

Date Started: 08/24/2020	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9
Date Completed: 09/02/2020	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezguita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 9/14/2020	
Total Depth: 107.58 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1					(0.0 - 55.0') 10" Suregrip 17 Casing		
2					(0.0 - 4.0') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(0.0 - 4.0') 9.8 bags	(0.0 - 4.0') 17 bags (173%) Note: Temporary backfill, used >20% of the calculated volume due to void formed ~3-1' bgs during drilling.
5		Topock - Fill	SP-SM				
7					(4.0 - 10.0') Portland Cement 3% Bentonite Type I, II, and V with Benseal	(4.0 - 10.0') 54.8 gallons	(4.0 - 10.0') 50 gallons (91%) Note: Grout seal
10		Topock - Fill	SM		(0.0 - 20.6') 18.0" Borehole		
15		Topock - Alluvium Deposits	SM		(10.0 - 41.7') Portland Cement 3% Bentonite Type I, II, and V with Benseal (14.5 - 15.5') Centralizer	(10.0 - 41.7') 289.5 gallons	(10.0 - 41.7') 385 gallons (133%) Note: Grout seal, used >20% of the calculated volume due to potential voids that formed during drilling and grout migration.
19		Topock - Alluvium Deposits	SM				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured pre-specific capacity

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT SURVEY\TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 21:17

Date Started: 08/24/2020	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9
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Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezguita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 9/14/2020	
Total Depth: 107.58 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21		Topock - Alluvium Deposits	SM	[Pattern]	(0.0 - 55.0') 10" Suregrip 17 Casing		
22					(0.0 - 20.6') 18.0" Borehole		
23							
24							
25							
26							
27							
28		Topock - Alluvium Deposits	SM	[Pattern]	(10.0 - 41.7') Portland Cement 3% Bentonite Type I, II, and V with Benseal		
29	IRZ-9-VAS- 27-32 (120 ppb) 12/3/2018 23:55				(20.6 - 40.6') 18.0" Borehole	(10.0 - 41.7') 289.5 gallons	(10.0 - 41.7') 385 gallons (133%) Note: Grout seal, used >20% of the calculated volume due to potential voids that formed during drilling and grout migration.
30							
31							
32							
33							
34							
35		Topock - Alluvium Deposits	ML	[Pattern]			
36							
37							
38							
39							
40							

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCKDRAFT BORING LOGS\GINT FILES\11.30.20\TOPOCK DATA TEMPLATE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GPJ 11/30/20 21:17

Date Started: 08/24/2020	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9
Date Completed: 09/02/2020	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezquita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 9/14/2020	
Total Depth: 107.58 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
41		Topock - Alluvium Deposits	SM		(10.0 - 41.7') Portland Cement 3% Bentonite Type I, II, and V with Benseal	(10.0 - 41.7') 289.5 gallons	(10.0 - 41.7') 385 gallons (133%) Note: Grout seal, used >20% of the calculated volume due to potential voids that formed during drilling and grout migration.
42					(41.7 - 44.0') Bentonite chip seal Puregold Medium Chips	(41.7 - 44.0') 3.9 bags	(41.7 - 44.0') 4 bags (103%) Note: Seal between filter pack and grout
43		Topock - Alluvium Deposits	SM		(0.0 - 55.0') 10" Suregrip 17 Casing		
44					(44.0 - 47.3') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(44.0 - 47.3') 8.1 bags	(44.0 - 47.3') 9 bags (111%) Note: Transition sand
45					(40.6 - 51.7') 18.0" Borehole		
46		Topock - Alluvium Deposits	SM				
47							
48	IRZ-9-VAS-47-52 (<0.033 U ppb) 12/4/2018 10:00	Topock - Alluvium Deposits	SM				
49							
50		Topock - Alluvium Deposits	GM		(52.5 - 53.5') Centralizer		
51					(47.3 - 107.6') Cemex #6 Mesh (6x12) Lapis Lustre Sand	(47.3 - 107.6') 142.9 bags	(47.3 - 107.6') 130 bags (91%) Note: Filter Pack - ran dummy tool and swabbed for approximately 180 minutes.
52		Topock - Alluvium Deposits	SM				
53					(55.0 - 99.8') 10" .050-Slot 316L SS Wire Wrap Screen	(51.7 - 59.4') 16.0" Borehole	
54							
55		Topock - Alluvium Deposits	SM				
56							
57		Topock - Alluvium Deposits	SM				
58							
59		Topock - Alluvium Deposits	SM				
60							(59.4 - 79.0') 16.0" Borehole

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_DRAFT BORING LOGS\GINT FILES\11.30.20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 21:17

Date Started: 08/24/2020	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9
Date Completed: 09/02/2020	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezcuita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 9/14/2020	
Total Depth: 107.58 ft bgs	Well Completion: <input type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input checked="" type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61					(55.0 - 99.8') 10" .050-Slot 316L SS Wire Wrap Screen		
62							
63							
64	IRZ-9-VAS-62-67 (<0.033 U ppb) 12/4/2018 13:05	Topock - Alluvium Deposits	SM				
65							
66							
67							
68							
69							
70					(47.3 - 107.6') Cemex #6 Mesh (6x12) Lapis Lustre Sand	(47.3 - 107.6') 142.9 bags	(47.3 - 107.6') 130 bags (91%) Note: Filter Pack - ran dummy tool and swabbed for approximately 180 minutes.
71							
72		Topock - Alluvium Deposits	SM				
73							
74							
75							
76							
77							
78							
79		Topock - Alluvium Deposits	SM				
80					(79.0 - 100.2') 16.0" Borehole		

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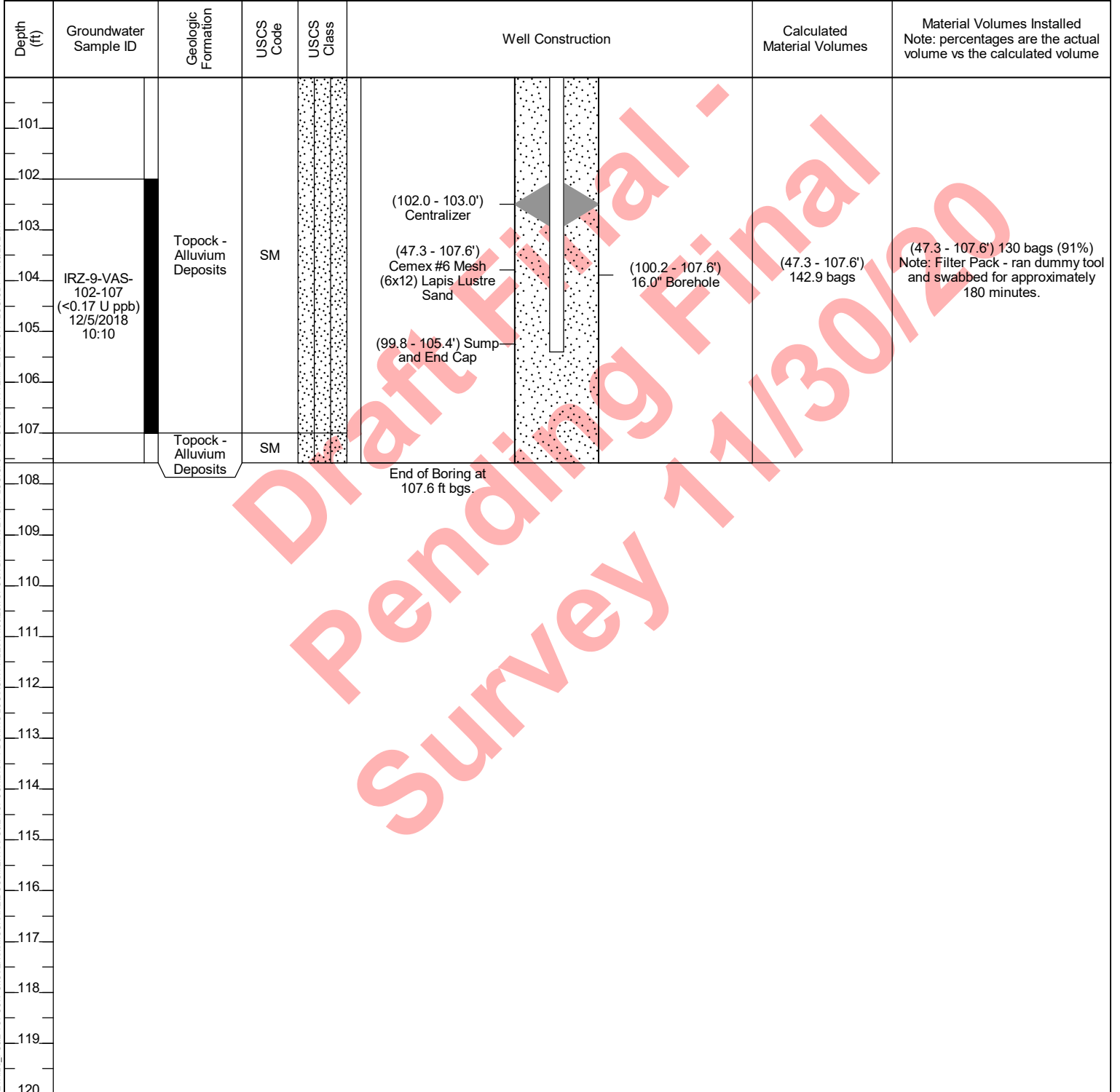
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Date Completed: 09/02/2020	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezguita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
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Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
81		Topock - Alluvium Deposits	SM		(55.0 - 99.8') 10" .050-Slot 316L SS Wire Wrap Screen			
82								
83								
84								
85		Topock - Alluvium Deposits	SM					
86								
87								
88								
89								
90		Topock - Alluvium Deposits	SM		(47.3 - 107.6') Cemex #6 Mesh (6x12) Lapis Lustre Sand	(79.0 - 100.2') 16.0" Borehole	(47.3 - 107.6') 142.9 bags	(47.3 - 107.6') 130 bags (91%) Note: Filter Pack - ran dummy tool and swabbed for approximately 180 minutes.
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								

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Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2103560.04	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615565.88	Location: PG&E Topock, Needles, California
Drilling Asst: A. & H. Amezguita	Borehole Diameter: 15 5/8-18 inches	
Logger: Ellen Redner	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 9/14/2020	
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Date Started:	08/21/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9	
Date Completed:	08/23/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Project Number:	RC000753.0051
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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 - 20.6) 0.97 mins/ft	SP-SM	SP-SM	(0.0 - 20.6') 18.0" Steel Casing	(0.0 - 9.5') Topock - Fill; Poorly graded sand with silt (SP-SM); pale yellow (2.5Y 8/3)		(0.0 - 20.6') 179 gallons of water used; 50 gallons of water recovered; 129 gallons of water lost
2							
3							
4							
5							
6							
7							
8							
9							
10					SM	SM	
11				(10.0') Observed some to little Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.			
12			(12.0 - 19.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6)	(12.0 - 14.0') Drill rods chattering			
13							
14							
15							
16							
17							
18							
19							
20	SM	SM	(19.0 - 25.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6)				

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Date Completed:	08/23/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Project Number:	RC000753.0051
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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 - 20.6) 0.97 mins/ft	SM	SM			(20.0') Observed some to little Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	(20.6 - 40.6') 161 gallons of water used; 35 gallons of water recovered; 126 gallons of water lost
22						(20.1 - 39.9') Soft drilling	
23							
24							
25							
26		SM	SM	(20.6 - 40.6') 18.0" Steel Casing	(25.0 - 34.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)		
27							
28							
29							
30	(20.6 - 40.6) 0.75 mins/ft					(30.0') Observed little to some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	
31							
32							
33							
34		ML	ML		(34.0 - 40.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); brown (7.5YR 5/4)		
35							
36							
37							
38							
39							
40							

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Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Needles,
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	California
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15 5/8" & 17 5/8" Tricone	Project Number: RC000753.0051
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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	(20.6 - 40.6) 0.75 mins/ft	SM			(40.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)	(40.0') Observed little to some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	(40.6 - 51.7') 72 gallons of water used; 20 gallons of water recovered; 52 gallons of water lost	
42								
43	(40.6 - 51.7) 0.72 mins/ft	SM		(40.6 - 51.7') 18.0" Steel Casing	(43.0 - 48.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)	(50.0') Observed little to some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.		
44								
45								
46								
47	(51.7 - 59.4) 1.30 mins/ft	SM		(51.7 - 59.4') 16.0" Steel Casing	(48.0 - 50.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)	(54.0 - 59.9') Soft drilling		
48								
49								
50	(51.7 - 59.4) 1.30 mins/ft	GM		(51.7 - 59.4') 16.0" Steel Casing	(50.0 - 54.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); light brown (7.5YR 6/4)	(54.0 - 59.9') Soft drilling	(51.7 - 59.4') 108 gallons of water used; 200 gallons of water recovered; 92 gallons of water gained	
51								
52	(51.7 - 59.4) 1.30 mins/ft	SM		(51.7 - 59.4') 16.0" Steel Casing	(54.5 - 68.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)	(54.0 - 59.9') Soft drilling		
53								
54								
55								
56	(59.4 - 79.0) 0.76 mins/ft						(59.4 - 79.0') 105 gallons of water used;	
57								
58								
59								
60								

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Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Project Number:	RC000753.0051
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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						(60.0') Observed some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	300 gallons of water recovered; 195 gallons of water gained
62							
63							
64		SM					
65							
66							
67							
68							
69	(59.4 - 79.0) 0.76 mins/ft			(59.4 - 79.0') 16.0" Steel Casing	(68.0 - 77.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark brown (10YR 3/3)		
70						(70.0') Observed some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	
71							
72		SM				(72.0 - 73.0') Rough drilling	
73							
74							
75							
76							
77							
78		SM			(77.0 - 85.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (2.5YR 4/3)		
79							
80	(79.0 - 100.2) 0.90 mins/ft			(79.0 - 100.2') 16.0" Steel Casing	(79') reddish brown (2.5YR 4/4)		(79.0 - 100.2') 72 gallons of water used; 112 gallons of water

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, NR = no recovery; Notes: depth to water collected during the first VAS interval of the pilot borehole

IRZ DRILLING LOG - PG&E-TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 21:09

Date Started:	08/21/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9	
Date Completed:	08/23/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Project Number:	RC000753.0051
Drilling Asst:	A. & H. Amezguita	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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		SM				(80.0') Observed some Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	recovered; 40 gallons of water gained
82							
83						(83.0 - 84.0') Drill rods chattering	
84							
85		SM			(85.0 - 86.0') Topock - Alluvium Deposits; Silty sand (SM); light reddish gray (2.5YR 7/1)		
86					(86.0 - 107.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2)		
87							
88							
89							
90	(79.0 - 100.2) 0.90 mins/ft			(79.0 - 100.2') 16.0" Steel Casing		(90.0') Observed little Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	
91							
92					(92') reddish brown (2.5YR 5/4)		
93		SM					
94							
95							
96							
97							
98							
99							
100							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, NR = no recovery; Notes: depth to water collected during the first VAS interval of the pilot borehole

IRZ DRILLING LOG - PG&E - TOPOCK - C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 21:09

Date Started:	08/21/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9	
Date Completed:	08/23/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	107.6 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Project Number:	RC000753.0051
Drilling Asst:	A. & H. Amezguita	Drill Bit:	15 5/8" & 17 5/8" Tricone		
Tool-Pusher:	A. Lamon	Depth to First Water:	24.8 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	Casing Diameter	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	(100.2 - 107.6) 0.82 mins/ft	SM	[Pattern]	(100.2 - 107.6') 16.0" Steel Casing	(102') pale red (2.5YR 6/2)	(100.0') Observed little Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	(100.2 - 107.6') 90 gallons of water used; 2150 gallons of water recovered; 2060 gallons of water gained
102							
103							
104							
105							
106							
107		SM			(107.0 - 107.6') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2)	(107.0') Observed little Cemex #2/16 Mesh (16x30) Lapis Luster Sand in drill cuttings.	
108					End of Boring at 107.6 ft bgs.		
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, NR = no recovery; Notes: depth to water collected during the first VAS interval of the pilot borehole

Date Started: 12/02/2018	Surface Elevation: 480.76 ft amsl	Boring No.: IRZ-9 Pilot
Date Completed: 12/18/2018	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Boart Longyear Track Mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Nick Petrone	Depth to First Water: 24.8 ft bgs	Project Number: RC000753.0051
Drilling Asst: T. Alymer/ J. Candelaria	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: A. Garcia / G. Willford	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
1							(0.0 - 9.5') Topock - Fill; Poorly graded sand with silt (SP-SM); pale yellow (2.5Y 8/3); very fine grained to fine grained, subangular to subround; little silt; dry		(0.0 - 281.0') No water used
2	0								
3									
4									
5				Topock - Fill	SP-SM				
6	6								
7									
8								(7.0') Loss of core sample during recovery due to very loose sediment.	
9									
10	54			Topock - Fill	SM		(9.5 - 12.0') Topock - Fill; Silty sand with gravel (SM); dark brown (7.5YR 3/4); very fine grained to fine grained, angular to subround; some granule to small pebbles, subangular to subround; dry		
11									
12									
13							(12.0 - 19.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6); very fine grained to coarse grained, subangular to subround; some granule to small pebbles, subangular to subround; dry to moist		
14									
15	42			Topock - Alluvium Deposits	SM				
16									
17									
18									
19	96								
20				Topock - Alluvium Deposits	SM		(19.0 - 25.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6); fine grained to very coarse grained, angular to subround; some small to large pebbles,		

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

Date Started: 12/02/2018	Surface Elevation: 480.76 ft amsl	Boring No.: IRZ-9 Pilot
Date Completed: 12/18/2018	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Boart Longyear Track Mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Nick Petrone	Depth to First Water: 24.8 ft bgs	Project Number: RC000753.0051
Drilling Asst: T. Alymer / J. Candelaria	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: A. Garcia / G. Willford	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
21				Topock - Alluvium Deposits	SM		subangular to subround; moist		
22									
23	96								
24		IRZ-9-SS-22-27							
25		12/19/2018 11:02							
26				Topock - Alluvium Deposits	SM		(25.0 - 34.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); fine grained to very coarse grained, subangular to subround; little granule to small pebbles, subangular to subround; wet	(25.0') Approximate depth of water table	
27									
28									
29	60								
30		IRZ-9-SS-27-32	IRZ-9-VAS-27-32 (120 ppb)						
31		12/19/2018 11:20	12/3/2018 23:55						
32				Topock - Alluvium Deposits	ML		(34.0 - 40.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); brown (7.5YR 5/4); low plasticity; some granules to very large pebbles, subangular to subround; little very fine to coarse grained sand, angular to subround; trace angular to subangular; moist	(32.0') Drill stem bolts sheared off when commencing drilling after VAS collection from 27-32' bgs.	
33									
34		IRZ-9-SS-32-37							
35		12/19/2018 11:50							
36	204								
37									
38		IRZ-9-SS-37-42							
39		12/19/2018 12:00							
40									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRANEDOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer/ J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid							
41	204	IRZ-9-SS-37-42 12/19/2018 12:00		Topock - Alluvium Deposits	SM		(40.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4); very fine grained to very coarse grained, subangular to subround; some granule to small pebbles, angular to subround; little silt; wet									
42																
43	204	IRZ-9-SS-42-47 12/19/2018 12:02		Topock - Alluvium Deposits	SM		(43.0 - 48.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4); fine grained to very coarse grained, angular to subround; some granules to large pebbles, subangular to subround; little silt; moist									
44																
45																
46	204	IRZ-9-SS-47-52 12/19/2018 12:10	IRZ-9-VAS-47-52 (<0.033 U ppb) 12/4/2018 10:00	Topock - Alluvium Deposits	SM		(48.0 - 50.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4); fine grained to very coarse grained, angular to subround; some medium to large pebbles, subangular to subround; little silt; moist to wet									
47																
48																
49	54	IRZ-9-SS-52-57 12/19/2018 12:15		Topock - Alluvium Deposits	GM		(50.0 - 54.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); light brown (7.5YR 6/4); granules to very large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; some silt; trace angular to subround									
50																
51																
52	102	IRZ-9-SS-57-62 12/19/2018 12:17		Topock - Alluvium Deposits	SM		(54.5 - 68.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); fine grained to very coarse grained, subangular to subround; little medium to large pebbles, subangular to subround; little silt; moist to wet									
53																
54																
55																
56																
57																
58																
59																
60																

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer/ J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
61		IRZ-9-SS-57-62 12/19/2018 12:17							
62									
63	102								
64		IRZ-9-SS-62-67 12/19/2018 12:14	IRZ-9-VAS-62-67 (<0.033 U ppb) 12/4/2018 13:05	Topock - Alluvium Deposits	SM				
65									
66									
67									
68							(68.0 - 77.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark brown (10YR 3/3); very fine grained to coarse grained, subangular to subround; some small to large pebbles, angular to subround; some silt; moist to wet		
69		IRZ-9-SS-67-72 12/19/2018 12:40							
70									
71									
72	108								
73				Topock - Alluvium Deposits	SM				
74		IRZ-9-SS-72-77 12/19/2018 13:05							
75									
76									
77									
78	108	IRZ-9-SS-77-82 12/20/2018 09:33		Topock - Alluvium Deposits	SM		(77.0 - 85.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (2.5YR 4/3); medium grained to coarse grained, subangular to subround; little silt; trace granule to small pebbles, subangular to subround; moist to wet		
79									
80							(79') reddish brown (2.5YR 4/4); very fine grained to fine grained, subangular to subround		

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E: TOPOCK: C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\1.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 1/12/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
81	108	IRZ-9-SS-77-82 12/20/2018 09:33		Topock - Alluvium Deposits	SM				
82									
83		IRZ-9-SS-82-87 12/20/2018 09:36		Topock - Alluvium Deposits	SM		(85.0 - 86.0') Topock - Alluvium Deposits; Silty sand (SM); light reddish gray (2.5YR 7/1); very fine grained to fine grained, subangular to subround; little silt; dry to moist		
84									
85									
86		IRZ-9-SS-87-92 12/20/2018 09:43		Topock - Alluvium Deposits	SM		(86.0 - 107.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2); very fine grained to fine grained, subangular to subround; little silt; trace granule to small pebbles, subangular to subround; moist to wet		
87									
88									
89									
90	96	IRZ-9-SS-92-97 12/20/2018 09:48		Topock - Alluvium Deposits	SM		(92') reddish brown (2.5YR 5/4)		
91									
92		IRZ-9-SS-97-102 12/20/2018 09:53		Topock - Alluvium Deposits	SM				
93									
94									
95	108								
96									
97									
98									
99									
100									

Final Revised 1/12/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer/ J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
101		IRZ-9-SS-97-102 12/20/2018 09:53		Topock - Alluvium Deposits	SM		(102') pale red (2.5YR 6/2)		
102	108								
103				Topock - Alluvium Deposits	SM		(107.0 - 127.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2); fine grained to coarse grained, subangular to subround; little silt; trace granule to large pebbles, subangular to subround; moist to wet; with interbedded gravel seams 3-5" thick sparingly throughout interval		
104		IRZ-9-SS-102-107 12/20/2018 09:55	IRZ-9-VAS-102-107 (<0.17 U ppb) 12/5/2018 10:10						
105				Topock - Alluvium Deposits	SM				
106									
107				Topock - Alluvium Deposits	SM				
108		IRZ-9-SS-107-112 12/20/2018 10:08							
109				Topock - Alluvium Deposits	SM				
110									
111				Topock - Alluvium Deposits	SM				
112		IRZ-9-SS-112-117 12/20/2018 10:10							
113				Topock - Alluvium Deposits	SM				
114									
115				Topock - Alluvium Deposits	SM				
116									
117				Topock - Alluvium Deposits	SM				
118		IRZ-9-SS-117-122 12/20/2018 10:12							
119				Topock - Alluvium Deposits	SM				
120									

Final Revised 1/12/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\1.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 1/12/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
121	108	IRZ-9-SS-117-122 12/20/2018 10:12		Topock - Alluvium Deposits	SM	[Soil Class Pattern]			
122									
123									
124									
125		IRZ-9-SS-122-127 1/4/2019 08:00							
126									
127									
128	102	IRZ-9-SS-127-132 12/20/2018 10:17		Topock - Alluvium Deposits	SM	[Soil Class Pattern]	(127.0 - 147.0') Topock - Alluvium Deposits; Silty sand (SM); weak red (10R 4/4); medium grained to coarse grained, subangular to subround; little silt; trace granule to medium pebbles, subangular to subround; moist to wet; with interbedded gravel seams 3-5" thick sparingly through interval		
129									
130									
131									
132									
133		IRZ-9-SS-132-137 12/20/2018 10:20							
134									
135									
136									
137									
138	108	IRZ-9-SS-137-142 12/20/2018 10:22							
139									
140									

Final Revised 1/12/20

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started: 12/02/2018	Surface Elevation: 480.76 ft amsl	Boring No.: IRZ-9 Pilot
Date Completed: 12/18/2018	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Boart Longyear Track Mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Nick Petrone	Depth to First Water: 24.8 ft bgs	Project Number: RC000753.0051
Drilling Asst: T. Alymer/ J. Candelaria	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: A. Garcia / G. Willford	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
141		IRZ-9-SS-137-142 12/20/2018 10:22		Topock - Alluvium Deposits	SM	[Pattern]			
142									
143	108								
144		IRZ-9-SS-142-147 12/20/2018 10:25	IRZ-9-VAS-142-147 (<0.17 U ppb) 12/5/2018 15:40						
145									
146									
147									
148				Topock - Alluvium Deposits	NR	[X]	(147.0 - 149.5') Topock - Alluvium Deposits; (NR)	(147.0 - 149.5') No core recovered	
149		IRZ-9-SS-147-152 12/20/2018 10:30							
150							(149.5 - 182.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (2.5YR 5/3); fine grained to very coarse grained, subangular to subround; some silt; little clay; trace granule to medium pebble, subangular to subround; trace subround; moist		
151									
152									
153	180			Topock - Alluvium Deposits	SM	[Pattern]			
154		IRZ-9-SS-152-157 12/20/2018 10:33							
155									
156									
157									
158									
159		IRZ-9-SS-157-162 12/20/2018 10:50							
160									

Final - Revised 1/29/20

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
161		IRZ-9-SS-157-162 12/20/2018 10:50							
162									
163	180								
164		IRZ-9-SS-162-167 12/20/2018 10:53							
165									
166									
167									
168									
169		IRZ-9-SS-167-172 12/20/2018 10:57		Topock - Alluvium Deposits	SM				
170									
171									
172	120								
173									
174		IRZ-9-SS-172-177 12/20/2018 10:59							
175									
176									
177									
178	120	IRZ-9-SS-177-182 12/20/2018 11:02							
179									
180									

Final - Revised 1/29/20

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer/ J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
181		IRZ-9-SS-177-182 12/20/2018 11:02		Topock - Alluvium Deposits	SM				
182		IRZ-9-SS-182-187 12/20/2018 11:07	IRZ-9-SS-182-187 (<0.17 U ppb) 12/20/2018 11:07	Topock - Alluvium Deposits	SM		(182.0 - 186.0') Topock - Alluvium Deposits; Silty sand (SM); reddish gray / pale brown (5YR 5/2); fine grained to coarse grained, angular to subround; some silt; trace granule to medium pebble; trace clay; moist to wet; sand composed of conglomerate and metadiorite		
183	120								
184									
185				Topock - Alluvium Deposits	SM		(186.0 - 187.0') Topock - Alluvium Deposits; Silty sand (SM); weak red (10R 4/3); fine grained to very coarse grained, subangular to subround; some silt; little granule to medium pebble, subangular to subround; little clay; trace subround; moist		
186				Topock - Alluvium Deposits	SM				
187				Topock - Alluvium Deposits	GM		(187.0 - 196.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); dark reddish brown (2.5YR 3/3); small pebbles to small cobbles, angular; some small to large pebble, angular; some silt; little very coarse grained sand, angular; trace angular; trace clay; moist to dry; moderate cementation; gravel composed of metadiorite	(187.0 - 197.0') Drill rods chattering	
188		IRZ-9-SS-187-192 12/20/2018 11:16		Topock - Alluvium Deposits	GM				
189		IRZ-9-SS-192-197 12/20/2018 11:22							
190	120								
191				Topock - Alluvium Deposits	GP		(196.5 - 197.0') Topock - Alluvium Deposits; Poorly graded gravel (GP); very pale brown (10YR 8/3); granules to very large pebbles, angular; little fine to very coarse grained sand, angular; little silt; trace boulders; dry; boulder metadiorite	(196.5') Possible bedrock	
192				Topock - Alluvium Deposits	SM		(197.0 - 202.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 3/4); fine grained to very coarse grained, subangular to subround; some silt; trace small to medium pebble, subround; trace clay; moist	(197.0 - 202.0') Rough drilling	
193									
194									
195									
196									
197									
198		IRZ-9-SS-197-202 12/20/2018 11:28							
199	120								
200									

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SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMCGRANE\DOCUMENTS\PG&E-TOPOCK\DATABASE FOR PLOG.GPJ TOPOCK DRAFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started: 12/02/2018	Surface Elevation: 480.76 ft amsl	Boring No.: IRZ-9 Pilot
Date Completed: 12/18/2018	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Boart Longyear Track Mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Nick Petrone	Depth to First Water: 24.8 ft bgs	Project Number: RC000753.0051
Drilling Asst: T. Alymer / J. Candelaria	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: A. Garcia / G. Willford	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
201	120	IRZ-9-SS-197-202 12/20/2018 11:28		Topock - Alluvium Deposits	SM	[Soil Class Pattern]			
202		120	IRZ-9-SS-202-207 12/20/2018 11:30						
203									
204									
205									
206									
207	120	IRZ-9-SS-207-212 12/20/2018 11:32	IRZ-9-VAS-207-212 (<0.17 U ppb) 12/13/2018 10:55	Topock - Alluvium Deposits	SM	[Soil Class Pattern]	(207.0 - 213.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark reddish brown (2.5YR 3/3); very fine grained to very coarse grained, angular to subround; some silt; little granule to large pebble, subangular to subround; trace subround; trace clay; moist		
208									
209									
210									
211									
212	120	IRZ-9-SS-212-217 12/20/2018 11:35	--no sample-- (Interval did not produce.) 12/12/2018 4:07	Topock - Alluvium Deposits	ML	[Soil Class Pattern]	(213.0 - 220.0') Topock - Alluvium Deposits; Sandy silt (ML); dark reddish brown (2.5YR 3/4); low plasticity; some very fine to medium grained sand, angular to subround; little granule to medium pebble, subangular to subround; little clay; moist		
213									
214									
215									
216									
217	120	IRZ-9-SS-217-222 12/20/2018 11:38		Topock - Alluvium Deposits	ML	[Soil Class Pattern]			
218									
219									
220									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
221	120	IRZ-9-SS-217-222 12/20/2018 11:38		Topock - Alluvium Deposits	SM		(220.0 - 234.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 2.5/4); fine grained to very coarse grained, angular to subround; and silt; little granule to medium pebble, subround; trace subround; trace clay; moist to wet; gravel composed of mixed lithology		
222									
223									
224									
225	120	IRZ-9-SS-222-227 12/20/2018 11:20		Topock - Alluvium Deposits	SM		(220.0 - 234.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 2.5/4); fine grained to very coarse grained, angular to subround; and silt; little granule to medium pebble, subround; trace subround; trace clay; moist to wet; gravel composed of mixed lithology		
226									
227									
228									
229	120	IRZ-9-SS-227-232 12/20/2018 11:17		Topock - Alluvium Deposits	SM		(220.0 - 234.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 2.5/4); fine grained to very coarse grained, angular to subround; and silt; little granule to medium pebble, subround; trace subround; trace clay; moist to wet; gravel composed of mixed lithology		
230									
231									
232									
233	120	IRZ-9-SS-232-237 12/20/2018 11:13	IRZ-9-VAS-232-237 (<0.17 U ppb) 12/13/2018 15:48	Topock - Alluvium Deposits	ML		(234.0 - 237.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (2.5YR 4/3); low plasticity; some very fine to coarse grained sand, angular to subround; little granule to medium pebble, subround; trace clay; moist		
234									
235									
236									
237	120	IRZ-9-SS-237-242 12/20/2018 11:11		Topock - Alluvium Deposits	ML		(237.0 - 252.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 4/3); medium plasticity; some granule to large pebble, subangular to subround; little very fine to coarse grained sand, angular to subround; trace clay; moist; gravel composed of mixed lithology		
238									
239									
240									

Final - Revised 1/12/20

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SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
241		IRZ-9-SS-237-242 12/20/2018 11:11		Topock - Alluvium Deposits	ML				
242									
243	120								
244		IRZ-9-SS-242-247 12/20/2018 11:05							
245									
246									
247									
248									
249		IRZ-9-SS-247-252 12/20/2018 10:55		Topock - Alluvium Deposits	GM		(252.0 - 266.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown / moderate brown (5YR 4/4); granules to very large pebbles, angular to subround; some silt; little angular; little very fine to very coarse grained sand, angular to subround; trace clay; moist to dry; moderate cementation; gravel composed of mixed lithology		
250									
251	86.4								
252									
253									
254		IRZ-9-SS-252-257 12/20/2018 10:37							
255								(254.5 - 261.0') Rough drilling	(254.5') No water used
256									
257	78								
258		IRZ-9-SS-257-262 12/20/2018 10:33							
259									
260									

Final - Revised 1/12/20

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
261	78	IRZ-9-SS-257-262 12/20/2018 10:33		Topock - Alluvium Deposits	GM		(261'); some silt; little clay; moist to dry; strong cementation; decrease in sand, gravel composed of mixed lithology, large cobbles of metadiorite	(261.0 - 266.0') Rough drilling	
262									
263									
264	60	IRZ-9-SS-262-267 12/20/2018 10:29		Topock - Alluvium Deposits	ML/MH		(266.0 - 268.0') Topock - Alluvium Deposits; Gravelly elastic silt with sand (ML/MH); reddish brown (5YR 5/4); medium plasticity; some granule to medium pebble, angular to subround; little very fine to medium grained sand, subangular to subround; moist; moderate cementation	(267.0 - 273.0') Rough drilling	
265									
266			IRZ-9-VAS-264-269 (<0.17 U ppb) 12/14/2018 09:15						
267									
268									
269									
270	72	IRZ-9-SS-267-272 12/20/2018 10:24		Topock - Alluvium Deposits	GM		(268.0 - 273.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown / moderate brown (5YR 4/4); granules to very large pebbles, angular to subround; some silt; little angular; little very fine to medium grained sand, subangular to subround; little clay; moist to dry; strong cementation; gravel composed of mixed lithology, large cobbles of metadiorite	(273.0 - 281.0') Rough drilling	
271									
272									
273									
274									
275									
276									
277	96	IRZ-9-SS-272-277 12/20/2018 10:22		Topock - Alluvium Deposits	ML		(273.0 - 277.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 5/4); some granule to large pebble, subangular to subround; little fine to medium grained sand, subangular to subround; trace; trace clay; moist to dry	(273.0 - 281.0') Rough drilling	
278									
279									
280									
			IRZ-9-VAS-276-279 (<0.17 U ppb) 12/15/2018 09:15	Topock - Alluvium Deposits	GM		(277.0 - 281.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/4); granules to very large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; some silt; trace angular to subround; trace clay; dry; strong cementation		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\MCGRANE\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started:	12/02/2018	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9 Pilot	
Date Completed:	12/18/2018	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Nick Petrone	Depth to First Water:	24.8 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	T. Alymer / J. Candelaria	Sampling Method:	4 inch x 10 ft. Core Barrel		
Logger:	A. Garcia / G. Willford	Sampling Interval:	Continuous		
Editor:	Sean McGrane	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
281	96	IRZ-9-SS-277-282 12/20/2018 10:20		Topock - Alluvium Deposits	GM		(281.0 - 285.5') Topock - Alluvium Deposits; (NR); Drilled with water, no recovery	(281.0 - 287.0') Attempted to drill using water this run to collect solid rock core resulted in poor recovery.	(281.0 - 287.0') 50 gallons of water used; 50 gallons of water recovered; 0 gallons of water lost
282	18			Topock - Alluvium Deposits	NR				
283				Topock - Alluvium Deposits	GM		(285.5 - 287.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/4); granules to large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; little silt; wet; iron oxide staining		
284	120			Topock - Alluvium Deposits	GM		(287.0 - 293.5') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/3); medium plasticity; some granule to large pebble, subangular to subround; little very fine to medium grained sand, subangular to subround; trace clay; moist	(287.0 - 317.0') No water used	
285				Topock - Alluvium Deposits	ML				
286			IRZ-9-SS-287-292 12/20/2018 10:17		Topock - Alluvium Deposits	GM		(292.0 - 297.0') Collected sample after attempting to collect sample from 312 to 317, pulled casing back up.	
287				Topock - Alluvium Deposits	GM		(293.5 - 297.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/3); granules to large pebbles, angular to subround; some very fine to coarse grained sand, angular to subround; some silt; trace angular to subround; trace clay; moist	(297.0 - 307.0') Drill rods chattering, tight formation	
288		IRZ-9-SS-292-297 12/20/2018 10:05	IRZ-9-VAS-292-297 (<0.17 U ppb) 12/18/2018 22:05	Topock - Alluvium Deposits	GM				
289				Topock - Weathered Bedrock - conglomerate	GM		(297.0 - 307.0') Topock - Weathered Bedrock - conglomerate; Silty gravel with sand (GM); reddish brown (2.5YR 4/3); granules to very large pebbles, angular to round; some silt; little very fine to medium grained sand, angular to subround; trace angular to round; trace clay; moist; strong cementation; iron oxide staining; gravel composed of mixed lithology, some gravels have red staining on them		
290	120			Topock - Weathered Bedrock - conglomerate	GM				
291									
292									
293									
294									
295									
296									
297									
298	120								
299									
300									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\MCGRANE\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Date Started: 12/02/2018	Surface Elevation: 480.76 ft amsl	Boring No.: IRZ-9 Pilot
Date Completed: 12/18/2018	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Boart Longyear Track Mount	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Nick Petrone	Depth to First Water: 24.8 ft bgs	Project Number: RC000753.0051
Drilling Asst: T. Alymer / J. Candelaria	Sampling Method: 4 inch x 10 ft. Core Barrel	
Logger: A. Garcia / G. Willford	Sampling Interval: Continuous	
Editor: Sean McGrane	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
301	120			Topock - Weathered Bedrock - conglomerate	GM				
302									
303									
304									
305									
306	120			Topock - Weathered Bedrock - conglomerate	MH		(307.0 - 311.0') Topock - Weathered Bedrock - conglomerate; Gravelly elastic silt (MH); reddish brown (2.5YR 4/4) (5YR); high plasticity; some granule to large pebble, subangular to subround; little very fine to medium grained sand, angular to subround; trace clay; moist; moderate cementation; gravel composed of mixed lithology	(307.0 - 317.0') Tight non producing formation, based on discussions with DSTC representative and independent QA on-site, it was determined that the aquifer thickness had been delineated and there was no need to drill deeper.	
307									
308									
309									
310									
311									
312									
313									
314									
315									
316			--no sample - (Interval did not produce.) 12/18/2018 10:15	Topock - Weathered Bedrock - conglomerate	GM		(311.0 - 317.0') Topock - Weathered Bedrock - conglomerate; Silty gravel with sand (GM); reddish brown (2.5YR 4/3); granules to very large pebbles, subangular to round; some fine to very coarse grained sand, angular to subround; some silt; trace subangular to round; trace clay; moist; strong cementation; iron oxide staining; gravel composed of mixed lithology, some red iron staining on gravels		
317									
318									
319									
320									

End of Boring at 317.0 ft bgs.

Final Revised 12/20/20

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.29.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:25

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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 - 7.0) 0.17 mins/ft	SP-SM		(0.0 - 7.0) 12.0" Steel Casing	(0.0 - 9.5') Topock - Fill; Poorly graded sand with silt (SP-SM); pale yellow (2.5Y 8/3)	(0.0 - 7.0') Soft drilling, observed temporary backfill material wildcat plastering sand and pea gravel in drill cuttings (see Photo Log).	(0.0 - 87.0') No water used
2							
3							
4							
5							
6							
7							
8	(7.0 - 17.0) 0.11 mins/ft	SM		(7.0 - 17.0) 8.0" Steel Casing	(9.5 - 12.0') Topock - Fill; Silty sand with gravel (SM); dark brown (7.5YR 3/4)	(7.0 - 127.0') Soft drilling, observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19	(17.0 - 27.0) 0.11 mins/ft	SM		(17.0 - 27.0) 8.0" Steel Casing	(12.0 - 19.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6)	(17.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
20							
21							
22					(19.0 - 25.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6)		

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IRZ:DRILLING LOG_PG&E-TOPOCK_C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 20:01

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(17.0 - 27.0) 0.11 mins/ft	SM	[Dotted pattern]	(17.0 - 27.0') 8.0" Steel Casing			
22							
23							
24							
25	(27.0 - 37.0) 0.13 mins/ft	SM	[Dotted pattern]	(27.0 - 37.0') 8.0" Steel Casing	(25.0 - 34.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)	(27.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
26							
27							
28							
29							
30							
31	(37.0 - 47.0) 0.04 mins/ft	ML	[Pattern with circles]	(37.0 - 47.0') 8.0" Steel Casing	(34.0 - 40.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); brown (7.5YR 5/4)	(37.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
32							
33							
34							
35							
36							
37							
38							
39							
40							

Final - Revised 11/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

IRZ DRILLING LOG_PG&E-TOPOCK_C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 20:01

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(37.0 - 47.0) 0.04 mins/ft	SM	SM	(37.0 - 47.0') 8.0" Steel Casing	(40.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
42					(43.0 - 48.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
43	(47.0 - 57.0) 0.11 mins/ft	SM	SM	(47.0 - 57.0') 8.0" Steel Casing	(47.0 - 48.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)	(47.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
44					(48.0 - 50.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
45					(50.0 - 54.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); light brown (7.5YR 6/4)		
46					(54.5 - 68.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)		
47	(57.0 - 67.0) 0.08 mins/ft	SM	SM	(57.0 - 67.0') 8.0" Steel Casing	(57.0 - 58.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)	(57.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
48					(58.0 - 59.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
49					(59.0 - 60.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
50					(60.0 - 61.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
51					(61.0 - 62.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
52					(62.0 - 63.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
53					(63.0 - 64.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
54					(64.0 - 65.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
55					(65.0 - 66.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
56					(66.0 - 67.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
57					(67.0 - 68.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
58					(68.0 - 69.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
59					(69.0 - 70.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		
60					(70.0 - 71.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light brown (7.5YR 6/4)		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

IRZ:DRILLING LOG_PG&E_TOPOCK_C:\USERS\SMCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 20:01

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(57.0 - 67.0) 0.08 mins/ft	SM		(57.0 - 67.0') 8.0" Steel Casing			
62							
63							
64							
65	(67.0 - 77.0) 0.13 mins/ft	SM		(67.0 - 77.0') 8.0" Steel Casing	(68.0 - 77.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark brown (10YR 3/3)	(67.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
66							
67							
68							
69							
70							
71							
72							
73	(77.0 - 87.0) 0.09 mins/ft	SM		(77.0 - 87.0') 8.0" Steel Casing	(77.0 - 85.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (2.5YR 4/3)	(77.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
74							
75							
76							
77							
78							
79							
80							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

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Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(77.0 - 87.0) 0.09 mins/ft	SM		(77.0 - 87.0') 8.0" Steel Casing			
82							
83							
84							
85		SM			(85.0 - 86.0') Topock - Alluvium Deposits; Silty sand (SM); light reddish gray (2.5YR 7/1)		
86					(86.0 - 107.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2)		
87						(87.0') Left core barrel downhole over night on 2/24/20. Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	(87.0 - 147.0') No water used
88							
89							
90							
91							
92	(87.0 - 97.0) 0.14 mins/ft	SM		(87.0 - 97.0') 8.0" Steel Casing			
93							
94							
95							
96							
97							
98	(97.0 - 107.0) 0.07 mins/ft			(97.0 - 107.0') 8.0" Steel Casing		(97.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
99							
100							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

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Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(97.0 - 107.0) 0.07 mins/ft	SM		(97.0 - 107.0') 8.0" Steel Casing			
102							
103							
104							
105	(107.0 - 117.0) 0.08 mins/ft	SM		(107.0 - 117.0') 8.0" Steel Casing	(107.0 - 127.0') Topock - Alluvium Deposits; Silty sand (SM); pinkish gray (5YR 6/2)	(107.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
106							
107							
108							
109							
110							
111							
112							
113	(117.0 - 127.0) 0.08 mins/ft			(117.0 - 127.0') 8.0" Steel Casing		(117.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
114							
115							
116							
117							
118							
119							
120							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

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Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(117.0 - 127.0) 0.08 mins/ft	SM	SM	(117.0 - 127.0') 8.0" Steel Casing			
122							
123							
124							
125	(127.0 - 137.0) 0.05 mins/ft	SM	SM	(127.0 - 137.0') 8.0" Steel Casing	(127.0 - 147.0') Topock - Alluvium Deposits: Silty sand (SM); weak red (10R 4/4)	(127.0 - 147.0') Observed temporary backfill material pea gravel in drill cuttings at 127 ft. bgs (see Photo Log). Soft drilling, material kept falling out of core barrel, will verify temporary backfill material from cleanout run on 2/26/20. Observed temporary backfill material pea gravel in drill cuttings at 147 ft. bgs on 2/26/20 (see Photo Log).	
126							
127							
128							
129							
130							
131							
132							
133							
134							
135	(137.0 - 147.0) 0.05 mins/ft			(137.0 - 147.0') 8.0" Steel Casing			
136							
137							
138							
139							
140							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(137.0 - 147.0) 0.05 mins/ft	SM	[Dotted pattern]	(137.0 - 147.0') 8.0" Steel Casing			
142							
143							
144							
145	(147.0 - 157.0) 0.05 mins/ft	NR	[X pattern]		(147.0 - 149.5') Topock - Alluvium Deposits; (NR)	(147.0 - 282.0') Soft drilling	(147.0 - 227.0') No water used
146							
147							
148							
149							
150							
151							
152							
153							
154							
155	SM	[Dotted pattern]	(147.0 - 157.0') 8.0" Steel Casing	(149.5 - 182.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (2.5YR 5/3)			
156							
157							
158							
159	(157.0 - 167.0) 0.05 mins/ft		[Dotted pattern]	(157.0 - 167.0') 8.0" Steel Casing			
160							

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Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(157.0 - 167.0) 0.05 mins/ft			8.0" Steel Casing			
162							
163							
164							
165	(167.0 - 177.0) 0.05 mins/ft	SM		8.0" Steel Casing		(167.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
166							
167							
168							
169							
170							
171							
172							
173	(177.0 - 187.0) 0.07 mins/ft			8.0" Steel Casing		(177.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
174							
175							
176							
177							
178							
179							
180							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground water, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
181	(177.0 - 187.0) 0.07 mins/ft	SM	(177.0 - 187.0)	8.0" Steel Casing	(182.0 - 186.0') Topock - Alluvium Deposits; Silty sand (SM); reddish gray / pale brown (5YR 5/2)		
182		SM	(186.0 - 187.0')		(186.0 - 187.0') Topock - Alluvium Deposits; Silty sand (SM); weak red (10R 4/3)		
183		SM	(187.0 - 196.5')		(187.0 - 196.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); dark reddish brown (2.5YR 3/3)		
184	(187.0 - 197.0) 0.06 mins/ft	GM	(187.0 - 197.0')	8.0" Steel Casing	(196.5 - 197.0') Topock - Alluvium Deposits; Poorly graded gravel (GP); very pale brown (10YR 8/3)	(187.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
185		GM	(197.0 - 207.0')		(197.0 - 207.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 3/4)		
186		GP					
187		SM					
188	(197.0 - 207.0) 0.07 mins/ft	SM	(197.0 - 207.0')	8.0" Steel Casing		(197.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
189		SM					
190		SM					
191		SM					

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground water, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	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	(197.0 - 207.0) 0.07 mins/ft	SM		(197.0 - 207.0') 8.0" Steel Casing			
202							
203							
204							
205	(207.0 - 217.0) 0.09 mins/ft	SM		(207.0 - 217.0') 8.0" Steel Casing	(207.0 - 213.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark reddish brown (2.5YR 3/3)	(207.0 - 227.0') Drill rod broke downhole, rod and core barrel were retrieved. Observed temporary backfill material pea gravel in drill cuttings at 207 ft. bgs (see Photo Log).	
206							
207							
208							
209							
210							
211							
212							
213	(213.0 - 220.0') Topock - Alluvium Deposits; Sandy silt (ML); dark reddish brown (2.5YR 3/4)	ML					
214							
215							
216							
217							
218							
219	(217.0 - 227.0) 0.07 mins/ft			(217.0 - 227.0') 8.0" Steel Casing		(217.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
220							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground water, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
221	(217.0 - 227.0) 0.07 mins/ft	SM	SM	(217.0 - 227.0') 8.0" Steel Casing	(220.0 - 234.0') Topock - Alluvium Deposits; Silty sand (SM); dark reddish brown (2.5YR 2.5/4)		
222							
223							
224							
225	(227.0 - 237.0) 0.06 mins/ft	ML	ML	(227.0 - 237.0') 8.0" Steel Casing	(227.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	(227.0 - 277.0') No water used	
226							
227							
228							
229							
230							
231							
232	(237.0 - 247.0) 0.05 mins/ft	ML	ML	(237.0 - 247.0') 8.0" Steel Casing	(234.0 - 237.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (2.5YR 4/3)	(237.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
233							
234							
235							
236	(237.0 - 252.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 4/3)	ML	ML	(237.0 - 252.0') 8.0" Steel Casing	(237.0 - 252.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (5YR 4/3)	(237.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
237							
238							
239							
240							

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Final - Revised 11/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
241	(237.0 - 247.0) 0.05 mins/ft	ML	ML	(237.0 - 247.0') 8.0" Steel Casing			
242							
243							
244							
245	(247.0 - 257.0) 0.06 mins/ft	GM	GM	(247.0 - 257.0') 8.0" Steel Casing	(252.0 - 266.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown / moderate brown (5YR 4/4)	(247.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
246							
247							
248							
249							
250							
251							
252							
253	(257.0 - 267.0) 0.05 mins/ft			(257.0 - 267.0') 8.0" Steel Casing		(257.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
254							
255							
256							
257							
258							
259							
260							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
261	(257.0 - 267.0) 0.05 mins/ft	GM	[Symbolic representation of gravelly silt]	8.0" Steel Casing	(261')		
262							
263							
264							
265	(267.0 - 277.0) 0.08 mins/ft	ML/MH	[Symbolic representation of silty gravel]	8.0" Steel Casing	(266.0 - 268.0') Topock - Alluvium Deposits; Gravelly elastic silt with sand (ML/MH); reddish brown (5YR 5/4)	(267.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
266							
267							
268							
269	(277.0 - 282.0) 0.09 mins/ft	GM	[Symbolic representation of silty gravel]	8.0" Steel Casing	(268.0 - 273.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown / moderate brown (5YR 4/4)	(277.0 - 297.0') Pulled back casing in attempt to flush casing to remove fines from casing for installation of abandonment materials. Flushing did not work casing became too pressurized. Observed temporary backfill material pea gravel in drill cuttings at 277 ft. bgs (see Photo Log).	(277.0 - 300.0') 200 gallons of water used; 159 gallons of water recovered; 41 gallons of water lost
270							
271							
272							
273	(277.0 - 282.0) 0.09 mins/ft	ML	[Symbolic representation of silty silt]	8.0" Steel Casing	(273.0 - 277.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 5/4)		
274							
275							
276							
277	(277.0 - 282.0) 0.09 mins/ft	GM	[Symbolic representation of silty gravel]	8.0" Steel Casing	(277.0 - 281.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/4)		
278							
279							
280							

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Date Started:	02/24/2020	Surface Elevation:	480.76 ft amsl	Boring No.: IRZ-9-Pilot-AB	
Date Completed:	03/04/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300.0 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track	Conductor Casing Diameter:	12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	S. Vasquez/J. Hernandez	Drill Casing Diameter:	8 inches	Project Number:	RC000753.0051
Drilling Asst:	J. Colon / F. Sandoval	Drill Bit:	Core Barrel		
Tool-Pusher:	NA	Depth to First Water:	24.8 ft bgs		
Rig Geologist:	J. Latham / S. McGrane	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	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observations confirming presence of temporary backfill material in drill cuttings	Drilling Fluid
281	(277.0 - 282.0) 0.09 mins/ft	GM		(277.0 - 282.0') 8.0" Steel Casing	(281.0 - 285.5') Topock - Alluvium Deposits; (NR)		
282		NR				(282.0 - 287.0') Normal drilling, casing was advanced to 287 ft. bgs five feet ahead of core barrel on 2/27/20. Observed temporary backfill material pea gravel in drill cuttings at 282 ft. bgs (see Photo Log).	
283							
284	(282.0 - 287.0) 1.60 mins/ft			(282.0 - 287.0') 8.0" Steel Casing			
285							
286		GM			(285.5 - 287.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/4)	(286.0 - 287.0') Observed temporary backfill material pea gravel in drill cuttings (see Photo Log).	
287					(287.0 - 293.5') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/3)	(287.0 - 297.0') Drilling normal with core barrel, formation was tight and advancing 8-inch casing was difficult. There was a crew change on 3/3/20, new driller thought casing was at 297 ft bgs and not 287 ft. bgs. When casing was tripped out of the hole it was confirmed that casing was at 287 ft. bgs at the start of drilling on 3/3/20.	
288		ML					
289							
290							
291							
292	(287.0 - 297.0) 1.50 mins/ft			(287.0 - 297.0') 8.0" Steel Casing			
293							
294					(293.5 - 297.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (2.5YR 4/3)		
295		GM					
296							
297						(296.0 - 297.0') Observed temporary backfill material Cemex #2/12 (see Photo Log).	
298	(297.0 - 300.0) Potential wash out	GM		(297.0 - 300.0') 8.0" Steel Casing	(297.0 - 300.0') Topock - Weathered Bedrock - conglomerate; Silty gravel with sand (GM); reddish brown (2.5YR 4/3)	(297.0 - 300.0') 3 ft. of material may have been washed out during flushing from 277 to 297 ft bgs assuming an 8-inch diameter hole for backfill calculations. Flushed casing again on 3/4/20, with drill rods at 297 ft bgs.	(297.0 - 300.0') 950 gallons of water used; 836.44 gallons of water recovered; 113.56 gallons of water lost
299							
300					End of Boring at 300.0 ft bgs.		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole

IRZ DRILLING LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11_30_20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/30/20 20:01

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
1		Topock - Fill	SP-SM		(0.0 - 0.5') Steel plate		Note: Steel plate with BMPs		
2									
3							(0.5 - 5.0') Wildcat Washed Plastering Sand	(0.5 - 5.0') 7.9 bags	(0.5 - 5.0') 5 bags (63%) Note: Surface seal sand, used <20% of the calculated volume due loose sands potentially entering borehole during installation.
4							(0.0 - 8.0') 12" Borehole		
5									
6		Topock - Fill	SM						
7									
8		Topock - Alluvium Deposits	SM						
9									
10									
11									
12									
13					(5.0 - 287.0') Cal-Silica 1/4"-3/8" pea gravel	(8.0 - 17.0') 6" Borehole	(5.0 - 287.0') 121.6 bags (5.0 - 287.0') 120 bags (99%) Note: Backfill gravel		
14									
15									
16									
17									
18									
19									
20									

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\SMCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer / J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

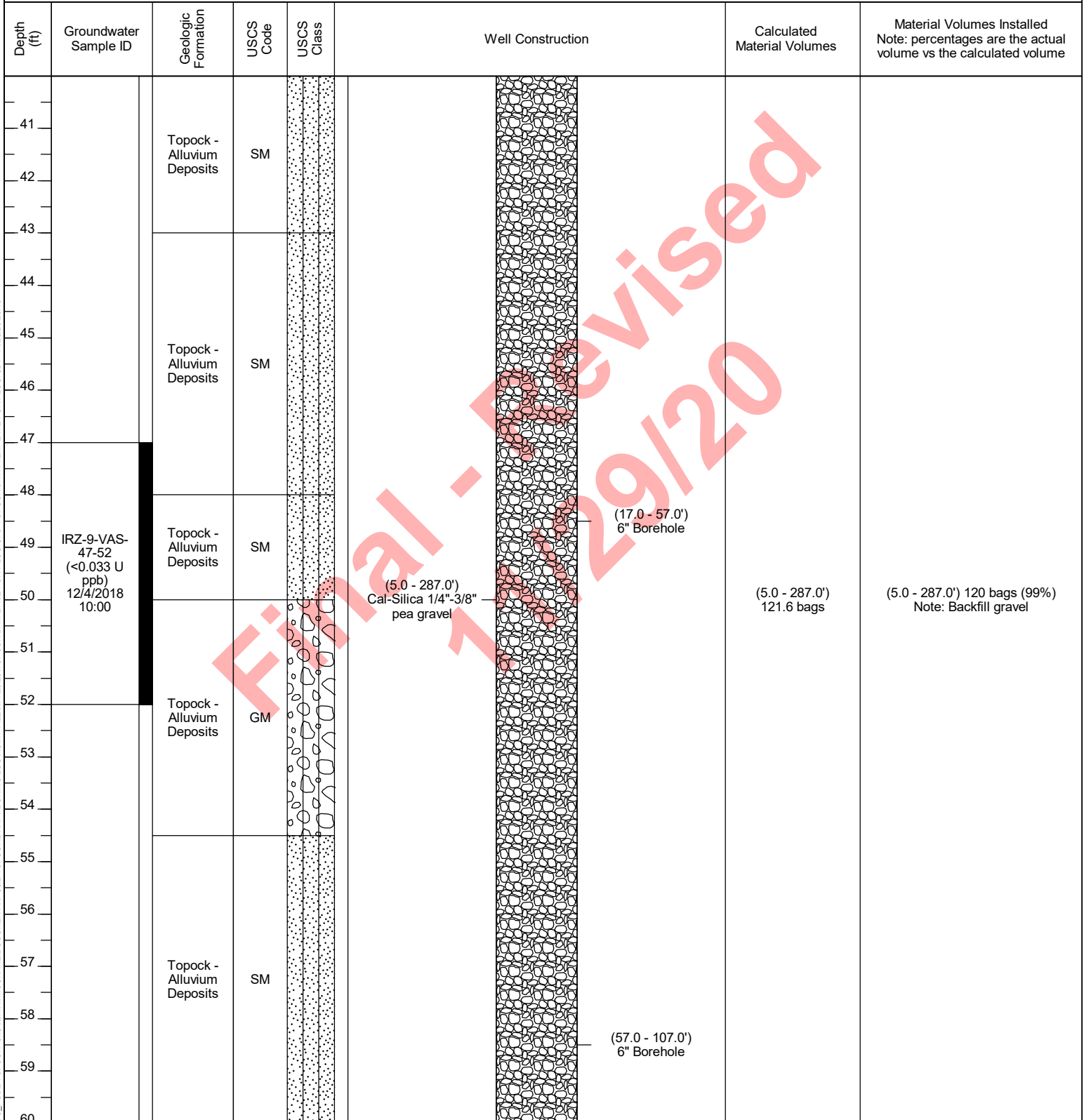
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21		Topock - Alluvium Deposits	SM	SM			
22							
23							
24							
25							
26		Topock - Alluvium Deposits	SM	SM	(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel	(17.0 - 57.0') 6" Borehole	(5.0 - 287.0') 121.6 bags
27							
28	IRZ-9-VAS-27-32 (120 ppb) 12/3/2018 23:55						
29							
30							(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
31							
32							
33							
34		Topock - Alluvium Deposits	ML	ML			
35							
36							
37							
38							
39							
40							

Final - Revised 12/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61		Topock - Alluvium Deposits	SM				
62							
63	IRZ-9-VAS-62-67 (<0.033 U ppb) 12/4/2018 13:05	Topock - Alluvium Deposits	SM				
64							
65							
66							
67		Topock - Alluvium Deposits	SM				
68							
69							
70		Topock - Alluvium Deposits	SM				
71							
72		Topock - Alluvium Deposits	SM				
73							
74		Topock - Alluvium Deposits	SM				
75							
76		Topock - Alluvium Deposits	SM				
77							
78		Topock - Alluvium Deposits	SM				
79							
80		Topock - Alluvium Deposits	SM				

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(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel (57.0 - 107.0') 6" Borehole

(5.0 - 287.0') 121.6 bags (5.0 - 287.0') 120 bags (99%) Note: Backfill gravel

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG PG&E TOPOCK C:\USERS\SMCGRANE\DOCUMENTS\PG&E TOPOCK\DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81		Topock - Alluvium Deposits	SM				
82							
83		Topock - Alluvium Deposits	SM				
84							
85		Topock - Alluvium Deposits	SM				
86							
87		Topock - Alluvium Deposits	SM				
88							
89		Topock - Alluvium Deposits	SM				
90							
91		Topock - Alluvium Deposits	SM				
92							
93		Topock - Alluvium Deposits	SM				
94							
95		Topock - Alluvium Deposits	SM				
96							
97		Topock - Alluvium Deposits	SM				
98							
99		Topock - Alluvium Deposits	SM				
100							

Final - Revised 1/29/20

(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel (57.0 - 107.0') 6" Borehole (5.0 - 287.0') 121.6 bags (5.0 - 287.0') 120 bags (99%) Note: Backfill gravel

TEMP ABANDONMENT LOG - PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\KIDRAFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101	IRZ-9-VAS-102-107 (<0.17 U ppb) 12/5/2018 10:10	Topock - Alluvium Deposits	SM		(57.0 - 107.0') 6" Borehole		
102							
103							
104							
105							
106							
107							
108		Topock - Alluvium Deposits	SM		(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

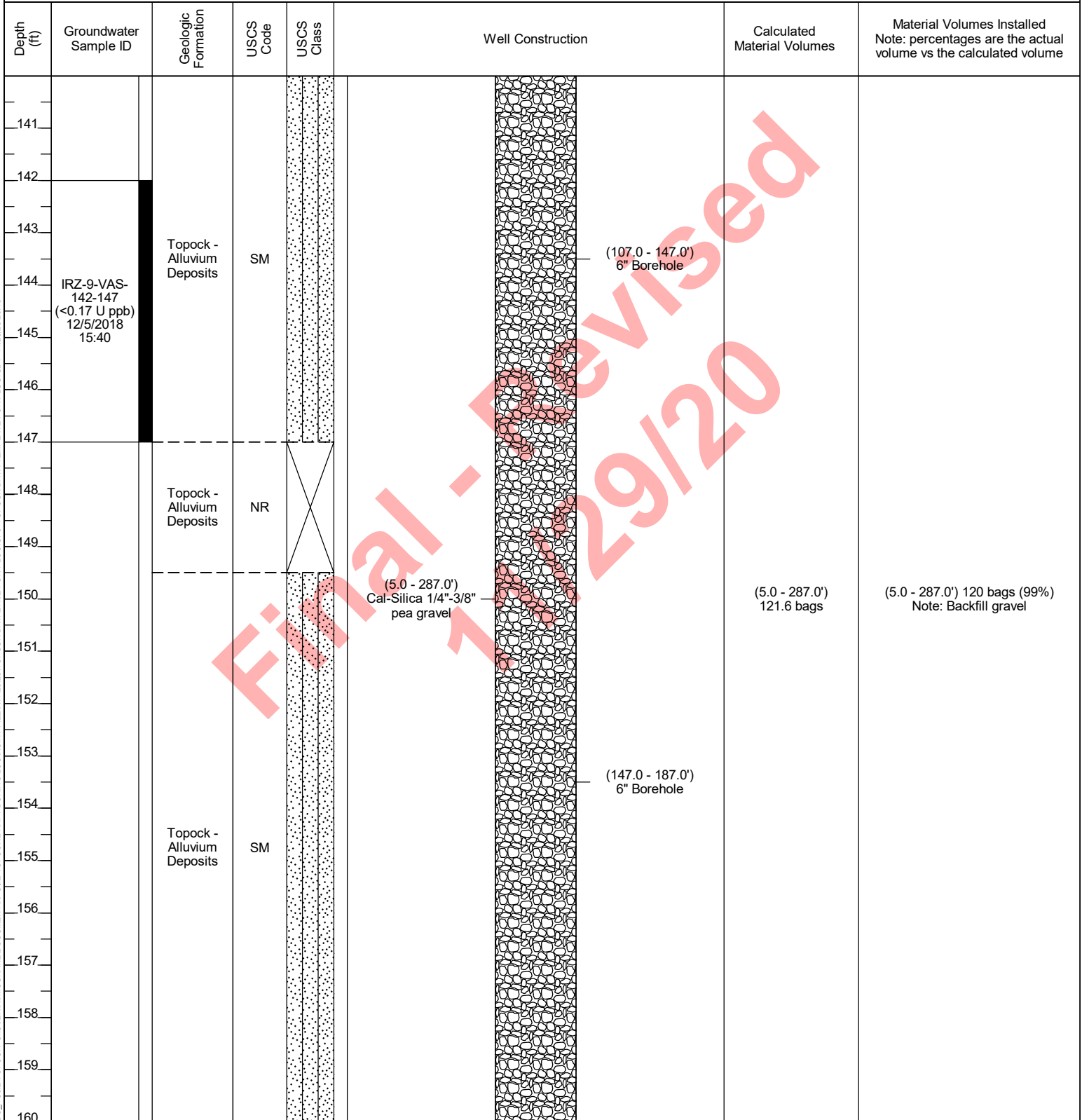
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
121		Topock - Alluvium Deposits	SM	[USCS Class Pattern]	[Well Construction Pattern]			
122								
123								
124								
125								
126								
127					(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel	(107.0 - 147.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
128		Topock - Alluvium Deposits	SM	[USCS Class Pattern]	[Well Construction Pattern]			
129								
130								
131								
132								
133								
134								
135								
136								
137								
138								
139								
140								

Final - Revised 1/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\KIDRAFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051



Final - Revised 12/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

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Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

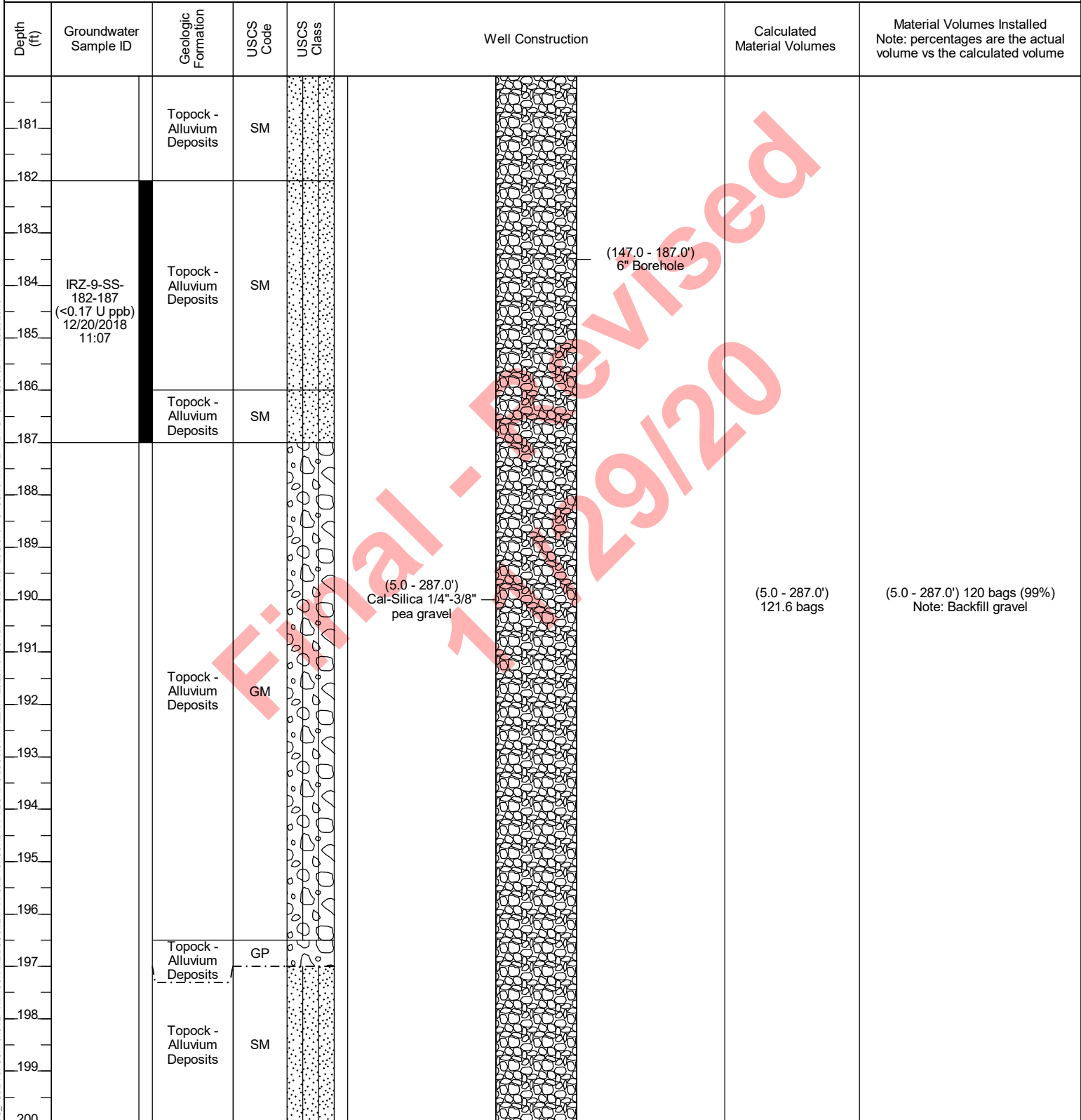
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
161							
162							
163							
164							
165							
166							
167							
168							
169							
170		Topock - Alluvium Deposits	SM		(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel (147.0 - 187.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
171							
172							
173							
174							
175							
176							
177							
178							
179							
180							

Final - Revised 1/29/20

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\KIDRAFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

Date Started:	12/19/2018	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9 Pilot	
Date Completed:	01/03/2019	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	317 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	Nick Petrone	Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	T. Alymer/ J. Candelaria	Depth to First Water:	24.8 ft bgs		
Logger:	A. Garcia / G. Willford	Editor:	Sean McGrane	Project Number:	RC000753.0051



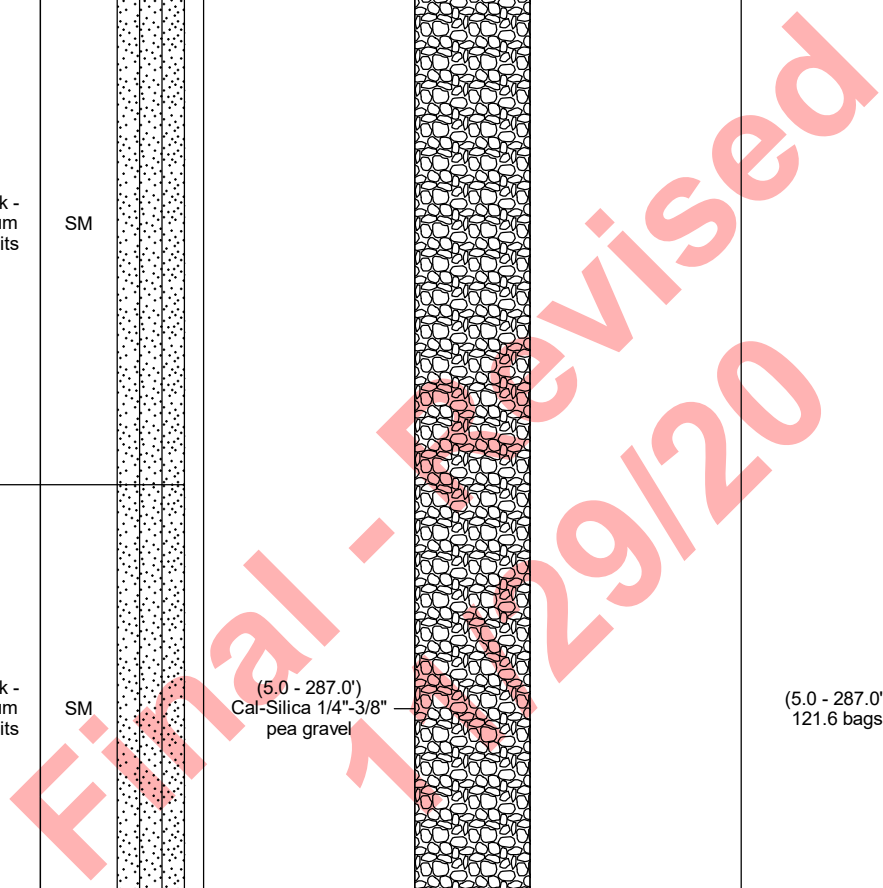
TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
201		Topock - Alluvium Deposits	SM				
202							
203							
204							
205							
206		Topock - Alluvium Deposits	SM				
207							
208							
209	IRZ-9-VAS-207-212 (<0.17 U ppb) 12/13/2018 10:55						
210							
211		Topock - Alluvium Deposits	ML				
212							
213	--no sample-- (Interval did not produce.) 12/12/2018 14:07						
214	--no sample-- (Interval did not produce.) 12/12/2018 13:25						
215							
216		Topock - Alluvium Deposits					
217							
218							
219							
220							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole



TEMP ABANDONMENT LOG - PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
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Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
221		Topock - Alluvium Deposits	SM	[USCS Class SM]	[Well Construction: Gravel]			
222								
223								
224								
225								
226								
227								
228								
229								
230								
230					(5.0 - 287.0') Cal-Silica 1/4" - 3/8" pea gravel	(217.0 - 247.0') 4" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
231								
232								
233								
234	IRZ-9-VAS-232-237 (<0.17 U ppb) 12/13/2018 15:48	Topock - Alluvium Deposits	ML	[USCS Class ML]	[Well Construction: Gravel]			
235								
236								
237		Topock - Alluvium Deposits	ML	[USCS Class ML]	[Well Construction: Gravel]			
238								
239								
240								

Final - Revised 12/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

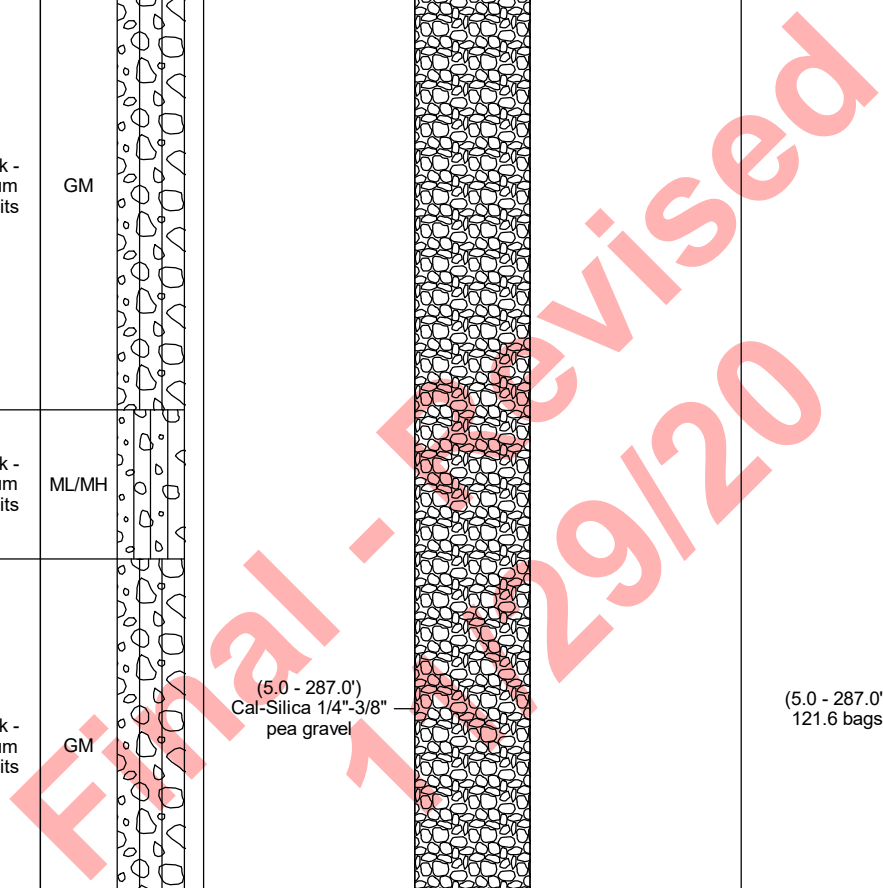
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
241		Topock - Alluvium Deposits	ML				
242							
243							
244							
245							
246							
247							
248							
249							
250							
251		Topock - Alluvium Deposits	GM			(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
252							
253							
254							
255							
256							
257							
258							
259							
260							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
261		Topock - Alluvium Deposits	GM				
262							
263		Topock - Alluvium Deposits	ML/MH				
264							
265	IRZ-9-VAS-264-269 (<0.17 U ppb) 12/14/2018 09:15	Topock - Alluvium Deposits	GM				
266							
267							
268		Topock - Alluvium Deposits	GM		(5.0 - 287.0') Cal-Silica 1/4" 3/8" pea gravel	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
269							
270		Topock - Alluvium Deposits	ML				
271							
272		Topock - Alluvium Deposits	GM				
273							
274		Topock - Alluvium Deposits	GM				
275							
276		Topock - Alluvium Deposits	GM				
277							
278	IRZ-9-VAS-276-279 (<0.17 U ppb) 12/15/2018 09:15	Topock - Alluvium Deposits	GM				
279							
280							

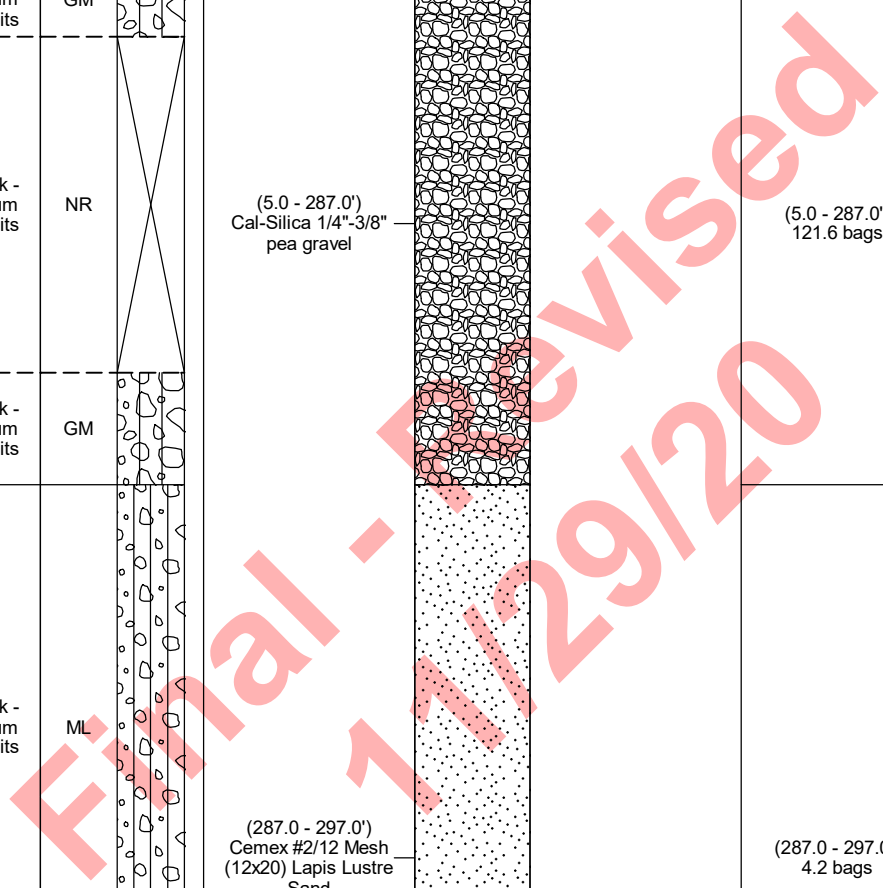


TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\SMCGRANE\DOCUMENTS\PG&E_TOPOCK\KIDRAFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
281		Topock - Alluvium Deposits	GM		(5.0 - 287.0') Cal-Silica 1/4"-3/8" pea gravel	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (99%) Note: Backfill gravel
282		Topock - Alluvium Deposits	NR				
283							
284		Topock - Alluvium Deposits	GM		(287.0 - 297.0') Cemex #2/12 Mesh (12x20) Lapis Lustre Sand	(287.0 - 297.0') 4.2 bags	(287.0 - 297.0') 6 bags (143%) Note: Indicator sand, used >20% of the calculated volume due to potential voids forming during drilling.
285		Topock - Alluvium Deposits	ML				
286							
287							
288							
289		Topock - Alluvium Deposits	GM		(297.0 - 317.0') Bentonite seal chips Puregold medium chips	(297.0 - 317.0') 5.8 bags	(297.0 - 317.0') 7.5 bags (129%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids forming during drilling.
290							
291							
292		Topock - Alluvium Deposits	GM				
293							
294	IRZ-9-VAS-292-297 (<0.17 U ppb) 12/18/2018 22:05	Topock - Alluvium Deposits	GM				
295							
296							
297		Topock - Weathered Bedrock - conglomerate	GM				
298							
299							
300							



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started: 12/19/2018	Surface Elevation: 480.76 ft amsl	Well ID: IRZ-9 Pilot
Date Completed: 01/03/2019	Northing (NAD83): 2103560.04	
Drilling Co.: Cascade	Easting (NAD83): 7615565.88	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 317 ft bgs	Project: Final GW Remedy Phase 1
Driller Name: Nick Petrone	Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, California
Drilling Asst: T. Alymer/ J. Candelaria	Depth to First Water: 24.8 ft bgs	
Logger: A. Garcia / G. Willford	Editor: Sean McGrane	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
301		Topock - Weathered Bedrock - conglomerate	GM				
302							
303							
304							
305		Topock - Weathered Bedrock - conglomerate	MH				(297.0 - 317.0') Bentonite seal chips Puregold medium chips
308							
309							
310		Topock - Weathered Bedrock - conglomerate	GM				(297.0 - 317.0') 5.8 bags
311							
312							
313							
314	--no sample-- (Interval did not produce.) 12/18/2018 10:15						
315							
316							
317							
318							
319							
320							

Final Revised 12/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:45

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1					(0.0 - 0.5') Steel Plate		Note: With BMPs in place
2					(0.5 - 4.0') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(0.5 - 4.0') 6.3 bags	(0.5 - 4.0') 4 bags (63%) Note: Surface seal sand, used <20% due to loose dredge sands potentially collapsing in hole as casing was pulled
3							
4					(0.0 - 7.0') 12.0" Borehole		
5		Topock - Fill	SP-SM				
6							
7							
8							
9							
10		Topock - Fill	SM				
11							
12					(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
13							
14		Topock - Alluvium Deposits	SM				
15							
16							
17							
18							
19		Topock - Alluvium Deposits	SM		(17.0 - 27.0') 8.0" Borehole		
20							

Final - Revised 7/12/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
 Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21		Topock - Alluvium Deposits	SM	[Pattern]	[Pattern]		
22							
23					(17.0 - 27.0') 8.0" Borehole		
24							
25							
26		Topock - Alluvium Deposits	SM	[Pattern]	[Pattern]		
27							
28							
29	IRZ-9-VAS-27-32 (120 ppb) 12/3/2018 23:55						
30					(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
31							
32					(27.0 - 37.0') 8.0" Borehole		
33							
34		Topock - Alluvium Deposits	ML	[Pattern]	[Pattern]		
35							
36							
37							
38							
39							
40					(37.0 - 47.0') 8.0" Borehole		

Final - Revised 1/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
 Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\11_29_20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
41		Topock - Alluvium Deposits	SM				
42							
43							
44		Topock - Alluvium Deposits	SM		(37.0 - 47.0') 8.0" Borehole		
45							
46							
47							
48		Topock - Alluvium Deposits	SM				
49	IRZ-9-VAS-47-52 (<0.033 U ppb) 12/4/2018 10:00	Topock - Alluvium Deposits	SM				
50					(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
51							
52		Topock - Alluvium Deposits	GM		(47.0 - 57.0') 8.0" Borehole		
53							
54							
55							
56							
57		Topock - Alluvium Deposits	SM				
58							
59					(57.0 - 67.0') 8.0" Borehole		
60							

Final - Revised 1/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
 Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61							
62							
63	IRZ-9-VAS-62-67 (<0.033 U ppb) 12/4/2018 13:05	Topock - Alluvium Deposits	SM		(57.0 - 67.0') 8.0" Borehole		
64							
65							
66							
67							
68		Topock - Alluvium Deposits	SM		(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
69							
70							
71							
72							
73		Topock - Alluvium Deposits	SM		(67.0 - 77.0') 8.0" Borehole		
74							
75							
76							
77							
78		Topock - Alluvium Deposits	SM		(77.0 - 87.0') 8.0" Borehole		
79							
80							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;

Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81		Topock - Alluvium Deposits	SM				
82							
83					(77.0 - 87.0') 8.0" Borehole		
84							
85		Topock - Alluvium Deposits	SM				
86							
87							
88							
89							
90					(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
91							
92		Topock - Alluvium Deposits	SM				
93							
94							
95							
96							
97							
98							
99					(87.0 - 97.0') 8.0" Borehole		
100							
					(97.0 - 107.0') 8.0" Borehole		

Final - Revised 1/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101	IRZ-9-VAS-102-107 (<0.17 U ppb) 12/5/2018 10:10	Topock - Alluvium Deposits	SM		(97.0 - 107.0') 8.0" Borehole		
102							
103							
104							
105							
106							
107							
108	Topock - Alluvium Deposits	SM		(4.0 - 119.0') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand	(107.0 - 117.0') 8.0" Borehole	(4.0 - 119.0') 82.9 bags	(4.0 - 119.0') 124.75 bags (150%) Note: Temporary backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

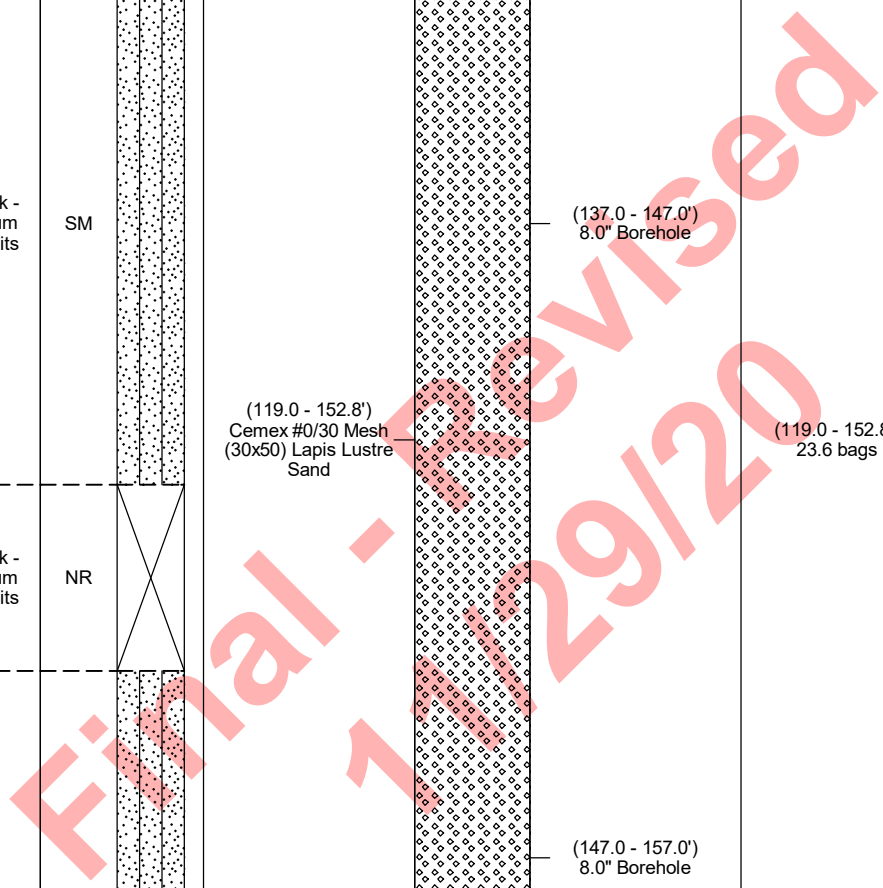
Final - Revised 1/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
 Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\SMCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
141-142	IRZ-9-VAS-142-147 (<0.17 U ppb) 12/5/2018 15:40	Topock - Alluvium Deposits	SM		(137.0 - 147.0') 8.0" Borehole		
143-147					(119.0 - 152.8') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(119.0 - 152.8') 23.6 bags	(119.0 - 152.8') 24.5 bags (104%)
148-149		Topock - Alluvium Deposits	NR				
150-153		Topock - Alluvium Deposits	SM		(147.0 - 157.0') 8.0" Borehole		
154-157	(152.8 - 300.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"				(152.8 - 300.0') 82.2 buckets	(152.8 - 300.0') 93 buckets (113%) Note: Decommissioned rathole, stopped at 152.8 instead of 150 to avoid overshooting of bentonite.	
158-160	(157.0 - 167.0') 8.0" Borehole						



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Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
161							
162							
163							
164					(157.0 - 167.0) 8.0" Borehole		
165							
166							
167							
168							
169							
170		Topock - Alluvium Deposits	SM		(152.8 - 300.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(152.8 - 300.0') 82.2 buckets	(152.8 - 300.0') 93 buckets (113%) Note: Decommissioned rathole, stopped at 152.8 instead of 150 to avoid overshooting of bentonite.
171							
172					(167.0 - 177.0) 8.0" Borehole		
173							
174							
175							
176							
177							
178					(177.0 - 187.0) 8.0" Borehole		
179							
180							

Final - Revised 2/29/20

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04	
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location: PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs	
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
181		Topock - Alluvium Deposits	SM				
182							
183	IRZ-9-VAS-182-187 (<0.17 U ppb) 12/11/2018 13:03	Topock - Alluvium Deposits	SM		(177.0 - 187.0) 8.0" Borehole		
184							
185							
186		Topock - Alluvium Deposits	SM				
187							
188							
189							
190					(152.8 - 300.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(152.8 - 300.0') 82.2 buckets	(152.8 - 300.0') 93 buckets (113%) Note: Decommissioned rathole, stopped at 152.8 instead of 150 to avoid overshooting of bentonite.
191							
192		Topock - Alluvium Deposits	GM		(187.0 - 197.0) 8.0" Borehole		
193							
194							
195							
196							
197		Topock - Alluvium Deposits	GP				
198							
199		Topock - Alluvium Deposits	SM		(197.0 - 207.0) 8.0" Borehole		
200							

Final - Revised 2/29/20

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Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

TEMP ABANDONMENT LOG_PG&E_TOPOCK_C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/29/20 20:58

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
201		Topock - Alluvium Deposits	SM	[Pattern]	[Pattern]		
202							
203							
204							
205		Topock - Alluvium Deposits	SM	[Pattern]	[Pattern]		
206							
207							
208							
209	IRZ-9-VAS-207-212 (<0.17 U ppb) 12/13/2018 10:55	Topock - Alluvium Deposits	SM	[Pattern]	[Pattern]		
210							
211							
212							
213	--no sample-- (Interval did not produce.) 12/12/2018 14:07	Topock - Alluvium Deposits	ML	[Pattern]	[Pattern]		
214							
215	--no sample-- (Interval did not produce.) 12/12/2018 13:25						
216							
217		Topock - Alluvium Deposits	ML	[Pattern]	[Pattern]		
218							
219							
220							

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Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04	
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location: PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs	
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
221		Topock - Alluvium Deposits	SM	[Pattern: Fine sand with silt]	[Image: Well construction diagram showing casing and seal]		
222							
223							
224							
225							
226							
227							
228							
229							
230							
231		Topock - Alluvium Deposits	ML	[Pattern: Medium sand]	[Image: Well construction diagram showing casing and seal]		
232							
233							
234	IRZ-9-VAS-232-237 (<0.17 U ppb) 12/13/2018 15:48						
235		Topock - Alluvium Deposits	ML	[Pattern: Medium sand]	[Image: Well construction diagram showing casing and seal]		
236							
237							
238		Topock - Alluvium Deposits	ML	[Pattern: Medium sand]	[Image: Well construction diagram showing casing and seal]		
239							
240							

Final - Revised 2/9/20

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Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;
 Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB	
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04		
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project:	Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location:	PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs		
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number:	RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
241		Topock - Alluvium Deposits	ML				
242							
243							
244							
245							
246							
247							
248							
249							
250							
251		Topock - Alluvium Deposits	GM				
252							
253							
254							
255							
256							
257							
258							
259							
260							

FINAL - REVISED 02/29/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

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Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04	
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location: PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs	
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
261		Topock - Alluvium Deposits	GM				
262							
263		Topock - Alluvium Deposits	ML/MH				
264							
265	IRZ-9-VAS-264-269 (<0.17 U ppb) 12/14/2018 09:15	Topock - Alluvium Deposits	GM				
266							
267							
268		Topock - Alluvium Deposits	GM				
269							
270		Topock - Alluvium Deposits	ML				
271							
272		Topock - Alluvium Deposits	GM				
273							
274		Topock - Alluvium Deposits	GM				
275							
276		Topock - Alluvium Deposits	GM				
277							
278	IRZ-9-VAS-276-279 (<0.17 U ppb) 12/15/2018 09:15	Topock - Alluvium Deposits	GM				
279							
280							

Final - Revised 2/9/20

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Notes: groundwater data collected during the drilling of the pilot borehole; granular backfill material was removed during overdrilling of the pilot borehole

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Date Started:	03/04/2020	Surface Elevation:	480.76 ft amsl	Well ID: IRZ-9-Pilot-AB
Date Completed:	03/06/2020	Northing (NAD83):	2103560.04	
Drilling Co.:	Cascade	Easting (NAD83):	7615565.88	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	300 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	S. Vasquez/J. Hernandez	Borehole Diameter:	8 inches	Location: PG&E Topock, Needles, California
Drilling Asst:	J. Colon / F. Sandoval	Depth to First Water:	24.8 ft bgs	
Logger:	J. Latham / S. McGrane	Editor:	Craig Prunier	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
281		Topock - Alluvium Deposits	GM		(277.0 - 282.0') 8.0" Borehole		
282		Topock - Alluvium Deposits	NR				
283							
284							
285					(282.0 - 287.0') 8.0" Borehole		
286		Topock - Alluvium Deposits	GM		(152.8 - 300.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(152.8 - 300.0') 82.2 buckets	(152.8 - 300.0') 93 buckets (113%) Note: Decommissioned rathole, stopped at 152.8 instead of 150 to avoid overshooting of bentonite.
287							
288							
289		Topock - Alluvium Deposits	ML				
290							
291							
292					(287.0 - 297.0') 8.0" Borehole		
293		Topock - Alluvium Deposits	GM				
294	IRZ-9-VAS-292-297 (<0.17 U ppb) 12/18/2018 22:05						
295							
296							
297							
298		Topock - Weathered Bedrock - conglomerate	GM		(297.0 - 300.0') 8.0" Borehole		
299							
300							

Final - Revised 2/29/20

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