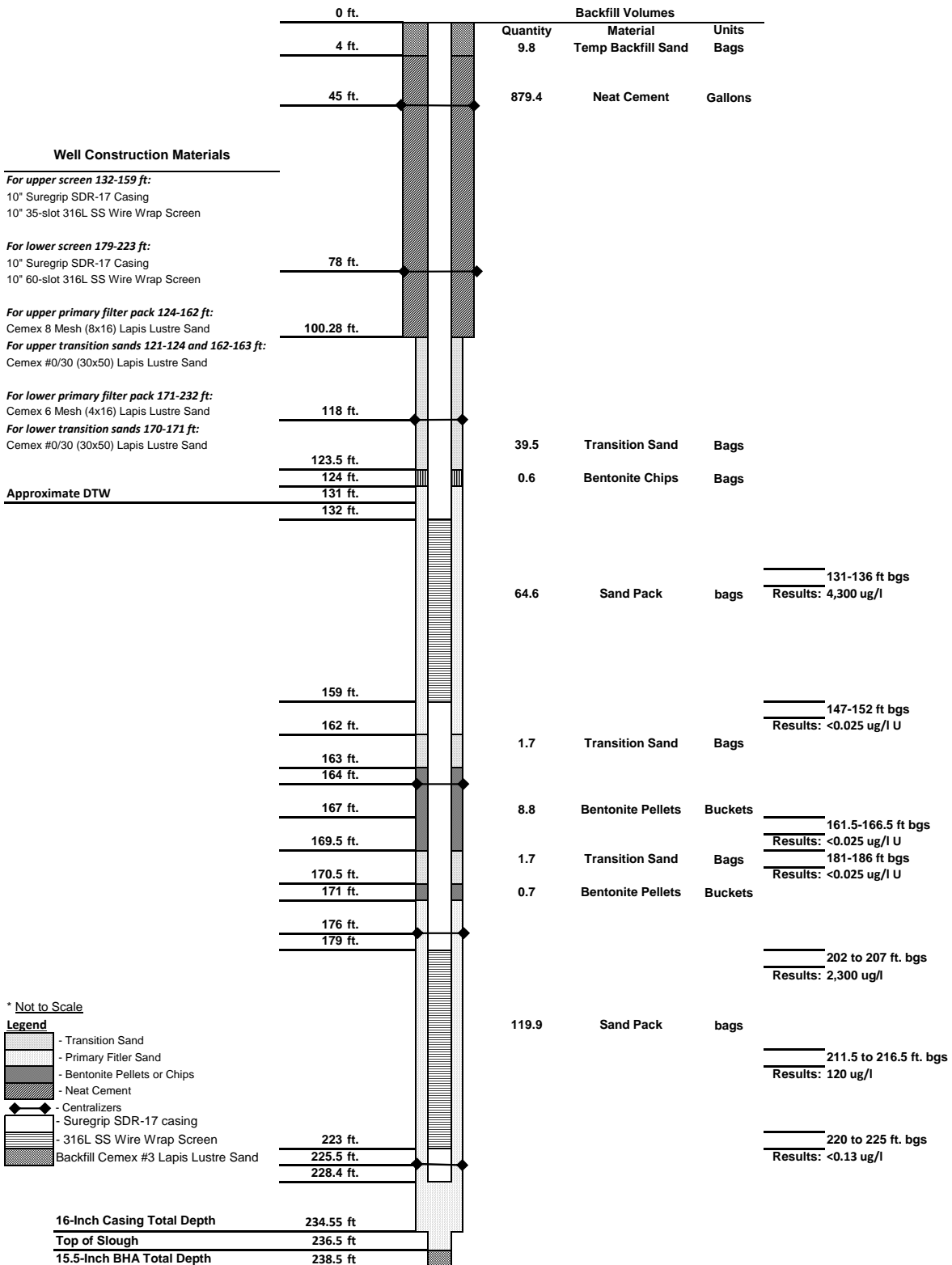


**Final Well Design
TCS-02 (07/22/22)**



Well ID: TCS-02 Well Purpose: Remediation Well Type: Dual Screened
 Borehole Dia.: 18-16 in. Well Diameters: 10 in.



Well Construction Materials

For upper screen 132-159 ft:
 10" Suregrip SDR-17 Casing
 10" 35-slot 316L SS Wire Wrap Screen

For lower screen 179-223 ft:
 10" Suregrip SDR-17 Casing
 10" 60-slot 316L SS Wire Wrap Screen

For upper primary filter pack 124-162 ft:
 Cemex 8 Mesh (8x16) Lapis Lustre Sand

For upper transition sands 121-124 and 162-163 ft:
 Cemex #0/30 (30x50) Lapis Lustre Sand

For lower primary filter pack 171-232 ft:
 Cemex 6 Mesh (4x16) Lapis Lustre Sand

For lower transition sands 170-171 ft:
 Cemex #0/30 (30x50) Lapis Lustre Sand

Approximate DTW

* Not to Scale

- Legend**
- Transition Sand
 - Primary Filter Sand
 - Bentonite Pellets or Chips
 - Neat Cement
 - Centralizers
 - Suregrip SDR-17 casing
 - 316L SS Wire Wrap Screen
 - Backfill Cemex #3 Lapis Lustre Sand

Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1		Fluvial Deposits	SW					
2					(0.0 - 4.0') Well Vault			Note: Well vault dimensions 4x5 feet by 4 feet deep.
3								
4			NR					
5					(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing	(4.0 - 100.3') 18" Diameter Borehole		
6								
7								
8		Fluvial Deposits	SW					
9								
10	No Groundwater Samples Collected							
11		Fluvial Deposits	SP					
12					(4.0 - 53.0') Portland Cement Grout with up to 6% bentonite hydrogel		(4.0 - 53.0') 447.6 gallons	(4.0 - 53.0') 523 gallons (117%) Note: Grout seal second lift.
13								
14		Fluvial Deposits	SM					
15								
16								
17								
18		Alluvium Deposits	SW					
19								
20								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezcuita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume			
21		Alluvium Deposits	SW		(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing						
22			SP								
23			ML								
24		Alluvium Deposits	SM		(4.0 - 53.0') Portland Cement Grout with up to 6% bentonite hydrogel			(4.0 - 53.0') 447.6 gallons	(4.0 - 53.0') 523 gallons (117%) Note: Grout seal second lift.		
25			SW								
26			SM								
27			SW-SC								
28		Alluvium Deposits	SM								
29			SW								
30	No Groundwater Samples Collected	Alluvium Deposits	SW								
31			SM								
32		Alluvium Deposits	SW								
33			SW								
34		Alluvium Deposits	SW								
35			SW								
36		Alluvium Deposits	SW								
37			SW								
38			SW								
39			SW								
40		SW									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
41		Alluvium Deposits	SW	[Pattern]	(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing				
42									
43									
44									
45					(44.5 - 45.5') Kwik-Zip Centralizer				
46					(4.0 - 53.0') Portland Cement Grout with up to 6% bentonite hydrogel	(4.0 - 53.0') 447.6 gallons	(4.0 - 53.0') 523 gallons (117%) Note: Grout seal second lift.		
47									
48		Alluvium Deposits	SM	[Pattern]					
49		Alluvium Deposits	SW	[Pattern]					
50	No Groundwater Samples Collected								
51									
52									
53		Alluvium Deposits	SM	[Pattern]					
54									
55									
56									
57					(53.0 - 101.0') Portland Cement Grout with up to 6% bentonite hydrogel	(53.0 - 101.0') 436.2 gallons	(53.0 - 101.0') 538 gallons (123%) Note: Grout seal first lift, used >20% of the calculated volume due to potential grout migration and voids forming during drilling.		
58		Alluvium Deposits	SM	[Pattern]					
59									
60									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

TOPOCK WELL COMPLETION DETAILS - ARCADIS\SHARE DOCUMENTS\PHASE II DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\04 - 2023-01-31\GINT PROJECT\GPI GINT DATA TEMPLATE.GDT 2/3/23

Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61	No Groundwater Samples Collected	Alluvium Deposits	SM		(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing		
62		Alluvium Deposits	SM				
63		Alluvium Deposits	SM				
64		Alluvium Deposits	SM				
65		Alluvium Deposits	SW-SM				
66		Alluvium Deposits	SW-SM				
67		Alluvium Deposits	SW-SM				
68		Alluvium Deposits	SW-SM				
69		Alluvium Deposits	SM				
70		Alluvium Deposits	SW-SM		(53.0 - 101.0') Portland Cement Grout with up to 6% bentonite hydrogel	(53.0 - 101.0') 436.2 gallons	(53.0 - 101.0') 538 gallons (123%) Note: Grout seal first lift, used >20% of the calculated volume due to potential grout migration and voids forming during drilling.
71		Alluvium Deposits	SW-SM				
72		Alluvium Deposits	SW-SM				
73		Alluvium Deposits	SW-SM				
74		Alluvium Deposits	SW-SM				
75		Alluvium Deposits	SW-SM				
76		Alluvium Deposits	SW-SM				
77		Alluvium Deposits	SW-SM				
78		Alluvium Deposits	SW-SM		(77.5 - 78.5') Kwik-Zip Centralizer		
79		Alluvium Deposits	SW-SM				
80		Alluvium Deposits	SW-SM				

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81	No Groundwater Samples Collected	Alluvium Deposits	SW-SM		(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing		
82			SM				
83		Alluvium Deposits	ML				
84			SM				
85		Alluvium Deposits	ML				
86			SM				
87		Alluvium Deposits	SW-SM				
88			ML			(53.0 - 101.0') Portland Cement Grout with up to 6% bentonite hydrogel	(53.0 - 101.0') 436.2 gallons
89		Alluvium Deposits	SW				
90			SM				
91							
92							
93							
94							
95							
96							
97							
98							
99							
100							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezcua / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
					Inner Casing	Outer Borehole		
101		Alluvium Deposits	SW		(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing	(100.3 - 234.6') 16" Diameter Borehole	(53.0 - 101.0') 436.2 gallons	
102								
103		Alluvium Deposits	SM					
104								
105		Alluvium Deposits	SM					
106								
107								
108		Alluvium Deposits	SM					
109								
110	No Groundwater Samples Collected	Alluvium Deposits	SM		(101.0 - 122.8') Cemex #0/30 Mesh (30x50) Lapis Lustré Sand		(101.0 - 122.8') 37.1 bags	(101.0 - 122.8') 35 bags (94%) Note: Transition sand
111								
112								
113		Alluvium Deposits	SM					
114								
115								
116								
117		Alluvium Deposits	SM					
118								
119		Alluvium Deposits	SM		(117.5 - 118.5') Kwik-Zip Centralizer			
120								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
121	No Groundwater Samples Collected	Alluvium Deposits	SM		(3.5 - 131.1') 10" SHUR-GRIP SDR17 PVC Casing (101.0 - 122.8') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(101.0 - 122.8') 37.1 bags	(101.0 - 122.8') 35 bags (94%) Note: Transition sand
122							
123	No Sample (127-132 Interval did not produce) 4/19/2022	Alluvium Deposits	SM		(122.8 - 123.8') Holeplug 3/8" bentonite chips	(122.8 - 123.8') 1.2 bags	(122.8 - 123.8') 2 bags (167%) Note: Bentonite seal, used >20% of the calculated volume due to potential voids that formed during drilling.
124							
125							
126	TCS-2-VAS-131-136 (4300 ppb) 4/19/2022 15:10	Alluvium Deposits	SM		(131.1 - 158.6') 10" 35-Slot 316L SS Wire Wrap Screen	(123.8 - 161.4') 63.9 bags	(123.8 - 161.4') 84 bags (131%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling. Swabbed the filter pack for approximately 240 minutes prior to installation of the bentonite seal.
127							
128							
129							
130	Alluvium Deposits	SM					
131							
132	Alluvium Deposits	SM					
133							
134	Alluvium Deposits	SM					
135							
136	Alluvium Deposits	SM					
137							
138	Alluvium Deposits	SM					
139							
140	Alluvium	SM					

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezcua / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
141		Deposits			(131.1 - 158.6') 10" 35-Slot 316L SS Wire Wrap Screen		
142		Alluvium Deposits	SM				
143		Alluvium Deposits	SW-SM				
144		Alluvium Deposits	SM				
145		Alluvium Deposits	SM				
146		Alluvium Deposits	SM				
147		Alluvium Deposits	SM				
148		Alluvium Deposits	SM				
149	TCS-2-VAS-147-152 (<0.025 ppb) 4/20/2022 11:15	Alluvium Deposits	SM		(123.8 - 161.4') Cemex #8 Mesh (8x16) Lapis Lustre Sand	(123.8 - 161.4') 63.9 bags	(123.8 - 161.4') 84 bags (131%) Note: Filter pack, used $>20\%$ of the calculated volume due to potential voids that formed during drilling. Swabbed the filter pack for approximately 240 minutes prior to installation of the bentonite seal.
150		Alluvium Deposits	SM				
151		Alluvium Deposits	SM				
152		Alluvium Deposits	SM				
153		Alluvium Deposits	SM				
154		Alluvium Deposits	SM				
155		Alluvium Deposits	SM				
156		Alluvium Deposits	SM				
157		Alluvium Deposits	SM				
158		Alluvium Deposits	SM				
159		Alluvium Deposits	SM		(158.6 - 178.6') 10" SHUR-GRIP SDR17 PVC Casing		
160		Alluvium Deposits	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
161	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	ML		(123.8 - 161.4') Cemex #8 Mesh (8x16) Lapis Lustre Sand	(123.8 - 161.4') 63.9 bags	
162					(161.4 - 162.4') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(161.4 - 162.4') 1.8 bags	(161.4 - 162.4') 5 bags (278%) Note: Transition sand seal, used >20% due to potential voids forming during drilling and sand entering the well through the upper screen.
163		Alluvium Deposits	SM		(163.5 - 164.5') Kwik-Zip Centralizer		(162.4 - 169.6') 9 buckets (92%) Note: Bentonite seal
164							
165		Alluvium Deposits	ML		(162.4 - 169.6') Pel-Plug Bentonite Pellets 3/8" (TR30)	(162.4 - 169.6') 9.8 buckets	
166							
167		Alluvium Deposits	SM				
168							
169		Alluvium Deposits	ML		(169.6 - 170.3') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(169.6 - 170.3') 1.1 bags	(169.6 - 170.3') 3 bags (273%) Note: Transition sand seal, used >20% due to potential voids forming during drilling and sand entering the well through the upper screen.
170					(170.3 - 171.1') Pel-Plug Bentonite Pellets 3/8" (TR30)	(170.3 - 171.1') 1.2 buckets	
171					(170.3 - 171.1') 1 buckets (83%) Note: Bentonite seal		
172	Alluvium Deposits	SM				(171.1 - 236.4') 147 bags (124%) Note: Filter pack, during installation some of the bags of sand appeared to be not to the manufacturer's specifications and contained too much fine grained sand. Bags were visually inspected in the field to confirm that the sand did look out of spec prior to installation. Used >20% of the calculated volume due to potential voids forming during drilling or the finer grained sand observed in the filter pack material entering the well through the screens during installation. Swabbed the filter pack for approximately 240 minutes prior to installation of the bentonite seal.	
173							
174							
175							
176							
177	Alluvium Deposits	SW-SM		(171.1 - 236.4') Cemex #6 Mesh (4x16) Lapis Lustre Sand	(171.1 - 236.4') 118.9 bags		
178				(175.5 - 176.5') Kwik-Zip Centralizer			
179	Alluvium Deposits	SM					
180							
					(178.6 - 223.3') 10" 60-Slot 316L SS Wire Wrap Screen		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

TOPOCK WELL COMPLETION DETAILS C:\USERS\SMCGRANE\ONE\DRIVE - ARCADIS\SHARED DOCUMENTS\PHASE II DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\01-31\GINT PROJECT\GPI GINT DATA TEMPLATE.GDT 2/3/23

Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
181	TCS-2-VAS-181-186 (<0.025 ppb) 4/21/2022 14:45	Alluvium Deposits	SW-SM		(178.6 - 223.3') 10" 60-Slot 316L SS Wire Wrap Screen		
182		Alluvium Deposits	ML				
183		Alluvium Deposits	SM				
184		Alluvium Deposits	SM				
185		Alluvium Deposits	SM				
186		Alluvium Deposits	SM				
187		Alluvium Deposits	SM				
188		Alluvium Deposits	SM				
189		Alluvium Deposits	SM				
190		(171.1 - 236.4') Cemex #6 Mesh (4x16) Lapis Lustre Sand	Alluvium Deposits	SM			(171.1 - 236.4') 118.9 bags
191	Alluvium Deposits	SM					
192	Alluvium Deposits	SM					
193	Alluvium Deposits	SM					
194	Alluvium Deposits	SM					
195	Alluvium Deposits	SM					
196	Alluvium Deposits	SM					
197	Alluvium Deposits	SM					
198	Alluvium Deposits	ML					
199	Alluvium Deposits	SM					
200	Alluvium Deposits	SM					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
201		Alluvium Deposits	SM		(178.6 - 223.3') 10" 60-Slot 316L SS Wire Wrap Screen		
202		Alluvium Deposits	SM				
203							
204	TCS-2-VAS-202-207 (2300 ppb) 4/22/2022 11:50						
205							
206		Alluvium Deposits	SM				
207							
208							
209							
210					(171.1 - 236.4') Cemex #6 Mesh (4x16) Lapis Lustre Sand	(171.1 - 236.4') 118.9 bags	(171.1 - 236.4') 147 bags (124%) Note: Filter pack, during installation some of the bags of sand appeared to be not to the manufacturer's specifications and contained too much fine grained sand. Bags were visually inspected in the field to confirm that the sand did look out of spec prior to installation. Used >20% of the calculated volume due to potential voids forming during drilling or the finer grained sand observed in the filter pack material entering the well through the screens during installation. Swabbed the filter pack for approximately 240 minutes prior to installation of the bentonite seal.
211							
212		Alluvium Deposits	SM				
213							
214	TCS-2-VAS-211.5-216.5 (120 ppb) 4/23/2022 09:00						
215		Alluvium Deposits	SM				
216							
217		Alluvium Deposits	ML				
218		Alluvium Deposits	SM				
219		Alluvium Deposits	ML				
220		Alluvium Deposits	SM				

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Date Started: 07/23/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02
Date Completed: 08/06/2022	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2100921.24	Project: Final GW Remedy Phase 2A
Driller Name: J Saldana / A Lamon	Easting (NAD83): 7615150.98	Location: PG&E Topock, Needles California
Drilling Asst: A. Amezquita / D. Aldona	Borehole Diameter: 15.5-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: 30126255
Editor: Sean McGrane	Development End Date: 10/20/2022	
Total Depth: 238.5 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
221	TCS-2-VAS-220-225 (<0.13 ppb) 4/22/2022 15:10	Alluvium Deposits	SM	[Pattern]	(178.6 - 223.3') 10" 60-Slot 316L SS Wire Wrap Screen		
222					(223.3 - 227.5') 10" SHUR-GRIP SDR-17 PVC Sump		
223		Weathered Bedrock - Conglomerate	N/A	[Pattern]	(225.0 - 226.0') Kwik-Zip Centralizer		
224	(171.1 - 236.4') Cemex #6 Mesh (4x16) Lapis Lustre Sand						
225	No Groundwater Samples Collected	Competent Bedrock - Conglomerate	N/A	[Pattern]	(227.5 - 228.83') 10" 316L SS End Cap	(171.1 - 236.4') 118.9 bags	(171.1 - 236.4') 147 bags (124%) Note: Filter pack, during installation some of the bags of sand appeared to be not to the manufacturer's specifications and contained too much fine grained sand. Bags were visually inspected in the field to confirm that the sand did look out of spec prior to installation. Used >20% of the calculated volume due to potential voids forming during drilling or the finer grained sand observed in the filter pack material entering the well through the screens during installation. Swabbed the filter pack for approximately 240 minutes prior to installation of the bentonite seal.
226					(234.6 - 238.5') 15.5" Diameter Borehole		
227					(236.4 - 238.5') Slough in bottom of borehole		
228							
229							
230							
231							
232							
233							
234							
235							
236							
237							
238							
239							
240							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, SS = Stainless Steel, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) collected during the specific capacity test from the upper and lower screen intervals, respectively.

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Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02 Pilot</u>	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid	
1	1.5	No Sieve Samples Collected	No Groundwater Samples Collected	Fluvial Deposits	SW		(0-1.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; some small to very large pebbles, subangular to subround; little granules, subangular to subround; trace silt; trace clay; dry. NOTE: Material was excavated with air-knife and placed back in the excavation, sample is disturbed.	(0.0 - 10.0') Air-knifed for utility clearance on 4/1/22, excavated material put back in hole.	(0.0 - 10.0') No drilling fluid used	
2				NR		(1.5-7.0 ft) No Recovery.				
3										
4										
5										
6										
7										
8	6.8	No Sieve Samples Collected	No Groundwater Samples Collected	Fluvial Deposits	SW		(7.0-10 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; little granules, subangular to subround; trace silt; trace clay; dry. NOTE: Material was excavated with air-knife and placed back in the excavation, sample is disturbed.	(10.0 - 17.0') Soft drilling	(10.0 - 17.0') No drilling fluid used	
9										
10										
11										
12										
13				Fluvial Deposits	SM		(12.5-17 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4); very fine to very coarse grained, subangular to subround; some small to very large pebbles, subangular to subround; little silt; little granules, subangular to subround; little clay; dry.	(17.0 - 20.0') Soft drilling	(17.0 - 20.0') No drilling fluid used	
14						(15.5-17 ft) Very large pebbles; potentially from a boulder pulverized by drilling; light brownish gray (10YR 6/2).				
15										
16										
17										
18	7.3	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SW		(17-24.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; some small to very large pebbles, subangular to subround; little granules, subangular to subround; trace silt; trace clay; dry.	(17.0 - 20.0') Soft drilling	(17.0 - 20.0') No drilling fluid used	
19										
20										

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02 Pilot</u>	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid			
21	7.3			Alluvium Deposits	SW		(17-24.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; some small to very large pebbles, subangular to subround; little granules, subangular to subround; trace silt; trace clay; dry.	(20.0 - 27.0') Normal drilling	(20.0 - 27.0') No drilling fluid used			
22							Alluvium Deposits			SP		(24.5-26 ft) Poorly graded sand with gravel (SP); brown (10YR 5/3); very fine to medium grained, little coarse to very coarse grained, subangular to subround; little granules, subangular to subround; little small to large pebbles, subangular to subround; trace silt; trace clay; dry.
23												Alluvium Deposits
24	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(27-31 ft) Silty sand (SM); brown (7.5YR 5/3); very fine grained, subangular to subround; some silt; trace granules, subangular to subround; trace clay; moist.	(27.0 - 37.0') Normal drilling	(27.0 - 37.0') No drilling fluid used				
25						Alluvium Deposits			SW		(31-31.5 ft) Well graded sand (SW); brown (10YR 5/3); very fine to very coarse grained; trace granules, subangular to subround; trace small to medium pebbles, subangular to subround; trace silt; dry.	
26											Alluvium Deposits	SM
27	Alluvium Deposits	SW-SC		(32.5-33 ft) Well graded sand with clay (SW-SC); brown (10YR 5/3); very fine to very coarse grained; little clay; trace small to medium pebbles, subangular to subround; trace silt; trace granules, subangular to subround; dry; trace clay nodules.								
28				Alluvium Deposits	SM		(33-35.5 ft) Silty sand (SM); brown (7.5YR 5/3); very fine grained, subangular to subround; some silt; some clay; trace granules, subangular to subround; moist; rapid dilatancy.					
29	Alluvium Deposits	SW					(35.5-36.5 ft) Well graded sand (SW); brown (10YR 5/3); very fine to very coarse grained; trace granules, subangular to subround; trace small to medium pebbles, subangular to subround; trace silt; trace clay; dry.					
30				Alluvium Deposits	SW		(36.5-48 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; little granules, subangular to subround; little small to very large pebbles, subangular to subround; trace silt; trace clay; dry.	(37.0 - 47.0') Normal drilling	(37.0 - 47.0') No drilling fluid used			
31	7.5						Alluvium Deposits			SM		
32				Alluvium Deposits	SW-SC							
33	Alluvium Deposits	SM										
34				Alluvium Deposits	SW							
35	Alluvium Deposits	SW										
36				8.2			Alluvium Deposits	SW				
37	Alluvium Deposits	SW										
38				Alluvium Deposits	SW							
39	Alluvium Deposits	SW										
40				Alluvium Deposits	SW							

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Date Started: 04/01/2022	Surface Elevation: 587.37 ft amsl	Boring No.: TCS-02 Pilot
Date Completed: 04/24/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Drill Rig Type: Boart Longyear drill head	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Driller Name: Matt Arnold	Depth to First Water: 129.5 ft bgs	
Drilling Asst: D Hoepfner / R West	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: 30126255
Logger: Ellen Redner	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
41	8.2			Alluvium Deposits	SW		(36.5-48 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; little granules, subangular to subround; little small to very large pebbles, subangular to subround; trace silt; trace clay; dry.		
42							(41.7 ft) Small cobble		
43									
44									
45									
46	8.2	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(48-48.5 ft) Silty sand with gravel (SM); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; little small to very large pebbles, angular to subround; little granules, subangular to subround; little silt; trace clay; dry.	(47.0 - 57.0') Rough drilling	(47.0 - 57.0') No drilling fluid used
47									
48									
49									
50									
51	8.2			Alluvium Deposits	SW		(48.5-52 ft) Well graded sand with gravel (SW); brown (10YR 5/3); very fine to very coarse grained, subangular to subround; little granules, subangular to subround; little small to very large pebbles, subangular to subround; trace silt; trace clay; dry.		
52									
53									
54									
55									
56	5.6			Alluvium Deposits	SM		(52-57 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/3); very fine to very coarse grained, subangular to subround; little silt; little small to large pebbles, angular to subround; little clay; trace granules, angular to subround; dry; silts and clays nodules within unit.	(57.0 - 64.5') Rough and hard drilling	(57.0 - 64.5') No drilling fluid used
57									
58									
59									
60									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

C:\USERS\SMCGRANE\DRIVE - ARCADIS\SHARED DOCUMENTS\PHASE II DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\2022-07-08\GINT PROJECT.GPJ - GINT DATA TEMPLATE.GDT 7/8/22

Date Started: 04/01/2022	Surface Elevation: 587.37 ft amsl	Boring No.: TCS-02 Pilot
Date Completed: 04/24/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Drill Rig Type: Boart Longyear drill head	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Driller Name: Matt Arnold	Depth to First Water: 129.5 ft bgs	
Drilling Asst: D Hoepfner / R West	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: 30126255
Logger: Ellen Redner	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
61	5.6			Alluvium Deposits	SM		(57-63 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2); very fine to very coarse grained, subangular to subround; some silt; little small to large pebbles, angular to subround; trace granules, angular to subround; trace clay; dry; silt and clay nodules within unit.		
62							(62-63 ft) Boulder; pulverized by drilling process.		
63	9.5	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(63-64.5 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to fine grained, little medium to very coarse grained, subangular to subround; some silt; little small to medium pebbles, angular to subround; little clay; trace granules, angular to subround; dry.	(64.5 - 77.0) Rough drilling	(64.5 - 77.0) No drilling fluid used
64									
65									
66	9.5			Alluvium Deposits	SW-SM		(64.5-68.5 ft) Well graded sand with silt and gravel (SW-SM); brown (very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry.		
67									
68	9.5	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(68.5-69.5 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little silt; little small to very large pebbles, angular to subangular; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
69									
70									
71	9.5			Alluvium Deposits	SW-SM		(69.5-77 ft) Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
72									
73	9.5			Alluvium Deposits	SW-SM		(75.5-76.5 ft) Cobbles/boulder pulverized by drilling process.		
74									
75	7.1			Alluvium Deposits	SW-SM		(77-83 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.	(77.0 - 87.0) Rough drilling	(77.0 - 87.0) No drilling fluid used
76									
77									
78	7.1			Alluvium Deposits	SW-SM				
79									
80	7.1			Alluvium Deposits	SW-SM				

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Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02 Pilot	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
81	7.1			Alluvium Deposits	SW-SM		(77-83 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
82							(82-83 ft) Small cobbles pulverized by drilling process.		
83				Alluvium Deposits	SM		(83-85.5 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
84	Alluvium Deposits	ML					(85.5-87 ft) Sandy silt with gravel (ML); brown (10YR 5/3); low plasticity, rapid dilatancy; some clay; little very fine to very coarse grained sand, angular to subround; little small to large pebbles, angular to subangular; trace granules, angular to subangular; medium stiff to hard; dry.		
85				Alluvium Deposits	SM		(87-89 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
86	Alluvium Deposits	SW-SM					(89-96 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; trace clay; dry to moist; silt and clay nodules within unit.		
87				Alluvium Deposits	ML		(93.6 ft) Boulder/cobble pulverized by drilling process.		
88	Alluvium Deposits	SW					(94.2-94.4 ft) Silt lens		
89				Alluvium Deposits	ML		(96-97 ft) Sandy silt (ML); brown (10YR 5/3); low plasticity, rapid dilatancy; some very fine to fine grained sand, little medium to very coarse grained sand, angular to subround; little clay; trace granules, angular to subangular; trace small to large pebbles, angular to subangular; medium stiff to hard; dry.		
90	Alluvium Deposits	SW					(97-99.5 ft) Well graded sand with gravel (SW); grayish brown (10YR 5/2) with brown (7.5YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; trace granules, angular to subangular; trace silt; trace clay; dry to moist; silt and clay nodules within unit.		
91				Alluvium	SM		(99.5-100 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2);		
92									
93									
94									
95									
96									
97									
98									
99									
100									

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TOPOCK SOIL BORING LOG C:\USERS\SMCGRANE\ONEEDRIVE - ARCADIS\SHARED DOCUMENTS\PHASE II DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\2022-07-06\GINT PROJECT.GPJ - GINT DATA TEMPLATE.GDT 7/8/22

Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02 Pilot</u>	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
101	7.3			Deposits	SW		very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry; silt and clay nodules within unit.		
102				Alluvium Deposits			(100-102.5 ft) Well graded sand with gravel (SW); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; trace granules, angular to subangular; trace silt; trace clay; dry to moist; silt and clay nodules within unit.		
103				Alluvium Deposits			(102.5-107 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; dry; silt and clay nodules within unit. (102.7 ft) Small cobble		
104	7.6	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(107-112 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little silt; little small to large pebbles, angular to subangular; trace granules, angular to subround; trace clay; moist; silt and clay nodules within unit.	(107.0 - 117.0') Rough drilling, stopped drilling for day on 4/15/22 due to moist core and potential for water table to be close for first VAS collection.	(107.0 - 117.0') No drilling fluid used
105				Alluvium Deposits			(112-116.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subround; trace granules, subangular to subround; trace clay; moist; silt and clay nodules and lens within unit.		
106				Alluvium Deposits			(116.5-117 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to fine grained, little medium to very coarse grained, subangular to subround; some silt; little small to large pebbles, angular to subangular; little clay, trace granules, angular to subround; moist; rapid dilatancy.		
107				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
108				Alluvium Deposits			(117.0 - 122.0') Rough drilling		
109	3.5			Alluvium Deposits	SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
110				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
111				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
112	3.5			Alluvium Deposits	SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
113				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
114				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
115	3.5			Alluvium Deposits	SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
116				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
117				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
118	3.5			Alluvium Deposits	SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
119				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
120				Alluvium Deposits			(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

Date Started: 04/01/2022	Surface Elevation: 587.37 ft amsl	Boring No.: TCS-02 Pilot
Date Completed: 04/24/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Drill Rig Type: Boart Longyear drill head	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Driller Name: Matt Arnold	Depth to First Water: 129.5 ft bgs	
Drilling Asst: D Hoepfner / R West	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: 30126255
Logger: Ellen Redner	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
121	3.5			Alluvium Deposits	SM		(117.5-119.5 ft) Dry to moist (119.5-120.5 ft) Moist (120.5-121.5 ft) Dry to moist (121.5-122 ft) Moist		
122		No Sieve Samples Collected						(122.0 - 127.0') Normal drilling	(122.0 - 127.0') No drilling fluid used
123			No Groundwater Samples Collected	Alluvium Deposits	SM		(122-126.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; trace small cobbles, subround; dry to moist; silt and clay nodules and lens within unit.		
124	3.5								
125							(125-125.5 ft) Moist		
126							(125.5-126 ft) Dry to moist (126-126.5 ft) Moist		
127			No Sample (127-132 Interval did not produce) 4/19/2022					(127.0 - 132.0') Normal drilling	(127.0 - 132.0') No drilling fluid used
128		TCS-2-SS-126.5-131 4/25/2022 09:00		Alluvium Deposits	SM		(126.5-134 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; moist to wet; silt and clay nodules and lens within unit.		
129	3.6						(129.5-134 ft) Wet		
130									
131									
132		TCS-2-SS-131-134 4/25/2022 09:05	TCS-2-VAS-131-136 (4300 ppb) 4/19/2022 15:10					(132.0 - 137.0') Normal drilling	(132.0 - 137.0') No drilling fluid used
133									
134	4.5			Alluvium Deposits	SM		(134-137 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; dry to moist; silt and clay nodules and lens within unit. (135.5 ft) Moist		
135									
136									
137		TCS-2-SS-134-139.5 4/25/2022 09:10							
138	8			Alluvium Deposits	SM		(137-139.5 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4); very fine to very coarse grained, angular to subround; little silt; little small to very large pebbles, angular to subround; little clay; trace granules, subangular to subround; dry to moist; silt and clay nodules and lens within unit.	(137.0 - 147.0') Rough drilling	(137.0 - 147.0') No drilling fluid used
139							(139 ft) Moist		
140				Alluvium	SM				

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Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02 Pilot	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
141	8	TCS-2-SS-139.5-144.5 4/25/2022 09:15		Deposits	SM		(139.5-142 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace granules, subangular to subround; trace clay; dry to moist; silt and clay nodules and lens within unit.		
142				Alluvium Deposits			(142-144.5 ft) Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3); very fine to very coarse grained, angular to subround; little small to very large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; moist; silt and clay nodules and lens within unit.		
143				Alluvium Deposits			(143-144.5 ft) Moist		
144	3.8	TCS-2-SS-144.5-148.5 4/25/2022 09:20		Alluvium Deposits	SM		(144.5-145.5 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little silt; little small to very large pebbles, angular to subangular; little clay; trace granules, angular to subangular; dry; silt and clay nodules and lens within unit.	(147.0 - 152.0')	Normal drilling
145				Alluvium Deposits			(145.5-148.5 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4) with brown (7.5YR 5/4); very fine to very coarse grained, angular to subround; little small to large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; wet; silt and clay nodules and lens within unit.		
146				Alluvium Deposits			(147 ft) Color change to brown (10YR 5/3) with brown (7.5YR 5/3).		
147	12	TCS-2-SS-148.5-153 4/25/2022 09:25	TCS-2-VAS-147-152 (<0.025 ppb) 4/20/2022 11:15	Alluvium Deposits	SM		(148.5-150 ft) Silty sand with gravel (SM); brown (7.5YR 5/3) with brown (10YR 5/3) very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, angular to subangular; little clay; trace granules, angular to subangular; wet; silt and clay nodules and lens within unit.	(152.0 - 157.0')	Rough drilling
148				Alluvium Deposits			(150-151.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3) with brown (10YR 5/3) very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, angular to subangular; trace granules, angular to subangular; trace clay; wet; silt and clay nodules and lens within unit.		
149				Alluvium Deposits			(151.5-152 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; little small to large pebbles, angular to subangular; little silt; trace granules, angular to subangular; trace clay; wet; silt and clay nodules and lens within unit.		
150		TCS-2-SS-153-158 4/25/2022 09:30		Alluvium Deposits	SM		(152-158 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to fine grained, little medium to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subangular; little clay; trace granules, angular to subangular; moist to wet; rapid dilatancy; silt and clay nodules and lens with in unit.	(157.0 - 159.0')	Very hard drilling
151				Alluvium Deposits			(152.5-153 ft) Wet		
152				Alluvium Deposits			(153-154 ft) Moist to wet (154-156 ft) Wet (156-158 ft) Moist to wet		
153				Alluvium Deposits	SM		(158-160 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, angular to subangular; little clay; little granules, angular to subangular; trace small cobble, subangular; wet; rapid dilatancy; silt and clay nodules and lens within unit.	(159.0 - 167.0')	hard drilling
154				Alluvium Deposits			(159-159.5 ft) Moist to Wet		
155				Alluvium Deposits					

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Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02 Pilot</u>	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
161	12	TCS-2-SS-158-163.5 4/25/2022 09:35	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	ML		(159.5-160 ft) Wet (160-163.5 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3); low plasticity, rapid dilatancy; some very fine to very coarse grained sand, angular to subround; little small to very large pebbles, angular to subangular; little clay; little granules, angular to subangular; trace small cobbles, subangular; soft; moist to wet; rapid dilatancy; silt and clay nodules and lens within unit.		used
162							(162.5-163.5 ft) Wet		
163							(163.5-164.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subround; little granules, angular to subangular; little clay; wet; silt and clay nodules and lens within unit.		
164	7.4	TCS-2-SS-163.5-167 4/25/2022 09:40	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	ML		(164.5-167 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3); low plasticity, rapid dilatancy; some very fine to very coarse grained sand, angular to subround; little small to large pebbles, angular to subround; little granules, angular to subangular; little clay; soft to medium stiff; wet; silt and clay nodules and lens within unit.		
165							(165.5-168.8 ft) Silty sand lens (SM); very fine to very coarse grained, angular to subround; little silt; little clay; trace granules to pebbles, subangular.		
166							(166.5 ft) Color change to reddish brown (5YR 5/4).		
167	7.4	TCS-2-SS-167-172.5 4/25/2022 09:45	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	ML		(167-168 ft) Silty sand with gravel (SM); brown (7.5YR 4/3); very fine to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subround; little clay; trace granules, angular to subangular; moist; silt and clay nodules and lens within unit.	(167.0 - 177.0') Normal drilling	(167.0 - 177.0') No drilling fluid used
168							(168-172.5 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3); low to medium plasticity, rapid dilatancy; some very fine to very coarse grained sand, angular to subround; little small to large pebbles, angular to subround; little granules, angular to subangular; little clay; soft to medium stiff; moist; silt and clay nodules and lens within unit.		
169							(172.5-177 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2); very fine to very coarse grained, angular to subround; little silt; little granules, angular to subangular; trace small to large pebbles, angular to subround; trace clay; wet; silt and clay nodules and lens within unit.		
170	7.7	TCS-2-SS-172.5-179 4/25/2022 09:50	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	SW-SM		(177-179 ft) Well graded sand with silt and gravel (SW-SM); dark reddish gray (5YR 4/2); very fine to very coarse grained, angular to subround; little granules, angular to subangular; little silt; trace small to large pebbles, angular to subround; trace clay; wet; trace silt and clay nodules within unit.	(177.0 - 187.0') Normal drilling	(177.0 - 187.0') No drilling fluid used
171							(179-180 ft) Silty sand with gravel (SM); reddish brown (5YR 5/3); very fine to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subround; little clay; trace		
172									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02 Pilot	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
181	7.7	TCS-2-SS-179-182 4/25/2022 09:55	TCS-2-VAS-181-186 (<0.025 ppb) 4/21/2022 14:45	Alluvium Deposits	SW-SM		granules, angular to subangular; wet; rapid dilatancy; silt and clay nodules within unit. (180-182 ft) Well graded sand with silt and gravel (SW-SM); reddish brown (5YR 4/3); very fine to very coarse grained, angular to subround; little granules, angular to subangular; little silt; trace small to large pebbles, angular to subround; trace clay; wet; trace silt and clay nodules within unit.		
182				Alluvium Deposits	ML		(182-183.5 ft) Sandy silt with gravel (ML); reddish brown (5YR 5/4); low to medium plasticity, rapid dilatancy; little very fine to very coarse grained sand, angular to subround; little small to large pebbles, angular to subround; little clay; trace granules, angular to subangular; soft; wet.		
183				Alluvium Deposits	SM		(183.5-184.5 ft) Silty sand with gravel (SM); reddish brown (5YR 4/3); very fine to very coarse grained, angular to subround; little silt; little granules, angular to subangular; trace small to large pebbles, angular to subround; trace clay; wet; trace silt and clay nodules within unit.		
184				Alluvium Deposits	SM		(184.5-185 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, angular to subround; some silt; little small to large pebbles, angular to subround; little granules, angular to subangular; trace clay; soft; wet; rapid dilatancy.		
185				Alluvium Deposits	SM		(185-187 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, subangular to subround; little silt; little granules, angular to subangular; trace small to large pebbles, angular to subround; trace clay; wet; silt and clay nodules within unit; NOTE: Silt and clay observed to be concentrated located along the outer edges of the core sample.		
186	7.4	TCS-2-SS-184.5-190 4/25/2022 10:05		Alluvium Deposits	SM		(187-188 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.	(187.0 - 197.0') Normal drilling	(187.0 - 197.0') No drilling fluid used
187				Alluvium Deposits	SM		(188-190 ft) Silty sand with gravel (SM); brown (7.5YR 4/3); very fine to very coarse grained, subangular to subround; little small to very large pebbles, subangular to subround; little silt; trace granules, subangular to subround; trace clay; wet; silt and clay nodules within unit; NOTE: Silt and clay observed to be concentrated located along the outer edges of the core sample.		
188				Alluvium Deposits	SM		(190-192 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.		
189				Alluvium Deposits	SM		(192-195 ft) Silty sand with gravel (SM); brown (7.5YR 4/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.		
190				Alluvium Deposits	SM		(195-196 ft) Silty sand with gravel (SM); brown (7.5YR 5/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.		
191	8.6	TCS-2-SS-196-199 4/25/2022 10:15		Alluvium Deposits	SM		(196-197 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.	(197.0 - 207.0') Normal drilling	(197.0 - 207.0') No drilling fluid used
192				Alluvium Deposits	SM		(197-199 ft) Sandy silt with gravel (ML); brown (7.5YR 4/3); low plasticity, rapid dilatancy; some very fine to very coarse grained sand, angular to subround; little small to very large pebbles, subangular to subround; little clay; trace granules, subangular to subround; soft; wet.		
193				Alluvium Deposits	ML				
194				Alluvium Deposits	SM				
195									
196									
197									
198									
199									
200									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

Date Started: 04/01/2022	Surface Elevation: 587.37 ft amsl	Boring No.: TCS-02 Pilot
Date Completed: 04/24/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Drill Rig Type: Boart Longyear drill head	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Driller Name: Matt Arnold	Depth to First Water: 129.5 ft bgs	
Drilling Asst: D Hoepfner / R West	Sampling Method: 4 inch x 10 ft. Core Barrel	Project Number: 30126255
Logger: Ellen Redner	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid		
201	8.6	TCS-2-SS-199-205 4/25/2022 10:20		Alluvium Deposits	SM		(199-202 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little clay; trace granules, angular to subround; soft; wet; rapid dilatancy.				
202				Alluvium Deposits	SM		(202-202.5 ft) Silty sand with gravel (SM); brown (7.5YR 4/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little granules, angular to subround; trace clay; wet; rapid dilatancy.				
203								(202.5-210 ft) Silty sand with gravel (SM); brown (7.5YR 4/4); very fine to very coarse grained, angular to subround; some silt, little small to very large pebbles, subangular to subround; little granules, angular to subround; little clay; soft; wet; rapid dilatancy; NOTE: Majority of silt and clay observed in large nodules.			
204	8	TCS-2-SS-205-210 4/25/2022 10:25	TCS-2-VAS-202-207 (2300 ppb) 4/22/2022 11:50	Alluvium Deposits	SM						
205											
206											
207											
208	12.3	TCS-2-SS-210-216.5 4/25/2022 10:30	TCS-2-VAS-211.5-216.5 (120 ppb) 4/23/2022 09:00	Alluvium Deposits	SM		(210-214 ft) Silty sand with gravel (SM); reddish brown (5YR 4/3); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little granules, subangular to subround; trace clay; trace small cobble, subangular; wet; rapid dilatancy.	(207.0 - 217.0')	(207.0 - 217.0')		
209									Normal drilling	No drilling fluid used	
210											
211											
212											
213	12.3	TCS-2-SS-216.5-219.5 4/25/2022 10:35		Alluvium Deposits	SM		(214-216.5 ft) Silty sand with gravel (SM); reddish brown (5YR 4/4); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little granules, angular to subround; trace clay; soft; wet; rapid dilatancy; NOTE: Majority of silt and clay observed in large nodules.				
214											
215											
216	12.3	TCS-2-SS-216.5-219.5 4/25/2022 10:35		Alluvium Deposits	ML		(216.5-217 ft) Gravelly silt with sand (ML); reddish brown (5YR 4/4); no plasticity, rapid dilatancy; some small to very large pebbles, subangular to subround; little very fine to very coarse grained sand, subangular to subround; little clay; trace granules, subangular to subround; soft; wet.	(217.0 - 224.0')	(217.0 - 224.0')		
217									Normal drilling	No drilling fluid used	
218											
219	12.3	TCS-2-SS-216.5-219.5 4/25/2022 10:35		Alluvium Deposits	SM		(217-219 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2); very fine to very coarse grained, angular to subround; some silt; little small to very large pebbles, subangular to subround; little granules, subangular to subround; little clay; wet; rapid dilatancy.				
220									(219-219.5 ft) Sandy silt with gravel (ML); reddish brown (5YR 4/4); no plasticity, rapid dilatancy; some very fine to very coarse grained		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

Date Started:	04/01/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02 Pilot	
Date Completed:	04/24/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Boart Longyear drill head	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Driller Name:	Matt Arnold	Depth to First Water:	129.5 ft bgs		
Drilling Asst:	D Hoepfner / R West	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	30126255
Logger:	Ellen Redner	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
221		TCS-2-SS-219.5-223 4/25/2022 10:40	TCS-2-VAS-220-225 (<0.13 ppb) 4/22/2022 15:10	Alluvium Deposits	SM	[Symbol]	sand, subangular to subround; little small to very large pebbles, subangular to subround; little clay; trace granules, subangular to subround; soft; wet. (219.5-223 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2); very fine to very coarse grained, angular to subround; some silt; little clay; little granules, subangular to subround; little small to very large pebbles, subangular to subround; poorly sorted; wet; rapid dilatancy.		
222									
223		No Sieve Samples Collected	No Groundwater Samples Collected	Weathered Bedrock - Conglomerate	N/A	[Symbol]	(223-227 ft) Sedimentary Rock; reddish brown (5YR 5/4); fine grained to coarse grained, angular; highly weathered; medium hard; friable; pulverized by drilling process; dry to moist.	(224.0 - 232.0') Very hard drilling	(224.0 - 232.0') No drilling fluid used
224	12.3								
225									
226									
227									
228									
229									
230									
231									
232									
End of Boring at 232 ft bgs.									
233									
234									
235									
236									
237									
238									
239									
240									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Apparent partial recoveries can be the result of potential compaction of sediments in the core bag.

TOPOCK SOIL BORING LOG C:\USERS\SMCGRANE\ONEEDRIVE - ARCADIS\SHARED DOCUMENTS\PHASE II DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\2022-07-06\GINT PROJECT.GPJ - GINT DATA TEMPLATE.GDT - 7/8/22

Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1		Fluvial Deposits	SW		(0.0 - 0.5') Steel plate		Note: Steel plate used to mark pilot borehole
2					(0.5 - 4.5') Cemex #60 (40x70) Lapis Lustre Sand	(0.5 - 4.5') 2.1 bags	(0.5 - 4.5') 3 bags (143%) Note: Surface sand seal, used >20% of the calculated volume due to potential voids that formed during drilling.
3							
4			NR		(4.5 - 5.0') Cemex #2/12 Mesh (12x20) Lapis Lustre Sand	(4.5 - 5.0') 0.5 bags	(4.5 - 5.0') 0.5 bags (100%) Note: Surface sand seal
5							
6							
7		Fluvial Deposits	SW				
8							
9							
10	No Groundwater Samples Collected						
11		Fluvial Deposits	SP				
12							
13					(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
14							
15		Fluvial Deposits	SM				
16							
17							
18		Alluvium Deposits	SW				
19							
20							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

TOPOCK TEMP ABANDONMENT LOG C:\USERS\SMC\GRANEDRIVE - ARCADIS\SHARED DOCUMENTS\PHASE II\DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\20 2022-07-08\GINT PROJECT.GPJ GINT DATA TEMPLATE.GDT 7/8/22

Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21	No Groundwater Samples Collected	Alluvium Deposits	SW			(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
22			SW				
23		Alluvium Deposits	SP				
24		Alluvium Deposits	ML				
25		Alluvium Deposits	SM				
26		Alluvium Deposits	SM				
27		Alluvium Deposits	SM				
28		Alluvium Deposits	SM				
29		Alluvium Deposits	SM				
30		Alluvium Deposits	SW				
31	Alluvium Deposits	SM					
32	Alluvium Deposits	SW-SC					
33	Alluvium Deposits	SM					
34	Alluvium Deposits	SM					
35	Alluvium Deposits	SM					
36	Alluvium Deposits	SW					
37	Alluvium Deposits	SW					
38	Alluvium Deposits	SW					
39	Alluvium Deposits	SW					
40	Alluvium Deposits	SW					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started:	04/24/2022	Surface Elevation:	587.37 ft amsl	Well ID: TCS-02 Pilot	
Date Completed:	04/27/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Driller Name:	Matt Arnold	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Drilling Asst:	D Hoepfner / R West	Depth to First Water:	129.5 ft bgs		
Logger:	Ellen Redner	Editor:	Sean McGrane	Project Number:	30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
41	No Groundwater Samples Collected	Alluvium Deposits	SW			(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
42							
43							
44							
45							
46							
47							
48		Alluvium Deposits	SM				
49		Alluvium Deposits	SW				
50							
51	Alluvium Deposits	SM					
52							
53							
54							
55							
56							
57	Alluvium Deposits	SM					
58							
59							
60							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61		Alluvium Deposits	SM				
62		Alluvium Deposits	SM				
63		Alluvium Deposits	SM				
64		Alluvium Deposits	SM				
65		Alluvium Deposits	SW-SM				
66		Alluvium Deposits	SW-SM				
67		Alluvium Deposits	SW-SM				
68		Alluvium Deposits	SW-SM				
69		Alluvium Deposits	SM				
70	No Groundwater Samples Collected				(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
71							
72							
73		Alluvium Deposits	SW-SM				
74		Alluvium Deposits	SW-SM				
75		Alluvium Deposits	SW-SM				
76		Alluvium Deposits	SW-SM				
77		Alluvium Deposits	SW-SM				
78		Alluvium Deposits	SW-SM				
79		Alluvium Deposits	SW-SM				
80		Alluvium Deposits	SW-SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81		Alluvium Deposits	SW-SM				
82							
83		Alluvium Deposits	SM				
84							
85		Alluvium Deposits	ML				
86							
87		Alluvium Deposits	SM				
88							
89							
90	No Groundwater Samples Collected				(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
91							
92		Alluvium Deposits	SW-SM				
93							
94							
95							
96		Alluvium Deposits	ML				
97							
98		Alluvium Deposits	SW				
99							
100		Alluvium Deposits	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

C:\USERS\SMCGRANE\ONE DRIVE - ARCADIS\SHARED DOCUMENTS\PHASE 1\DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\00 2022-07-08\GINT PROJECT.GPJ_GINT DATA TEMPLATE.GDT_7/8/22

Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101	No Groundwater Samples Collected	Alluvium Deposits	SW			(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
102							
103		Alluvium Deposits	SM				
104							
105							
106							
107							
108		Alluvium Deposits	SM				
109							
110							
111							
112							
113							
114		Alluvium Deposits	SM				
115							
116							
117		Alluvium Deposits	SM				
118							
119		Alluvium Deposits	SM				
120							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
121	No Groundwater Samples Collected	Alluvium Deposits	SM				
122		Alluvium Deposits	SM				
123	No Sample (127-132 Interval did not produce) 4/19/2022	Alluvium Deposits	SM		(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
124		Alluvium Deposits	SM				
125		Alluvium Deposits	SM				
126	TCS-2-VAS-131-136 (4300 ppb) 4/19/2022 15:10	Alluvium Deposits	SM				
127		Alluvium Deposits	SM				
128		Alluvium Deposits	SM				
129		Alluvium Deposits	SM				
130		Alluvium Deposits	SM				
131		Alluvium Deposits	SM				
132		Alluvium Deposits	SM				
133		Alluvium Deposits	SM				
134		Alluvium Deposits	SM				
135		Alluvium Deposits	SM				
136		Alluvium Deposits	SM				
137		Alluvium Deposits	SM				
138		Alluvium Deposits	SM				
139		Alluvium Deposits	SM				
140		Alluvium Deposits	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started:	04/24/2022	Surface Elevation:	587.37 ft amsl	Well ID: TCS-02 Pilot	
Date Completed:	04/27/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Driller Name:	Matt Arnold	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Drilling Asst:	D Hoepfner / R West	Depth to First Water:	129.5 ft bgs		
Logger:	Ellen Redner	Editor:	Sean McGrane	Project Number:	30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
141		Alluvium Deposits	SM				
142		Alluvium Deposits	SW-SM				
143		Alluvium Deposits	SM				
144		Alluvium Deposits	SM				
145		Alluvium Deposits	SM				
146		Alluvium Deposits	SM				
147		Alluvium Deposits	SM				
148		Alluvium Deposits	SM				
149	TCS-2-VAS-147-152 (<0.025 ppb) 4/20/2022 11:15	Alluvium Deposits	SM		(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
150		Alluvium Deposits	SM				
151		Alluvium Deposits	SM				
152		Alluvium Deposits	SM				
153		Alluvium Deposits	SM				
154		Alluvium Deposits	SM				
155		Alluvium Deposits	SM				
156		Alluvium Deposits	SM				
157		Alluvium Deposits	SM				
158		Alluvium Deposits	SM				
159		Alluvium Deposits	SM				
160		Alluvium Deposits	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

TOPOCK TEMP ABANDONMENT LOG C:\USERS\SMCGRANE\ONE DRIVE - ARCADIS\SHARED DOCUMENTS\PHASE I\DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\2022-07-08\GINT PROJECT.GPJ GINT DATA TEMPLATE.GDT 7/8/22

Date Started:	04/24/2022	Surface Elevation:	587.37 ft amsl	Well ID: TCS-02 Pilot	
Date Completed:	04/27/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Driller Name:	Matt Arnold	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Drilling Asst:	D Hoepfner / R West	Depth to First Water:	129.5 ft bgs		
Logger:	Ellen Redner	Editor:	Sean McGrane	Project Number:	30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
161	TCS-2-VAS-161.5-166.5 (<0.025 ppb) 4/21/2022 09:45	Alluvium Deposits	ML			(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
162		Alluvium Deposits	ML				
163		Alluvium Deposits	SM				
164		Alluvium Deposits	ML				
165		Alluvium Deposits	SM				
166		Alluvium Deposits	ML				
167		Alluvium Deposits	SM				
168		Alluvium Deposits	ML				
169		Alluvium Deposits	SM				
170		Alluvium Deposits	ML				
171		Alluvium Deposits	SM				
172		Alluvium Deposits	ML				
173		Alluvium Deposits	SM				
174		Alluvium Deposits	ML				
175		Alluvium Deposits	SM				
176		Alluvium Deposits	ML				
177		Alluvium Deposits	SM				
178		Alluvium Deposits	SW-SM				
179		Alluvium Deposits	ML				
180		Alluvium Deposits	SM				

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Date Started:	04/24/2022	Surface Elevation:	587.37 ft amsl	Well ID: TCS-02 Pilot	
Date Completed:	04/27/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	232 ft bgs	Project:	Final GW Remedy Phase 2A
Driller Name:	Matt Arnold	Borehole Diameter:	4-7 inches	Location:	PG&E Topock, Needles California
Drilling Asst:	D Hoepfner / R West	Depth to First Water:	129.5 ft bgs		
Logger:	Ellen Redner	Editor:	Sean McGrane	Project Number:	30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
181	TCS-2-VAS-181-186 (<0.025 ppb) 4/21/2022 14:45	Alluvium Deposits	SW-SM	SW-SM		(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
182		Alluvium Deposits	ML	ML			
183		Alluvium Deposits	SM	SM			
184		Alluvium Deposits	SM	SM			
185		Alluvium Deposits	SM	SM			
186		Alluvium Deposits	SM	SM			
187		Alluvium Deposits	SM	SM			
188		Alluvium Deposits	SM	SM			
189		Alluvium Deposits	SM	SM			
190		Alluvium Deposits	SM	SM			
191	Alluvium Deposits	SM	SM				
192	Alluvium Deposits	SM	SM				
193	Alluvium Deposits	SM	SM				
194	Alluvium Deposits	SM	SM				
195	Alluvium Deposits	SM	SM				
196	Alluvium Deposits	SM	SM				
197	Alluvium Deposits	SM	SM				
198	Alluvium Deposits	ML	ML				
199	Alluvium Deposits	SM	SM				
200	Alluvium Deposits	SM	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
201		Alluvium Deposits	SM				
202		Alluvium Deposits	SM				
203	TCS-2-VAS-202-207 (2300 ppb) 4/22/2022 11:50	Alluvium Deposits	SM				
204							
205							
206							
207		Alluvium Deposits	SM				
208							
209							
210					(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
211							
212		Alluvium Deposits	SM				
213							
214	TCS-2-VAS-211.5-216.5 (120 ppb) 4/23/2022 09:00	Alluvium Deposits	SM				
215							
216							
217		Alluvium Deposits	ML				
218		Alluvium Deposits	SM				
219		Alluvium Deposits	ML				
220			SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

TOPOCK TEMP ABANDONMENT LOG C:\USERS\SMC\GRANEONE\DRIVE - ARCADIS\SHARED DOCUMENTS\PHASE I\DRILLING\06 - FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\2022-07-08\GINT PROJECT.GPJ GINT DATA TEMPLATE.GDT 7/8/22

Date Started: 04/24/2022	Surface Elevation: 587.37 ft amsl	Well ID: TCS-02 Pilot
Date Completed: 04/27/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 232 ft bgs	Project: Final GW Remedy Phase 2A
Driller Name: Matt Arnold	Borehole Diameter: 4-7 inches	Location: PG&E Topock, Needles California
Drilling Asst: D Hoepfner / R West	Depth to First Water: 129.5 ft bgs	
Logger: Ellen Redner	Editor: Sean McGrane	Project Number: 30126255

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Construction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
221	TCS-2-VAS-220-225 (<0.13 ppb) 4/22/2022 15:10	Alluvium Deposits	SM	[Pattern]	(5.0 - 221.5') Cemex 8 Mesh (8x16) Lapis Lustre Sand	(5.0 - 221.5') 88.2 bags	(5.0 - 221.5') 98 bags (111%) Note: Backfill sand
222					Weathered Bedrock - Conglomerate	N/A	[Pattern]
223	No Groundwater Samples Collected	Competent Bedrock - Conglomerate	N/A	[Pattern]			
224							
225							
226							
227							
228							
229							
230							
231							
232							
233							
234							
235							
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250							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, NR = No Recovery, N/A = Not Applicable, GW = groundwater, ppb = parts per billion, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively. Granular backfill material was removed during overdrilling of the pilot borehole.

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles California
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	Project Number:	30126255
Drilling Asst:	A. Amezcuita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid	
1	(0.0 - 21.2) 1.65 mins/ft	SW		(0-1.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3).	(0.0 - 0.1') Confirmed drill casing was lined up over pilot borehole.	(0.1 - 20.2') 450 gallons of water used; 150 gallons of water recovered; 300 gallons of water lost	
2				(1.5-7.0 ft) No Recovery.	(0.1 - 14.0') Normal drilling		
3							
4			NR				(3.0') Observed trace Cemex #60 (40x70) Lapis Lustre Sand in drill cuttings. Majority of drill cuttings was bentonite from the mud tub seal installed during the pilot borehole drilling.
5							
6							
7							
8			SW		(7.0-10 ft) Well graded sand with gravel (SW); brown (10YR 5/3).		(8.0') Observed little Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.
9							
10							
11			SP		(10-12.5 ft) Poorly graded sand with gravel (SP); brown (10YR 5/3).		
12							
13							
14							
15			SM		(12.5-17 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4).		(14.0 - 21.2') Soft drilling
16					(15.5-17 ft) Very large pebbles; potentially from a boulder pulverized by drilling; light brownish gray (10YR 6/2).		(15.0') Observed little Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.
17							
18			SW		(17-24.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3).		
19							
20							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles California
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches		
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid	
21	(0.0 - 21.2) 1.65 mins/ft	SW		(17-24.5 ft) Well graded sand with gravel (SW); brown (10YR 5/3).	(21.2 - 41.2') Normal drilling	(21.2 - 41.2') 650 gallons of water used; 200 gallons of water recovered; 450 gallons of water lost	
22							
23	(21.2 - 41.2) 2.85 mins/ft	SW		(24.5-26 ft) Poorly graded sand with gravel (SP); brown (10YR 5/3).	(25.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.		
25							
26				ML			(26-27 ft) Sandy silt (ML); brown (7.5YR 5/3).
27				SM			(27-31 ft) Silty sand (SM); brown (7.5YR 5/3).
28							
29				SW			(31-31.5 ft) Well graded sand (SW); brown (10YR 5/3).
30							
31				SM			(31.5-32.5 ft) Silty sand (SM); brown (7.5YR 5/3).
32				SW-SC			(32.5-33 ft) Well graded sand with clay (SW-SC); brown (10YR 5/3).
33				SM			(33-35.5 ft) Silty sand (SM); brown (7.5YR 5/3).
34							
35	SW	(35.5-36.5 ft) Well graded sand (SW); brown (10YR 5/3).					
36							
37	SW	(36.5-48 ft) Well graded sand with gravel (SW); brown (10YR 5/3).					
38							
39							
40				(35.0') Observed little Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles California
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	Project Number:	30126255
Drilling Asst:	A. Amezcuita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid		
41	(21.2 - 41.2) 2.85 mins/ft	SW		(36.5-48 ft) Well graded sand with gravel (SW); brown (10YR 5/3).	(41.2 - 61.2') Normal drilling	(41.2 - 61.2') 700 gallons of water used; 300 gallons of water recovered; 400 gallons of water lost		
42				(41.7 ft) Small cobble				
43	(41.2 - 61.2) 2.55 mins/ft	SW		(45.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(45.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.			
44								
45								
46								
47								
48				SM			(48-48.5 ft) Silty sand with gravel (SM); brown (10YR 5/3).	
49				SW				(48.5-52 ft) Well graded sand with gravel (SW); brown (10YR 5/3).
50								
51								
52				SM				(52-57 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/3).
53								
54								
55	SM		(57-63 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2).					
56								
57								
58								
59								
60								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid		
61	(41.2 - 61.2) 2.55 mins/ft	SM		(57-63 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2).	(61.2 - 81.2') Normal drilling	(61.2 - 81.2') 650 gallons of water used; 400 gallons of water recovered; 250 gallons of water lost		
62				(62-63 ft) Boulder; pulverized by drilling process.				
63	(61.2 - 81.2) 2.40 mins/ft	SM		(63-64.5 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).	(65.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.			
64								
65				SW-SM			(64.5-68.5 ft) Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3).	
66								
67				SM				(68.5-69.5 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3).
68								
69	SW-SM		(69.5-77 ft) Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3) with brown (7.5YR 5/3).	(75.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.				
70								
71	SW-SM		(75.5-76.5 ft) Cobbles/boulder pulverized by drilling process.					
72								
73	SW-SM		(77-83 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).					
74								
75	SW-SM							
76								
77	SW-SM							
78								
79	SW-SM							
80								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
81	(61.2 - 81.2) 2.40 mins/ft	SW-SM		(77-83 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).	(81.2 - 101.2') Normal drilling	(81.2 - 101.2') 700 gallons of water used; 500 gallons of water recovered; 200 gallons of water lost
82				(82-83 ft) Small cobbles pulverized by drilling process.		
83	(81.2 - 101.2) 2.90 mins/ft	SM		(83-85.5 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).	(85.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
84						
85						
86		ML		(85.5-87 ft) Sandy silt with gravel (ML); brown (10YR 5/3).		
87		SM		(87-89 ft) Silty sand with gravel (SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).		
88	SW-SM			(89-96 ft) Well graded sand with silt and gravel (SW-SM); grayish brown (10YR 5/2) with brown (7.5YR 5/2).	(95.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
89						
90						
91						
92	ML			(93.6 ft) Boulder/cobble pulverized by drilling process.		
93				(94.2-94.4 ft) Silt lens		
94	ML			(96-97 ft) Sandy silt (ML); brown (10YR 5/3).		
95						
96	SW			(97-99.5 ft) Well graded sand with gravel (SW); grayish brown (10YR 5/2) with brown (7.5YR 5/2).		
97						
98	SM			(99.5-100 ft) Silty sand with gravel (SM); grayish		
99						
100						

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TOPOCK\IRZ\DRILLING LOG \ARCADIS\0365\SHAREPOINT.COM\SSLD\A\WWW\ROOT\TEAMS\FGETOPOCK\CONSTRUCTION\PHASE II\DRILLING\06_FIELD DOCUMENTATION\02_GINT FILES\00_NEW PHASE 2_GINT FILES\41_2022-10-19\GINT PROJECT\GJ_GINT DATA TEMPLATE.GDT_10/19/22

Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
101	(81.2 - 101.2) 2.90 mins/ft	SW		(100-102.5 ft) Well graded sand with gravel (SW); brown (7.5YR 5/2) with grayish brown (10YR 5/2).	(101.2 - 120.0') Hard/rough drilling	(101.2 - 120.0') 950 gallons of water used; 700 gallons of water recovered; 250 gallons of water lost
102						
103	(101.2 - 120.0) 4.36 mins/ft	SM		(102.5-107 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2). (102.7 ft) Small cobble	(105.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
104						
105						
106						
107		SM		(107-112 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2).	(115.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
108						
109						
110		SM		(112-116.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2).		
111						
112		SM		(116.5-117 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).		
113						
114		SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2).		
115						
116		SM		(117.5-119.5 ft) Dry to moist		
117						
118		SM				
119						
120						

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TOPOCK\IRZ\DRILLING LOG \ARCADIS\0615\SHAREPOINT.COM\SS\DA\WWW\ROOT\TEAMS\FGETOPOCK\CONSTRUCTION\SHARED DOCUMENTS\PHASE II DRILLING\06 FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\41 2022-10-19\GINT PROJECT\GJ GINT DATA TEMPLATE.GDT 10/19/22

Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
121		SM		(117-122 ft) Silty sand with gravel (SM); brown (7.5YR 5/2) with grayish brown (10YR 5/2). (119.5-120.5 ft) Moist (119.5-120.5 ft) Moist (120.5-121.5 ft) Dry to moist (121.5-122 ft) Moist	(120.0 - 140.0') Hard drilling	(120.0 - 140.0') 600 gallons of water used; 600 gallons of water recovered; 0 gallons of water lost
122						
123						
124		SM		(122-126.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).		
125				(125-125.5 ft) Moist	(125.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
126				(125.5-126 ft) Dry to moist (126-126.5 ft) Moist		
127				(126.5-134 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).		
128						
129						
130	(120.0 - 140.0) 2.95 mins/ft	SM		(129.5-134 ft) Wet		
131						
132						
133						
134						
135		SM		(134-137 ft) Silty sand with gravel (SM); brown (7.5YR 5/3). (135.5 ft) Moist	(135.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	
136						
137						
138		SM		(137-139.5 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4). (139 ft) Moist		
139						
140		SM				

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
141	(140.0 - 160.0) 2.15 mins/ft	SM		(139.5-142 ft) Silty sand with gravel (SM); brown (7.5YR 5/3). (140 ft) Moist	(140.0 - 160.0') Normal drilling (145.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(140.0 - 160.0') 600 gallons of water used; 600 gallons of water recovered; 0 gallons of water lost
142		SW-SM		(142-144.5 ft) Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3). (143-144.5 ft) Moist		
143						
144		SM		(144.5-145.5 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3).		
145		SM		(145.5-148.5 ft) Silty sand with gravel (SM); yellowish brown (10YR 5/4) with brown (7.5YR 5/4). (147 ft) Color change to brown (10YR 5/3) with brown (7.5YR 5/3).		
146		SM		(148.5-150 ft) Silty sand with gravel (SM); brown (7.5YR 5/3) with brown (10YR 5/3).		
147		SM		(150-151.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3) with brown (10YR 5/3).		
148		SM		(151.5-152 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3).		
149		SM		(152-158 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3). (152.5-153 ft) Wet (153-154 ft) Moist to wet		
150				(154-156 ft) Wet		
151			(156-158 ft) Moist to wet			
152	SM		(158-160 ft) Silty sand with gravel (SM); brown (10YR 5/3) with brown (7.5YR 5/3). (159-159.5 ft) Moist to Wet (159.5-160 ft) Wet	(155.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.		
153						
154						
155						
156						
157						
158						
159						
160						

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: <u>TCS-02</u>	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid		
161	(160.0 - 180.0) 1.00 mins/ft	ML		(160-163.5 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3).	(160.0 - 180.0') Soft drilling	(160.0 - 180.0') 350 gallons of water used; 400 gallons of water recovered; 50 gallons of water gained		
162				(162.5-163.5 ft) Wet				
163		SM		(163.5-164.5 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).				
164				(164.5-167 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3).				
165		ML		(165.5-168.8 ft) Silty sand lens (SM).			(165.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(165.0') No drilling fluid used
166				(166.5 ft) Color change to reddish brown (5YR 5/4).				
167		SM		(167-168 ft) Silty sand with gravel (SM); brown (7.5YR 4/3).				
168				(168-172.5 ft) Sandy silt with gravel (ML); brown (7.5YR 5/3).				
169		ML		(172.5-177 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2).			(175.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(175.0') No drilling fluid used
170								
171	SM		(177-179 ft) Well graded sand with silt and gravel (SW-SM); dark reddish gray (5YR 4/2).					
172								
173	SW-SM		(179-180 ft) Silty sand with gravel (SM); reddish brown (5YR 5/3).					
174								
175	SM							
176								
177	SW-SM							
178								
179	SM							
180								

Final 07/19/22

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

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Date Started: 07/13/2022	Surface Elevation: 587.37 ft amsl	Boring No.: TCS-02
Date Completed: 07/22/2022	Northing (NAD83): 2100921.24	
Drilling Co.: Cascade	Easting (NAD83): 7615150.98	Client: PG&E
Drilling Method: Dual Rotary	Total Depth: 238.5 ft bgs	Project: Final GW Remedy Phase 2A
Drill Rig Type: Foremost DR 24HD	Conductor Casing Diameter: 18 inches	Location: PG&E Topock, Needles California
Driller Name: Josh Saldana	Drill Casing Diameter: 16 inches	
Drilling Asst: A. Amezcuita / D. Aldona	Drill Bit: 15 5/8" & 17 5/8" Tricone	Project Number: 30126255
Tool-Pusher: Arnold Lamon	Depth to First Water: 129.5 ft bgs	
Rig Geologist: Ellen Redner	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description <small>(See Pilot boring log for full geologic descriptions)</small>	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid	
181	(180.0 - 200.0) 1.55 mins/ft	SW-SM		(180-182 ft) Well graded sand with silt and gravel (SW-SM); reddish brown (5YR 4/3).	(180.0 - 188.0') Soft Drilling	(180.0 - 200.0') 400 gallons of water used; 500 gallons of water recovered; 100 gallons of water gained	
182		ML		(182-183.5 ft) Sandy silt with gravel (ML); reddish brown (5YR 5/4).			
183		SM		(183.5-184.5 ft) Silty sand with gravel (SM); reddish brown (5YR 4/3).			
184		SM		(184.5-185 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).			
185		SM		(185-187 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).			(185.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.
186		SM		(187-188 ft) Silty sand with gravel (SM); brown (7.5YR 5/2).			
187		SM		(188-190 ft) Silty sand with gravel (SM); brown (7.5YR 4/3).			(188.0 - 191.0') Hard drilling
188		SM		(190-192 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).			
189		SM		(192-195 ft) Silty sand with gravel (SM); brown (7.5YR 4/3).			(191.0 - 200.0') Soft drilling
190		SM		(195-196 ft) Silty sand with gravel (SM); brown (7.5YR 5/3).			
191		SM		(196-197 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).			(195.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.
192		SM		(197-199 ft) Sandy silt with gravel (ML); brown (7.5YR 4/3).			
193	ML		(199-202 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).				
194	SM						
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, Notes: Solid blue and hollow blue water table marks represent depth to water (ft. bgs.) first encountered from logging and depth to water measured during the first VAS interval, respectively

TOPOCK\IRZ\DRILLING LOG \V\ARCADIS\0365\SHAREPOINT.COM\SSL\DAV\WWW\ROOT\TEAMS\FGETOPOCK\CONSTRUCTION\SHARED DOCUMENTS\PHASE II DRILLING\06 FIELD DOCUMENTATION\02 GINT FILES\00 NEW PHASE 2 GINT FILES\41 2022-10-19\GINT PROJECT.GPJ GINT DATA TEMPLATE.GDT 10/19/22

Date Started:	07/13/2022	Surface Elevation:	587.37 ft amsl	Boring No.: TCS-02	
Date Completed:	07/22/2022	Northing (NAD83):	2100921.24		
Drilling Co.:	Cascade	Easting (NAD83):	7615150.98	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	238.5 ft bgs	Project:	Final GW Remedy Phase 2A
Drill Rig Type:	Foremost DR 24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles
Driller Name:	Josh Saldana	Drill Casing Diameter:	16 inches	California	
Drilling Asst:	A. Amezquita / D. Aldona	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number:	30126255
Tool-Pusher:	Arnold Lamon	Depth to First Water:	129.5 ft bgs		
Rig Geologist:	Ellen Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
201	(200.0 - 220.0) 0.95 mins/ft	SM		(199-202 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).	(200.0 - 220.0') Soft drilling	(200.0 - 220.0') 250 gallons of water used; 500 gallons of water recovered; 250 gallons of water gained
202		SM		(202-202.5 ft) Silty sand with gravel (SM); brown (7.5YR 4/3).		
203				(202.5-210 ft) Silty sand with gravel (SM); brown (7.5YR 4/4).		
204						
205					(205.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(205.0') No drilling fluid used
206			SM			
207						
208						
209						
210						
211				(210-214 ft) Silty sand with gravel (SM); reddish brown (5YR 4/3).		
212		SM				
213						
214				(214-216.5 ft) Silty sand with gravel (SM); reddish brown (5YR 4/4).		
215		SM			(215.0') Observed trace Cemex #8 (8x16) Lapis Lustre Sand in drill cuttings.	(215.0') No drilling fluid used
216						
217		ML		(216.5-217 ft) Gravelly silt with sand (ML); reddish brown (5YR 4/4).		
218		SM		(217-219 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2).		
219		ML		(219-219.5 ft) Sandy silt with gravel (ML); reddish brown (5YR 4/4).		
220		SM				

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Date Started: <u>07/13/2022</u>	Surface Elevation: <u>587.37 ft amsl</u>	Boring No.: <u>TCS-02</u>
Date Completed: <u>07/22/2022</u>	Northing (NAD83): <u>2100921.24</u>	
Drilling Co.: <u>Cascade</u>	Easting (NAD83): <u>7615150.98</u>	Client: <u>PG&E</u>
Drilling Method: <u>Dual Rotary</u>	Total Depth: <u>238.5 ft bgs</u>	Project: <u>Final GW Remedy Phase 2A</u>
Drill Rig Type: <u>Foremost DR 24HD</u>	Conductor Casing Diameter: <u>18 inches</u>	Location: <u>PG&E Topock, Needles</u>
Driller Name: <u>Josh Saldana</u>	Drill Casing Diameter: <u>16 inches</u>	<u>California</u>
Drilling Asst: <u>A. Amezquita / D. Aldona</u>	Drill Bit: <u>15 5/8" & 17 5/8" Tricone</u>	Project Number: <u>30126255</u>
Tool-Pusher: <u>Arnold Lamon</u>	Depth to First Water: <u>129.5 ft bgs</u>	
Rig Geologist: <u>Ellen Redner</u>	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run (ft) and Average Penetration Rate	USCS Code	USCS Class	Description <small>(See Pilot boring log for full geologic descriptions)</small>	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
221	(220.0 - 238.5) 2.70 mins/ft	SM	SM	(219.5-223 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2).	(220.0 - 230.0') Soft drilling	(220.0 - 238.5') 750 gallons of water used; 1200 gallons of water recovered; 450 gallons of water gained
222				N/A	N/A	
223		N/A	N/A			
224				N/A	N/A	
225		N/A	N/A			
226				N/A	N/A	
227		N/A	N/A			
228				N/A	N/A	
229		N/A	N/A			
230				N/A	N/A	
231	N/A	N/A				
232			N/A	N/A		
233	N/A	N/A				
234			N/A	N/A		
235	N/A	N/A				
236			N/A	N/A		
237	N/A	N/A				
238			N/A	N/A		
239	End of Boring at 238.5 ft bgs.					
240						

Final 10/19/22

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