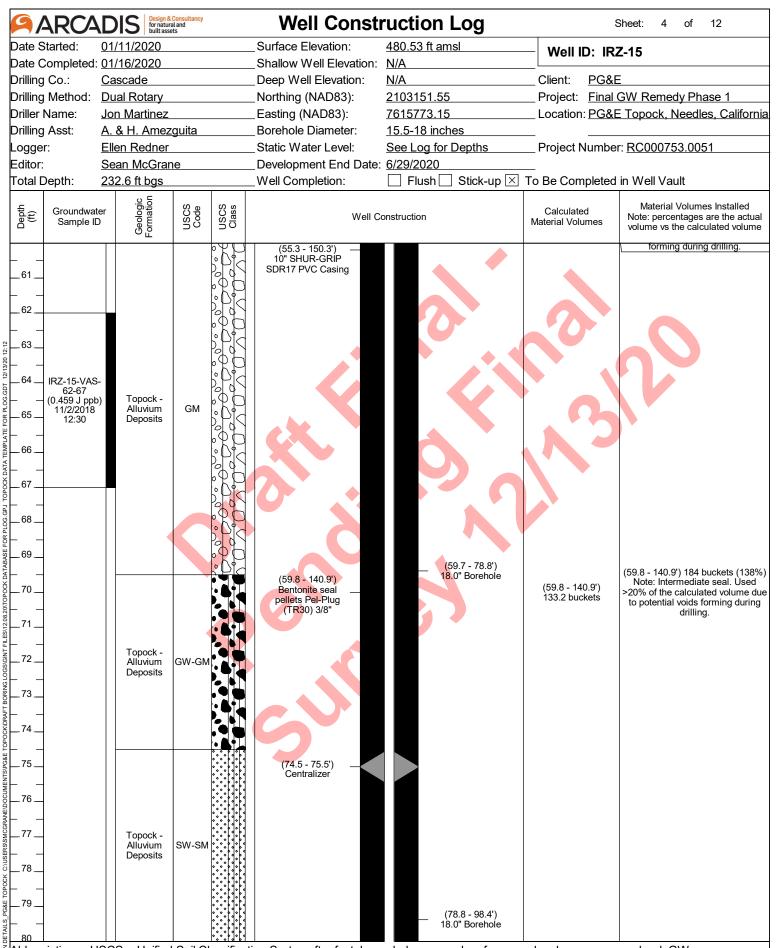
9 _A	RCA	DIS Design & for natura built asse	Consultancy l and ts		Well Consti	ruction Log	S	Sheet: 1 of 12
Date St		01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IRZ	Z-15
		01/16/2020				N/A		
Drilling (Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2103151.55	•	GW Remedy Phase 1
Driller N		Jon Martinez			_Easting (NAD83):	7615773.15	Location: <u>PG&E</u>	Topock, Needles, California
Drilling /		A. & H. Amez	guita		_Borehole Diameter:	15.5-18 inches		
Logger:		Ellen Redner			_Static Water Level:	See Log for Depths	Project Number	:: RC000753.0051
Editor:		Sean McGran	<u>e</u>		_ Development End Date:			:- \A/-II\/It
Total De	eptn:	232.6 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up 区	To Be Completed	in vveii vauit
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
_ 1 _ _ 1 _ 2 _			NR		(0.0 - 30.0') — 30.0' 10" SHUR-GRIP SDR17 PVC Casing (0.0 - 4.0') Cemex #0/30 Mesh — 30.00'		(0.0 - 4.0')	(0.0 - 4.0') 10 bags (102%) Note: Temporary backfill sand to fill an <mark>nular</mark> space prior to vault
3 					(30x50) Lapis Lustre		9.8 bags	fill annular space prior to vault installation.
5 6 7		Topock - Fill	SP				13	
8 9					(4.0 - 17.1') Portland Cement 3% Bentonite Type I, II and V and Hydrogel	(0.0 - 19.7') 18.0" Borehole	(4.0 - 17.1') 119.7 gallons	(4.0 - 17.1') 105 gallons (88%) Note: Grout seal
12		Topock - Fill	SP		(15.5 - 16.5') Centralizer			
17 18 19 20	ations: III	Topock - Alluvium Deposits	SM	assifica	(17.1 - 22.0') Cemex #0/30 Mesh	= below ground surface, ar	(17.1 - 22.0') 12 bags	(17.1 - 22.0') 12 bags (100%) Note: Transition sand between filter pack and grout seal.

9/	ARCA	DIS Design 8 for nature built ass	Consultancy ral and ets		Well Con	structi	on Log	;	Sheet: 2 of 12
Date S		01/11/2020			_Surface Elevation:		3 ft amsl	Well ID: IR	Z-15
		01/16/2020			_Shallow Well Elevati				
Drilling 		Cascade			_Deep Well Elevation			Client: PG&E	
_		Dual Rotary			_Northing (NAD83):		51.55	•	GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):		73.15	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		A. & H. Amez Ellen Redner			_Borehole Diameter:		15.5-18 inches		DC0007E2 00E4
Logge Editor:		Sean McGrai			_Static Water Level: _Development End D		og for Depths	Project Numbe	r: RC000753.0051
Total D		232.6 ft bgs	ie .		_Development End D _Well Completion:			 To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	W	ell Construction	on	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 21 		Topock - Alluvium Deposits	SM		(17.1 - 22.0') Cemex #0/30 Mesh — (30x50) Lapis Lustre Sand		\'	(17.1 - 22.0') 12 bags	(17.1 - 22.0') 12 bags (100%) Note: Transition sand between filter pack and grout seal.
23		Topock - Alluvium Deposits	GW-GM		(0.0 - 30.0') 10" SHUR-GRIP — SDR17 PVC Casing			70	00
24 25 26 27			NR					3	
28 29 		Topock - Alluvium Deposits	ML		(30.0 - 55.3')				
30 31 32			•		10" 25-Slot 316L SS Wire Wrap Screen — (22.0 - 58.6') Cemex #2/16 Mesh — (16x30) Lapis Lustre Sand		(19.7 - 40.5') 18.0" Borehole	(22.0 - 58.6') 89.4 bags	(22.0 - 58.6') 122 bags (136%) Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. Swabbed for approximately 60 minutes prior to adding additional well materials.
33 34 35 36 37 38 39	IRZ-15-VAS 32-37 (13 ppb) 11/1/2018 13:00	Topock - Alluvium Deposits	GM						
40				<u> [. F.H.</u>		<u>⊬∷</u> ‡ <u>∷</u> :			

9/	ARC ²	DIS Design 8 for nature built ass	Consultancy ral and ets		Well Const	ruction Log	;	Sheet: 3 of 12		
Date S	Started:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15		
	•	: 01/16/2020			_Shallow Well Elevation:					
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
	Method:	Dual Rotary			_Northing (NAD83):	2103151.55	•	GW Remedy Phase 1		
	Name:	Jon Martinez			_Easting (NAD83):	7615773.15	Location: <u>PG&</u>	<u> Topock, Needles, California</u>		
Drilling		A. & H. Amez	-		_Borehole Diameter:	15.5-18 inches	<u> </u>			
Logge		Ellen Redner			Static Water Level: See Log for Depths		Project Numbe	r: RC000753.0051		
Editor		Sean McGrar	<u>1e</u>		Development End Date: 6/29/2020					
Total [Jepth:	232.6 ft bgs		1 1	_Well Completion:	☐ Flush ☐ Stick-up 区	To Be Completed	in Well Vault		
Depth (ft)	Groundwai Sample II		USCS Code USCS Class				Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
41		Topock - Alluvium Deposits	GM		(30.0 - 55.3') 10" 25-Slot 316L SS Wire Wrap Screen	(19.7 - 40.5) 18.0" Borehole				
48		Topock - Alluvium Deposits	GM		(22.0 - 58.6') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand (55.3 - 150.3') 10" SHUR-GRIP SDR17 PVC Casing	(40.5 - 59.7') 18.0" Borehole	(22.0 - 58.6') 89.4 bags	(22.0 - 58.6') 122 bags (136%) Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. Swabbed for approximately 60 minutes prior to adding additional well materials.		
59 59 _ 59 _ 60		Topock - Alluvium Deposits	GM		(58.6 - 59.8') Cemex #0/30 Mesh		(58.6 - 59.8') 2.9 bags	(58.6 - 59.8') 4 bags (138%) Note: Transition sand between filter pack and intermediate seal. Used >20% of the calculated volume due to potential voids		
_						s = below ground surface, a				
<u>, </u>	groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured pre-specific capacity for the shallow and deep screens respectively.									

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured pre-specific capacity for the shallow and deep screens respectively



ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	:	Sheet: 5 of 12
Date S	Started:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15
Date C	Completed:	01/16/2020			_Shallow Well Elevation:	<u>N/A</u>		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
Drilling	Method:	Dual Rotary			_Northing (NAD83):	2103151.55	Project: Final	GW Remedy Phase 1
Driller I	Name:	Jon Martinez			_Easting (NAD83):	7615773.15	Location: PG&I	E Topock, Needles, California
Drilling	Asst:	A. & H. Amez	guita		_Borehole Diameter:	15.5-18 inches		
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:			
Total D	Depth:	232.6 ft bgs			_Well Completion:	☐ Flush ☐ Stick-	-up 🗵 To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		nscs Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81 82 83 84 85 86 87		Topock - Alluvium Deposits	SW-SM		(55.3 - 150.3') 10" SHUR-GRIP SDR17 PVC Casing			
		Topock - Alluvium Deposits	GM		(59.8 - 140.9') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(78.8 - 98. 18.0" Borel		(59.8 - 140.9') 184 buckets (138%) Note: Intermediate seal. Used >20% of the calculated volume due to potential voids forming during drilling.
97 98 99 100		Topock - Alluvium Deposits	SM			(98.4 - 116 16.0" Borel	5.7') hole	

9/	ARC4	DIS Design & for nature built asso	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 6 of 12
	Started:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15
		01/16/2020			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller	Method:	Dual Rotary Jon Martinez			_Northing (NAD83):	2103151.55 7615773.15	•	GW Remedy Phase 1
Drilling		A. & H. Amez	rquita		_Easting (NAD83): _Borehole Diameter:	15.5-18 inches	Location. <u>PG&t</u>	Topock, Needles, California
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Proiect Numbe	r: RC000753.0051
Editor:		Sean McGrar			_Development End Date:			
Total [Depth:	232.6 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up ⊠	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101 102 103 104	IRZ-15-VAS 102-107 (< 0.17 U	Topock - Alluvium Deposits	SM		(55.3 - 150.3') — 10" SHUR-GRIP SDR17 PVC Casing			
105	ppb) 11/3/2018 16:15	Topock - Alluvium Deposits	SM			Ò	14,3	
107108109110111112113114115116		Topock - Alluvium Deposits	ML		(59.8 - 140.9') Bentonite seal pellets Pel-Plug (TR30) 3/8"	— (98.4 - 116.7') 16.0" Borehole	(59.8 - 140.9') 133.2 buckets	(59.8 - 140.9') 184 buckets (138%) Note: Intermediate seal. Used >20% of the calculated volume due to potential voids forming during drilling.
 117		Topock - Alluvium Deposits	GM					
118 119 120		Topock - Alluvium Deposits	ML			(116.7 - 137.3') 16.0" Borehole		

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 7 of 12
Date S	tarted:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15
		01/16/2020			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&</u>	
_	Method:	Dual Rotary			_Northing (NAD83):	2103151.55	•	GW Remedy Phase 1
Driller N		Jon Martinez			_Easting (NAD83):	7615773.15	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		A. & H. Amez			_Borehole Diameter:	15.5-18 inches		D0000750 0054
Logger Editor:	:	Ellen Redner Sean McGrar			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor: Total D	epth:	232.6 ft bgs	1e		_Development End Date: _Well Completion:		— To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
		Topock - Alluvium Deposits	GM		(55.3 - 150.3') — 10" SHUR-GRIP SDR17 PVC Casing			
		Topock - Alluvium Deposits	ML					
128	IRZ-15-VAS 132-137 (< 0.17 U ppb) 11/4/2018 12:40	Topock - Alluvium Deposits	GM		(59.8 - 140.9') Bentonite seal pellets Pel-Plug (TR30) 3/8"	— (116.7 - 137.3) 16.0" Borehole	(59.8 - 140.9') 133.2 buckets	(59.8 - 140.9') 184 buckets (138%) Note: Intermediate seal. Used >20% of the calculated volume due to potential voids forming during drilling.
138 139 		Topock - Alluvium Deposits	ML			(137.3 - 158.1') 16.0" Borehole		

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	Sheet: 8 of 12		
	Started:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15	
		01/16/2020			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
1 -	Method:	Dual Rotary			_Northing (NAD83):	2103151.55	•	GW Remedy Phase 1	
	Name:	Jon Martinez			_Easting (NAD83):	7615773.15	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling		A. & H. Amez	-		_Borehole Diameter:	15.5-18 inches			
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051	
Editor: Total [Sean McGrar 232.6 ft bgs	<u>1e</u>		_Development End Date: _Well Completion:		 To Be Completed	in Well Vault	
					_ 11011 00111pledo11.		To Be completed		
Depth (ft)	Groundwat Sample II		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
141		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(150.3 - 200.2') 10" SHUR-GRIP SDR17 PVC Casing (140.9 - 142.1') Cemex #0/300 Mesh (30x50) Lapis Lustre Sand (150.3 - 200.2') 10" 30-Slot 316L SS Wire Wrap Screen (142.1 - 207.5') Cemex #2/12 Mesh (12x20) Lapis Lustre Sand	(137.3 - 158.1') 16.0" Borehole	(142.1 - 207.5') 112.8 bags	(140.9 - 142.1') 3 bags (143%) Note: Transition sand between filter pack and intermediate seal. Used >20% of the calculated volume due to potential voids forming during drilling. (142.1 - 207.5') 153 bags (136%) Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. Swabbed for approximately 105 minutes prior to adding additional well materials, during swabbing well casing dropped approximately 0.5 ft. bgs.	
156 157 158 159						(158.1 - 177.8') 16.0" Borehole			
160									

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 9 of 12
Date S	tarted:	01/11/2020		Surface Elevation:	480.53 ft amsl	Well ID: IRZ	Z-15
	•	01/16/2020			N/A		
Drilling		Cascade		Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary		Northing (NAD83):	2103151.55		GW Remedy Phase 1
Driller I		Jon Martinez		Easting (NAD83):	7615773.15	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		A. & H. Amez	guita	Borehole Diameter:	15.5-18 inches	Project Number: RC000753.0051	
Logge Editor:		Ellen Redner Sean McGrar		Static Water Level:	See Log for Depths	Project Number	T. RC000753.0051
Total D		232.6 ft bgs	ie	Development End Date: Well Completion:		 To Be Completed	in Well Vault
	. орин.					To Be completed	
Depth (ft)	Groundwat Sample II		USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
		Topock - Alluvium Deposits	SM	(150.3 - 200.2') —			
161 162 163 164 	IRZ-15-VAS 162-167 (3200 ppb) 11/5/2018	Topock - Alluvium Deposits	ML , 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
165 166 167	`11/5/2018` 13:00	Topock - Alluvium Deposits	SM			1/2	
168 169 170 171 172		Topock - Alluvium Deposits	SM	(142.1 - 207.5') Cemex #2/12 Mesh (12x20) Lapis Lustre Sand	(158.1 - 177.8') 16.0" Borehole	(142.1 - 207.5') 112.8 bags	(142.1 - 207.5') 153 bags (136%) Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. Swabbed for approximately 105 minutes prior to adding additional well materials, during swabbing well casing dropped approximately 0.5 ft. bgs.
173 174		Topock - Alluvium Deposits	GM O				
175176177178179180		Topock - Alluvium Deposits	G W		(177.8 - 197.3') 16.0" Borehole		

Date Started: 01/11/2020 Surface Elevation: 480.53 ft amsl Well ID: IRZ-15 Date Completed: 01/16/2020 Shallow Well Elevation: N/A Drilling Co.: Cascade Deep Well Elevation: N/A Drilling Method: Dual Rotary Northing (NAD83): 2103151.55 Project: Final GW Remedy Phase 1 Driller Name: Jon Martinez Easting (NAD83): 7615773.15 Location: PG&E Topock, Needles, Calif Drilling Asst: A. & H. Amezguita Borehole Diameter: 15.5-18 inches Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: Flush Stick-up X To Be Completed in Well Vault Editor: Groundwater Sample ID State Stick	ARC4
Date Completed: 01/16/2020 Shallow Well Elevation: N/A Client: PG&E Drilling Co.: Cascade Deep Well Elevation: N/A Client: PG&E Drilling Method: Dual Rotary Northing (NAD83): 2103151.55 Project: Final GW Remedy Phase 1 Driller Name: Jon Martinez Easting (NAD83): 7615773.15 Location: PG&E Topock, Needles, Calif Drilling Asst: A. & H. Amezguita Borehole Diameter: 15.5-18 inches Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: Flush Stick-up X To Be Completed in Well Vault	Date Started:
Drilling Method: Dual Rotary Northing (NAD83): 2103151.55 Project: Final GW Remedy Phase 1 Driller Name: Jon Martinez Easting (NAD83): 7615773.15 Location: PG&E Topock, Needles, Calif Drilling Asst: A. & H. Amezguita Borehole Diameter: 15.5-18 inches Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: Flush Stick-up X To Be Completed in Well Vault	•
Driller Name: Jon Martinez Easting (NAD83): 7615773.15 Location: PG&E Topock, Needles, Calif Drilling Asst: A. & H. Amezguita Borehole Diameter: 15.5-18 inches Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: Flush Stick-up X To Be Completed in Well Vault	-
Drilling Asst: A. & H. Amezguita Borehole Diameter: 15.5-18 inches Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: Flush Stick-up X To Be Completed in Well Vault	-
Logger: Ellen Redner Static Water Level: See Log for Depths Project Number: RC000753.0051 Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: ☐ Flush ☐ Stick-up ☒ To Be Completed in Well Vault	
Editor: Sean McGrane Development End Date: 6/29/2020 Total Depth: 232.6 ft bgs Well Completion: ☐ Flush ☐ Stick-up ☒ To Be Completed in Well Vault	-
Total Depth: 232.6 ft bgs Well Completion: ☐ Flush ☐ Stick-up ☒ To Be Completed in Well Vault	
Groundwater Sample ID Groundwater Sample ID	
	Groundwa Sample
181	

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 11 of 12			
	Started:	01/11/2020			_Surface Elevation:	480.53 ft amsl	Well ID: IR	Z-15			
		01/16/2020			_Shallow Well Elevation:	•					
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I				
_	Method:	Dual Rotary			_Northing (NAD83):	2103151.55	· ·	GW Remedy Phase 1			
Driller		Jon Martinez			_Easting (NAD83):	<u>7615773.15</u>	Location: <u>PG&l</u>	E Topock, Needles, California			
Drilling		A. & H. Amez	_		_Borehole Diameter:	15.5-18 inches					
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051			
Editor: Total [Sean McGrar 232.6 ft bgs	<u>1e</u>		_Development End Date _Well Completion:		 ⊠ To Be Completed	in Well Vault			
Depth (ft)	Groundwat Sample II	er logic ation	USCS	USCS Class	·	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume			
201		Topock - Alluvium Deposits	SM		(202.0 - 203.0') — Centralizer (142.1 - 207.5') Cemex #2/12 Mesh — (12x20) Lapis Lustre Sand (200.2 - 205.9') — Sump and PVC End Cap		(142.1 - 207.5') 112.8 bags	(142.1 - 207.5') 153 bags (136%) Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. Swabbed for approximately 105 minutes prior to adding additional well materials, during swabbing well casing dropped approximately 0.5 ft. bgs.			
208 209 210 211 212		Topock - Alluvium Deposits	ML			(197.3 - 218.0') 16.0" Borehole					
213		Topock - Weathered Bedrock - conglomerate	ML		(207.5 - 232.6') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(218.0 - 232.6') 16.0" Borehole	(207.5 - 232.6') 56.2 buckets	(207.5 - 232.6') 66 buckets (117%) Note: Decommissioned rathole			
220				<u>[:[:1:]</u>							

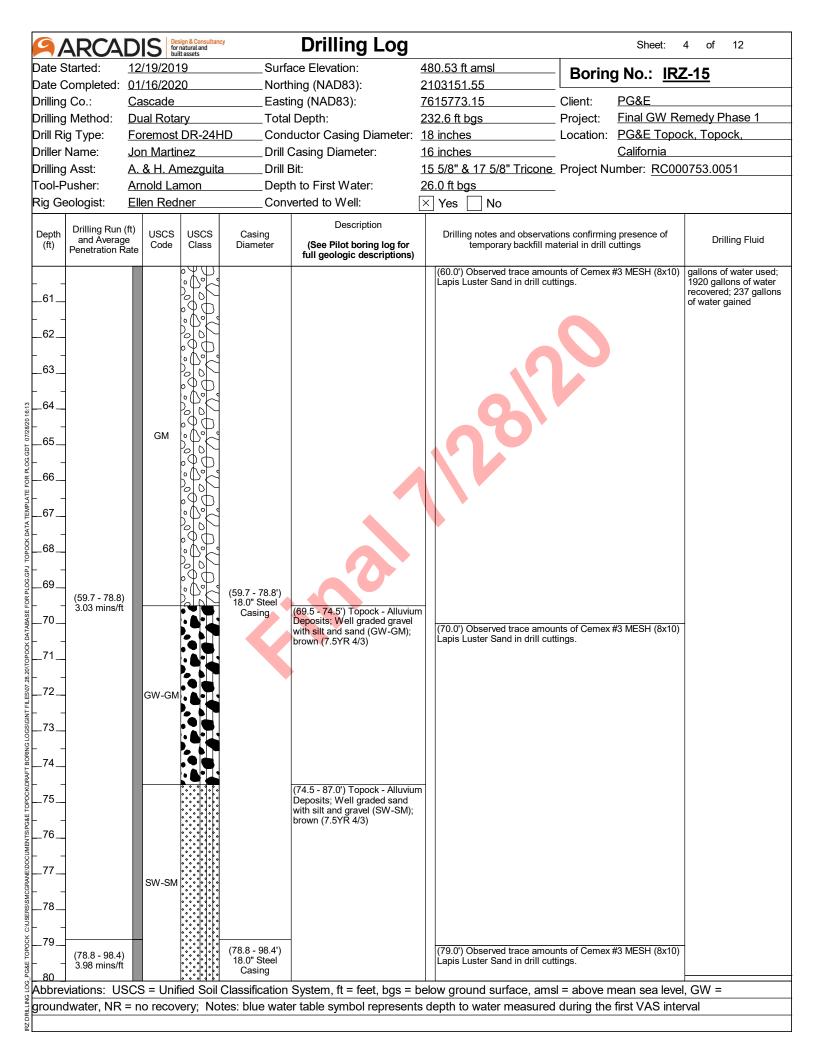
9/	ARC4	DIS Design & C for natural built asset	Consultancy l and ts		Well Const	ruction	Log		Sheet:	12	of	12
	Started:	01/11/2020			_Surface Elevation:	480.53 ft a	ımsl	Well ID: I	RZ-15			
		01/16/2020				N/A						
Drilling		Cascade			_Deep Well Elevation:	<u>N/A</u>		Client: PG				
_		Dual Rotary			_Northing (NAD83):	2103151.5		Project: Fin		-		
Drilling	Name:	Jon Martinez A. & H. Amezo			_Easting (NAD83): _Borehole Diameter:	7615773.1 15.5-18 inc		Location: <u>PG</u>	<u>&⊏ 10pc</u>	OCK, INE	<u>eales</u>	<u>s, California</u>
Logge		Ellen Redner	juita		_Static Water Level:	See Log fo		— — Project Numl	ner: RC0)00753		 1
Editor:		Sean McGran	——— е		_Otatic Water Level. _Development End Date:		л Бериіз	110,0001140111	JCI. <u>IXOC</u>	100100	.000	
	Depth:	232.6 ft bgs			_Well Completion:	Flush [☐ Stick-up 区	 To Be Complete	ed in We	ıll Vaul	t	
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	onstruction		Calculated Material Volumes	Note	: percent	tages a	s Installed are the actual lated volume
	IRZ-15-VAS 222-227 (< 0.17 U ppb) 11/7/2018 14:00	Topock - Weathered Bedrock - conglomerate	ML		(207.5 - 232.6') Bentonite seal pellets Pel-Plug (TR30) 3/8"		(218.0 - 232.6') 16.0" Borehole	(207.5 - 232.6') 56.2 buckets				uckets (117%) oned rathole
233 234					End of Boring at 232.6 ft bgs.							
_235	-											
	-											
_236												
	1											
238												
220	1											
_239												
240												
240 Abbre	viations: II	SCS = Unified	Soil Cl	assifica	tion System. ft = feet. bas	= below ard	ound surface an	nsl = ahove mea	n sea le	vel GV	N =	

9	ARCA	DIS	Design for nati	& Consultandural and	су	Drilling Log		She	eet: 1 of 12		
Date S	Started:	12/19/2				ace Elevation:	480.53 ft amsl	Boring No.:	IRZ-15		
	Completed:					hing (NAD83):	2103151.55	-	<u></u>		
Drilling		Casca				ing (NAD83):	7615773.15 Client: PG&E				
_	Method:	<u>Dual R</u>	-			I Depth:	232.6 ft bgs Project: Final GW Remedy Phase 1				
	g Type:	Forem				ductor Casing Diameter:			Topock, Topock,		
	Name:	Jon Ma				Casing Diameter:	·				
Drilling	usher:	A. & H Arnold		•		ธแ: th to First Water:	26.0 ft bgs	Project Number: I	RC000753.0051		
	eologist:	Ellen R			•	verted to Well:	× Yes No	-			
T tig Ot				-i		Description	Tes				
Depth (ft)	Drilling Run and Averag Penetration F	je Co		USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)	Drilling notes and observat temporary backfill m	ions confirming presence aterial in drill cuttings	e of Drilling Fluid		
3 - 1 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3		NI 	_ /			(2.0 - 7.0') Topock - Fill; Poorl graded sand (SP); yellowish brown / moderate yellowish brown (10YR 5/4) (7.0 - 17.0') Topock - Fill; Poorly graded sand (SP); brown (10YR 4/3)	(0.0') Confirmed drill casing borehole prior to drilling. (0.5 - 25.0') Soft drilling	was centered on the pilo	ot (0.0 - 59.7') 1079 gallons of water used; 1000 gallons of water recovered; 79 gallons of water lost		
10	(0.0 - 19.7) 1.65 mins/ft	SI			(0.0 - 19.7') 18.0" Steel Casing		(10.0') Observed trace amou #3 MESH (8x10) Lapis Luste	ints of Cemex #60 and C er Sand in drill cuttings.	Semex		
	viations: 119	SI		200	Classification	(17.0 - 22.5') Topock - Alluviur Deposits; Silty sand with grave (SM); dark yellowish brown (10YR 4/4)		ol – abovo moon co	a lavel GW =		
·							pelow ground surface, ams				
ground	uwater, NR	- no re	cove	ıy, NO	ies: Diue Wate	er table symbol represent	s depth to water measured	uuring the first VA	o interval		
귈											

ARCA	Design & Consultant for natural and built assets	Drilling	Log	Sheet: 2	of 12
ate Started:	12/19/2019	Surface Elevation:	480.53 ft amsl	Boring No.: IRZ	-15
ate Completed:		Northing (NAD83):	2103151.55		
Orilling Co.:	Cascade	Easting (NAD83):	<u>7615773.15</u>	Client: PG&E	I DI 4
Orilling Method:	Dual Rotary	Total Depth:	232.6 ft bgs	Project: Final GW Ren	
orill Rig Type:	Foremost DR-24F		Diameter: <u>18 inches</u>	Location: PG&E Topocl	к, Гороск,
oriller Name:	Jon Martinez	Drill Casing Diamet		California	752.0054
rilling Asst: ool-Pusher:	A. & H. Amezguita Arnold Lamon	uDrill Bit: Depth to First Wate		'Tricone Project Number: RC000	753.0051
Rig Geologist:	Ellen Redner	Converted to Well:	\times Yes \square No		
	Liich Redner				
Depth (ft) Drilling Run (and Average Penetration R	e Code Class	Casing Diameter (See Pilot bor full geologic de	ring log for escriptions) Drilling notes an temporary	nd observations confirming presence of y backfill material in drill cuttings	Drilling Fluid
	SM		(20.0') Observed Lapis Luster Sand	trace amounts of Cemex #3 MESH (8x10) d in drill cuttings.	
.23	GW-GM	(22.5 - 23.5') Top Deposits; Well gr with silt and sand (10Y 3/2)	raded gravel I (GW-GM);	(1)	
24		(23.5 - 27.0') (NR	9		
.26_	NR NR		T		
27_		(27.0 - 29.5') Top	ock - Alluvium		
.28	ML O	Deposits; Gravell sand (ML); brown	y silt with		
_29		(19.7 - 40.5') (29.5 - 47.0') Top	ock - Alluvium		
.30 (19.7 - 40.5) 2.69 mins/ft		18.0" Steel Casing Deposits; Silty gra (GM); brown (10)	avel with sand	trace amounts of Cemex #3 MESH (8x10)	
31					
.32					
.33					
35_	GM O				
.36					
37_					
.38					
.39					
40					
				ace, amsl = above mean sea level,	
oundwater, NR	= no recovery; No	tes: blue water table symbol	represents depth to water n	neasured during the first VAS interv	/ai

9/	ARCA										
	Started:						480.53 ft a		Borino	No.: <u>IR</u> Z	Z -15
	Completed:			20		ning (NAD83):	2103151.5			<u> </u>	
Drilling		Caso				ng (NAD83):	7615773.		Client:	PG&E	
_	Method:	<u>Dual</u>				Depth:	232.6 ft bo	<u>gs</u>	Project:		emedy Phase 1
Driller I	g Type:	Jon I		DR-241		ductor Casing Diameter: Casing Diameter:	16 inches		Location:	PG&E Topo California	ск, гороск,
Drilling				nezguit		_		17 5/8" Tricone	Project Nu		0753 0051
	usher:	Arno		_		հ to First Water։	26.0 ft bgs		i iojectiva	ilibei. Itoo	0733.0031
	eologist:	Ellen			•	verted to Well:	× Yes	No No			
Depth (ft)	Drilling Run and Averag Penetration F	ie 2	ISCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		notes and observation			Drilling Fluid
41	(40.5 - 59.7) 2.63 mins/ft		GM GM		(19.7 - 40.5') 18.0" Steel Casing (40.5 - 59.7') 18.0" Steel Casing	(47.0 - 57.0') Topock - Alluviui Deposits; Silty gravel with san (GM); grayish brown (10YR 5/2) (57.0 - 69.5') Topock - Alluviui Deposits; Silty gravel with san (GM); brown (7.5YR 5/3) and reddish brown (5YR 5/3)	(42.0 - 53	bserved trace amounts for Sand in drill cutted in drill cutted in the sand in the	nts of Cemex #		
60				54°C							(59.7 - 79.8') 1683

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval



9	ARCA	DIS	Design & Consultar for natural and built assets	псу	Drilling Log				Sheet:	5 of 12
	Started:	12/19/2	2019	Surfa	ace Elevation:		0.53 ft amsl	Borine	No.: IRZ	<u> </u>
	•	01/16/2			hing (NAD83):		03151.55			<u></u>
Drilling	-	Cascad			ing (NAD83):			Client:	PG&E	
_	Method:	Dual Ro	-		I Depth:		•	Project:		medy Phase 1
	ig Type:		ost DR-24I		ductor Casing Diameter:			Location:	PG&E Topoo	ck, Lopock,
	Name:	Jon Ma			Casing Diameter:		inches	D!4 NI	<u>California</u>	2750 0054
	g Asst: Pusher:		Amezguit		มเ: :h to First Water:		5/8" & 17 5/8" Tricone	Project Nu	imber: RC00	0753.0051
	eologist:	Arnold Ellen R		•	verted to Well:		.0 ft bgs Yes No			
rtig Ci		LIICITIX	Curici		1	<u> </u>	165 140			
Depth (ft)	Drilling Run and Averag Penetration F	e Coo		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	,	Drilling notes and observation temporary backfill materials	terial in drill d	uttings	Drilling Fluid
	(78.8 - 98.4) 3.98 mins/ft	GM 		(78.8 - 98.4') 18.0" Steel Casing	(87.0 - 97.0') Topock - Alluviu Deposits; Silty gravel with sar (GM); brown (7.5YR 4/3) (97.0 - 104.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brov (2.5YR 4/4)	_ · ·	(90.0') Observed trace amount (90.0') Observed trace amount (20.0') Observed trace amount (20.0') Smooth drilling (91.0 - 95.0') Smooth drilling (98.0') Observed trace amount (20.0') Observed (2	ngs. tts of Cemexings.	#3 MESH (8x10)	(79.8 - 98.4') 534 gallons of water used; 5000 gallons of water recovered; 4466 gallons of water gained
99 100	(98.4 - 116.7 2.82 mins/ft			(98.4 - 116.7') 16.0" Steel Casing	System #= fact has				2000 222 124	(98.4 - 177.8') 9300 gallons of water used; 9000 gallons of water recovered; 300 gallons of water lost
Annie	viations. U	303 - U	mineu Soll	Ciassincation	System, ft = feet, bgs =	nelo	w ground sunace, amsi	- above fi	ican sea ievel	, ७०० –

groundwater, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval

	<u> ARCA</u>			ign & Consultand natural and t assets		Drilling Log			_	Sheet: 6	of 12
	Started:		<u>19/201</u>			ace Elevation:	480.53 ft		Borin	g No.: <u>IRZ</u>	<u>-15</u>
	Completed:			0		hing (NAD83):	2103151				
_	Co.:		scade			ing (NAD83):	<u>7615773</u>		Client:	PG&E	
_	Method:		al Rota	-		I Depth:	232.6 ft b	-	Project:		medy Phase 1
	ig Type:			DR-24F		ductor Casing Diameter:			Location:	PG&E Topoc	к, гороск,
	Name:		<u>Martir</u>			Casing Diameter:	16 inches		Duning of N	California	752 0054
_	g Asst: Pusher:		<u>х н. Ar</u> iold Lai	nezguita man		ะh to First Water:	26.0 ft bg	17 5/8" Tricone	Projectivi	umber: RC000	1753.0051
	eologist:		n Redi		-	verted to Well:	× Yes	No			
ig O	Joiogist.	LIIC	, i i i i cui			1		140			
Depth (ft)	Drilling Run and Averag Penetration F	je	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		g notes and observation temporary backfill ma	terial in drill	cuttings	Drilling Fluid
- _101_							(8x10) ĺ	Observed trace amou apis Luster Sand in c 108.0') Rough drilling	rill cuttings.	x #3 MESH	
_ _102			SM						0		
104 - _105_		_				(104.5 - 106.5') Topock - Alluvium Deposits; Silty sand		18/	•		
-106 106			SM			with gravel (SM); reddish brown (5YR 4/4)	vn				
- _107						(106.5 - 116.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brov	wn .	*			
-						/ moderate brown (5YR 4/4)	""				
108	(98.4 - 116.7)			(98.4 - 116.7') 16.0" Steel						
109_	2.82 mins/ft				Casing						
_ _110							(110.0')	Observed trace amo	unts of Ceme	x #3 MESH	
- _111_								apis Luster Sand in c	Ü		
_ _112			ML				(11.5	rio.o) rioagii aiiiiii	3		
- 113											
_ _114											
- _115							(115.0 -	116.0') Rough drilling)		
- _116			615			(116.0 - 117.0') Topock - Alluvium Deposits; Silty grave					
- 117			GM			with sand (GM); reddish brow / moderate brown (5YR 4/4)	n				
- _118_ - _119_	(116.7 - 137.: 2.18 mins/ft		ML		(116.7 - 137.3') 16.0" Steel Casing	(117.0 - 120.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brov / moderate brown (5YR 4/4)	vn				
120											
	viations: U	scs	= Unif	ied Soil	Classification	System, ft = feet, bgs =	below grou	und surface, ams	l = above r	nean sea level,	GW =
				NI-		er table symbol represen				C 1)/// C: 1	

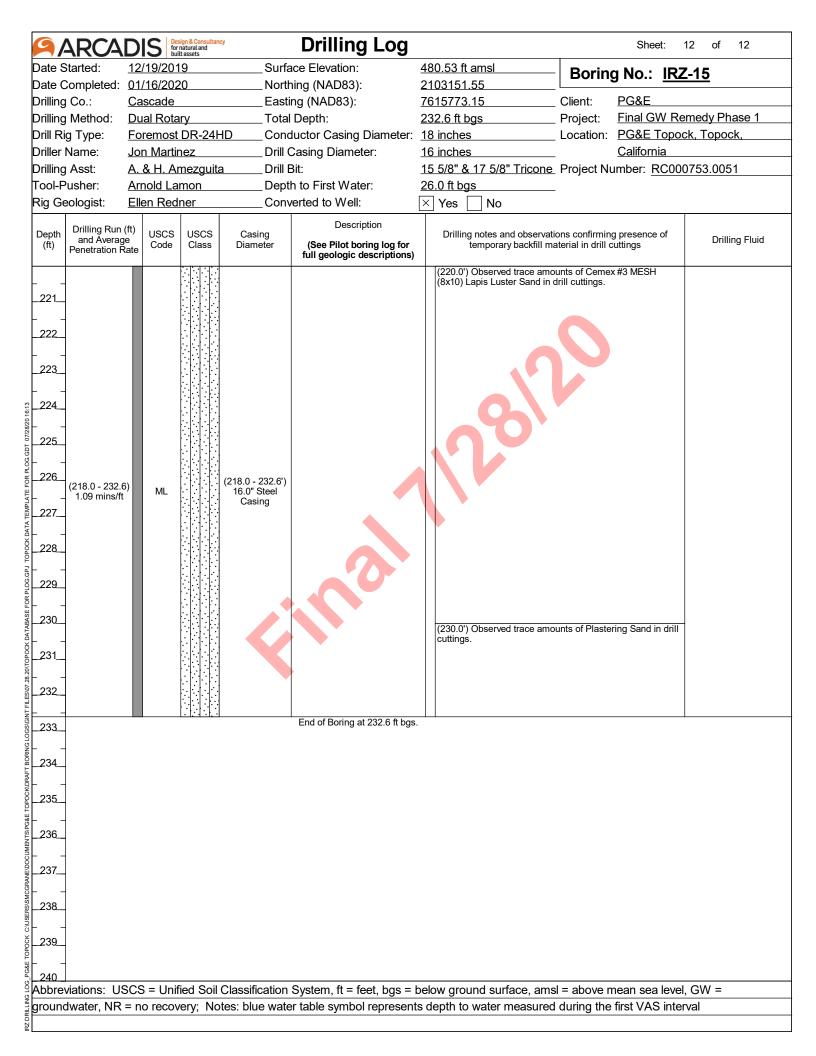
9/	<u> ARCA</u>	DI	5 for	sign & Consultant natural and It assets		Drilling Log		Sheet: 7	of 12
	Started:		19/201			ace Elevation:	480.53 ft amsl	Boring No.: IRZ	<u>-15</u>
	Completed:			20		ning (NAD83):	2103151.55		
Orilling			scade			ng (NAD83):	7615773.15	Client: PG&E	mady Dhasa 1
•	Method:		al Rota	-		Depth: ductor Casing Diameter:	232.6 ft bgs	Project: Final GW Rer Location: PG&E Topoc	
	g Type: Name:		<u>emosi</u> n Martir	DR-24F		Casing Diameter:	16 inches		к, тороск,
	Asst:			nezguita		-	15 5/8" & 17 5/8" Tricone		753.0051
_	usher:		old La	_		h to First Water:	26.0 ft bgs		
Rig Ge	eologist:	Elle	en Red	ner	Con\	erted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration F	je	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		ions confirming presence of aterial in drill cuttings	Drilling Fluid
			GM			(120.0 - 121.0') Topock - Alluvium Deposits; Silty grave with sand (GM); reddish brow / moderate brown (5YR 4/4) (121.0 - 127.0') Topock -	(8x10) Lapis Luster Sand in		
						Alluvium Deposits; Gravelly si with sand (ML); reddish browr moderate brown (5YR 4/4)	It h	0	
_123 _ _124			ML						
- _125							U.D.		
_ _126									
_ _127		-				(127.0 - 137.0') Topock - Alluvium Deposits; Silty grave			
128_						with sand (GM); reddish brown / moderate brown (5YR 4/4)	n		
- _129	(116.7 - 137.3 2.18 mins/ft				(116.7 - 137.3') 16.0" Steel Casing				
_ _130							(130.0') Observed trace amo		
_ _131					X		(8x10) Lapis Luster Sand in	ariii cuttings.	
_132			GM		•				
_133									
_134									
_135 _ 									
_136 - _137									
_138			ML		(407.0 455.**	(137.0 - 139.5') Topock - Alluvium Deposits; Gravelly si with sand (ML); reddish browr moderate brown (5YR 4/4)	It h		
_ _139	(137.3 - 158. 1.63 mins/ft				(137.3 - 158.1') 16.0" Steel Casing				
140			SM			(139.5 - 144.5') Topock -			
						·	below ground surface, ams		
round	dwater, NR	= nc	recov	erv: No	tes: blue wate	er table symbol represent	is depth to water measured	I during the first VAS interv	/al

	<u> ARCA</u>		built	gn & Consultano atural and assets		Drilling Log				Sheet:	8 of 12
	Started:		19/201			ice Elevation:	480.53 ft		Borine	g No.: <u>IF</u>	RZ-15
	Completed:			0		ning (NAD83):	2103151				
-	Co.:		scade			ng (NAD83):	7615773		Client:	PG&E	
-	Method:		al Rota	-		Depth:	232.6 ft k	-	Project:		Remedy Phase 1
	g Type:			DR-24F		luctor Casing Diameter:			Location:	-	ock, Topock,
	Name:		Martin			Casing Diameter:	16 inches		Droisethi	California	000752 0054
-	Asst: Pusher:		<u>s H. An</u> old Lar	nezguita mon		มะ h to First Water:	26.0 ft bo	k 17 5/8" Tricone	Project Nu	ımber: RCC	00753.0051
	eologist:		n Redr			rerted to Well:	× Yes	No			
iig Ot	Joiogiot.		- Tricour				103				
Depth (ft)	Drilling Run and Averag Penetration F	je	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		g notes and observation temporary backfill ma	terial in drill d	uttings	Drilling Fluid
_ _141						Alluvium Deposits; Silty sand with gravel (SM); reddish brov (2.5YR 4/4)	/n (8x10) i) Observed trace amou Lapis Luster Sand in d		(#3 MESH	
- 142_ -			SM						0		
143 - 144_											
145_						(144.5 - 161.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brov	m l	19,			
_ 146						with gravel (SM); reddish brow (2.5YR 4/4)					
- 147							(147.0	- 151.0') Rough drilling)		
148 <u> </u>					(427.2. 452.41)						
149 - 150_	(137.3 - 158.7 1.63 mins/ft	1)			(137.3 - 158.1') 16.0" Steel Casing						
							(150.0') (8x10) i) Observed trace amou Lapis Luster Sand in d	unts of Cemex rill cuttings.	¢#3 MESH	
152_											
- 153_			SM								
- 154_											
- 155 -											
156_ -											
157 - 158_											
-	(158.1 - 177.8 1.29 mins/ft	3)			(158.1 - 177.8') 16.0" Steel Casing						
160											
						System, ft = feet, bgs = r table symbol represen					
	divistan NID										

9/	ARCA	DIS for bu	esign & Consultanc r natural and uilt assets	у	Drilling Log		Sheet:	9 of 12
Date S	Started:	12/19/201		Surfa	ace Elevation:	480.53 ft amsl	Boring No.: IR	Z-15
	Completed:				ning (NAD83):	2103151.55		<u> </u>
Drilling		Cascade			ng (NAD83):	7615773.15	Client: PG&E	Domody Dhaga 1
_	Method: g Type:	Dual Rota Foremost	-		Depth: ductor Casing Diameter:	232.6 ft bgs	Project: Final GW F Location: PG&E Tope	Remedy Phase 1
	Name:	Jon Martin			Casing Diameter:	16 inches	California	оск, тороск,
Drilling		A. & H. A				15 5/8" & 17 5/8" Tricone	·	00753.0051
_	usher:	Arnold La	-		h to First Water:	26.0 ft bgs		
Rig Ge	eologist:	Ellen Red	Iner	Conv	verted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration R	e Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		ions confirming presence of aterial in drill cuttings	Drilling Fluid
		SM				(160.0') Observed trace amo (8x10) Lapis Luster Sand in		
161 162 163 		ML			(161.0 - 164.5') Topock - Alluvium Deposits; Gravelly sil with sand (ML); dark reddish brown (2.5YR 3/3)			
164_					(164.5 - 167.0') Topock -	8		
165 166		SM			Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n (165.0 - 172.0') Drill rods cha	attering	
167	(158.1 - 177.£ 1.29 mins/ft			(158.1 - 177.8') 16.0" Steel Casing	(167.0 - 172.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n		
		L			4700 4745) T	(170.0') Observed trace amo (8x10) Lapis Luster Sand in		
173 174		GM			(172.0 - 174.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish browr / moderate brown (5YR 4/4)			
175_					(174.5 - 187.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish browr / moderate brown (5YR 4/4)			
176 177		GM			(********)	(177.0') Observed trace amo (8x10) Lapis Luster Sand in o		
2178 179	(177.8 - 197.3 1.53 mins/ft			(177.8 - 197.3') 16.0" Steel Casing				(177.8 - 232.6') 4900 gallons of water used; 8674 gallons of water recovered; 3774 gallon of water gained
5 <u>180 </u>	viations: 119	SCS = Unit	fied Soil (Classification	System.ft = feet_bas = k	□□ pelow ground surface, ams	sl = above mean sea leve	 el. GW =
						s depth to water measured		

Parte Started: Parte Complete Partilling Co.: Partilling Metho Partill Rig Type: Partiller Name: Partilling Asst:	<u>12</u> ed: <u>01</u>	2/19/201		Surfa			1	
orilling Co.: Orilling Metho Orill Rig Type: Oriller Name:		/16/202	•		ace Elevation:	480.53 ft amsl	Boring No.: IRZ	-15
rilling Metho rill Rig Type: riller Name:	<u>Ca</u>		.0	North	ning (NAD83):	2103151.55		10
orill Rig Type: oriller Name:		ascade		Easti	ng (NAD83):	7615773.15	Client: PG&E	
riller Name:	d: <u>D</u> ւ	ual Rota	ry	Total	Depth:	232.6 ft bgs	Project: Final GW Ren	medy Phase 1
	Fo	oremost	DR-24H		luctor Casing Diameter:	18 inches	Location: PG&E Topoc	k, Topock,
rilling Acet		n Martir			Casing Diameter:	16 inches	<u>California</u>	
-			<u>nezguita</u>			15 5/8" & 17 5/8" Tricone	Project Number: RC000	753.0051
ool-Pusher:		nold La		•	h to First Water:	26.0 ft bgs		
tig Geologist	<u>EI</u>	len Redi	ner	Con\	verted to Well:	× Yes No		
Depth Drilling	Run (ft)	USCS	USCS	Casing	Description	Drilling notes and observation	one confirming presence of	
/ft\ and A	erage ion Rate	Codo	Class	Diameter	(See Pilot boring log for full geologic descriptions)	temporary backfill ma	terial in drill cuttings	Drilling Fluid
181_	П					(180.0') Observed trace amou (8x10) Lapis Luster Sand in d		
_								
182_	-1							
183_ - 184_		GM						
185						76		
186_	-1							
187_	-1							
	- 1		. 00		(187.0 - 189.5') Topock - Alluvium Deposits; Gravelly si	lt l		
188					with sand (ML); reddish brown (2.5YR 4/4)			
	407.0\	ML		(177.8 - 197.3')	(2.51R 4/4)			
189(177.8 - 1.53 m				16.0" Steel Casing				
_ 			.00.		(189.5 - 192.0') Topock - Alluvium Deposits; Gravelly si	lt (400 0) Ol	10 NO	
4	- 1				with sand (ML); reddish browr (2.5YR 4/4)	(190.0') Observed trace amou (8x10) Lapis Luster Sand in d	rill cuttings.	
191	- 1	ML			,			
	- 1							
192	- 1	_	00		(400 0 407 0l) Tl			
4					(192.0 - 197.0') Topock - Alluvium Deposits; Sandy silt			
193					with gravel (ML); reddish brow (2.5YR 4/4)	/n		
4					,			
194	- 1							
4	- 1	ML						
195	- 1							
4								
196								
4								
197					(197.0 - 200.0') Topock -	_		
-					Alluvium Deposits; Silty sand			
198					with gravel (SM); dark reddish brown (2.5YR 3/4)			
(197.3 -		SM		(197.3 - 218.0') 16.0" Steel				
199 `1.28 m				Casing				
4								
200		0 - 11 '		Olasaida d	Overtown # = f= ()			C)M =
						below ground surface, amsl is depth to water measured		
oundwater,	1417 – L	io iecov	cıy, INOL	.cs. piue Wale	a table symbol represent	is acpiri to water measufed	during the list VAS litter	val

	<u> ARCA</u>		buil	i <mark>gn & Consultano</mark> natural and t assets		Drilling Log		1	
	Started:		9/201			ace Elevation:	480.53 ft amsl	Boring No.: IRZ	<u>-15</u>
	Completed:			.0		ning (NAD83):	2103151.55	-	
_	Co.:		cade			ng (NAD83):	7615773.15	Client: <u>PG&E</u> Project: <u>Final GW Rer</u>	mody Phono 1
_	Method: g Type:		l Rota	ry DR-24H		Depth: ductor Casing Diameter:	232.6 ft bgs	Project: Final GW Rer Location: PG&E Topocl	-
	y rype. Name:		<u>Martir</u>			Casing Diameter:	16 inches	California	к, гороск,
	Asst:			nezguita		-		Project Number: RC000	753.0051
-	usher:		old La	•		h to First Water:	26.0 ft bgs	- · · · , - · · · · · · · · · · · · · · · · · ·	
ig Ge	eologist:	<u>Eller</u>	n Redi	ner	Conv	erted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration R	je '	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	temporary backfill m	ions confirming presence of aterial in drill cuttings	Drilling Fluid
- 201_						(200.0 - 206.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brov (2.5YR 4/4)	(200.0') Observed trace amo (8x10) Lapis Luster Sand in		
202 -								0	
203 - 204			SM						
205_							0,0,		
- 206_									
207						(206.5 - 212.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brow (2.5YR 4/4)	n		
208_ -					(197.3 - 218.0')	(2.01(17)			
209 _ 210_	(197.3 - 218.0 1.28 mins/ft		ML		16.0" Steel Casing				
211_							(210.0') Observed trace amo (8x10) Lapis Luster Sand in		
- 212_						(212.0 - 232.6') Topock -			
- 213_						Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); red (2.5YR 4/6)			
214 <u> </u>									
215									
216 - 217			ML						
- 218_									
- 219	(218.0 - 232.6 1.09 mins/ft	6)			(218.0 - 232.6') 16.0" Steel Casing				
220					<u> </u>				0.44
						·	below ground surface, ams	sl = above mean sea level, I during the first VAS interv	
	OWNER IN IN	_ 110							

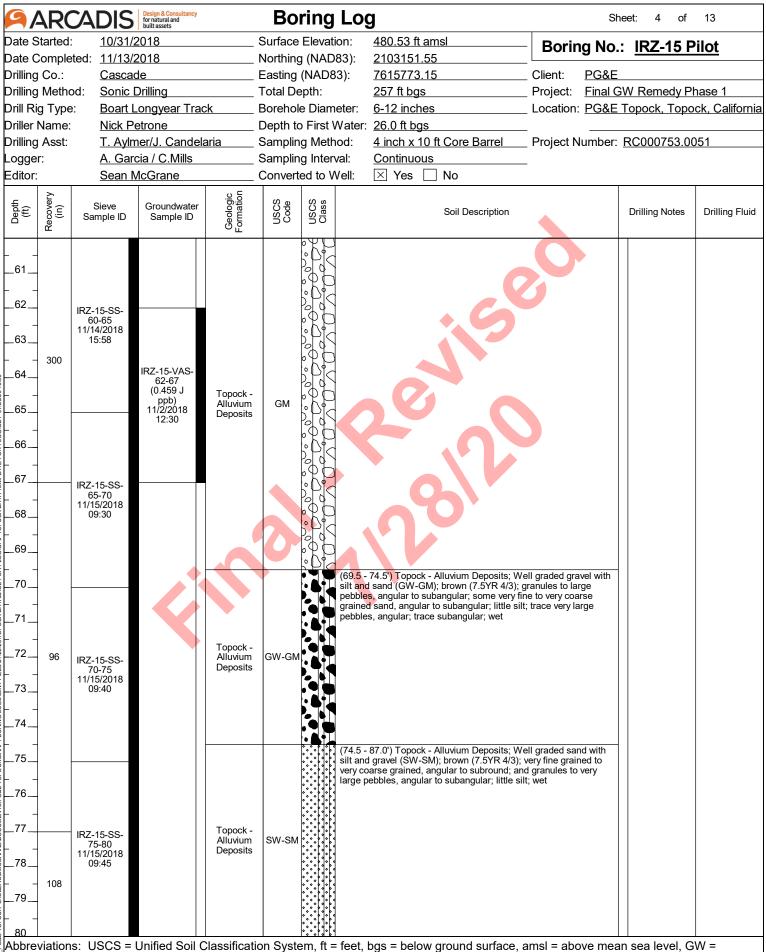


9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9	Sheet: 1 of 13			
Date S	tarted:	10/31/2	2018		Surface	Elevat	ion:	480.53 ft amsl	Boring N	o.: <u>IRZ-15</u>	Pilot	
	•	ted: <u>11/13/2</u>			Northing			2103151.55				
Drilling		Cascac			Easting	•	33):	7615773.15	Client: PG8			
Drilling					Total De	•		257 ft bgs	-	I GW Remedy		
Drill Ri			<u>ongyear Trac</u>		Borehol			6-12 inches	Location: PG8	<u> RE Topock, Top</u>	ock, California	
Driller I		Nick Pe						26.0 ft bgs	. <u> </u>			
Drilling		•	ner/J. Candel		Samplin	-		4 inch x 10 ft Core Barrel	Project Number	er: <u>RC000753.</u>	0051	
Logge			cia / C.Mills		Samplin	-		Continuous	-			
Editor:		<u>Sean Iv</u>	<u>//cGrane</u>		Convert	ed to v	veii:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description		Drilling Notes	Drilling Fluid	
 _ 1 _ 	0				NR		(0.0 - 2	2.0') No recovery (NR); not logged during	ng h <mark>and cle</mark> aring	(0.0 - 5.0') Attempted to hand clear for utility clearance.		
2	60			Topock - Fil	II SP	<u>/ </u>	/ mode mediur grained subrou (7.0 - 1 4/3); ve	7.0') Topock - Fill; Poorly graded sand (rate yellowish brown (10YR 5/4); very fin grained, angular to round; little coars d sand, angular to round; trace granule nd; trace silt; trace clay; dry 7.0') Topock - Fill; Poorly graded sand ery fine grained to medium grained, angular to very coarse grained sand, angular to	ine grained to se to very coarse to small pebbles, (SP); brown (10YR) gular to round; little			
891011121314151617	120			Topock - Fil	II SP		(17.0 - (SM); c	22.5') Topock - Alluvium Deposits; Silt lark yellowish brown (10YR 4/4); very fi	y sand with gravel ine grained to very	(17.0 - 27.0') Core barrel	ĺ	
18 19 20	78			Topock - Alluvium Deposits	SM		coarse pebble grained	grained, angular to subangular; some, angular to subangular; some very fined to subangular; some very fined to sand, angular to subround; some silt;	granule to large to very coarse trace clay; dry	and sedimen were hot	ts	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	13
Date S	tarted:	10/31/2	2018		Surface	Elevat	ion: <u>480.53 ft amsl</u>	Boring No.	: IRZ-15 P	ilot
		ted: <u>11/13/</u> 2	2018		Northing		,		- 	
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling					Total De	-	257 ft bgs	•	W Remedy Ph	
Drill Ri			ongyear Trac		Borehol		•	Location: PG&E	Topock, Topod	ck, California
Driller I		Nick P			•		Water: 26.0 ft bgs	· 		
Drilling		•	ner/J. Candela		Samplin	-		Project Number:	RC000753.00	51
Loggeı Editor:			cia / C.Mills //dcGrane		Samplin Convert	•				
	1	<u>ocar n</u>					VOII. M 103 M 140			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 21 22				Topock - Alluvium Deposits	SM		. 6			
23	78			Topock - Alluvium Deposits	GW-GM		(22.5 - 23.5') Topock - Alluvium Deposits; We silt and sand (GW-GM); very dark grayish bro granules to large pebbles, angular to subangu very coarse grained sand, angular; little silt; tr	wn (10YR 3/2); ular; little very fine to		
24 25							pebbles, subangular; moist (23.5 - 27.0') (NR); No recovery core barrel we the sample bag part of the core fell through the hopper.	as hot and melted e rig deck into the		
26					NR		(n)		<u>.</u>	
27		IRZ-15-SS- 25-30 11/14/2018					(27.0 - 29.5') Topock - Alluvium Deposits; Gra (ML); brown (10YR 4/3); medium plasticity; litt large pebbles, angular to subangular; little ver	tle granules to very	(27.0') Approximate depth of water	
28 29		11:55		Topock - Alluvium Deposits	ML		grained sand, angular to subangular; trace cla	ay; wet	table	
30	•						(29.5 - 47.0') Topock - Alluvium Deposits; Silt (GM); brown (10YR 5/3); granules to medium	pebbles, angular to		
 31							suba <mark>ngu</mark> lar; and silt; little very fine to very coa subangular to round; trace large pebbles, ang wet			
32	120	IRZ-15-SS- 30-35								
33		30-35 11/14/2018 12:03								
34			IRZ-15-VAS-							
			32-37	Topock -						
35			(13 ppb) 11/1/2018 13:00	Alluvium Deposits	GM	9				
			13.00	Берозіта						
36						Port				
37		IRZ-15-SS-				PST &				
 		35-40 11/14/2018								
38		12:15				PITE				
20	300									
39						PITE				
40										
Abbre	viation	s: USCS =	Unified Soil C	Classificati	on Syste	em, ft	feet, bgs = below ground surface, a	amsl = above mea	n sea level, G	W =

groundwater, ppb = parts per billion; U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the collection of samples from the temporary well; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

9/	PARCADIS Design & Consultancy for natural and built assets					ring	Log		Sh	eet: 3 of	13
Date S				_	Surface			Borin	a No.:	: <u>IRZ-15 P</u>	ilot
		ted: <u>11/13/2</u>			Northing		•	. L			
Drilling		Cascad			Easting	•	· ·	Client:	PG&E	W D D	4
Drilling					Total De	-	257 ft bgs	Project:		W Remedy Ph	
Drill Riq			ongyear Trac		Borehole			Location:	PG&E	Topock, Topo	ck, California
Driller I Drilling			etrone ner/J. Candela		Samplin		Water: 26.0 ft bgs od: 4 inch x 10 ft Core Barrel	Project N	umber:	RC000753.00	51
Logge		-	cia / C.Mills	<u>aiia</u>	Samplin	-		i iojeci iv	umber.	110000733.00	J I
Editor:			//////////////////////////////////////		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45		IRZ-15-SS- 40-45 11/14/2018 12:24		Topock - Alluvium Deposits	GM				•		
46 47 48 49 50	300	IRZ-15-SS- 45-50 11/14/2018 12:43			0		(47.0 - 57.0') Topock - Alluvium Deposits; Silt (GM); grayish brown (10YR 5/2); granules to rangular to subangular; some very fine to very sand, subangular to rounded; little large to ver angular to subangular; little silt; trace subangular	medium pebb coarse grain ry large pebb	oles, ed		
51 52 52 53 54 55		IRZ-15-SS- 50-55 11/14/2018 13:23		Topock - Alluvium Deposits	GM						
56 57 58 59 60	intion	IRZ-15-SS- 55-60 11/14/2018 13:32	Inified Soil C	Topock - Alluvium Deposits	GM System		(57.0 - 69.5') Topock - Alluvium Deposits; Silt (GM); brown (7.5YR 5/3) and reddish brown (5 to medium pebbles, angular to subangular; sc coarse grained sand, subangular to round; litt pebbles, angular to subangular; little silt; trace	5YR 5/3); gra ome very fine le large to ve e subangular	nules to very ry large wet	n soa level. C	Λ/



groundwater, ppb = parts per billion; U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the collection of samples from the temporary well; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 5 of	13
Date S	Started	10/31/2	2018		Surface	Elevat	ion: <u>480.53 ft amsl</u>	Borin	a No.:	IRZ-15 P	ilot
Date C	Comple	ted: <u>11/13/2</u>	2018		Northing	y (NAD	983): <u>2103151.55</u>		9		<u></u>
Drilling	Co.:	<u>Cascac</u>	de		Easting	(NAD8	33): <u>7615773.15</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic I</u>	<u> Drilling</u>		Total De	-	257 ft bgs	•		W Remedy Ph	
Drill Ri			ongyear Trac	ck	Borehol			Location:	PG&E	<u>Topock, Topo</u>	<u>ck, California</u>
Driller I							Water: 26.0 ft bgs	-			
Drilling			ner/J. Candela	aria	Samplin	-		Project N	umber:	RC000753.00)51
Logge			cia / C.Mills		Samplin	-		-			
Editor:		Sean N	<u>/IcGrane</u>		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
81 82 83 84 85	108	IRZ-15-SS- 80-85 11/15/2018 09:50		Topock - Alluvium Deposits	SW-SM				•		
86 87 88 88 89		IRZ-15-SS- 85-90 11/15/2018 09:58			0		(87.0 - 97.0') Topock - Alluvium Deposits; Silt (GM); brown (7.5YR 4/3); granules to large pe subangular; some silt; little very fine to very co angular to subround; trace very large pebbles wet	ebbles, angula parse grained	ar to sand,		
90 91 92 93 94 95	96	IRZ-15-SS- 90-95 11/15/2018 10:05		Topock - Alluvium Deposits	GM						
96 97 98 99	96	IRZ-15-SS- 95-100 11/15/2018 10:15		Topock - Alluvium Deposits	SM		(97.0 - 104.5') Topock - Alluvium Deposits; Si (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subangular; and granules pebbles, angular; little silt; trace angular; wet	ained to very o			
	viation	s: USCS =	Unified Soil (Classificati	ion Syste	em, ft =	= feet, bgs = below ground surface, a	amsl = abo	ve mea	n sea level, G	W =

groundwater, ppb = parts per billion; U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the collection of samples from the temporary well; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

9/-	۱RC	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	et: 6 of	13
Date S				_	Surface			Boring	ı No.:	IRZ-15 P	ilot
		ted: <u>11/13/2</u>			Northing		· ·				
Drilling		Cascad			Easting	•	•		PG&E		
Drilling			•		Total De	-	257 ft bgs	-		N Remedy Pr	
Drill Ri Driller I			<u>-ongyear Trac</u>	CK	Borehole			Location: <u>F</u>	G&E I	Topock, Topo	ck, California
Drilling			etrone ner/J. Candela	aria	Samplin		Water: 26.0 ft bgs nod: 4 inch x 10 ft Core Barrel	Droiget Nu	mher: I	RC000753.00	 151
Logge		-	cia / C.Mills	<u> </u>	Samplin	-	· · · · · · · · · · · · · · · · · · ·	. i iojectivui	ilibei. <u>i</u>	10000733.00	10 I
Editor:			McGrane		Converte	-		-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
101 102 103 104 105	96	IRZ-15-SS- 100-105 12/6/2018 10:25	IRZ-15-VAS- 102-107 (< 0.17 U ppb) 11/3/2018 16:15	Topock - Alluvium Deposits	SM		(104.5 - 106.5') Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown (5YR 4 to very coarse grained, angular to subangular	4/4); very fine gi	rained		
 106 _107_				Alluvium Deposits	SM		very large pebble, angular; some silt; trace an (106.5 - 116.0') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown (5YR 4	i <mark>gul</mark> ar; wet Sandy silt with g			
108 109 110		IRZ-15-SS- 105-110 11/15/2018 11:00		•	0		plasticity; some granules to very large pebble, subangular; some very fine to very coarse gra to subangular; wet; weak cementation	, angular to	ular		
	300	IRZ-15-SS- 110-115 11/15/2018 11:20		Topock - Alluvium Deposits	ML		(416.0 447.0) Topogle Allunium Dopogito. S	Cilty grouply with	oond		
117 118 119				Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML		(116.0 - 117.0') Topock - Alluvium Deposits; S (GM); reddish brown / moderate brown (5YR) large pebbles, angular to subangular; and silt very coarse grained sand, angular to subangu cementation (117.0 - 120.0') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown (5YR 4) plasticity; some granules to very large pebbles subangular; some very fine to very coarse grato subangular; wet; weak cementation	4/4); granules to ; little very fine to alar; wet; weak Sandy silt with g 4/4); medium s, angular to	o very to gravel		
120 Abbrey	viation	e: 119C9 -	Unified Soil (laccificati	ion Syste	m ft	 	amal = abov	o moar	sea level G	\ \ \/ -

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Log	3			She	eet: 7 of	13
Date S				_		Elevation:	480.53 ft an		Borin	g No.:	IRZ-15 P	ilot
	•	eted: <u>11/13</u>				g (NAD83):	2103151.55					
Drilling		Casca			•	(NAD83):	7615773.15	<u> </u>	Client:	PG&E		4
Drilling			Drilling	-1-	Total D	•	257 ft bgs		Project:		W Remedy Pl	
Drill Ri			Longyear Tra	CK		le Diameter:	6-12 inches		_ Location:	PG&E	Topock, Topo	ck, California
Driller			Petrone			o First Water:	•	t Cara Barral	- Droinet N		DC000753.00)E1
Drilling		•	<u>mer/J. Candel</u> rcia / C.Mills	ana	-	ng Method: ng Interval:		t Core Barrel	_ Project N	umber:	RC000753.00	<u>)5 I</u>
Logge Editor:			McGrane		•	ted to Well:	Continuous	No	-			
Editor.		Sean	T T T T T T T T T T T T T T T T T T T		Conven	led to Well.		INO				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
-				Topock - Alluvium	GM			 Alluvium Deposits; noderate brown (5YR 				
121				Deposits				to subangular; some s nd, angular to sub <mark>ang</mark> u		ine to		
				Topock - Alluvium Deposits	ML	(127.0) (127.0) (127.0) (127.0) (127.0) (127.0)	- 127.0') Topock eddish brown / m ty; some granule gular; little very fin gular; wet; weak of the distribution of the control of the eddish brown / m	- Alluvium Deposits; noderate brown (5YR 4) sis to very large pebble ne to very coarse grain comentation - Alluvium Deposits; noderate brown (5YR	Gravelly silt w 4/4); medium , angular to ned sand, ang Silty gravel wit 4/4); granules	th sand		
128	300			Topock - Alluvium Deposits	GM	coarse	grained sand, ar	io subangular; some v ngular to subangular; omposed of metadiori	some silt; wet			
			IRZ-15-VAS- 132-137 (< 0.17 U ppb) 11/4/2018 12:40			• Che (ML); re	eddish brown / m	- Alluvium Deposits; oderate brown (5YR 4	4/4); low plast	icity;		
	96			Topock - Alluvium Deposits	ML	some of very fin weak of	granules to very l e to very coarse ementation	arge pebbles, angular grained sand, angular - Alluvium Deposits; \$	to subangula r to subangula	r; some ar; wet;		
140	dotic -	N 11800 -	Unified Call O	oooific = ti = :				<u> </u>		Ū	a lovel CM -	
(2)								ound surface, ams				
ground	ıwater	, ppp = parts	s per billion; N	otes: appa	arent par	uai recoveries	can be the re	esult of potential o	compaction	ot sedir	nents in the c	ore pag
BOR												
IIOS												

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 8 of	13	
Date S	tarted:	10/31/2	2018		Surface	Elevat	ion: <u>480.53 ft amsl</u>	Borin	a No:	IRZ-15 P	ilot	
		eted: 11/13/2	2018		Northing	ı (NAC	83): <u>2103151.55</u>		ig 110	<u> </u>	<u></u>	
Drilling		Cascac			Easting	•	·	Client:	PG&E			
Drilling	Metho				Total De	-	257 ft bgs	Project:		W Remedy Pl		
Drill Ri			ongyear Trac		Borehol			Location:	PG&E	<u> Topock, Topo</u>	ck, California	
Driller					-		Water: 26.0 ft bgs					
Drilling		-	ner/J. Candela		Samplin	-		Project N	lumber: <u>l</u>	RC000753.00)51	
Logge Editor:			cia / C.Mills //cGrane		Samplin Convert	-						
Editor.		<u>Sean iv</u>	ICGIANE				Veli. A res 110					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid	
141 142 143 144 145	96	IRZ-15-SS- 140-145 11/15/2018 11:25		Topock - Alluvium Deposits	SM		(SM); reddish brown (2.5YR 4/4); very fine gragrained, angular to subangular; some granule pebbles, angular; little silt; trace angular; wet (144.5 - 161.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra	s to very larg	n gravel			
146 147	IRZ-15-S:	IRZ-15-SS- 145-150					grained, angular to subangular; some granule pebbles, angular; some silt; trace angular; we (147'); increase in granules and very large pel	s to very larg	e			
148 149 150		11/15/2018 11:30	15/2018		0		silt					
151 152 153 154	96	06 IRZ-15-SS- 150-150 11/15/2018 12:40	150-150 11/15/2018 Alluvium Deposits		Topock - Alluvium Deposits	SM		(154.5'); decrease in silt, trace clay				
155 156 157 158 159	96	IRZ-15-SS- 155-160 11/15/2018 12:45					(154.5); decrease in silt, trace clay					
160		11000 - 1	l-:6l O - :l O			<u> </u>	<u> </u>				\	

9/	٩RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		Sheet: 9	of	13														
Date S	Started	10/31/2	2018		Surface	Elevat	tion:	480.53 ft amsl	Boring No	o.: IRZ	-15 P	ilot														
	-	eted: 11/13/2			Northing	- '		2103151.55	_																	
Drilling		Casca			Easting	•	33):	7615773.15	_ Client: <u>PG&</u>																	
Drilling					Total De	•		257 ft bgs		GW Ren																
Drill Ri			_ongyear Trac		Borehol			6-12 inches	_ Location: <u>PG&</u>	E Topock	<u>, Topo</u>	<u>ck, California</u>														
Driller I					•			26.0 ft bgs	- <u> </u>	D0000	750.06															
Drilling		•	ner/J. Candela		Samplin	•		4 inch x 10 ft Core Barrel	_ Project Numbe	r: <u>RC000</u>	753.00	<u>151</u>														
Logge Editor:			cia / C.Mills McGrane		Samplin Convert	-		Continuous	_																	
Luitoi.		<u>Scan n</u>	TICGIAITE		Convert		/V GII.	∴ les □ l\u																		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description		Drilling	Notes	Drilling Fluid														
 161				Topock - Alluvium Deposits	SM																					
162 163 164	96	IRZ-15-SS- 160-165 11/15/2018 12:50 IRZ-15-VAS- 162-167 (3200 ppb) 11/5/2018		Topock - Alluvium Deposits	ML		(ML); d to very very co cemen	- 164.5') Topock - Alluvium Deposits; ark reddish brown (2.5YR 3/3); no pla large pebbles, angular to subangular arse grained sand, angular to subrou lation	asticity; some granule: ; some very fine to nd; wet; weak	3																
165 166 167		IR7-15-99-	13:00	Topock - Alluvium Deposits	SM		(SM); r grained pebble	eddish brown (2.5YR 4/4); very fine g l, angular to subangular; some granu s, angular; some silt; trace angular; w	rained to very coarse les to very large vet																	
168 169 170 171		165-170 165-170 11/15/2018 13:05		Topock - Alluvium Deposits	SM		(SM); r	- 172.0') Topock - Alluvium Deposits; eddish brown (2.5YR 4/4); very fine g di, angular to subangular; some granu s, angular; some silt; trace angular; tr	rained to very coarse les to very large																	
 172	114	IRZ-15-SS-										X									(172.0	- 174.5') Topock - Alluvium Deposits;	Silty groupl with cond			
173 174		IRZ-15-SS- 170-175 11/15/2018 13:15	11/15/2018	170-175 11/15/2018	170-175 11/15/2018	170-175 11/15/2018	170-175 11/15/2018	170-175 11/15/2018	170-175 11/15/2018		Topock - Alluvium Deposits	GM		(GM); r large p	eddish brown / moderate brown (5YF ebbles, angular to subangular; some grained sand, angular to subangular;	R 4/4); granules to very very fine to very	<i>'</i>									
175 175 176							(GM); r large p	- 187.0') Topock - Alluvium Deposits; eddish brown / moderate brown (5YF ebbles, angular to subangular; some grained sand, angular to subangular; tation	R 4/4); granules to very very fine to very	<i>'</i>																
 _177				T		137																				
 178 179	108			Topock - Alluvium Deposits	GM																					
180		11000 -	I losificad Cail C	<u> </u>	in Curt	174 L	_ f t	age = holow ground surface				\														

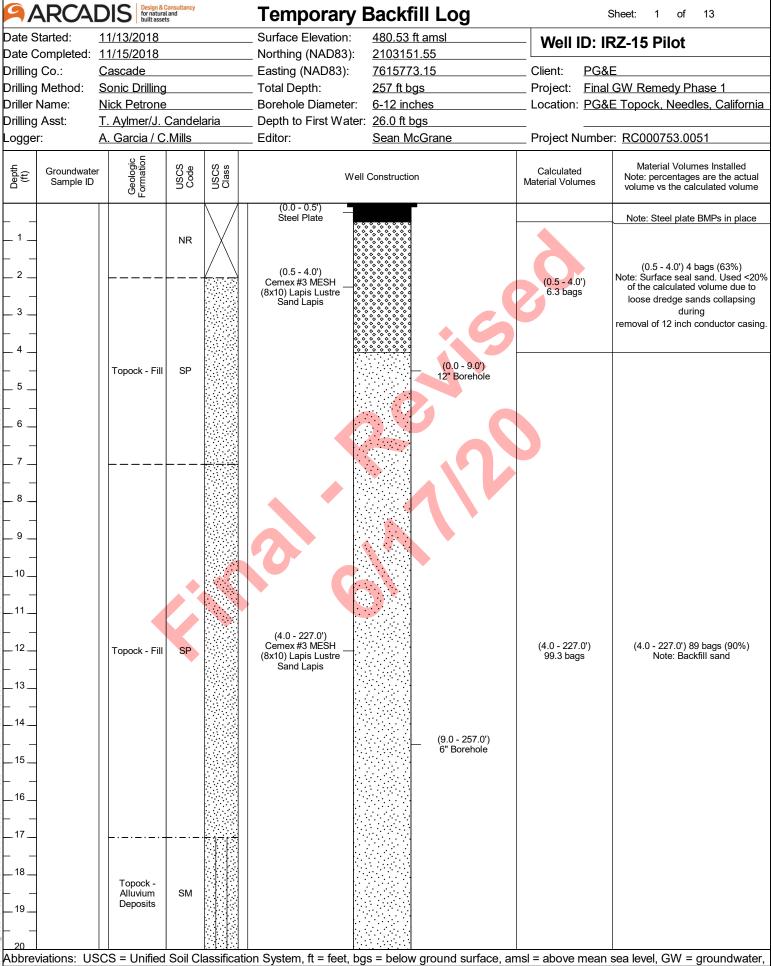
9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 10 of	13
Date S					Surface			Boring No.:	: IRZ-15 P	ilot
		ted: <u>11/13/</u>			Northing		•			
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling			_		Total De	•	257 ft bgs	•	W Remedy Ph	
Drill Ri Driller I			Longyear Trad		Borehol		neter: <u>6-12 inches</u> Water: <u>26.0 ft bgs</u>	Location: <u>PG&E</u>	тороск, торос	ck, Calliornia
Drilling			ner/J. Candel		Samplin		G	 Project Number:	RC000753.00)51
Logge		-	cia / C.Mills		Samplin	-		1 10,000 110,110,011	110000100.00	<u> </u>
Editor:		Sean N	<u>McGrane</u>		Convert	ed to V	Vell:			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description	1	Drilling Notes	Drilling Fluid
	108	IRZ-15-SS- 180-185 11/15/2018 13:27	IRZ-15-VAS- 182-187 (140 ppb) 11/6/2018 11:10	Topock - Alluvium Deposits	GM					
186 187 188		IRZ-15-SS- 185-190 11/15/2018 13:25		Topock -			(187.0 - 189.5') Topock - Alluvium Depos (ML); reddish brown (2.5YR 4/4); no plas very large pebbles, angular to subangula coarse grained sand, angular to subroun	ticity; some granules to r; some very fine to very		
189 190				Alluvium Deposits	ML		(189.5 - 192.0') Topock - Alluvium Depos (ML); reddish brown (2.5YR 4/4); no plas very large pebbles, angular to subangula	ticity; some granules to r; some very fine to very		
191 192	108	IRZ-15-SS-		Alluvium Deposits	ML		coarse grained sand, angular to subroun (192.0 - 197.0') Topock - Alluvium Depos	sits; Sandy silt with gravel		
 193 194 195		190-195 11/15/2018 13:30		Topock - Alluvium Deposits	ML		(ML); reddish brown (2.5YR 4/4); no plas very large pebbles, angular to subangula coarse grained sand, angular to subroun	r; some very fine to very		
196 197		IRZ-15-SS-					(197.0 - 200.0') Topock - Alluvium Depos		(197.0 -	
198 199 200	108	195-200 11/15/2018 13:35		Topock - Alluvium Deposits	SM		(SM); dark reddish brown (2.5YR 3/4); ve coarse grained, angular to subangular; s large pebbles, angular; some silt; trace a	ome granules to very	202.0') Interval is coarse grained and very saturated	
		11000	- 10 14			<u> </u>	foot bas = bolow around ourfoo		n and lavel C	\

9/	AR(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 11 of	13
Date S	started:	10/31/2	2018		Surface	Elevat	ion: <u>480.53 ft amsl</u>	Borino	ı No ·	IRZ-15 P	ilot
Date C	omple	ted: <u>11/13/2</u>	<u>2018 </u>		Northing	g (NAC	83): <u>2103151.55</u>		, 140	1112-101	<u>110t</u>
Drilling	Co.:	Cascad	de		Easting	(NAD	33): <u>7615773.15</u>		PG&E		
Drilling	Metho	od: <u>Sonic D</u>	<u> Drilling</u>		Total De	epth:	257 ft bgs	Project: [Final GV	N Remedy Ph	nase 1
Drill Ri			ongyear Trac		Borehol			Location: <u>I</u>	<u> PG&E T</u>	opock, Topo	ck, California
Driller							Water: 26.0 ft bgs	-			
Drilling		-	ner/J. Candela		Samplin	-		Project Nu	mber: <u>F</u>	RC000753.00)51
Logge			cia / C.Mills		Samplin	•		-			
Editor:		<u>Sean IV</u>	<u>//cGrane</u>		Convert		Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	108	IRZ-15-SS- 200-205 11/15/2018 13:45	Topock - Alluvium Deposits	SM		(200.0 - 206.5') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subangular; some granule pebble, angular; some silt; trace angular; trace	ained to very co es to very large	arse			
206 		IRZ-15-SS-	Topoc Alluvit Depos				(206.5 - 212.0') Topock - Alluvium Deposits; S (ML); reddish brown (2.5YR 4/4); low plasticity very coarse grained sand, angular to subround	y; some very fir	ne to		
208 209 210		205-210 11/15/2018 13:50		Topock - Alluvium Deposits	ML		very large pebbles, angular to subangular; trac cementation				
	108	IRZ-15-SS-			+		(212.0 - 232.0') Topock - Weathered Bedrock		 e;		
213		210-215 11/15/2018 14:00					Sandy silt with gravel (ML); red (2.5YR 4/6); rr little granules to very large pebbles, angular to very fine to very coarse grained sand, angular	o subangular; li	ittle		
							clay; wet; weak cementation	o subrouriu, li	400		
_214											
_215											
				Topock - Weathered	1						
_216				Bedrock -	IVIL						
 217				conglomerat	ie						
		IRZ-15-SS- 215-220									
218		215-220 11/15/2018 14:05									
	96										
_219											
220			oxdot	<u> </u>						<u></u>	<u> </u>

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 12 of	13
Date S	tarted	10/31/			Surface	Elevati	on: <u>480.53 ft amsl</u>	Boring No.	.: <u>IRZ-15 P</u>	ilot
		ted: <u>11/13/</u>			Northing		•			
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			-		Total De	-	257 ft bgs	•	GW Remedy Ph	
Drill Ri			<u>_ongyear Tra</u>		Borehol			Location: PG&E	Topock, Topo	<u>ck, California</u>
Driller I							Vater: 26.0 ft bgs		D0000750.00	
Drilling		•	ner/J. Candel		Samplin	-		Project Number:	RC000753.00)51
Logge Editor:			cia / C.Mills McGrane		Samplin Convert	-		-		
Luitor.		<u>ocan i</u>	VICOIGIIC	0 5			Veii. 103 1140			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	96		IRZ-15-VAS- 222-227 (< 0.17 U ppb) 11/7/2018 14:00	Topock - Weathered Bedrock - conglomeral	IVIL		(227.0 - 232.0'); some very fine to very coarse	e grained sand.		
228 229 230 231 	60			10	0		angular to subround; little clay; wet; decrease	in silt		
233 234 235 236 237	60	IRZ-15-SS- 232-237 11/15/2018 13:37		Topock - Weathered Bedrock - conglomerat	SIVI		(232.0 - 237.0') Topock - Weathered Bedrock Silty sand with gravel (SM); red (2.5YR 4/6); v very coarse grained, angular to subround; son large pebbles, angular; some silt; trace angular	ery fine grained to ne granules to very		
238 239 	108			Topock - Weathered Bedrock - conglomerat	te		(237.0 - 247.0') Topock - Weathered Bedrock Silty sand with gravel (SM); red (2.5YR 4/6); v very coarse grained, angular to subround; son large pebbles, angular; some silt; trace angula	rery fine grained to me granules to very ar; trace clay; moist		
Abbre	viatior	s: USCS =	Unified Soil	Classificat	ion Svst	em, ft =	feet, bgs = below ground surface, a	amsl = above me	an sea level. G	W =

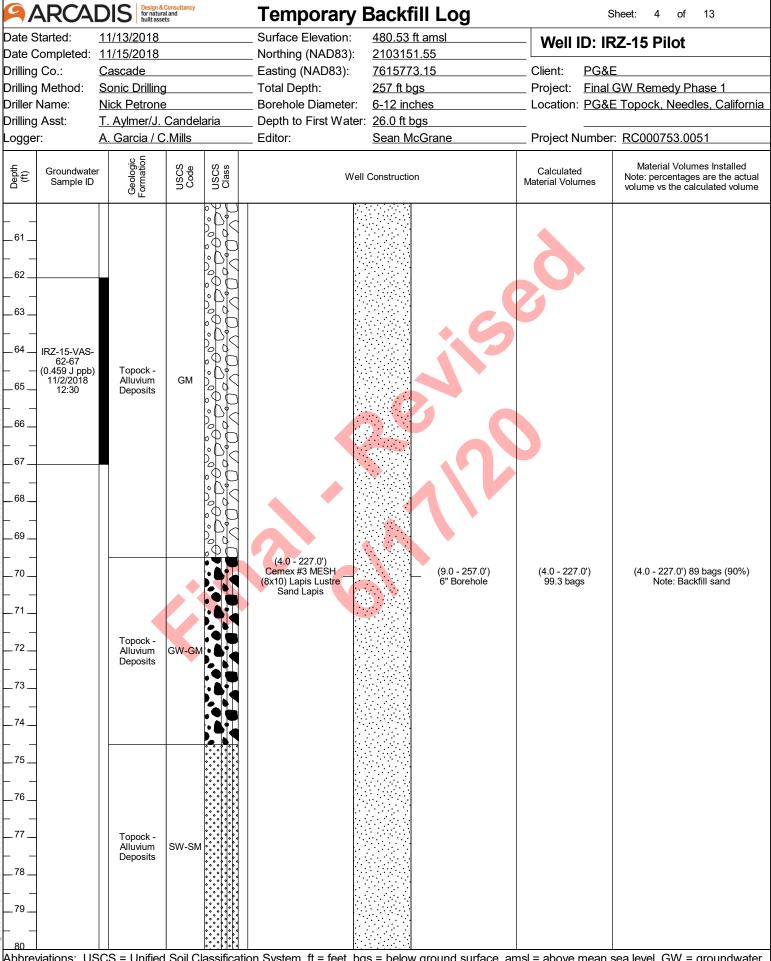
9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 13 of	13
Date S	started:	10/31/2	2018	{	Surface	Elevat	on: <u>480.53 ft amsl</u>	Boring No.	.: <u>IRZ-15 P</u>	Pilot
					Northing	g (NAE	83): <u>2103151.55</u>	Borning No	<u>IIQE 101</u>	1100
Drilling Co.: <u>Cascade</u>						(NAD	3): <u>7615773.15</u>	Client: PG&E	<u> </u>	
Drilling Method: Sonic Drilling						epth:	257 ft bgs	Project: Final 0	GW Remedy Pl	nase 1
Drill Ri	д Туре	: <u>Boart L</u>	ongyear Trad	<u>k </u>	Borehol	e Dian	eter: <u>6-12 inches</u>	Location: PG&E	Topock, Topo	ck, California
Driller	Name:	Nick Pe	etrone	[Depth to	First	Vater: 26.0 ft bgs	<u> </u>		
Drilling	Asst:	T. Aylm	ner/J. Candel	aria S	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.00)51
Logge	r:	A. Gard	cia / C.Mills		Samplin	g Inter	/al: <u>Continuous</u>	<u> </u>		
Editor:		Sean N	//cGrane	(Convert	ed to \	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	108			Topock - Weathered Bedrock - conglomerate	SM					
246_ 246_ 247_							(247.0 - 255.0') Topock - Weathered Bedrock	; - conglomerate;	-	
248				Topock -	0		Silty sand with gravel (SM); red (2.5YR 4/6); v medium grained, angular to subround; some large pebbles, angular; some silt; trace coars grained sand, subangular to round; trace clay	ery fine grained to granules to very e to very coarse		
	108			Weathered Bedrock - conglomerate	SM					
202										
255				Topodi			(255.0 - 257.0') Topock - Competent Bedrock (2.5YR 4/6); friable	- conglomerate; red		
				Topock - Competent Bedrock - conglomerate			· · · · · · · · · · · · · · · · · · ·			
257							F=4-fD- 1 (057.0.5)			
258258							End of Boring at 257.0 ft bo	gs.		
<u> </u>										
260										
n'							feet, bgs = below ground surface, a			
							ne laboratory reporting limit, J - estin			
blue w	ater ta	ble symbol	represents d	epth to wat	er mea	sured	luring the collection of samples from	the temporary w	ell; apparent p	artial

recoveries can be the result of potential compaction of sediments in the core bag

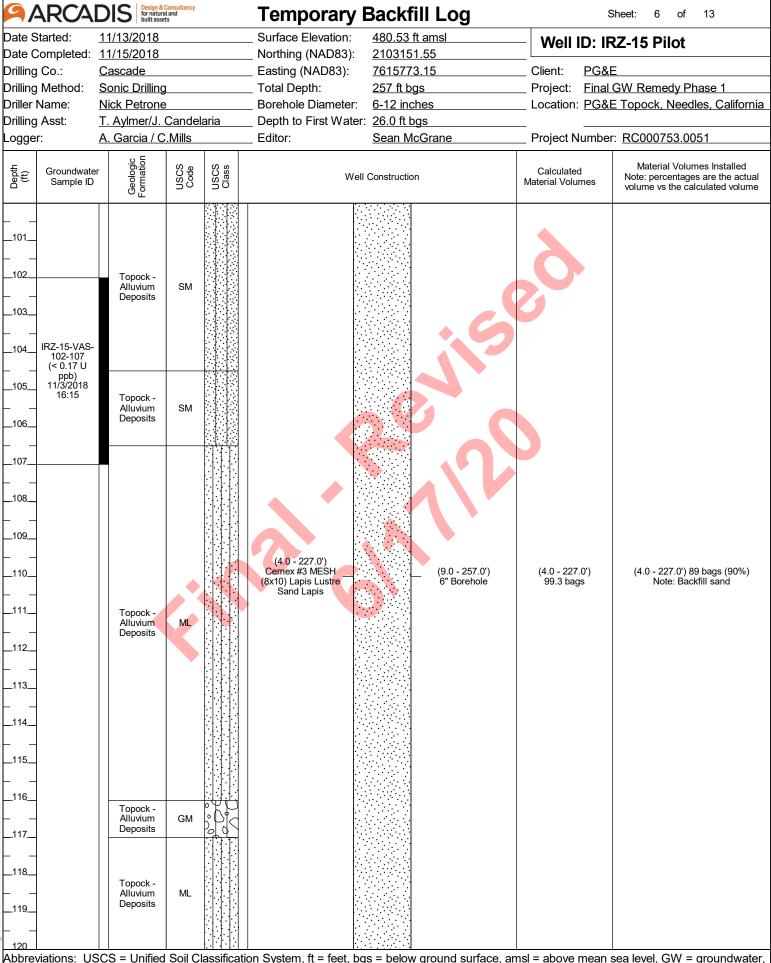


ARCADIS | Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 480.53 ft amsl 11/13/2018 Well ID: IRZ-15 Pilot Northing (NAD83): 2103151.55 Date Completed: 11/15/2018 Cascade Drilling Co.: Easting (NAD83): 7615773.15 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase 1 257 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 26.0 ft bgs Drilling Asst: A. Garcia / C.Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class Material Volumes Installed USCS Code Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume 21 Topock -SM Alluvium Deposits 22 Topock -23 Alluvium Deposits 24 25 NR 26 27 Topock -ML Alluvium Deposits 29 (4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre (4.0 - 227.0') 89 bags (90%) (9.0 - 257.0') (4.0 - 227.0') 30 6" Borehole 99.3 bags Note: Backfill sand Sand Lapis 3 32 IRZ-15-VAS-(13 ppb) 11/1/2018 Topock -Alluvium 35 Deposits 36 38 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

9/	ARCA	DIS Design & for natu built ass	& Consultancy ral and sets		Temporary I	Backfill Log	5	Sheet: 3 of 13
Date Started: Date Completed: Drilling Co.:		11/13/2018 11/15/2018 Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83):	480.53 ft amsl 2103151.55 7615773.15	Well ID: IRZ-15 Pilot	
Drilling	y Method: Name: y Asst:	Cascade Sonic Drilling Nick Petrone T. Aylmer/J. Candelaria A. Garcia / C.Mills			Lasting (NAD03) Total Depth: Borehole Diameter: _ Depth to First Water: _ Editor:	257 ft bgs 6-12 inches	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051	
Depth (ft)	Groundwate Sample ID	s S S S S S S S S S S S S S S S S S S S			Well Construction		Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
41		Topock - Alluvium Deposits	GM				20	
49 — 48 — 50 — 51 — 52 — 53 — 54 — 55 — 55 — 55 — 55 — 55 — 55		Topock - Alluvium Deposits	GM		(4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre Sand Lapis	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 99.3 bags	(4.0 - 227.0') 89 bags (90%) Note: Backfill sand
57 58 59 60	viations: U	Topock - Alluvium Deposits	GM d Soil C	lassificati	on System, ft = feet, bq	s = below ground surface, a	amsl = above mean :	sea level, GW = groundwater,



ARC	ADIS Designation for natural built as	& Consultancy iral and sets		Temporary I	Backfill Log	Sheet: 5 of 13		
Date Started: Date Complete Drilling Co.: Drilling Method Driller Name: Drilling Asst: Logger:	Cascade	g e Cande	aria	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.53 ft amsl 2103151.55 7615773.15 257 ft bgs 6-12 inches 26.0 ft bgs Sean McGrane	Well ID: IRZ-15 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Groundy Sample		SSCO	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
	Topock - Alluvium Deposits	SW-SN						
88 — — — — — — — — — — — — — — — — — —	Topock - Alluvium Deposits	GM		(4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre Sand Lapis	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 99.3 bags	(4.0 - 227.0') 89 bags (90%) Note: Backfill sand	
99	Topock - Alluvium Deposits	SM Soil C		ion System # - feet b-	a – bolow ground surface	omel = above mass	sea level, GW = groundwater,	



ARCADIS | Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 480.53 ft amsl 11/13/2018 Well ID: IRZ-15 Pilot Northing (NAD83): 2103151.55 Date Completed: 11/15/2018 Cascade Drilling Co.: Easting (NAD83): 7615773.15 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase 1 257 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 26.0 ft bgs Drilling Asst: A. Garcia / C.Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class Material Volumes Installed USCS Code Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume Topock -Alluvium GM Deposits _121. 122 123_ Topock -124 Alluvium Deposits 125 126 127 129 (4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre (4.0 - 227.0') 89 bags (90%) Note: Backfill sand (9.0 - 257.0') (4.0 - 227.0') _130_ 6" Borehole 99.3 bags Sand Lapis Topock -132 Alluvium Deposits _133. IRZ-15-VAS-132-137 (< 0.17 U ppb) 11/4/2018 _135. 12:40 136 137 _138. Topock -Alluvium ML Deposits 139

ARCA	DIS Design & Const for natural and built assets	sultancy	Temporary E	Backfill Log	Sheet: 8 of 13		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Nick Petrone T. Aylmer/J. Ca A. Garcia / C.M		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.53 ft amsl 2103151.55 7615773.15 257 ft bgs 6-12 inches 26.0 ft bgs Sean McGrane	_ Location: <u>PG&E</u> 		
Groundwate 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	
141 142 143 144	Topock - Alluvium Deposits	SM			6		
271 271	Deposits	SM	(4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre Sand Lapis	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 99.3 bags	(4.0 - 227.0') 89 bags (90%) Note: Backfill sand	

ARCADIS | Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 480.53 ft amsl 11/13/2018 Well ID: IRZ-15 Pilot Northing (NAD83): 2103151.55 Date Completed: 11/15/2018 Drilling Co.: Cascade Easting (NAD83): 7615773.15 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase 1 257 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 26.0 ft bgs Drilling Asst: A. Garcia / C.Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class Material Volumes Installed USCS Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume Topock -Alluvium SM Deposits _161. 162 Topock -Alluvium 163_ Deposits 164 IRZ-15-VAS-162-167 (3200 ppb) 11/5/2018 165 Topock -SM Alluvium 166 Deposits 167 _168 169 Topock -SM Alluvium (4.0 - 227.0')Deposits Cemex #3 MESH (8x10) Lapis Lustre (4.0 - 227.0') 89 bags (90%) (9.0 - 257.0') (4.0 - 227.0') 6" Borehole 99.3 bags Note: Backfill sand Sand Lapis 172 Topock -GM Alluvium Deposits 176 Topock -Alluvium Deposits 179

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 480.53 ft amsl 11/13/2018 Well ID: IRZ-15 Pilot Northing (NAD83): 2103151.55 Date Completed: 11/15/2018 Drilling Co.: Cascade Easting (NAD83): 7615773.15 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase 1 257 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 26.0 ft bgs Drilling Asst: A. Garcia / C.Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class Material Volumes Installed USCS Code Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume _181. 182 183_ Topock -Alluvium Deposits 184 IRZ-15-VAS-182-187 (140 ppb) 11/6/2018 185 186 187 _188_ Topock -ML Alluvium Deposits 189 (4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre (4.0 - 227.0') 89 bags (90%) (9.0 - 257.0') (4.0 - 227.0') _190_ 6" Borehole 99.3 bags Note: Backfill sand Sand Lapis Topock -Alluvium ML _191 Deposits 192 193. 194 Topock -ML Alluvium Deposits 195_ 196 197 _198. Topock -Alluvium Deposits 199

ARCA	DIS Design & for natura built asse	Consultancy I and ts		Temporary I	Backfill Log	5	Sheet: 11 of 13
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	11/13/2018			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.53 ft amsl 2103151.55 7615773.15 257 ft bgs 6-12 inches 26.0 ft bgs Sean McGrane	Client: PG& Project: Final Location: PG&	RZ-15 Pilot E GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051
	Groundwater Sample ID Code Code Code Code Code Code Code Code		Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate	SM ML		(4.0 - 227.0') Cemex #3 MESH (8x10) Lapis Lustre Sand Lapis	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 99.3 bags	volume vs the calculated volume (4.0 - 227.0') 89 bags (90%) Note: Backfill sand
219 220 Abbreviations: II	SCS - Unified	Soil C	lassification	on System ft - foot ha	s = helpw ground surface.	amel = above moon	sea level, GW = groundwater,

