

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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
0					(+3.0 - 5.0') Surface completion		Note: 12x12-inch Lockable Steel Monument
1					(+2.4 - 100.0') 2" PVC Sch 40 Casing		
2			NR		(0.0 - 4.0') 12.0" Borehole		(+1.0 - 5.0') 35 bags Note: 24-inch Diameter Concrete Well Pad, King Kon-Crete 4000 PSI
3							
4							
5							
6							
7		Topock - Fill	SP				
8							
9					(5.0 - 14.0') Bentonite seal chips Puregold Medium Chips	(5.0 - 14.0') 6.3 bags	(5.0 - 14.0') 9 bags (143%) Note: Bentonite seal, used >20% of the calculated volume due to potential voids forming during drilling.
10							
11					(11.5 - 12.5') Centralizer		
12							
13			NR				
14	MW-O-VAS-12.5-17 (0.163 J ppb) 5/8/2019 14:20						
15					(14.0 - 85.0') Agua Guard High Solids Bentonite Grout	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (131%) Note: Annular seal across the screen interval of MW-86-30 and MW-86-66, used >20% of the calculated volume due to potential voids that formed during drilling.
16		Topock - Fluvial Deposits	SP-SM				
17							

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_DRAFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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			
18		Topock - Fluvial Deposits	SP-SM	[Dotted Pattern]	(+2.4 - 100.0') 2" PVC Sch 40 Casing					
19										
20										
21										
22										
23										
24										
25										
26										
27					Topock - Fluvial Deposits	CH	[Diagonal Hatching]	(14.0 - 85.0') Aqua Guard High Solids Bentonite Grout	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (131%) Note: Annular seal across the screen interval of MW-86-30 and MW-86-66, used >20% of the calculated volume due to potential voids that formed during drilling.
28		Topock - Fluvial Deposits	SP-SM	[Dotted Pattern]	(4.0 - 143.0') 10" Borehole					
29										
30										
31										
32										
33										
34										
35										
36					Topock - Fluvial Deposits	SP-SM	[Dotted Pattern]			
37										

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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		
38		Topock - Fluvial Deposits	SP-SM		(+2.4 - 100.0') 2" PVC Sch 40 Casing				
39									
40									
41									
42									
43		Topock - Fluvial Deposits	SW		(14.0 - 85.0') Agua Guard High Solids Bentonite Grout				
44									
45									
46		Topock - Fluvial Deposits	SW		(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (131%) Note: Annular seal across the screen interval of MW-86-30 and MW-86-66, used >20% of the calculated volume due to potential voids that formed during drilling.		
47									
48		Topock - Fluvial Deposits	SW						
49									
50		Topock - Fluvial Deposits	SP-SM						
51									
52		Topock - Fluvial Deposits	SM						
53	MW-O-VAS-51-56 (<0.033 U ppb) 5/9/2019 09:18								
54									
55		Topock - Alluvium Deposits	CL						
56									
57									

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_DRAFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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		
58		Topock - Alluvium Deposits	CL	[Hatched Pattern]	(+2.4 - 100.0') 2" PVC Sch 40 Casing				
59									
60		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(61.5 - 62.5') Centralizer				
61									
62									
63									
64									
65		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(14.0 - 85.0') Agua Guard High Solids Bentonite Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons		
66									
67	MW-O-VAS-66-71 (0.178 J ppb) 5/9/2019 14:30								(14.0 - 85.0') 350 gallons (131%) Note: Annular seal across the screen interval of MW-86-30 and MW-86-66, used >20% of the calculated volume due to potential voids that formed during drilling.
68									
69		Topock - Alluvium Deposits	SC	[Hatched Pattern]					
70									
71									
72									
73									
74									
75									
76									
77									

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/12/2019 Surface Elevation: 465.95 ft amsl
 Date Completed: 08/01/2019 Shallow Well Elevation: 468.33 ft amsl
 Drilling Co.: Cascade Deep Well Elevation: 468.18 ft amsl
 Drilling Method: Sonic Drilling Northing (NAD83): 2103345.27
 Driller Name: Dan O'Mara Easting (NAD83): 7616128.02
 Drilling Asst: E. Huellmantel / J. Pacheco Borehole Diameter: 6-12 inches
 Logger: G. Willford / M. Andrews Static Water Level: See Log for Depths
 Editor: Sean McGrane Development End Date: 7/23/2019
 Total Depth: 146 ft bgs Well Completion: Flush Stick-up To Be Completed in Well Vault

Well ID: MW-86-120, MW-86-140

Client: PG&E

Project: Final GW Remedy Phase 1

Location: PG&E Topock, Needles, California

Project Number: RC000753.0051

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
78		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(+2.4 - 100.0') 2" PVC Sch 40 Casing		
79							
80		Topock - Alluvium Deposits	CL	[Dotted Pattern]	(14.0 - 85.0') Agua Guard High Solids Bentonite Grout	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (131%) Note: Annular seal across the screen interval of MW-86-30 and MW-86-66, used >20% of the calculated volume due to potential voids that formed during drilling.
81							
82		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(4.0 - 143.0') 10" Borehole		
83							
84		Topock - Alluvium Deposits	CL	[Dotted Pattern]			
85							
86		Topock - Alluvium Deposits	SC	[Hatched Pattern]			
87							
88		Topock - Alluvium Deposits	CL	[Dotted Pattern]			
89							
90		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(85.0 - 98.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(85.0 - 98.0') 10.4 buckets	(85.0 - 98.0') 12 buckets (115%) Note: Seal between filter pack and grout seal.
91							
92		Topock - Alluvium Deposits	CL	[Dotted Pattern]			
93							
94		Topock - Alluvium Deposits	SC	[Hatched Pattern]			
95							
96		Topock - Alluvium Deposits	CL	[Dotted Pattern]			
97							

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCK DRAFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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
98		Topock - Alluvium Deposits	SC	[Hatched Pattern]	(+2.4 - 100.0') 2" PVC Sch 40 Casing	(85.0 - 98.0') 10.4 buckets	(85.0 - 98.0') 12 buckets (115%) Note: Seal between filter pack and grout seal.
99					(+2.2 - 130.0') 2" PVC Sch 40 Casing		
100					(100.0 - 120.0') 2" Sch 40 PVC (20-slot) Screen		
101							
102							
103	MW-O-VAS-101-106 (<0.033 U ppb) 5/10/2019 12:32						
104							
105							
106							
107		Topock - Alluvium Deposits	SM	[Dotted Pattern]	(98.0 - 124.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(98.0 - 124.0') 25.5 bags	(98.0 - 124.0') 36 bags (141%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling.
108	MW-O-VAS-106-111 (<0.17 U ppb) 5/11/2019 08:25						
109							
110							
111							
112		Topock - Alluvium Deposits	SM	[Dotted Pattern]			
113							
114							
115							
116		Topock - Alluvium Deposits	SM	[Dotted Pattern]			
117							

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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				
118		Topock - Alluvium Deposits	SM		(100.0 - 120.0') 2" Sch 40 PVC (20-slot) Screen	(98.0 - 124.0') 25.5 bags	(98.0 - 124.0') 36 bags (141%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling.				
119											
120											
121											
122					(120.5 - 121.5') Centralizer (98.0 - 124.0') Cemex #3 MESH Lapis Lustre Sand (120.0 - 122.3') Sump and PVC End Cap						
123											
124											
125											
126					(124.0 - 128.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(124.0 - 128.0') 3.3 buckets	(124.0 - 128.0') 5 buckets (152%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids forming during drilling.				
127					(4.0 - 143.0') 10" Borehole						
128		Topock - Alluvium Deposits	ML								
129											
130											
131					(130.0 - 140.0') 2" Sch 40 PVC (20-slot) Screen						
132											
133		Topock - Alluvium Deposits	SM		(128.0 - 143.0') Cemex #3 MESH (8x20) Lapis Lustre Sand L	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (123%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling.				
134											
135											
136											
137		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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/12/2019	Surface Elevation: 465.95 ft amsl	Well ID: MW-86-120, MW-86-140
Date Completed: 08/01/2019	Shallow Well Elevation: 468.33 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 468.18 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2103345.27	Project: Final GW Remedy Phase 1
Driller Name: Dan O'Mara	Easting (NAD83): 7616128.02	Location: PG&E Topock, Needles, California
Drilling Asst: E. Huellmantel / J. Pacheco	Borehole Diameter: 6-12 inches	
Logger: G. Willford / M. Andrews	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 7/23/2019	
Total Depth: 146 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" 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
138	MW-O-VAS-136-141 (<0.17 U ppb) 5/11/2019 14:26	Topock - Alluvium Deposits	SM		(128.0 - 143.0') Cemex #3 MESH (8x20) Lapis Lustre Sand L	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (123%) Note: Filter pack, used $>20\%$ of the calculated volume due to potential voids forming during drilling.
139					(130.0 - 140.0') 2" Sch 40 PVC (20-slot) Screen		
140		Topock - Competent Bedrock - conglomerate			(4.0 - 143.0') 10" Borehole	(143.0 - 146.0') 0.8 bags	(143.0 - 146.0') 1 bags (125%) Note: Decommissioned rathole, installed to 142 ft. bgs, 1.5 ft removed during reaming with 10 inch casing.
141	(140.5 - 141.5') Centralizer						
142	(140.0 - 142.3') Sump and PVC End Cap						
143					(143.0 - 146.0') Bentonite seal chips		
144					(143.0 - 146.0') Enviroplug Medium Chips		
145							
146					End of Boring at 146.0 ft bgs.		
147							
148							
149							
150							
151							
152							
153							
154							
155							
156							
157							

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-86d

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\120820\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 20:50

Date Started: 05/08/2019	Surface Elevation: 465.95 ft amsl	Boring No.: MW-86d
Date Completed: 05/29/2019	Northing (NAD83): 2103345.27	
Drilling Co.: Cascade	Easting (NAD83): 7616128.02	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 146 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Terrasonic track mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Dan O'Mara	Depth to First Water: 10.0 ft bgs	Project Number: RC000753.0051
Drilling Asst: E. Huellmantel / J. Pacheco	Sampling Method: 4 inch x 10 ft Core Barrel	
Logger: Grant Willford	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							(0.0 - 4.0') No recovery (NR); see drilling notes	(0.0 - 4.0') No recovery due to loose dredge sands.	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
2					NR				
3									
4									
5	24			Topock - Fill	SP		(4.0 - 10.0') Topock - Fill; Poorly graded sand (SP); light yellowish brown (10YR 6/4); very fine grained to fine grained, subangular to subround; trace small pebbles, subround to round; trace silt; dry; homogeneous; some organics present 4-6 ft. bgs		
6									
7									
8									
9									
10									
11	48						(10.0 - 16.0') No recovery (NR); see drilling notes	(10.0 - 16.0') No recovery due to loose dredge sands.	
12									
13					NR			(12.5') Lost approximately 0.5 ft out of core barrel due to lose sands.	
14									
15			MW-O-VAS-12.5-17 (0.163 J ppb) 5/8/2019 14:20						
16									
17							(16.0 - 26.8') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); very dark grayish brown (10YR 3/2); very fine grained to fine grained, subangular to subround; little silt; wet	(16.0 - 36.0') Soft drilling	
18	222			Topock - Fluvial Deposits	SP-SM				
19									
20									

Final Revised 12/13/20

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started: 05/08/2019	Surface Elevation: 465.95 ft amsl	Boring No.: MW-86d
Date Completed: 05/29/2019	Northing (NAD83): 2103345.27	
Drilling Co.: Cascade	Easting (NAD83): 7616128.02	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 146 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Terrasonic track mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Dan O'Mara	Depth to First Water: 10.0 ft bgs	Project Number: RC000753.0051
Drilling Asst: E. Huellmantel / J. Pacheco	Sampling Method: 4 inch x 10 ft Core Barrel	
Logger: Grant Willford	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				Topock - Fluvial Deposits	SP-SM				
22									
23				Topock - Fluvial Deposits	CH		(26.8 - 27.8') Topock - Fluvial Deposits; Fat clay (CH); dark grayish brown / dark yellowish brown (10YR 4/2); high plasticity; little silt; trace very fine grained sand, subround to round; moist; very soft to soft; homogeneous	(26.8 - 27.8') Notified Archaeologist about 1' clay layer.	
24									
25				Topock - Fluvial Deposits	SP-SM		(27.8 - 36.0') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); dark grayish brown / dark yellowish brown (10YR 4/2); very fine grained to fine grained, subangular to subround; little silt; wet		
26									
27				Topock - Fluvial Deposits	SP-SM		(36.0 - 45.0') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); light yellowish brown (10YR 6/4); very fine grained to fine grained, subangular to subround; little silt; trace clay; wet to moist	(36.0 - 56.0') Soft drilling	
28	222								
29				Topock - Fluvial Deposits	SP-SM				
30									
31				Topock - Fluvial Deposits	SP-SM				
32									
33				Topock - Fluvial Deposits	SP-SM				
34									
35				Topock - Fluvial Deposits	SP-SM				
36									
37				Topock - Fluvial Deposits	SP-SM				
38	240								
39				Topock - Fluvial Deposits	SP-SM				
40									

Final Revised 12/13/20

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

Date Started:	05/08/2019	Surface Elevation:	465.95 ft amsl	Boring No.: MW-86d	
Date Completed:	05/29/2019	Northing (NAD83):	2103345.27		
Drilling Co.:	Cascade	Easting (NAD83):	7616128.02	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	146 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Terrasonic track mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Dan O'Mara	Depth to First Water:	10.0 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	E. Huellmantel / J. Pacheco	Sampling Method:	4 inch x 10 ft Core Barrel		
Logger:	Grant Willford	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				Topock - Fluvial Deposits	SP-SM				
42									
43				Topock - Fluvial Deposits	SW		(45.0 - 50.0') Topock - Fluvial Deposits; Well graded sand (SW); light yellowish brown (10YR 6/4); very fine grained to coarse grained, subangular to subround; trace granules to small pebbles, subround to round; trace silt; wet		
44									
45				Topock - Fluvial Deposits	SW		(50.0 - 51.0') Topock - Fluvial Deposits; Well graded sand (SW); light yellowish brown (10YR 6/4); very fine grained to coarse grained, subangular to round; little granules to large pebbles, subangular to round; trace silt; wet; gravel composed of mixed lithology		
46									
47				Topock - Fluvial Deposits	SP-SM		(51.0 - 52.0') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); light yellowish brown (10YR 6/4); very fine grained to fine grained, subangular to subround; little silt; trace clay; wet to moist		
48	240								
49				Topock - Fluvial Deposits	SM		(52.0 - 56.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (10YR 4/3); very fine grained to coarse grained, subangular to subround; little granules to large pebbles, subangular to round; little silt; wet; gravel composed of mixed lithology		
50									
51				Topock - Fluvial Deposits	SM		(52.0 - 56.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (10YR 4/3); very fine grained to coarse grained, subangular to subround; little granules to large pebbles, subangular to round; little silt; wet; gravel composed of mixed lithology		
52									
53			MW-O-VAS-51-56 (<0.033 U ppb) 5/9/2019 09:18	Topock - Alluvium Deposits	CL		(56.0 - 60.0') Topock - Alluvium Deposits; Sandy lean clay with gravel (CL); brown (7.5YR 5/3); low plasticity; and very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subround; little silt; moist; medium stiff; moderate cementation; gravel composed of mixed lithology	(56.0 - 66.0') Rough drilling	
54									
55				Topock - Alluvium Deposits	CL		(56.0 - 60.0') Topock - Alluvium Deposits; Sandy lean clay with gravel (CL); brown (7.5YR 5/3); low plasticity; and very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subround; little silt; moist; medium stiff; moderate cementation; gravel composed of mixed lithology	(56.0 - 66.0') Rough drilling	
56									
57				Topock - Alluvium Deposits	CL		(56.0 - 60.0') Topock - Alluvium Deposits; Sandy lean clay with gravel (CL); brown (7.5YR 5/3); low plasticity; and very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subround; little silt; moist; medium stiff; moderate cementation; gravel composed of mixed lithology	(56.0 - 66.0') Rough drilling	
58	120								
59				Topock - Alluvium Deposits	CL		(56.0 - 60.0') Topock - Alluvium Deposits; Sandy lean clay with gravel (CL); brown (7.5YR 5/3); low plasticity; and very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subround; little silt; moist; medium stiff; moderate cementation; gravel composed of mixed lithology	(56.0 - 66.0') Rough drilling	
60									

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started: 05/08/2019	Surface Elevation: 465.95 ft amsl	Boring No.: MW-86d
Date Completed: 05/29/2019	Northing (NAD83): 2103345.27	
Drilling Co.: Cascade	Easting (NAD83): 7616128.02	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 146 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Terrasonic track mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Dan O'Mara	Depth to First Water: 10.0 ft bgs	Project Number: RC000753.0051
Drilling Asst: E. Huellmantel / J. Pacheco	Sampling Method: 4 inch x 10 ft Core Barrel	
Logger: Grant Willford	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	120			Topock - Alluvium Deposits	SC		(60.0 - 66.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subround; little granules to medium pebbles, angular to subangular; little silt; little clay; moist; strong cementation; iron oxide staining		
62									
63									
64									
65	120		MW-O-VAS-66-71 (0.178 J ppb) 5/9/2019 14:30	Topock - Alluvium Deposits	SC		(66.0 - 76.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subround; some granules to medium pebbles, angular to subangular; little silt; little clay; moist to wet; moderate cementation; iron oxide staining	(66.0 - 76.0') Rough drilling	
66									
67									
68									
69									
70									
71	120			Topock - Alluvium Deposits	SC		(69'); to 71.0' slightly saturated		
72									
73									
74									
75	120			Topock - Alluvium Deposits	SC		(74'); dry		
76									
77									
78									
79									
80							(76.0 - 86.0') Rough drilling		

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E-TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started:	05/08/2019	Surface Elevation:	465.95 ft amsl	Boring No.: MW-86d	
Date Completed:	05/29/2019	Northing (NAD83):	2103345.27		
Drilling Co.:	Cascade	Easting (NAD83):	7616128.02	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	146 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Terrasonic track mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Dan O'Mara	Depth to First Water:	10.0 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	E. Huellmantel / J. Pacheco	Sampling Method:	4 inch x 10 ft Core Barrel		
Logger:	Grant Willford	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	120			Topock - Alluvium Deposits	SC				
82				Topock - Alluvium Deposits	CL		(82.0 - 86.0') Topock - Alluvium Deposits; Gravelly lean clay with sand (CL); brown (7.5YR 4/3); medium plasticity; some silt; little granules to medium pebbles, angular to subangular; little very fine to very coarse grained sand, angular to subround; moist; hard; strong cementation		
83	120			Topock - Alluvium Deposits	SC		(86.0 - 90.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 4/3); very fine grained to coarse grained, angular to subround; little granules to medium pebbles, angular to subround; little silt; little clay; moist to wet; gravel composed of mixed lithology (87'); to 89.5' saturated	(86.0 - 96.0') Rough drilling	
84				Topock - Alluvium Deposits	CL		(90.0 - 96.0') Topock - Alluvium Deposits; Sandy lean clay with gravel (CL); brown (7.5YR 4/3) trace light reddish brown (2.5YR 6/3); medium plasticity; some silt; little granules to medium pebbles, angular to subangular; little very fine to very coarse grained sand, angular to subround; moist to dry; medium stiff to very stiff; moderate cementation; gravel composed of mixed lithology, low to medium plasticity		
85				Topock - Alluvium Deposits	CL		(93') to 93.6' dry		
86				Topock - Alluvium Deposits	SC		(96.0 - 106.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); (7.5YR 4/); very fine grained to very coarse grained, angular to subround; little granules to medium pebbles, angular to subround; little silt; little clay; moist to dry; moderate cementation	(96.0 - 106.0') Rough drilling	
87	120			Topock - Alluvium Deposits	SC				
88				Topock - Alluvium Deposits	CL				
89				Topock - Alluvium Deposits	CL				
90				Topock - Alluvium Deposits	SC				
91	120			Topock - Alluvium Deposits	SC				
92				Topock - Alluvium Deposits	CL				
93				Topock - Alluvium Deposits	CL				
94				Topock - Alluvium Deposits	SC				
95	120			Topock - Alluvium Deposits	SC				
96				Topock - Alluvium Deposits	CL				
97				Topock - Alluvium Deposits	CL				
98				Topock - Alluvium Deposits	SC				
99	120			Topock - Alluvium Deposits	SC				
100				Topock - Alluvium Deposits	CL				

Final Review 2/13/20

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started:	05/08/2019	Surface Elevation:	465.95 ft amsl	Boring No.: MW-86d	
Date Completed:	05/29/2019	Northing (NAD83):	2103345.27		
Drilling Co.:	Cascade	Easting (NAD83):	7616128.02	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	146 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Terrasonic track mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Dan O'Mara	Depth to First Water:	10.0 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	E. Huellmantel / J. Pacheco	Sampling Method:	4 inch x 10 ft Core Barrel		
Logger:	Grant Willford	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	120			Topock - Alluvium Deposits	SC		(105.3'); to 105.8' dry		
102									
103		MW-O-VAS-101-106 (<0.033 U ppb) 5/10/2019 12:32							
104									
105	120			Topock - Alluvium Deposits	SM		(106.0 - 112.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace clay; wet; weak cementation; gravel composed of mixed lithology mostly metadiorite	(106.0 - 116.0') Soft drilling, sample interval 106 to 111 was low yielding.	
106									
107		MW-O-VAS-106-111 (<0.17 U ppb) 5/11/2019 08:25							
108									
109									
110									
111									
112	120			Topock - Alluvium Deposits	SM		(112.0 - 116.0') Topock - Alluvium Deposits; Silty sand (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subround; little granules to medium pebbles, angular to subround; little silt; little clay; wet		
113									
114									
115									
116	120			Topock - Alluvium Deposits	SM		(116.0 - 127.8') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4); very fine grained to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little silt; little clay; wet; weak cementation; iron oxide staining; gravel composed of mixed lithology mostly metadiorite, some red staining on pebbles	(116.0 - 126.0') Soft drilling	(116.0 - 126.0') 40 gallons of water used; 0 gallons of water recovered; 40 gallons of water lost
117									
118									
119									
120									

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMC\GRANEDOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started: 05/08/2019	Surface Elevation: 465.95 ft amsl	Boring No.: MW-86d
Date Completed: 05/29/2019	Northing (NAD83): 2103345.27	
Drilling Co.: Cascade	Easting (NAD83): 7616128.02	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 146 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Terrasonic track mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Dan O'Mara	Depth to First Water: 10.0 ft bgs	Project Number: RC000753.0051
Drilling Asst: E. Huellmantel / J. Pacheco	Sampling Method: 4 inch x 10 ft Core Barrel	
Logger: Grant Willford	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			(125.0') Artesian flow occurred during the removal of 6 inch casing.	
122									
123									
124									
125	120			Topock - Alluvium Deposits	ML		(127.8 - 130.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); low plasticity; and very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subangular; moist; stiff, moderate cementation; iron oxide staining; gravel composed of mixed lithology mostly metadiorite, some iron staining on pebbles	(126.0 - 143.0') 640 gallons of water used; 290 gallons of water recovered; 350 gallons of water lost	
126									
127									
128									
129									
130									
131	120			Topock - Alluvium Deposits	SM		(130.0 - 136.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) little red (2.5YR 5/8); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subround; little clay; moist; moderate cementation; iron oxide staining	(132.0 - 136.0') Rough drilling	
132									
133									
134									
135	120			Topock - Alluvium Deposits	SM		(136.0 - 140.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown / moderate brown (5YR 4/4) some red (2.5YR 4/8); very fine grained to very coarse grained, angular to subround; some silt; little granules to large pebbles, angular to subround; trace clay; wet to moist; weak cementation; iron oxide staining	(136.0 - 140.0') Rough drilling	
136									
137									
138									
139									
140									

Final Revised 3/20

MW-O-VAS-136-141 (<0.17 U ppb) 5/11/2019 14:26

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05

Date Started: 05/08/2019	Surface Elevation: 465.95 ft amsl	Boring No.: MW-86d
Date Completed: 05/29/2019	Northing (NAD83): 2103345.27	
Drilling Co.: Cascade	Easting (NAD83): 7616128.02	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 146 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Terrasonic track mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Dan O'Mara	Depth to First Water: 10.0 ft bgs	Project Number: RC000753.0051
Drilling Asst: E. Huellmantel / J. Pacheco	Sampling Method: 4 inch x 10 ft Core Barrel	
Logger: Grant Willford	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							(140.0 - 146.0') Topock - Competent Bedrock - conglomerate; reddish brown (2.5YR 4/4) little red (2.5YR 4/6); moist to dry; strong cementation; friable, heavily fractured-pulverized, mostly dry through out some slightly moist portions of core	(140.0 - 146.0') Rough drilling, encountered bedrock much shallower than expected. Independent QA inspector observed core and agreed that core was bedrock, sample interval from 141 to 146 ft. bgs was low yielding	
142									
143	120			Topock - Competent Bedrock - conglomerate					
144									
145									
146									

End of Boring at 146.0 ft bgs.

Final - Revised
12/13/20

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: blue water table symbol represents depth to water measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-86-120, MW-86-140 installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\12.08.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 12/13/20 21:05