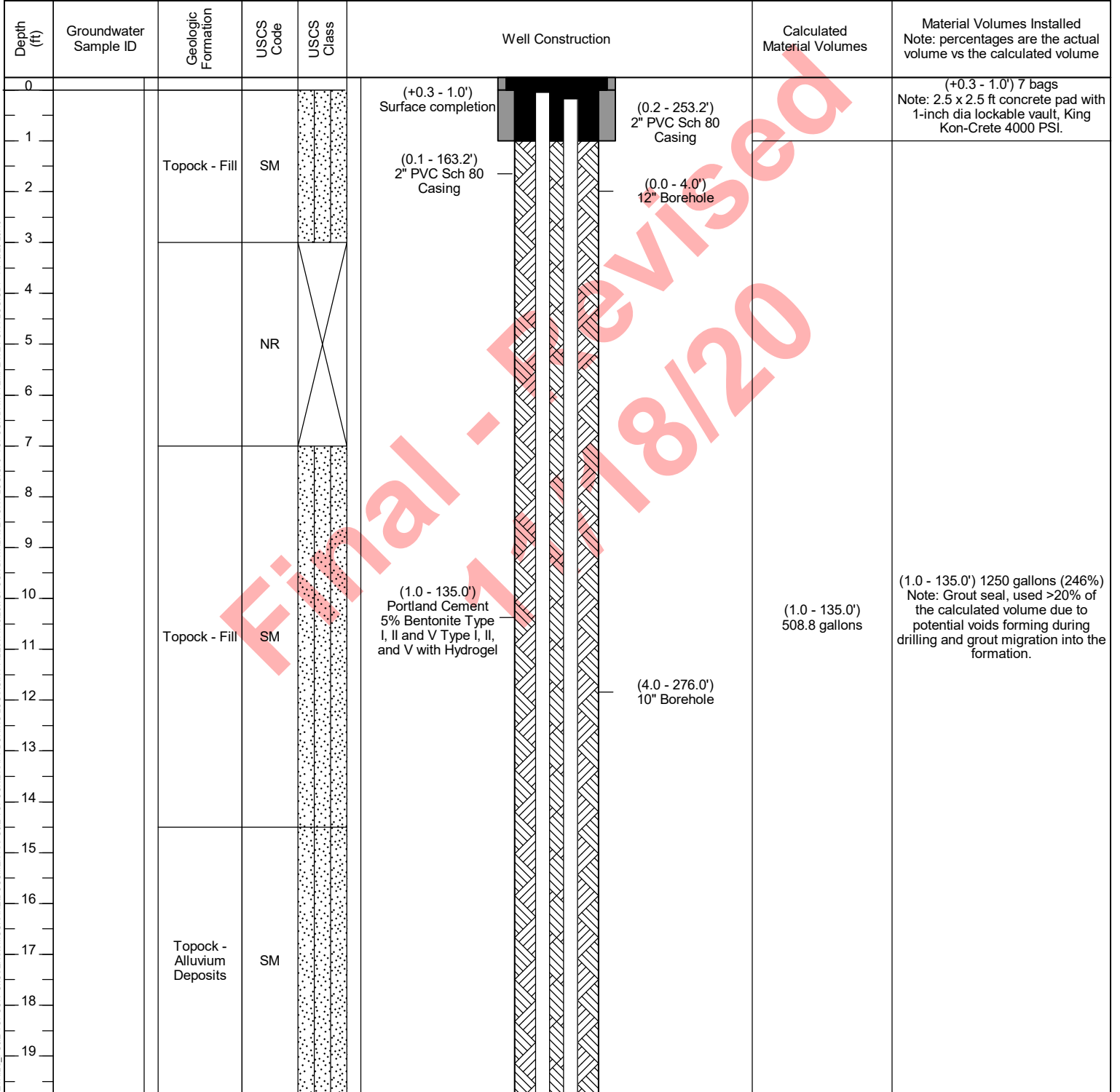


Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	



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 23:10

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
20		Topock - Alluvium Deposits	SM		(0.1 - 163.2') 2" PVC Sch 80 Casing		
21					(0.2 - 253.2') 2" PVC Sch 80 Casing		
22		Topock - Alluvium Deposits	GP				
23							
24		Topock - Alluvium Deposits	SM				
25							
26		Topock - Alluvium Deposits	GM				
27							
28		NR			(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel		(1.0 - 135.0') 508.8 gallons  (1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.
29							
30							
31							
32							
33							
34							
35							
36							
37							
38		Topock - Alluvium Deposits	SM				
39							
		Topock - Alluvium Deposits	GM				

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_DRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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	
40		Topock - Alluvium Deposits	GM		(0.1 - 163.2') 2" PVC Sch 80 Casing			
41					(0.2 - 253.2') 2" PVC Sch 80 Casing			
42		Topock - Alluvium Deposits	SM		(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 508.8 gallons	
43								(1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.
44								
45		Topock - Alluvium Deposits	GM					
46								
47		Topock - Alluvium Deposits	GM					
48								
49		Topock - Alluvium Deposits	GM					
50								
51		Topock - Alluvium Deposits	GM					
52								
53		Topock - Alluvium Deposits	GM					
54								
55		Topock - Alluvium Deposits	GM					
56								
57		Topock - Alluvium Deposits	GM					
58								
59		Topock - Alluvium Deposits	GM					

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

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 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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	
60		Topock - Alluvium Deposits	GM		(0.1 - 163.2') 2" PVC Sch 80 Casing			
61					(0.2 - 253.2') 2" PVC Sch 80 Casing			
62								
63								
64		Topock - Alluvium Deposits	GP					
65								
66		Topock - Alluvium Deposits	GM					
67								
68								
69								
70					(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 508.8 gallons	(1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.
71								
72		Topock - Alluvium Deposits	SM					
73								
74								
75								
76								
77								
78								
79								

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_TOPOCKDRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT\_11/18/20\_23.10

Date Started: 04/28/2019 Surface Elevation: 587.70 ft amsl  
 Date Completed: 05/10/2019 Shallow Well Elevation: 587.52 ft amsl  
 Drilling Co.: Cascade Deep Well Elevation: 587.66 ft amsl Client: PG&E  
 Drilling Method: Sonic Drilling Northing (NAD83): 2101958.53 Project: Final GW Remedy Phase 1  
 Driller Name: Eddie Ramos Easting (NAD83): 7613300.55 Location: PG&E Topock, Needles, California  
 Drilling Asst: L. Amaya / O. Flores Borehole Diameter: 6-12 inches  
 Logger: G. Willford / D. Maurer Static Water Level: See Log for Depths Project Number: RC000753.0051  
 Editor: Sean McGrane Development End Date: 5/10/2019  
 Total Depth: 327 ft bgs Well Completion:  Flush  Stick-up  To Be Completed in Well Vault

**Well ID: MW-89-183, MW-89-273**

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
80		Topock - Alluvium Deposits	SM		(0.1 - 163.2') 2" PVC Sch 80 Casing		
81					(0.2 - 253.2') 2" PVC Sch 80 Casing		
82		Topock - Alluvium Deposits	SM		(82.5 - 83.5') Centralizer		
83							
84							
85		Topock - Alluvium Deposits	GM		(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel		
86							
87							
88							
89		Topock - Alluvium Deposits	SM		(4.0 - 276.0') 10" Borehole		
90						(1.0 - 135.0') 508.8 gallons	(1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.
91							
92							
93							
94		Topock - Alluvium Deposits	GM				
95							
96							
97		Topock - Alluvium Deposits	GM				
98							
99							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_TOPOCKDRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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						
100		Topock - Alluvium Deposits	GM		(0.1 - 163.2') 2" PVC Sch 80 Casing								
101							(0.2 - 253.2') 2" PVC Sch 80 Casing						
102													
103													
104		Topock - Alluvium Deposits	SM		(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 508.8 gallons	(1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.					
105													
106													
107													
108		Topock - Alluvium Deposits	ML										
109													
110													
111													
112		Topock - Alluvium Deposits	SM										
113													
114													
115													
116		Topock - Alluvium Deposits	SM										
117													
118													
119													

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_TOPOCKDRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT\_11/18/20\_23.10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

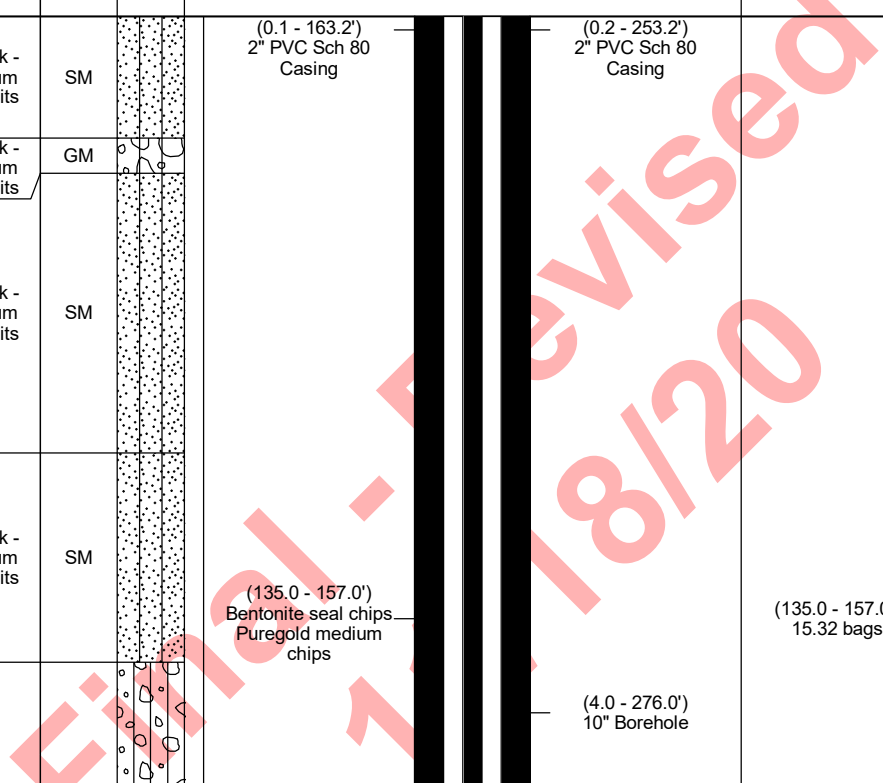
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
120 - 121		Topock - Alluvium Deposits	SM		(0.1 - 163.2') 2" PVC Sch 80 Casing		
121 - 122					(0.2 - 253.2') 2" PVC Sch 80 Casing		
122 - 125		Topock - Alluvium Deposits	GM		(1.0 - 135.0') Portland Cement 5% Bentonite Type I, II and V Type I, II, and V with Hydrogel	(1.0 - 135.0') 508.8 gallons	(1.0 - 135.0') 1250 gallons (246%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration into the formation.
125 - 132					(4.0 - 276.0') 10" Borehole		
132 - 133					(132.5 - 133.5') Centralizer		
133 - 135		Topock - Alluvium Deposits	SM				
135 - 137					(135.0 - 157.0') Bentonite seal chips Puregold medium chips	(135.0 - 157.0') 15.32 bags	(135.0 - 157.0') 13 bags (85%) Note: Seal above filter pack
137 - 138	MW-U-VAS-137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM				
138 - 139							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

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 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
140	MW-U-VAS-137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM		(0.1 - 163.2') 2" PVC Sch 80 Casing		
141		Topock - Alluvium Deposits	GM		(0.2 - 253.2') 2" PVC Sch 80 Casing		
142		Topock - Alluvium Deposits	SM				
143		Topock - Alluvium Deposits	SM				
144		Topock - Alluvium Deposits	SM				
145		Topock - Alluvium Deposits	SM				
146		Topock - Alluvium Deposits	SM				
147		Topock - Alluvium Deposits	SM				
148		Topock - Alluvium Deposits	SM				
149		Topock - Alluvium Deposits	SM		(135.0 - 157.0') Bentonite seal chips Puregold medium chips	(135.0 - 157.0') 15.32 bags	(135.0 - 157.0') 13 bags (85%) Note: Seal above filter pack
150		Topock - Alluvium Deposits	ML		(4.0 - 276.0') 10" Borehole		
151		Topock - Alluvium Deposits	ML				
152		Topock - Alluvium Deposits	ML				
153		Topock - Alluvium Deposits	ML				
154		Topock - Alluvium Deposits	SM				
155		Topock - Alluvium Deposits	SM				
156		Topock - Alluvium Deposits	SM				
157		Topock - Alluvium Deposits	SM				
158		Topock - Alluvium Deposits	SM		(157.0 - 187.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(157.0 - 187.0') 30.2 bags	(157.0 - 187.0') 43 bags (142%) Note: Filter pack, used >20% of the calculated volume to to potential voids that formed during drilling.
159		Topock - Alluvium Deposits	SM				



WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_C:\USERS\SMC\GRANE\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 23:10

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89



Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
160		Topock - Alluvium Deposits	SM		(0.1 - 163.2') 2" PVC Sch 80 Casing		
161					(0.2 - 253.2') 2" PVC Sch 80 Casing		
162							
163							
164					(163.2 - 183.2') 2" Sch 80 PVC (20-slot) Screen		
165							
166		Topock - Alluvium Deposits	GM				
167							
168		Topock - Alluvium Deposits	SM		(157.0 - 187.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(157.0 - 187.0') 30.2 bags	(157.0 - 187.0') 43 bags (142%) Note: Filter pack, used >20% of the calculated volume to to potential voids that formed during drilling.
169							
170					(4.0 - 276.0') 10" Borehole		
171							
172							
173							
174							
175							
176							
177							
178							
179							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK TOPOCK DRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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	
180		Topock - Alluvium Deposits	SM		(163.2 - 183.2') 2" Sch 80 PVC (20-slot) Screen			
181					(0.2 - 253.2') 2" PVC Sch 80 Casing			
182		Topock - Alluvium Deposits	SM		(157.0 - 187.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(157.0 - 187.0') 30.2 bags	(157.0 - 187.0') 43 bags (142%) Note: Filter pack, used >20% of the calculated volume to potential voids that formed during drilling.	
183	MW-U-VAS-181-186 (0.112 J ppb) 4/13/2019 12:00				(183.7 - 184.7') Centralizer			
184					(183.2 - 185.6') Sump and PVC End Cap			
185		Topock - Alluvium Deposits	SM		(4.0 - 276.0') 10" Borehole			
186								
187								
188								
189								
190		Topock - Alluvium Deposits	SM		(187.0 - 247.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(187.0 - 247.0') 50.2 buckets	(187.0 - 247.0') 66.8 buckets (133%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids that formed during drilling.	
191								
192								
193								
194								
195								
196								
197								
198								
199								

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

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 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
200		Topock - Alluvium Deposits	SM		(0.2 - 253.2') 2" PVC Sch 80 Casing		
201							
202		Topock - Alluvium Deposits	CL-ML				
203							
204							
205							
206							
207		Topock - Alluvium Deposits	SM				
208							
209							
210					(187.0 - 247.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(187.0 - 247.0') 50.2 buckets	(187.0 - 247.0') 66.8 buckets (133%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids that formed during drilling.
211		Topock - Alluvium Deposits	GP-GM				
212							
213		Topock - Alluvium Deposits	CL-ML				
214							
215		Topock - Alluvium Deposits	GM				
216							
217							
218		Topock - Alluvium Deposits	SC				
219							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_TOPOCKDRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT\_11/18/20\_23.10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
220					(0.2 - 253.2') 2" PVC Sch 80 Casing		
221							
222							
223	MW-U-VAS-222-227 (<0.033 U ppb) 4/14/2019 14:05	Topock - Alluvium Deposits	SC				
224							
225							
226							
227							
228					(227.5 - 228.5') Centralizer		
229							
230					(187.0 - 247.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(187.0 - 247.0') 50.2 buckets	(187.0 - 247.0') 66.8 buckets (133%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids that formed during drilling.
231							
232							
233		Topock - Alluvium Deposits	GM				
234							
235							
236							
237							
238							
239		Topock - Alluvium Deposits	SM				

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK C:\USERS\SMC\GRANE\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 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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		
240		Topock - Alluvium Deposits	SM		(0.2 - 253.2') 2" PVC Sch 80 Casing				
241									
242									
243									
244					(187.0 - 247.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(187.0 - 247.0') 50.2 buckets	(187.0 - 247.0') 66.8 buckets (133%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids that formed during drilling.		
245									
246									
247									
248		Topock - Alluvium Deposits	CL-ML		(4.0 - 276.0') 10" Borehole				
249									
250									
251									
252									
253					(247.0 - 276.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(247.0 - 276.0') 30.3 bags	(247.0 - 276.0') 37.25 bags (123%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling		
254		Topock - Alluvium Deposits	SM		(253.2 - 273.2') 2" Sch 80 PVC (20-slot) Screen				
255									
256									
257									
258	MW-U-VAS-257-262 (0.0896 J ppb) 4/16/2019 14:05								
259									

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E\_TOPOCK\DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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			
260	MW-U-VAS-257-262 (0.0896 J ppb) 4/16/2019 14:05	Topock - Alluvium Deposits	SM		(253.2 - 273.2') 2" Sch 80 PVC (20-slot) Screen					
261										
262		Topock - Alluvium Deposits	ML		(247.0 - 276.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(4.0 - 276.0') 10" Borehole	(247.0 - 276.0') 30.3 bags	(247.0 - 276.0') 37.25 bags (123%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling		
263										
264										
265										
266		Topock - Alluvium Deposits	SM		(273.7 - 274.7') Centralizer					
267										
268										
269		Topock - Alluvium Deposits	MH		(276.0 - 327.0') Bentonite seal chips Purgold medium chips	(276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags	(276.0 - 327.0') 22 bags (158%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids that formed during drilling.		
270										
271		Topock - Alluvium	ML							
272										
273										
274										
275										
276										
277										
278										
279										

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

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 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
280		Deposits					
281		Topock - Alluvium Deposits	ML				
282							
283							
284		Topock - Alluvium Deposits	SM				
285							
286							
287		Topock - Alluvium Deposits	SM		(276.0 - 327.0') Bentonite seal chips Purgold medium chips	(276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags
288							
289	MW-U-VAS-287-292 (<0.033 U ppb) 4/17/2019 14:50						
290							(276.0 - 327.0') 22 bags (158%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids that formed during drilling.
291		Topock - Alluvium Deposits	ML				
292							
293							
294		Topock - Alluvium Deposits	GM				
295							
296							
297		Topock - Alluvium Deposits	MH				
298							
299							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_TOPOCK DRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 23:10

Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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
300		Topock - Alluvium Deposits	MH				
301							
302		Topock - Alluvium Deposits	SM				
303							
304							
305		Topock - Alluvium Deposits	SC		(276.0 - 327.0') Bentonite seal chips Purgold medium chips	(276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags
306							
307							
308							
309		Topock - Alluvium Deposits	CL-ML				(276.0 - 327.0') 22 bags (158%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids that formed during drilling.
310							
311							
312							
313							
314		Topock - Alluvium Deposits	ML				
315							
316							
317							
318	MW-U-VAS-317-322 (<0.17 U) 4/24/2019 11:05						
319							

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

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 23:10



Date Started: 04/28/2019	Surface Elevation: 587.70 ft amsl	<b>Well ID: MW-89-183, MW-89-273</b>
Date Completed: 05/10/2019	Shallow Well Elevation: 587.52 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 587.66 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101958.53	Project: Final GW Remedy Phase 1
Driller Name: Eddie Ramos	Easting (NAD83): 7613300.55	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores	Borehole Diameter: 6-12 inches	
Logger: G. Willford / D. Maurer	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 5/10/2019	
Total Depth: 327 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	
320	MW-U-VAS-317-322 (<0.17 U) 4/24/2019 11:05	Topock - Alluvium Deposits	ML					
321								
322								
323		Topock - Competent Bedrock - conglomerate			(276.0 - 327.0') Bentonite seal chips Purgold medium chips	(276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags	(276.0 - 327.0') 22 bags (158%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids that formed during drilling.
324								
325								
326								
327		Topock - Bedrock - metadiorite			End of Boring at 327.0 ft bgs.			
328								
329								
330								
331								
332								
333								
334								
335								
336								
337								
338								
339								

Final - Revised 11/18/20

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E\_TOPOCK\DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 20:10

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, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-89

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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	36			Topock - Fill	SM		(0.0 - 3.0') Topock - Fill; Silty sand with gravel (SM); brown (10YR 5/3); very fine grained to very coarse grained, angular to subround; and boulders, boulders; some granules to large pebbles, angular to subround; little silt; little clay; trace small cobbles, angular; dry; gravel composed of mixed lithology, possible highway fill	(0.0 - 3.0') Hand augered to ~3 ft bgs due to refusal from a boulder.	(0.0 - 97.0') No water used
2									
3									
4	0				NR		(3.0 - 7.0') No recovery (NR); No recovery see Drilling Notes	(3.0 - 7.0') Material falling out of core barrel.	
5									
6									
7									
8	120	No Sieve Samples Collected		Topock - Fill	SM		(7.0 - 14.5') Topock - Fill; Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (10YR 5/3); very fine grained to very coarse grained, angular to subangular; some granules to medium pebbles, angular to subangular; little silt; little clay; dry; gravel composed of mixed lithology, possible highway fill	(7.0 - 17.0') Soft drilling	
9									
10									
11									
12									
13	72			Topock - Alluvium Deposits	SM		(14.5 - 22.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4) some brown (10YR 5/3); very fine grained to very coarse grained, angular to subangular; some granules to medium pebbles, angular to subangular; little silt; little clay; dry; gravel composed of mixed lithology	(17.0 - 27.0') Soft drilling	
14									
15									
16									
17									
18									
19									
20									

Final Revised 11/18/20

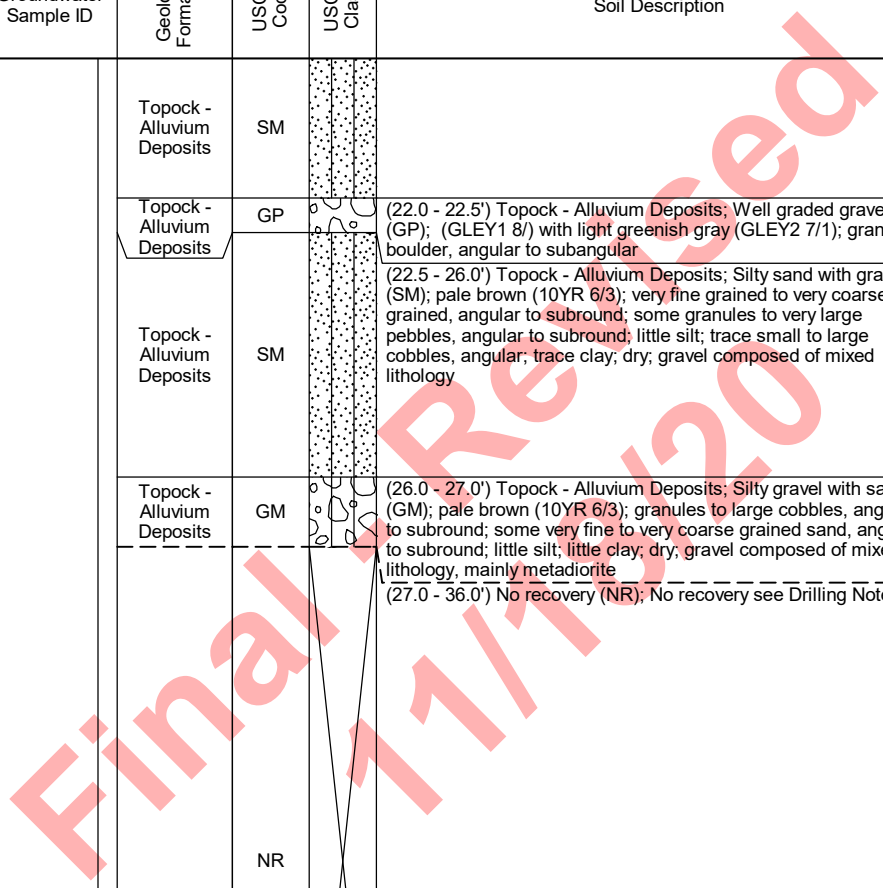
SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 22:55

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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	72			Topock - Alluvium Deposits	SM								
22				Topock - Alluvium Deposits	GP		(22.0 - 22.5') Topock - Alluvium Deposits; Well graded gravel (GP); (GLE1 8/) with light greenish gray (GLE2 7/1); granite boulder, angular to subangular						
23	48			Topock - Alluvium Deposits	SM		(22.5 - 26.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); pale brown (10YR 6/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace small to large cobbles, angular; trace clay; dry; gravel composed of mixed lithology						
24													
25													
26	12	No Sieve Samples Collected			NR		(26.0 - 27.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pale brown (10YR 6/3); granules to large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; little silt; little clay; dry; gravel composed of mixed lithology, mainly metadiorite	(27.0 - 37.0') Rough drilling					
27													
28												(28.0 - 37.0') Air pocket built up in core barrel, causing the core to pore out of the top of the core barrel into the mud tube when the joint of the 20ft core barrel joint was unscrewed.	
29													
30													
31													
32													
33													
34													
35													
36				Topock - Alluvium Deposits	SM		(36.0 - 37.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); pale brown (10YR 6/3); very fine grained to very coarse grained, angular to subround; little granules to medium pebbles, angular to subround; little silt; little clay; dry; weak cementation; gravel composed of mixed lithology						
37				Topock - Alluvium Deposits	GM		(37.0 - 47.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pale brown (10YR 6/3); granules to large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; little silt; little clay; dry; gravel composed of mixed lithology, gravel main grain size granules to small pebbles						
38	120												
39													
40													

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole



SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\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 22:55

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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	120			Topock - Alluvium Deposits	GM				
42									
43									
44									
45	108	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(47.0 - 55.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4) some pale brown (10YR 6/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; little clay; dry; gravel composed of mixed lithology	(47.0 - 56.0') Rough drilling	
46									
47									
48									
49									
50									
51									
52	96			Topock - Alluvium Deposits	GM		(55.0 - 63.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); light brown (7.5YR 6/3); granules to small cobbles, angular to subangular; little very fine to very coarse grained sand, angular to subangular; little silt; little clay; dry; iron oxide staining; gravel composed of mixed lithology, red staining on metadiorite clasts	(56.0 - 87.0') Rough drilling	
53									
54									
55									
56									
57									
58									
59									
60									

Final Revised 11/18/20

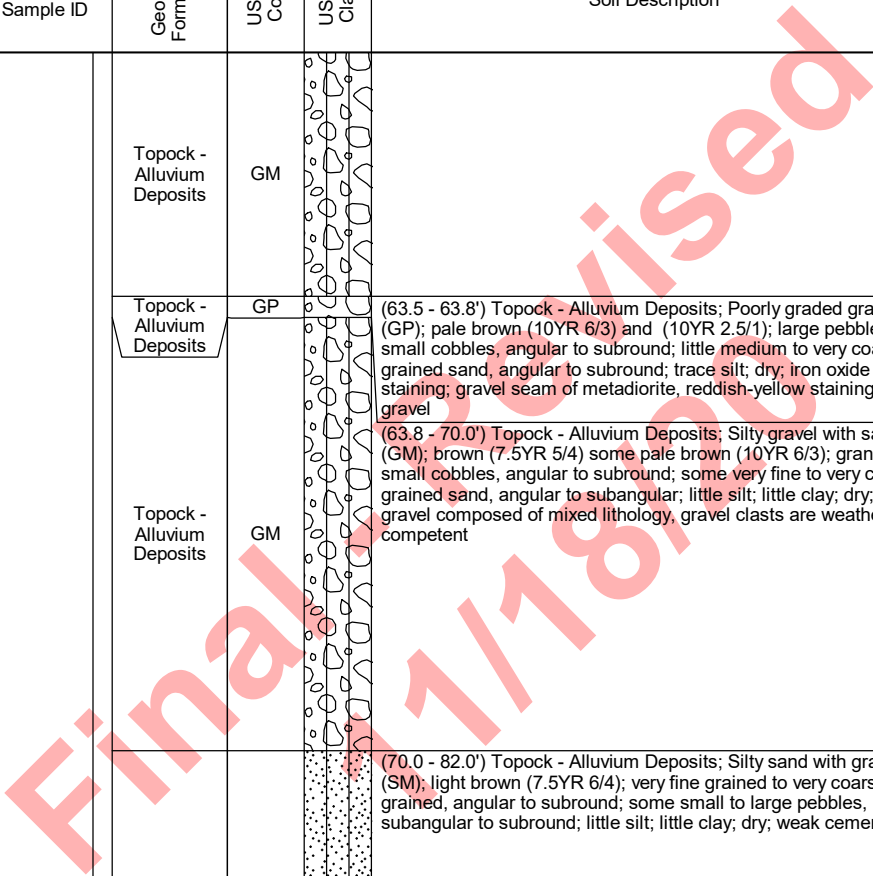
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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		
61	96			Topock - Alluvium Deposits	GM						
62											
63	36			Topock - Alluvium Deposits	GP		(63.5 - 63.8') Topock - Alluvium Deposits; Poorly graded gravel (GP); pale brown (10YR 6/3) and (10YR 2.5/1); large pebbles to small cobbles, angular to subround; little medium to very coarse grained sand, angular to subround; trace silt; dry; iron oxide staining; gravel seam of metadiorite, reddish-yellow staining on gravel				
64											
65											
66	108			Topock - Alluvium Deposits	GM		(63.8 - 70.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); brown (7.5YR 5/4) some pale brown (10YR 6/3); granules to small cobbles, angular to subround; some very fine to very coarse grained sand, angular to subangular; little silt; little clay; dry; gravel composed of mixed lithology, gravel clasts are weathered to competent				
67											
68											
69											
70	114			Topock - Alluvium Deposits	SM		(70.0 - 82.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4); very fine grained to very coarse grained, angular to subround; some small to large pebbles, subangular to subround; little silt; little clay; dry; weak cementation				
71											
72											
73											
74											
75	No Sieve Samples Collected										
76											
77											
78											
79											
80											

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole



SOIL BORING LOG: 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 22:55

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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	
81	114			Topock - Alluvium Deposits	SM					
82								(82.0 - 87.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (7.5YR 6/2) little pale brown (10YR 6/3); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little silt; little clay; dry; iron oxide staining; sand and gravel composed of mixed lithology, trace red staining on gravel clasts		
83				Topock - Alluvium Deposits	SM					
84										
85										
86										
87										
88	90	No Sieve Samples Collected		Topock - Alluvium Deposits	GM		(87.0 - 93.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pinkish gray (7.5YR 6/2); granules to small cobbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; some silt; little clay; dry; iron oxide staining; gravel composed of mixed lithology, trace red staining on some of the gravel clasts	(87.0 - 117.0') Rough drilling		
89										
90										
91										
92										
93										
94				Topock - Alluvium Deposits	SM		(93.0 - 98.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; some small to large pebbles, angular to subangular; little silt; little clay; dry; weak cementation; gravel composed of mixed lithology			
95										
96										
97	132			Topock - Alluvium Deposits	GM		(98.0 - 107.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pinkish gray (7.5YR 6/2) and light brown (7.5YR 6/4); granules to small cobbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; some silt; little clay; dry; moderate cementation; gravel composed of mixed lithology		(97.0 - 267.0') 2000 gallons of water used; 1400 gallons of water recovered; 600 gallons of water lost	
98										
99										
100										

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SOIL BORING LOG: 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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
101	132			Topock - Alluvium Deposits	GM				
102									
103									
104									
105	90	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(107.0 - 114.2') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; little clay; trace small cobbles, angular to subangular; dry; iron oxide staining; gravel composed of mixed lithology some red staining on gravel clasts		
106									
107									
108									
109									
110									
111									
112	120			Topock - Alluvium Deposits	ML		(114.2 - 117.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); dark grayish brown / dark yellowish brown (10YR 4/2); low plasticity, no dilatency; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subround; little clay; dry; when moist soil has low-very low plasticity, gravel composed of mixed lithology		
113									
114									
115									
116	120			Topock - Alluvium Deposits	SM		(117.0 - 124.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; little clay; trace small cobbles, angular to subangular; dry; iron oxide staining; gravel composed of mixed lithology, some red staining on gravel clasts		(116.0 - 132.0') Driller noted material is getting compressed in core barrel.  (117.0 - 127.0') Soft drilling
117									
118									
119									
120									

Final Revised 11/8/20

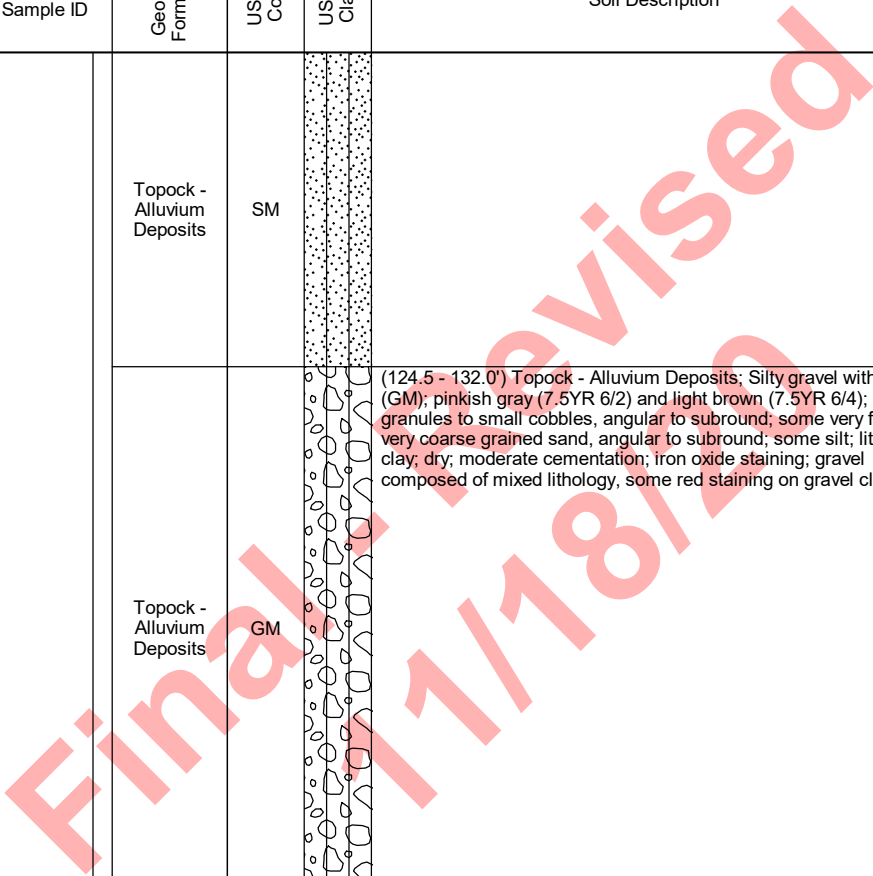
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\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 22:55

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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
121	120			Topock - Alluvium Deposits	SM				
122									
123									
124									
125	36	No Sieve Samples Collected		Topock - Alluvium Deposits	GM		(124.5 - 132.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pinkish gray (7.5YR 6/2) and light brown (7.5YR 6/4); granules to small cobbles, angular to subround; some very fine to very coarse grained sand, angular to subround; some silt; little clay; dry; moderate cementation; iron oxide staining; gravel composed of mixed lithology, some red staining on gravel clasts	(127.0 - 132.0') Rough drilling	
126									
127									
128									
129	60			Topock - Alluvium Deposits	SM		(132.0 - 137.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/2) some light gray (7.5YR 7/1); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subangular; little silt; little clay; trace small cobbles, angular; dry to moist	(132.0 - 137.0') Rough drilling	
130									
131									
132									
133				Topock - Alluvium Deposits	SM		(136.5'); wet	(136.5') Approximate depth to water table.	
134									
135									
136									
137			MW-U-VAS-137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM		(137.0 - 141.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/2) some light gray (7.5YR 7/1); very fine grained to very coarse grained, angular to subangular; little granules to large pebbles, angular to subround; little silt; little clay; wet; gravel composed of mixed lithology		
138									
139									
140									

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Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
141			MW-U-VAS-137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM				
142				Topock - Alluvium Deposits	GM		(141.5 - 142.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); greenish gray (5GY 6/1) some brown (7.5YR 5/2); large pebbles to small cobbles, angular to subangular; little medium to very coarse grained sand, angular to subangular; little silt; trace clay; wet; iron oxide staining; gravel composed of metadiorite, some red staining on gravel clasts		
143				Topock - Alluvium Deposits	SM		(142.0 - 146.0') Topock - Alluvium Deposits; Silty sand (SM); brown (7.5YR 5/2) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, subangular to subround; little silt; trace small cobbles, subangular; trace clay; wet; homogeneous		
144				Topock - Alluvium Deposits	SM		(146.0 - 149.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/2); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; some silt; little clay; trace small cobbles, angular; moist; weak cementation; iron oxide staining; gravel composed of mixed lithology, some red staining on metadiorite gravel clasts		
145				Topock - Alluvium Deposits	SM		(149.0 - 153.5') Topock - Alluvium Deposits; Gravelly silt with sand (ML); brown (7.5YR 5/2); medium plasticity, no dilatancy; little granules to very large pebbles, angular to subround; little very fine to very coarse grained sand, angular to subround; trace small cobbles, angular; moist; weak cementation; iron oxide staining; core was slightly moist; not dry but had low moisture content, low to medium plasticity, gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		
146				Topock - Alluvium Deposits	ML			(150.0 - 157.0') Rough drilling	
147				Topock - Alluvium Deposits	SM		(153.5 - 157.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/2) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, subangular to subround; little silt; trace small cobbles, subangular; trace clay; wet; homogeneous; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite		
148				Topock - Alluvium Deposits	SM		(157.0 - 166.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/2) some light reddish brown / light brown (5YR 6/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace clay; wet; iron oxide staining; sand and gravel composed of mixed lithology, mainly metadiorite, some red staining on gravel clasts		
149				Topock - Alluvium Deposits	SM			(157.0 - 177.0') Soft drilling	
150	180	No Sieve Samples Collected		Topock - Alluvium Deposits	ML				
151				Topock - Alluvium Deposits	SM				
152				Topock - Alluvium Deposits	SM				
153				Topock - Alluvium Deposits	SM				
154				Topock - Alluvium Deposits	SM				
155				Topock - Alluvium Deposits	SM				
156				Topock - Alluvium Deposits	SM				
157				Topock - Alluvium Deposits	SM				
158	120			Topock - Alluvium Deposits	SM				
159				Topock - Alluvium Deposits	SM				
160				Topock - Alluvium Deposits	SM				

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: 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 22:55

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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									
161	120			Topock - Alluvium Deposits	SM		<p>(166.0 - 167.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); greenish gray (5GY 6/1) some red (2.5YR 4/8); large pebbles to large cobbles, angular to subangular; little medium to very coarse grained sand, angular to subangular; little silt; trace clay; dry to moist; iron oxide staining; gravel composed of meta-diorite, some red staining on gravel clasts, possible metadiorite boulder</p> <p>(167.0 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown / light brown (5YR 6/4) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; wet; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts</p>											
162																		
163																		
164																		
165																		
166	No Sieve Samples Collected			Topock - Alluvium Deposits	GM		<p>(166.0 - 167.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); greenish gray (5GY 6/1) some red (2.5YR 4/8); large pebbles to large cobbles, angular to subangular; little medium to very coarse grained sand, angular to subangular; little silt; trace clay; dry to moist; iron oxide staining; gravel composed of meta-diorite, some red staining on gravel clasts, possible metadiorite boulder</p> <p>(167.0 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown / light brown (5YR 6/4) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; wet; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts</p>											
167																		
168																		
169																		
170																		
171																		
172										120			Topock - Alluvium Deposits	SM		<p>(167.0 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown / light brown (5YR 6/4) some pinkish gray (7.5YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; wet; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts</p>		
173																		
174																		
175																		
176																		
177																		
178																		
179																		
180																		

Final Revised 11/20

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: 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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
181				Topock - Alluvium Deposits	SM				
182				Topock - Alluvium Deposits	SM		(181.5 - 187.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown (5YR 6/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little small cobbles, angular to subangular; little silt; wet		
183									
184			MW-U-VAS-181-186 (0.112 J ppb) 4/13/2019 12:00						
185									
186									
187				Topock - Alluvium Deposits	SM		(187.0 - 201.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish yellow (5YR 6/6) with light brown (7.5YR 6/4); very fine grained to very coarse grained, angular to subround; little small to large pebbles, subangular to subround; little silt; trace small cobbles, subangular; wet; iron oxide staining; gravel clasts predominantly metadiorite with some red staining	(187.0 - 227.0') Soft drilling	
188									
189									
190		No Sieve Samples Collected							
191									
192	240			Topock - Alluvium Deposits	SM				
193									
194									
195									
196									
197									
198									
199									
200									

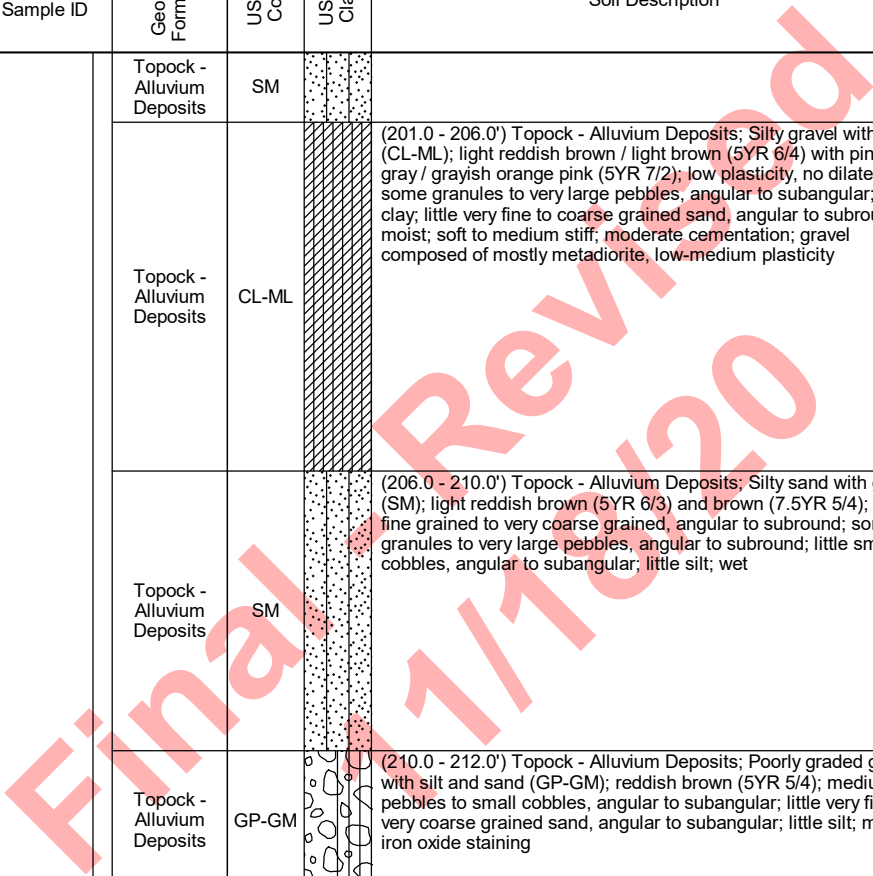
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: 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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
201	240			Topock - Alluvium Deposits	SM		(201.0 - 206.0') Topock - Alluvium Deposits; Silty gravel with sand (CL-ML); light reddish brown / light brown (5YR 6/4) with pinkish gray / grayish orange pink (5YR 7/2); low plasticity, no dilatency; some granules to very large pebbles, angular to subangular; some clay; little very fine to coarse grained sand, angular to subround; moist; soft to medium stiff; moderate cementation; gravel composed of mostly metadiorite, low-medium plasticity		
202				CL-ML					
203									
204									
205									
206									
207	120	No Sieve Samples Collected				Topock - Alluvium Deposits	SM		(206.0 - 210.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown (5YR 6/3) and brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little small cobbles, angular to subangular; little silt; wet
208				GP-GM					
209									
210									
211	120	No Sieve Samples Collected		Topock - Alluvium Deposits	GP-GM		(210.0 - 212.0') Topock - Alluvium Deposits; Poorly graded gravel with silt and sand (GP-GM); reddish brown (5YR 5/4); medium pebbles to small cobbles, angular to subangular; little very fine to very coarse grained sand, angular to subangular; little silt; moist; iron oxide staining		
212				CL-ML					
213									
214									
215	120	No Sieve Samples Collected				Topock - Alluvium Deposits	GM		(214.0 - 217.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); light reddish brown / light brown (5YR 6/4); granules to small cobbles, angular to subround; some very fine to very coarse grained sand, angular to subround; some silt; little clay; moist to dry; moderate cementation; iron oxide staining
216				SC					
217									
218									
219	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SC		(217.0 - 227.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); reddish brown (5YR 5/4) little reddish brown (2.5YR 4/3); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; little clay; trace small cobbles, angular to subangular; wet; moderate cementation; iron oxide staining; gravel composed mostly of metadiorite, some red staining on gravel clasts		
220									

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole



SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMC\GRANEDOCUMENTS\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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
221	120		MW-U-VAS-222-227 (<0.033 U ppb) 4/14/2019 14:05	Topock - Alluvium Deposits	SC				
222									
223									
224									
225									
226	120	No Sieve Samples Collected		Topock - Alluvium Deposits	GM		(227.0 - 238.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4); granules to small cobbles, angular to subround; some very fine to very coarse grained sand, subangular to subround; little silt; trace small cobbles, angular to subangular; trace clay; wet; iron oxide staining; gravel composed mostly of metadiorite, some red staining on gravel clasts		
227									
228									
229									
230									
231									
232									
233									
234									
235									
236	240			Topock - Alluvium Deposits	SM		(238.5 - 250.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; little clay; trace small cobbles, subangular; wet; iron oxide staining; gravel composed of mostly	(237.0 - 257.0') Core barrel became locked up after drilling 237 ft bgs to 257 ft bgs. To free up the core barrel	
237									
238									
239									
240									

Final Revised 8/20

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\1.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 22:55

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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
241				Topock - Alluvium Deposits	SM		metadiorite, some red staining on gravel clasts	Cascade had to flush water in while advancing the 6" outer casing to free up the core barrel. While flushing in the 6" casing the casing became sand locked. Driller had to retreat casing to 97' bgs and re-advance casing to 257' bgs to free up the core barrel.	
242									
243									
244									
245									
246									
247									
248									
249	120								
250		No Sieve Samples Collected							
251				Topock - Alluvium Deposits	CL-ML		(250.0 - 253.5') Topock - Alluvium Deposits; Sandy silt with gravel (CL-ML); light brown (7.5YR 6/3); low plasticity, no dilatancy; some very fine to coarse grained sand, angular to subround; some clay; little granules to medium pebbles, subangular to subround; wet to moist; very soft to soft; weak cementation; gravel composed of mixed lithology, mostly metadiorite		
252									
253									
254				Topock - Alluvium Deposits	SM		(253.5 - 257.0') Topock - Alluvium Deposits; Silty sand (SM); light brownish gray / pale yellowish brown (10YR 6/2); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, subangular to subround; little silt; little clay; wet to moist; weak cementation; gravel composed of mixed lithology		
255									
256									
257									
258	120		MW-U-VAS-257-262 (0.0896 J ppb) 4/16/2019 14:05	Topock - Alluvium Deposits	SM		(257.0 - 264.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) some reddish yellow (5YR 6/8); very fine grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; little clay; trace small cobbles, subangular; wet; iron oxide staining; gravel composed of mostly metadiorite, some red staining on gravel clasts	(257.0 - 267.0') Soft drilling	
259									
260									

Final - Revised 1/18/20

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: 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 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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			
261	120		MW-U-VAS-257-262 (0.0896 J ppb) 4/16/2019 14:05	Topock - Alluvium Deposits	SM							
262												
263			120	No Sieve Samples Collected		Topock - Alluvium Deposits	ML		(264.0 - 273.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 5/4); low plasticity, no dilatancy; some granules to very large pebbles, angular to subangular; little very fine to very coarse grained sand, angular to subround; little clay; trace small cobbles, angular; moist; stiff; moderate cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		(267.0 - 295.0') Soft drilling	(267.0 - 327.0') No water used
264												
265												
266												
267	120			Topock - Alluvium Deposits	SM		(273.0 - 277.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark reddish brown / moderate brown (5YR 3/4) some red (2.5YR 5/6); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; wet; weak cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts, very saturated 273-275 ft bgs					
268												
269												
270												
271	120			Topock - Alluvium Deposits	MH		(277.0 - 279.0') Topock - Alluvium Deposits; Sandy elastic silt with gravel (MH); red (2.5YR 5/6); medium plasticity, no dilatancy; little granules to medium pebbles, angular to subangular; little very fine to coarse grained sand, angular to subround; little clay; moist; stiff; strong cementation; iron oxide staining; medium to high plasticity					
272												
273												
274												
275	120			Topock - Alluvium Deposits	ML		(279.0 - 285.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 5/4); low plasticity, no dilatancy; some granules to very large pebbles, angular to subangular; little very					
276												
277												
278												
279	120			Topock - Alluvium Deposits	ML							
280												

Final Revised 1/18/20

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMC\GRANEDOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 1/18/20 22:55

Date Started:	04/10/2019	Surface Elevation:	587.70 ft amsl	<b>Boring No.: MW-89</b>	
Date Completed:	04/28/2019	Northing (NAD83):	2101958.53		
Drilling Co.:	Cascade	Easting (NAD83):	7613300.55	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	327 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:	Eddie Ramos	Depth to First Water:	132.1 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	L. Amaya / O. Flores	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	G. Willford / D. Maurer	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
281				Topock - Alluvium Deposits	ML		fine to very coarse grained sand, angular to subround; little clay; trace small cobbles, angular; moist; stiff; moderate cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		
282									
283				Topock - Alluvium Deposits	SM		(285.0 - 287.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) with light brown (7.5YR 6/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; wet to moist; moderate cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		
284									
285				Topock - Alluvium Deposits	SM		(287.0 - 291.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); red (2.5YR 5/6) with reddish brown (5YR 5/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; wet; weak cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		
286									
287				Topock - Alluvium Deposits	ML		(291.0 - 295.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 5/4) with red (2.5YR 5/6); low plasticity, no dilatancy; some granules to very large pebbles, angular to subangular; little very fine to very coarse grained sand, angular to subround; little clay; trace small cobbles, angular; moist to dry; medium stiff to very stiff; strong cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts		
288									
289				Topock - Alluvium Deposits	GM		(295.0 - 297.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); red (2.5YR 5/6) some pinkish gray / grayish orange pink (5YR 7/2); granules to very large pebbles, angular to subangular; low plasticity; some very fine to very coarse grained sand, angular to subround; little silt; little clay; dry; strong cementation; iron oxide staining	(295.0 - 297.0')	Rough drilling
290									
291				Topock - Alluvium Deposits	MH		(297.0 - 303.0') Topock - Alluvium Deposits; Sandy elastic silt with gravel (MH); red (2.5YR 5/6) some reddish brown (5YR 5/4); medium plasticity, no dilatancy; little granules to medium pebbles, angular to subangular; little very fine to coarse grained sand, angular to subround; little clay; trace small to large cobbles, angular; moist; soft to medium stiff; strong cementation; iron oxide staining; medium to high plasticity, trace angular cobbles of weathered metadiorite or possibly basalt (aphanitic)	(297.0 - 307.0')	Soft drilling
292									
293									
294									
295									
296									
297									
298									
299									
300									

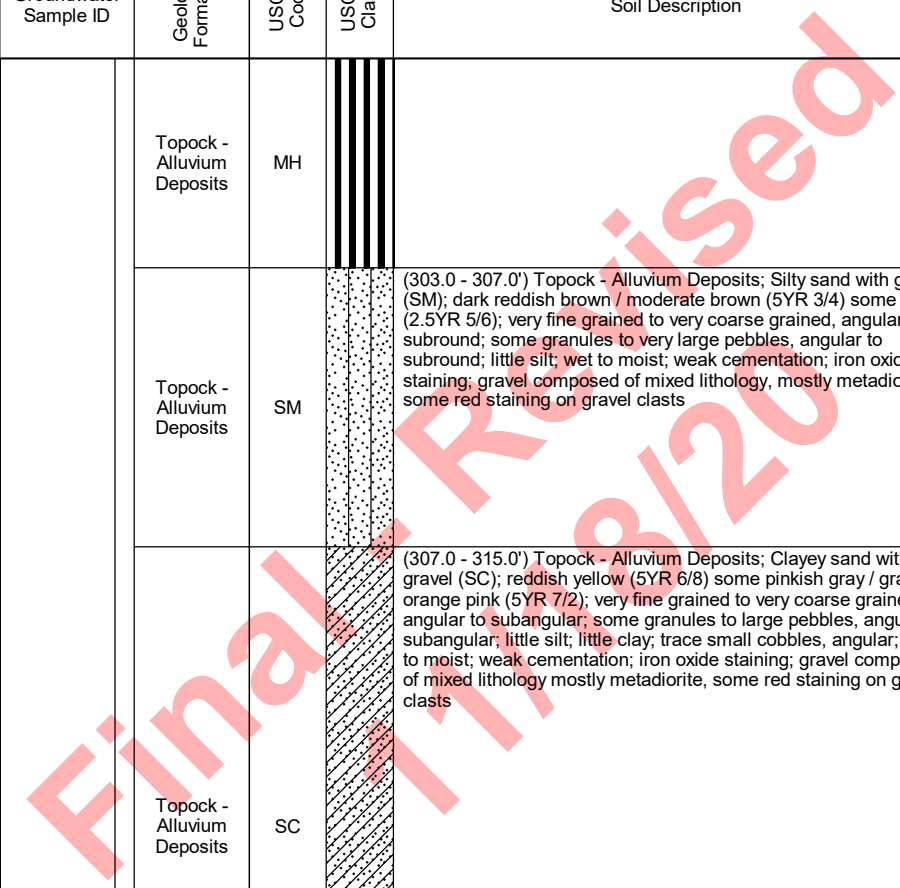
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: 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 22:55



Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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		
301	120			Topock - Alluvium Deposits	MH						
302											
303											
304							Topock - Alluvium Deposits	SM		(303.0 - 307.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark reddish brown / moderate brown (5YR 3/4) some red (2.5YR 5/6); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; wet to moist; weak cementation; iron oxide staining; gravel composed of mixed lithology, mostly metadiorite, some red staining on gravel clasts	
305	No Sieve Samples Collected										
306											
307											
308							Topock - Alluvium Deposits	SC		(307.0 - 315.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); reddish yellow (5YR 6/8) some pinkish gray / grayish orange pink (5YR 7/2); very fine grained to very coarse grained, angular to subangular; some granules to large pebbles, angular to subangular; little silt; little clay; trace small cobbles, angular; wet to moist; weak cementation; iron oxide staining; gravel composed of mixed lithology mostly metadiorite, some red staining on gravel clasts	(307.0 - 315.0') Soft drilling
309											
310											
311											
312	120										
313											
314											
315							Topock - Alluvium Deposits	CL-ML		(315.0 - 317.0') Topock - Alluvium Deposits; Sandy elastic silt with gravel (CL-ML); red (2.5YR 5/6) some reddish brown (5YR 5/3); high plasticity, no dilatancy; some granules to large pebbles, angular to subangular; some clay; little very fine to very coarse grained sand, angular to subround; moist; medium stiff to very stiff; strong cementation	(315.5 - 317.0') Rough drilling
316	60										
317											
318							Topock - Alluvium Deposits	ML		(317.0 - 323.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); red (2.5YR 4/8) some pinkish gray (5YR 6/2); low plasticity, no dilatancy; little granules to very large pebbles, angular to round; little very fine to very coarse grained sand, angular to subround; little clay; trace small cobbles, angular to subround; moist; stiff to hard; iron oxide staining; gravel composed of mixed lithology mostly metadiorite, some red staining on gravel clasts, some greenish gray in core (GLEY 1 6/2)	(317.0 - 322.0') Soft drilling
319											
320											



SOIL BORING LOG: 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 22:55

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, NR = no recovery; Notes: depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-89-183, MW-89-273 installed in borehole

Date Started: 04/10/2019	Surface Elevation: 587.70 ft amsl	<b>Boring No.: MW-89</b>
Date Completed: 04/28/2019	Northing (NAD83): 2101958.53	
Drilling Co.: Cascade	Easting (NAD83): 7613300.55	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 327 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: Eddie Ramos	Depth to First Water: 132.1 ft bgs	Project Number: RC000753.0051
Drilling Asst: L. Amaya / O. Flores	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: G. Willford / D. Maurer	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
321	60		MW-U-VAS-317-322 (<0.17 U) 4/24/2019 11:05	Topock - Alluvium Deposits	ML				
322								(322.0 - 327.0') Rough drilling	
323		No Sieve Samples Collected					(323.0 - 326.7') Topock - Competent Bedrock - conglomerate; light red (2.5YR 6/8) some red (10R 4/8); moist to dry; moderate cementation; friable, highly fractured		
324				Topock - Competent Bedrock - conglomerate					
325	60								
326									
327				Topock - Bedrock - metadiorite			(326.7 - 327.0') Topock - Bedrock - metadiorite; hard, Highly fractured and pulverized rock		
328							End of Boring at 327.0 ft bgs.		
329									
330									
331									
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338									
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340									

Final Revised 11/11/20

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, NR = no recovery; Notes: depth to wells MW-89-183, MW-89-273 installed in borehole

SOIL BORING LOG: PG&E-TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E-TOPOCK\DRAFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/11/20 22:55