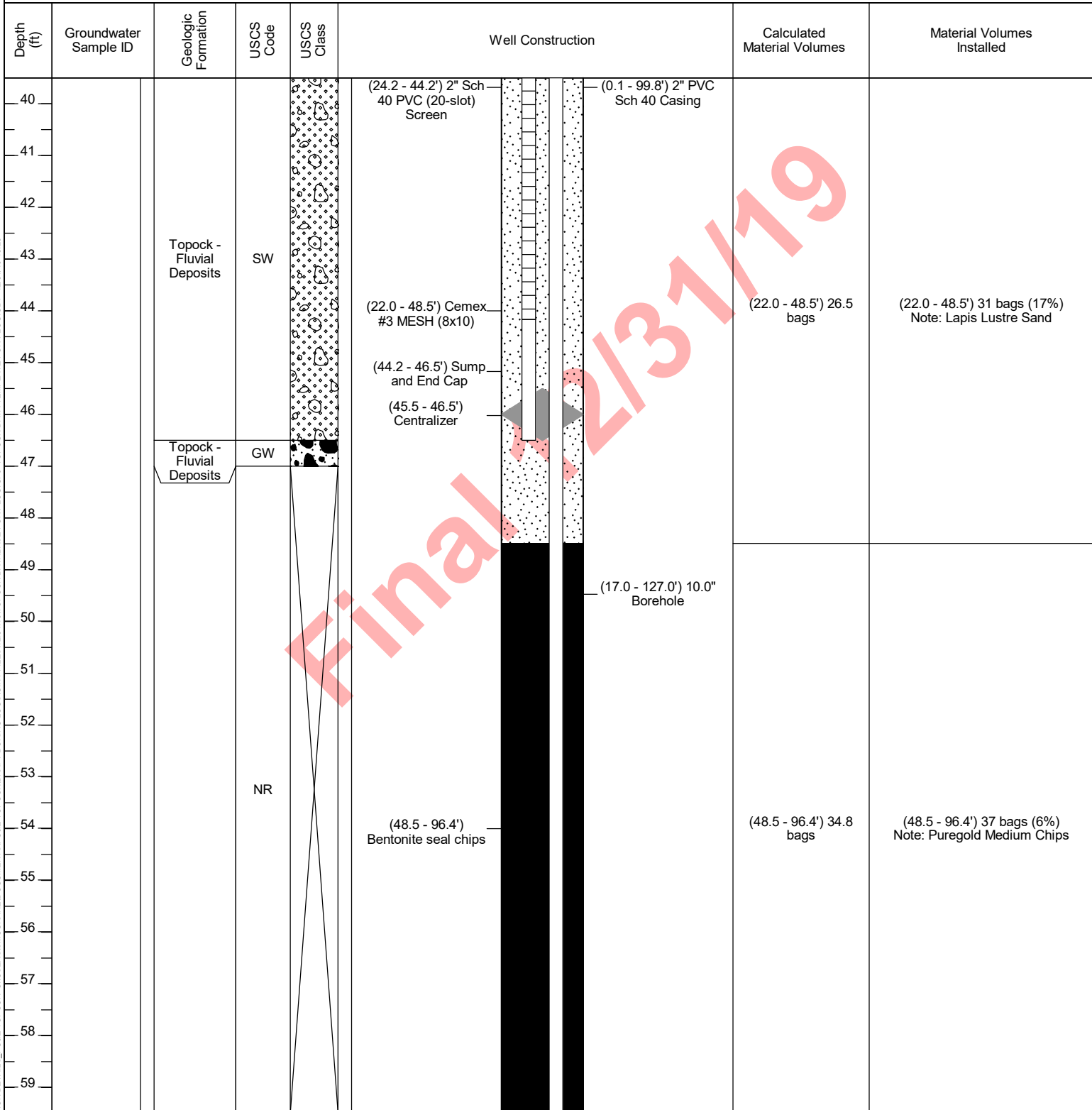
Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	Project Number: RC000753.0051
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
20 - 21					(0.0 - 24.2') 2" PVC Sch 40 Casing (17.1 - 22.0') Bentonite seal chips	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips
22 - 27			NR		(24.2 - 44.2') 2" Sch 40 PVC (20-slot) Screen		
28 - 32	MW-X-VAS-32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill	SP		(22.0 - 48.5') Cemex #3 MESH (8x10)	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand
33 - 37		Topock - Fluvial Deposits	SW		(17.0 - 127.0') 10.0" Borehole		

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCK DRAFT BORING LOGS\GINT FILES\1231.19\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	Project Number: RC000753.0051
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	



WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCK DRAFT BORING LOGS\GINT FILES\1231.19\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

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, NR = no recovery, groundwater data was collected from MW-91d

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	Project Number: RC000753.0051
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed	
60					(0.1 - 99.8') 2" PVC Sch 40 Casing			
61								
62								
63								
64								
65								
66								
67								
68								
69								
70			NR		(48.5 - 96.4') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.8 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
71								
72								
73	MW-X-VAS-71-76 (<0.033 U ppb) 6/27/2019 08:52							
74								
75								
76								
77								
78								
79								

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\1231.18\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	Project Number: RC000753.0051
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
80					(0.1 - 99.8') 2" PVC Sch 40 Casing		
81							
82							
83							
84							
85					(84.5 - 85.5') Centralizer		
86							
87							
88			NR		(48.5 - 96.4') Bentonite seal chips	(48.5 - 96.4') 34.8 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
89							
90					(17.0 - 127.0') 10.0" Borehole		
91							
92							
93							
94							
95							
96							
97							
98		Topock - Fluvial Deposits	SW		(96.4 - 124.0') Cemex #3 MESH (8x10)	(96.4 - 124.0') 29 bags	(96.4 - 124.0') 35 bags (21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during flushing of the casing
99							

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\1231.19\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	Project Number: RC000753.0051
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

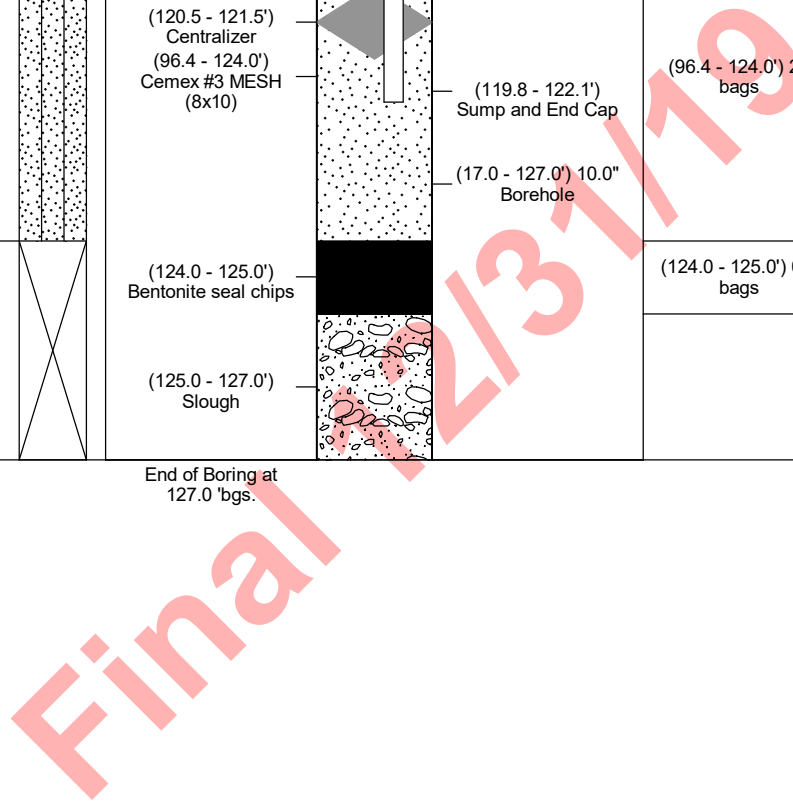
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed		
100		Topock - Fluvial Deposits	SW	[Pattern]	(99.8 - 119.8') 2" Sch 40 PVC (20-slot) Screen				
101									
102									
103									
104									
105		Topock - Fluvial Deposits	GW	[Pattern]	(96.4 - 124.0') Cemex #3 MESH (8x10)	(96.4 - 124.0') 29 bags	(96.4 - 124.0') 35 bags (21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during flushing of the casing		
106									
107		Topock - Fluvial Deposits	SM	[Pattern]	(17.0 - 127.0') 10.0" Borehole				
108	MW-X-VAS-107-112 (<0.033 U ppb) 6/27/2019 15:04								
109		Topock - Fluvial Deposits	GW	[Pattern]					
110	MW-X-VAS-112-117 (<0.033 U ppb) 6/28/2019 09:56								
111		Topock - Alluvium Deposits	GW-GM	[Pattern]					
112									
113		Topock - Alluvium Deposits	SM	[Pattern]					
114									
115		Topock - Alluvium Deposits	SM	[Pattern]					
116									
117		Topock - Alluvium Deposits	SM	[Pattern]					
118									
119		Topock - Alluvium Deposits	SM	[Pattern]					
120									

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCK DRAFT BORING LOGS\GINT FILES\1231.19\TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:23

Date Started: 08/13/2019	Surface Elevation: 465.5 ft amsl	Well ID: MW-91-45, MW-91-120
Date Completed: 09/24/2019	Shallow Well Elevation: 465.5 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 465.4 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103782.1	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7616745.1	Location: PG&E Topock, Needles, California
Drilling Asst: O. Flores / L. Amaya	Borehole Diameter: 10-12 inches	
Logger: Anthony Mack	Water Level Start: 11.8 ft bgs	Project Number: RC000753.0051
Editor: Grant Wilford	Development End Date: 11/20/2019	
Total Depth: 127 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
120		Topock - Alluvium Deposits	SM	[Pattern]	(120.5 - 121.5') Centralizer	(96.4 - 124.0') 29 bags	(96.4 - 124.0') 35 bags (21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during flushing of the casing
121					(96.4 - 124.0') Cemex #3 MESH (8x10)		
122					(17.0 - 127.0') 10.0" Borehole		
123							
124							
124		NR	NR	[X]	(124.0 - 125.0') Bentonite seal chips	(124.0 - 125.0') 0.8 bags	(124.0 - 125.0') 1 bags (25%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids forming during flushing of the casing
125					(125.0 - 127.0') Slough		Note: Formation material that settled from the water column in the casing
126							
127					End of Boring at 127.0' bgs.		
128							
129							
130							
131							
132							
133							
134							
135							
136							
137							
138							
139							



WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\SMC\GRANDOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\1231.19\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GPJ 12/31/19 13:23

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Date Started: 08/09/2019	Surface Elevation: 465.5 ft amsl	Boring No.: MW-91s
Date Completed: 08/12/2019	Northing (NAD83): 2103782.1	
Drilling Co.: Cascade	Easting (NAD83): 7616745.1	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 127 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 10-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 9.6 ft bgs	
Drilling Asst: O. Flores / L. Amaya	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger: Anthony Mack	Sampling Interval: Screen Intervals	
Editor: Grant Wilford	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							(0.0 - 17.0') No recovery (NR); did not collect or log core, see MW-91d for lithology	(0.0 - 17.0') Soft drilling.	(0.0 - 40.0') No water used
2									
3									
4									
5									
6									
7									
8									
9	0				NR				
10		No Sieve Samples Collected							
11									
12									
13									
14			MW-X-VAS-12-17 (<0.033 U ppb) 6/25/2019 15:10						
15									
16									
17							(17.0 - 27.0') No recovery (NR)		
18								(17.0 - 27.0') Loose fine grained sands did not stay in core barrel.	
19	0				NR				
20									

Final 12/31/19

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

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, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval at MW-91d, groundwater data was collected from MW-91d

Date Started: 08/09/2019	Surface Elevation: 465.5 ft amsl	Boring No.: MW-91s
Date Completed: 08/12/2019	Northing (NAD83): 2103782.1	
Drilling Co.: Cascade	Easting (NAD83): 7616745.1	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 127 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 10-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 9.6 ft bgs	
Drilling Asst: O. Flores / L. Amaya	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger: Anthony Mack	Sampling Interval: Screen Intervals	
Editor: Grant Wilford	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									
22									
23									
24	0				NR				
25									
26									
27									
28				Topock - Fill	SP		(27.0 - 36.0') Topock - Fill; Poorly graded sand (SP); dark yellowish brown (10YR 4/4); very fine grained to medium grained, subangular to round; trace silt; wet	(27.0 - 40.0') Soft drilling.	
29									
30		No Sieve Samples Collected							
31									
32	120								
33									
34			MW-X-VAS-32-37 (<0.033 U ppb) 6/26/2019 11:45						
35									
36									
37				Topock - Fluvial Deposits	SW		(36.0 - 46.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW); grayish brown (10YR 5/2); fine grained to very coarse grained, subangular to subround; little granules to small pebbles, subangular to subround; trace silt; wet		
38									
39	120								
40									

Final 12131119

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12131119\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

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Date Started: 08/09/2019	Surface Elevation: 465.5 ft amsl	Boring No.: MW-91s
Date Completed: 08/12/2019	Northing (NAD83): 2103782.1	
Drilling Co.: Cascade	Easting (NAD83): 7616745.1	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 127 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 10-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 9.6 ft bgs	
Drilling Asst: O. Flores / L. Amaya	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger: Anthony Mack	Sampling Interval: Screen Intervals	
Editor: Grant Wilford	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	120			Topock - Fluvial Deposits	SW		(44.5'); little granules to large pebbles; increase in pebble size	(40.0') Retracked 10-inch casing and started flushing casing to get past due to rough drilling at 119 to 124 ft. bgs. and too much torque on the drill head.	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
42									
43									
44									
45	0	No Sieve Samples Collected		Topock - Fluvial Deposits	GW		(46.5 - 47.0') Topock - Fluvial Deposits; Well graded gravel with sand (GW); dark grayish brown / dark yellowish brown (10YR 4/2); angular to subangular; some fine to coarse grained sand, subangular to subround; trace silt		
46					NR		(47.0 - 97.0') No recovery (NR); did not collect or log core, see MW-91d for lithology		
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									

Final 213119

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\2.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

Date Started: 08/09/2019	Surface Elevation: 465.5 ft amsl	Boring No.: MW-91s
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Drilling Method: Sonic Drilling	Total Depth: 127 ft bgs	Project: Final GW Remedy Phase 1
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Driller Name: Steve Vasquez	Depth to First Water: 9.6 ft bgs	
Drilling Asst: O. Flores / L. Amaya	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger: Anthony Mack	Sampling Interval: Screen Intervals	
Editor: Grant Wilford	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
61									
62									
63									
64									
65									
66									
67									
68									
69									
70	0	No Sieve Samples Collected			NR				
71			MW-X-VAS-71-76 (<0.033 U ppb) 6/27/2019 08:52						
72									
73									
74									
75									
76									
77									
78									
79									
80									

Final 12/31/19

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

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Drilling Method: Sonic Drilling	Total Depth: 127 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 10-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 9.6 ft bgs	
Drilling Asst: O. Flores / L. Amaya	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger: Anthony Mack	Sampling Interval: Screen Intervals	
Editor: Grant Wilford	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
81									
82									
83									
84									
85									
86									
87									
88									
89	0				NR				
90		No Sieve Samples Collected							
91									
92									
93									
94									
95									
96								(95.0') Rough drilling starts.	
97									
98				Topock - Fluvial Deposits	SW		(97.0 - 107.0') Topock - Fluvial Deposits; Well graded sand (SW); brown (10YR 4/3); fine grained to very coarse grained, subangular to subround; trace granules, subangular to subround; wet		
99	120								
100									

Final 12/31/19

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

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, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval at MW-91d, groundwater data was collected from MW-91d

Date Started:	08/09/2019	Surface Elevation:	465.5 ft amsl	Boring No.: MW-91s	
Date Completed:	08/12/2019	Northing (NAD83):	2103782.1		
Drilling Co.:	Cascade	Easting (NAD83):	7616745.1	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	127 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	10-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	9.6 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	O. Flores / L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	Anthony Mack	Sampling Interval:	Screen Intervals		
Editor:	Grant Wilford	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
101	120	No Sieve Samples Collected		Topock - Fluvial Deposits	SW				
102									
103									
104									
105	120	No Sieve Samples Collected	MW-X-VAS-107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	GW		(107.0 - 108.0') Topock - Fluvial Deposits; Well graded gravel with sand (GW); brown (10YR 4/3); granules to very large pebbles, angular to subround; some very fine to medium grained sand, subangular to subround; trace silt		
106				Topock - Fluvial Deposits	SM		(108.0 - 112.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); dark grayish brown / dark yellowish brown (10YR 4/2); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet		
107				Topock - Fluvial Deposits	GW		(112.0 - 116.0') Topock - Fluvial Deposits; Well graded gravel with sand (GW); dark grayish brown / dark yellowish brown (10YR 4/2); granules to large cobbles, subangular to round; some fine to very coarse grained sand, subangular to subround; trace small cobbles; wet		
108				Topock - Alluvium Deposits	GW-GM		(116.0 - 117.0') Topock - Alluvium Deposits; Well graded gravel with silt and sand (GW-GM); brown (7.5YR 4/4) trace weak red / pale reddish brown (10R 5/4); granules to small cobbles, angular to round; some very fine to medium grained sand, subangular to round; little silt; wet		
109	84			Topock - Alluvium Deposits	SM		(117.0 - 124.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles		
110									
111									
112									
113	84								
114									
115									
116									
117	84								
118									
119									
120									
								(119.0 - 124.0') Rough drilling due to large	

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SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SSM\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\12.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

Date Started:	08/09/2019	Surface Elevation:	465.5 ft amsl	Boring No.: MW-91s	
Date Completed:	08/12/2019	Northing (NAD83):	2103782.1		
Drilling Co.:	Cascade	Easting (NAD83):	7616745.1	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	127 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	10-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	9.6 ft bgs		
Drilling Asst:	O. Flores / L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	Anthony Mack	Sampling Interval:	Screen Intervals		
Editor:	Grant Wilford	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
121	84			Topock - Alluvium Deposits	SM			cobbles and boulders in the formation, increased torque caused spindle bolts to shear. Start flushing casing with water	
122									
123									
124									
125	0				NR		(124.0 - 127.0') No recovery (NR); Did not collect or log core, see MW-91d for lithology	(124.0 - 127.0') Drilled an extra 3 ft to get through boulders and cobbles.	
126									
127									

End of Boring at 127.0' bgs.

SOIL BORING LOG - PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.31.19\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/31/19 13:09

Final 1213119

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, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval at MW-91d, groundwater data was collected from MW-91d