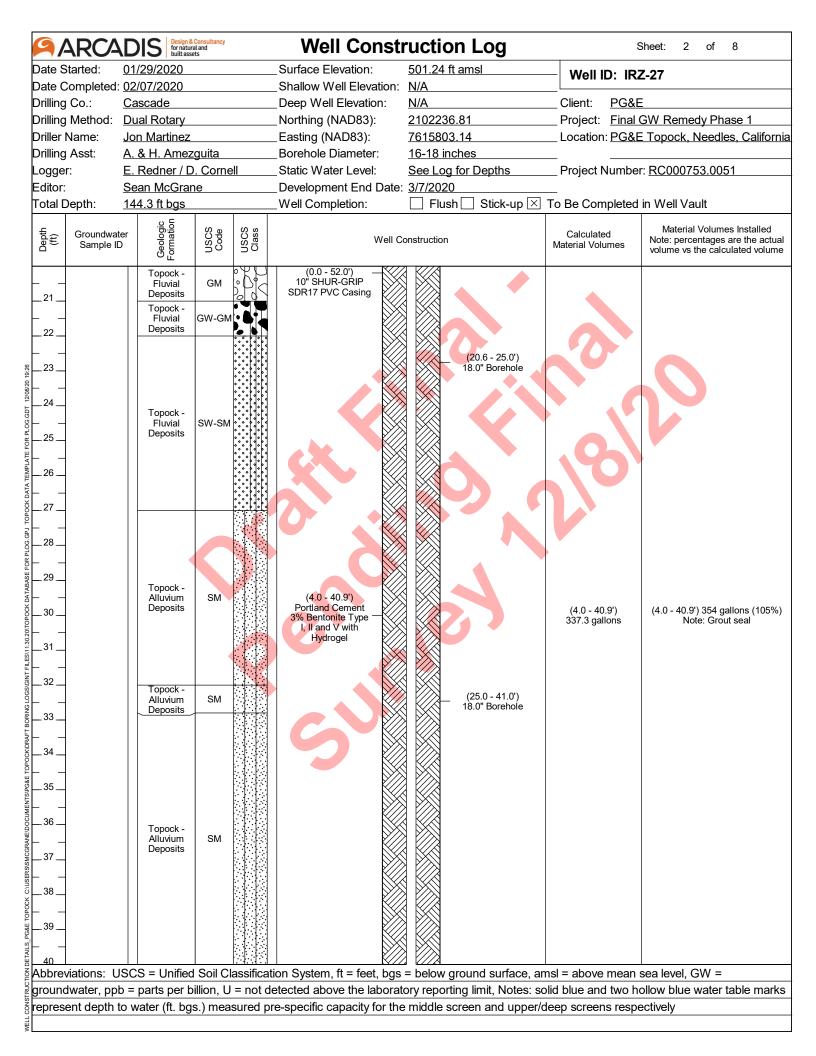
ARC <sup>4</sup>	DIS for natura built asse	Consultancy al and ts	Well Const		1	Sheet: 1 of 8
ate Started:	01/29/2020		_Surface Elevation:	501.24 ft amsl		Z-27
ate Completed:			_Shallow Well Elevation:	<u>N/A</u>		
rilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&	
rilling Method:	Dual Rotary		_Northing (NAD83):	2102236.81	-	GW Remedy Phase 1
riller Name:	Jon Martinez		_Easting (NAD83):	7615803.14	Location: <u>PG8</u>	E Topock, Needles, Californ
orilling Asst:	<u>A. &amp; H. Amez</u>	•	Borehole Diameter:	16-18 inches		
ogger:	E. Redner / D		_Static Water Level:	See Log for Depths	Project Numbe	er: <u>RC000753.0051</u>
ditor:	Sean McGran	le	_Development End Date:			
otal Depth:	<u>144.3 ft bgs</u>		_Well Completion:	Flush Stick-up	∑ To Be Completed	
Groundwat Games Sample II		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Topock - Fill	SM	(0.0 - 52.0') 10" SHUR-GRIP SDR17 PVC Casing (0.0 - 4.0') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(0.0 - 4.0') 9.8 bags	(0.0 - 4.0') 9 bags (92%) Note: Temporary backfill sand to fill annular space prior to vault installation.
. 5	Topock -					
_	Fluvial	SW SW				
. 6	Deposits / Topock -	SW-SM				
_	Fluvial					
.7	Topock -	SW-SM				
_	Deposits /					
. 8	Topock - Fluvial	GP 00				
_	Deposits					
99	Topock -					
_	Fluvial	SC				
_10	Deposits / Topock -	SW	(9.5 - 10.5')	(0.0 - 20.6') 18.0" Borehole		
_	Fluvial Deposits		Centralizer			
_11	Topock -					
_	Fluvial	GW-GM	(4.0 - 40.9')			
_12	Deposits		Portland Cement 3% Bentonite Type		(4.0 - 40.9')	(4.0 - 40.9') 354 gallons (105%) Note: Grout seal
_	Topock - Fluvial	GP O	I, II and V with		337.3 gallons	Note. Grout sear
_13	Deposits		Hydrogel			
_	Topock -					
_ 14	Fluvial Deposits	SM				
_						
_15						
· _	Topock -					
_ 16	Fluvial Deposits	SW-SM				
_						
_17						
· _	Topock -					
_18	Fluvial Deposits	GW-GC				
	Topock -					
_ 19	Fluvial	GW-GM				
	Deposits					
20		GM				
			tion System, ft = feet, bgs			
						nollow blue water table mark
present depth	ιο water (π. bg	s.) measured p	re-specific capacity for the	; mudule screen and upbe	er/ueed screens rest	Jecuvely

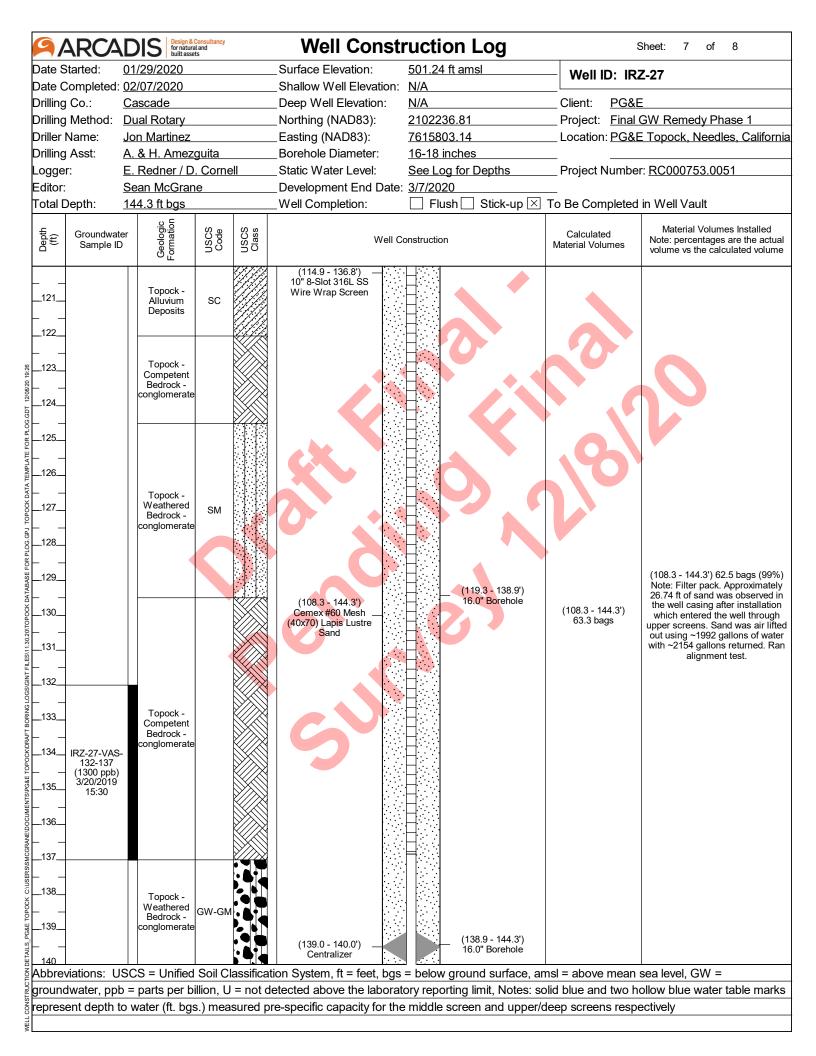


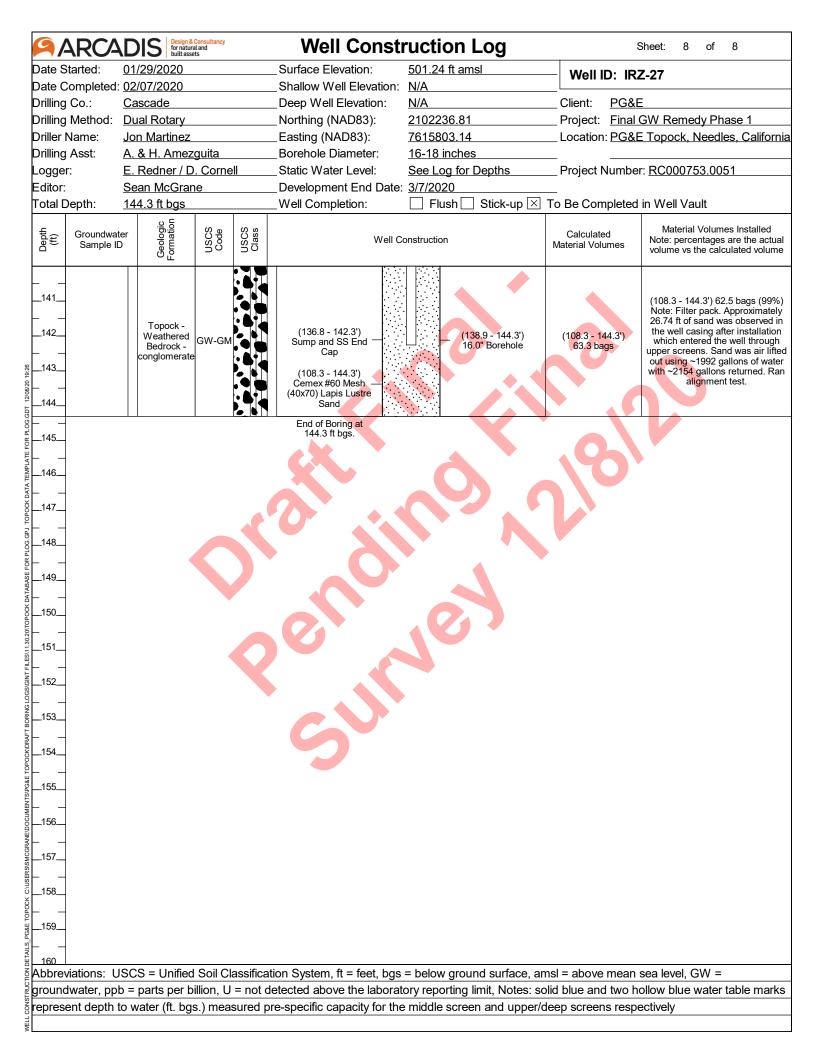
ARCA	DIS for natura built asse	Consultancy al and ets	well Const	truction Log		Sheet: 3 of 8
ate Started:	01/29/2020		Surface Elevation:	501.24 ft amsl		7-27
ate Completed:	02/07/2020		Shallow Well Elevation	: <u>N/A</u>		/
rilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;I</u>	
rilling Method:	Dual Rotary		Northing (NAD83):	2102236.81	Project: <u>Final</u>	GW Remedy Phase 1
riller Name:	Jon Martinez		Easting (NAD83):	7615803.14	Location: <u>PG&amp;I</u>	<u>E Topock, Needles, Californ</u>
rilling Asst:	A. & H. Amez	-	Borehole Diameter:	16-18 inches		
ogger:	E. Redner / D		Static Water Level:	See Log for Depths	Project Numbe	r: <u>RC000753.0051</u>
ditor:	Sean McGran	ne	Development End Date			
otal Depth:	144.3 ft bgs		Well Completion:	🗌 Flush 🗌 Stick-up 🛛	To Be Completed	in Well Vault
Groundwater Sample ID Sample ID		USCS USCS USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Topock - Alluvium Deposits	SM	(0.0 - 52.0') 10" SHUR-GRIP SDR17 PVC Casing (40.9 - 43.9') Cemex #60 Mesh (40x70) Lapis Lustre Sand	(25.0 - 41.0') 18.0" Borehole	(4.0 - 40.9') 337.3 gallons (40.9 - 43.9') 5.1 bags	(4.0 - 40.9') 354 gallons (105%) Note: Grout seal (40.9 - 43.9') 6 bags (118%) Note: Transition sand
	Topock - Alluvium Deposits	SM			8	
48 49	Topock - Alluvium Deposits	ML				
_50	Topock - Alluvium Deposits	G G	(49.5 - 50.5') Centralizer (43.9 - 69.1') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand (52.0 - 67.0') 10" 10-Slot 316L SS Wire Wrap Screen	(41.0 - 60.2') 16.0" Borehole	(43.9 - 69.1') 42.7 bags	(43.9 - 69.1') 51 bags (119%) Note: Filter pack, swabbed filter pack for approximately 60 minute
	Topock - Alluvium Deposits	SM				
			cation System, ft = feet, bg t detected above the labora			sea level, GW = ollow blue water table mark
	ν – μαιιο μεί D	mon, o – no	יי הפוברובה מההאב וווה ומהחופ	atory reporting infill, NOIES.	Solid Dide allu two li	

ARCA	DIS for nature built asse	Consultancy al and ts	Well Cons	struction Log		Sheet: 4 of 8
ate Started:	01/29/2020		Surface Elevation:	501.24 ft amsl	Well ID: IR	Z-27
ate Completed:	02/07/2020		Shallow Well Elevation			
rilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: <u>PG&amp;</u>	E
rilling Method:	Dual Rotary		Northing (NAD83):	2102236.81	Project: <u>Final</u>	GW Remedy Phase 1
riller Name:	Jon Martinez		Easting (NAD83):	7615803.14	Location: <u>PG&amp;</u>	E Topock, Needles, Californ
orilling Asst:	<u>A. &amp; H. Amez</u>	-	Borehole Diameter:	16-18 inches		
ogger:	E. Redner / D		Static Water Level:	See Log for Depths	Project Numbe	er: <u>RC000753.0051</u>
ditor:	Sean McGrar	e	Development End Da			
otal Depth:	144.3 ft bgs		Well Completion:	🗌 Flush 🗌 Stick-up 🛛	] To Be Completed	l in Well Vault
Groundwat		USCS Code USCS	We Case	Il Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Topock - Alluvium Deposits	SM	(52.0 - 67.0') — 10" 10-Slot 316L SS Wire Wrap Screen			
_61	Topock -					
	Alluvium Deposits	GM OL				
_ 62						
_63	Topock - Alluvium	SM .				
_03	Deposits					
_64						
			(43.9 - 69.1') Cemex #0/30 Mesh		(43.9 - 69.1')	(43.9 - 69.1') 51 bags (119%)
_65			(30x50) Lapis Lustre		42.7 bags	Note: Filter pack, swabbed filte pack for approximately 60 minute
	Tanaak		Sand			
_ 66	Topock - Alluvium	SM 🔅				
_00_	Deposits					
_67						
_0/				(67.0 - 77.0') 10" SHUR-GRIP		
_68				SDR17 PVC Casing		
_00	Topock - Alluvium	SW-SM				
_69_	Deposits					
_03						
70			(69.5 - 70.5')	(60.2 - 79.4') 16.0" Borehole		
			Centralizer	10.0 Borenoie		(69.1 - 72.9') 6.5 buckets (125%
_71			(69.1 - 72.9') Bentonite seal		(69.1 - 72.9')	Note: Intermediate seal, used
- ′ '	Topock - Alluvium	SM	pellets Pel-Plug		5.2 buckets	>20% of the calculated volume de to potential voids forming during
72	Deposits		(TR30) 3/8"			drilling.
_73_						
			(72.9 - 74.1') Cemex #0/30 Mesh	>>>> >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	(72.9 - 74.1')	(72.9 - 74.1') 3 bags (150%) Note: Transition sand, used >20
IRZ-27-VAS	5-		: (30x50) Lapis Lustre 💲		2 bags	of the calculated volume due to potential voids forming during
- /4	- ·		Sand			drilling.
ppb)	Topock - Alluvium	SM .				
_753/17/2019 13:15	Deposits					
_76						(74.1 - 103.3') 70 bags (141%)
			(74.1 - 103.3')		(74.4 400.01)	Note: Filter pack, used >20% of
_77			Cemex #2/16 Mesh (16x30) Lapis Lustre	· · · · · · · · · · · · · · · · · · ·	(74.1 - 103.3') 49.7 bags	the calculated volume due to potential voids forming during
	Topock - Alluvium	SM 🔅	Sand	10" 20-Slot 316L SS       Wire Wrap Screen		drilling. Swabbed filter pack for approximately 110 minutes.
_78	Deposits					approximatory i to minuted.
·			観日			
_79						
· -				(79.4 - 99.5')		
<u>80</u> bbreviations: U	ISCS = Unified	Soil Class	ification System ft = feet h	gs = below ground surface, a	imsl = ahove mean	sea level GW =
				pratory reporting limit, Notes:		
	· · ·			the middle screen and upper		
		.,				

ARCA	DIS Design & for nature built asse	Consultancy al and ets		Well Const	ruction Log		Sheet: 5 of 8
Date Started: (	)1/29/2020			Surface Elevation:	501.24 ft amsl	Well ID: IF	RZ-27
Date Completed: <u>(</u>				Shallow Well Elevation:			
•	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;</u>	
•	Dual Rotary			Northing (NAD83):	2102236.81	-	I GW Remedy Phase 1
	Jon Martinez			Easting (NAD83):	<u>7615803.14</u>	Location: <u>PG8</u>	E Topock, Needles, Californi
-	<u> A. &amp; H. Amez</u>	-		Borehole Diameter:	<u>16-18 inches</u>		
	<u>E. Redner / D</u>			Static Water Level: Development End Date:	See Log for Depths	Project Numbe	er: <u>RC000753.0051</u>
	<u>Sean McGrar</u> 144.3 ft bgs	le		Well Completion:		 ⊠ To Be Completed	d in Well Vault
Groundwater	o <u>je</u>	USCS Code USCS	Class	•	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
	ڻ ۾ ا			l	[		
	Topock -				10" 20-Slot 316L SS Wire Wrap Screen		
81	Alluvium	SM 🔅					
_ 82	Topock -						
	Alluvium Deposits	SM					
_83	Topock -	SW-SM					
	Deposits						
84	Topock - Alluvium	SW 🔅					
	Deposits						
_ 85							
_ 86	Topock -						
	Alluvium	SM 🔅					
_ 87	Deposits				H		
_ 88							
89	Topock - Alluvium	SM					
	Deposits			(74.1 - 103.3')	(79.4 - 99.5')		(74.1 - 103.3') 70 bags (141%) Note: Filter pack, used >20% of
_ 90				Cemex #2/16 Mesh	H	(74.1 - 103.3') 49.7 bags	the calculated volume due to potential voids forming during
				(16x30) Lapis Lustre		49.7 bags	drilling. Swabbed filter pack for
_91					H.		approximately 110 minutes.
_92					Hard		
_93	Topock -						
	Alluvium Deposits	SM					
_94							
95					H		
					R.: I		
_96					H.		
_97							
	Topock - Alluvium	SM			Hail		
98	Deposits						
99	Topock - Alluvium	SM .					
	Deposits						
100					(99.5 - 119.3') 		
	SCS = Unified	Soil Class	ificatio	on System, ft = feet, bgs		amsl = above mean	n sea level, GW =
roundwater, ppb	= parts per b	illion, U = r	not de	tected above the laborat	ory reporting limit, Notes:	solid blue and two l	hollow blue water table mark
epresent depth to	water (ft. bg	s.) measur	ed pre	e-specific capacity for the	middle screen and uppe	er/deep screens resp	pectively
				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		

ARCAI	DIS for natura built asse	<mark>Consultancy</mark> Il and ts		Well Const			Sheet: 6 of 8
	1/29/2020			Surface Elevation:	501.24 ft amsl	Well ID: IR	Z-27
ate Completed: <u>C</u>				Shallow Well Elevation:			
0	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: PG&	
•	Jual Rotary			Northing (NAD83):	2102236.81	-	GW Remedy Phase 1
	on Martinez			Easting (NAD83):	7615803.14	Location: <u>PG&amp;</u>	E Topock, Needles, Californ
•	<u>. &amp; H. Amez</u>	•		Borehole Diameter:	<u>16-18 inches</u>		D0000750 0054
	. Redner / D			Static Water Level:	See Log for Depths	Project Numbe	er: <u>RC000753.0051</u>
	Sean McGrar 44.3 ft bgs	le		Development End Date: Well Completion:		 ╳ To Be Completed	d in Well Vault
Groundwater	j <u>i</u>	USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Topock - Alluvium Deposits	SM		(99.9 - 114.9') 10" SHUR-GRIP SDR17 PVC Casing (74.1 - 103.3') Cemex #2/16 Mesh (16x30) Lapis Lustre Sand (103.3 - 104.0') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand (105.0 - 106.0') Centralizer (104.0 - 108.3') Bentonite seal pellets Pel-Plug (TR30) 3/8"		(74.1 - 103.3') 49.7 bags (103.3 - 104.0') 1.2 bags (104.0 - 108.3') 5.8 buckets	<ul> <li>(74.1 - 103.3') 70 bags (141%) Note: Filter pack, used &gt;20% of the calculated volume due to potential voids forming during drilling. Swabbed filter pack for approximately 110 minutes.</li> <li>(103.3 - 104.0') 2 bags (167%) Note: Transition sand, used &gt;209 of the calculated volume due to potential voids forming during drilling.</li> <li>(104.0 - 108.3') 6.5 buckets (112%) Note: Intermediate seal</li> </ul>
	Topock - Alluvium Deposits	SM		(108.3 - 144.3') Cemex #60 Mesh (40x70) Lapis Lustre Sand (114.9 - 136.8') 10" &-Slot 316L SS Wire Wrap Screen	(99.5 - 119.3') 16.0" Borehole	(108.3 - 144.3') 63.3 bags	(108.3 - 144.3') 62.5 bags (99%) Note: Filter pack. Approximately 26.74 ft of sand was observed in the well casing after installation which entered the well through upper screens. Sand was air lifte out using ~1992 gallons of wate with ~2154 gallons returned. Rar alignment test.
120					(119.3 - 138.9') 16.0" Borehole		<u> </u>
				on System, ft = feet, bgs	-		
roundwater, ppb	· ·						nollow blue water table mark
					مرجرين أمجره مرجمه معرم مالملم أمر	er/deep screens resp	ootivolv

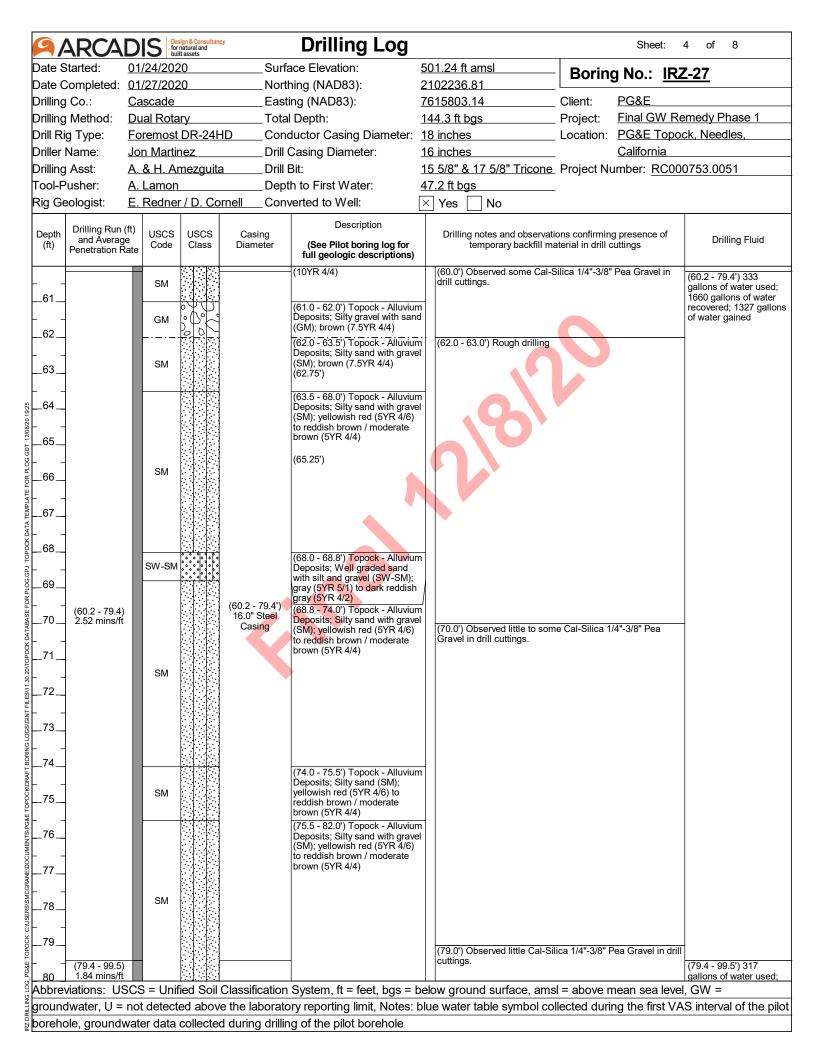




ARCA	DIS Design & Consultar for natural and built assets	ICY	Drilling Log		Sheet:	1 of 8	
ate Started:	01/24/2020	Surfa	ce Elevation:	<u>501.24 ft amsl</u>	Boring No.: IR	Z-27	
ate Completed:			ing (NAD83):	2102236.81			
Drilling Co.:	Cascade		ng (NAD83):	7615803.14	Client: <u>PG&amp;E</u>	·	
Prilling Method:	Dual Rotary		Depth:	<u>144.3 ft bgs</u>	2	Remedy Phase 1	
Drill Rig Type:	Foremost DR-24		uctor Casing Diameter:		ock, Needles,		
riller Name:	Jon Martinez		asing Diameter:	<u>16 inches</u>			
Drilling Asst:	A. & H. Amezguit				e Project Number: RC0	00753.0051	
ool-Pusher:	<u>A. Lamon</u>		to First Water:	47.2 ft bgs	_		
Rig Geologist:	E. Redner / D. Co		erted to Well:	X Yes No			
(ft) Drilling Run (ft) Penetration		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	temporary backfill	rations confirming presence of material in drill cuttings	Drilling Fluid	
		(0.0 - 20.6') 18.0" Steel Casing	<ul> <li>(0.0 - 5.0') Topock - Fill; Silly sand (SM); yellowish brown / moderate yellowish brown / moderate yellowish brown (10YR 5/4)</li> <li>(10YR 5/4)</li> <li>(10YR 5/4)</li> <li>(5.5 - 6.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (10YR 4/3)</li> <li>(5.5 - 6.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW-SM); dark yellowish brown (10YR 4/4)</li> <li>(6.5 - 7.0') Topock - Fluvial Deposits; Well graded sand with gravel (SW-SM); dark yellowish brown (10YR 4/4)</li> <li>(7.0 - 9.0') Topock - Fluvial Deposits; Clayey sand with gravel (SC); dark yellowish brown (10YR 4/4)</li> <li>(9.0 - 9.5') Topock - Fluvial Deposits; Clayey sand with gravel (SC); dark yellowish brown (10YR 4/4)</li> <li>(9.5 - 10.8') Topock - Fluvial Deposits; Well graded gravel (SC); dark yellowish brown (10YR 4/4)</li> <li>(9.5 - 10.8') Topock - Fluvial Deposits; Well graded gravel (SC); dark yellowish brown (10YR 4/4)</li> <li>(9.5 - 10.8') Topock - Fluvial Deposits; Well graded gravel (SC); dark yellowish brown (10YR 5/2)</li> <li>(12.0 - 13.0') Topock - Fluvial Deposits; Well graded gravel (SC); gray (10YR 5/1)</li> <li>(13.0 - 14.5') Topock - Fluvial Deposits; Well graded gravel (SC); gray (10YR 5/1)</li> <li>(13.0 - 14.5') Topock - Fluvial Deposits; Well graded gravel (SM); brown (10YR 5/3)</li> <li>(14.5 - 17.0') Topock - Fluvial Deposits; Well graded gravel (SM); brown (10YR 5/3)</li> <li>(17.0 - 18.5') Topock - Fluvial Deposits; Well graded gravel (SM); brown (10YR 5/3)</li> <li>(17.0 - 18.5') Topock - Fluvial Deposits; Well graded gravel (SM); brown (10YR 5/3)</li> <li>(17.0 - 18.5') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GK); brown (7.5YR 4/4)</li> <li>(18.5 - 19.5') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GK); brown (7.5YR 4/4)</li> </ul>	in drill cuttings.         R         Image: I	ome amounts of Plastering Sand		

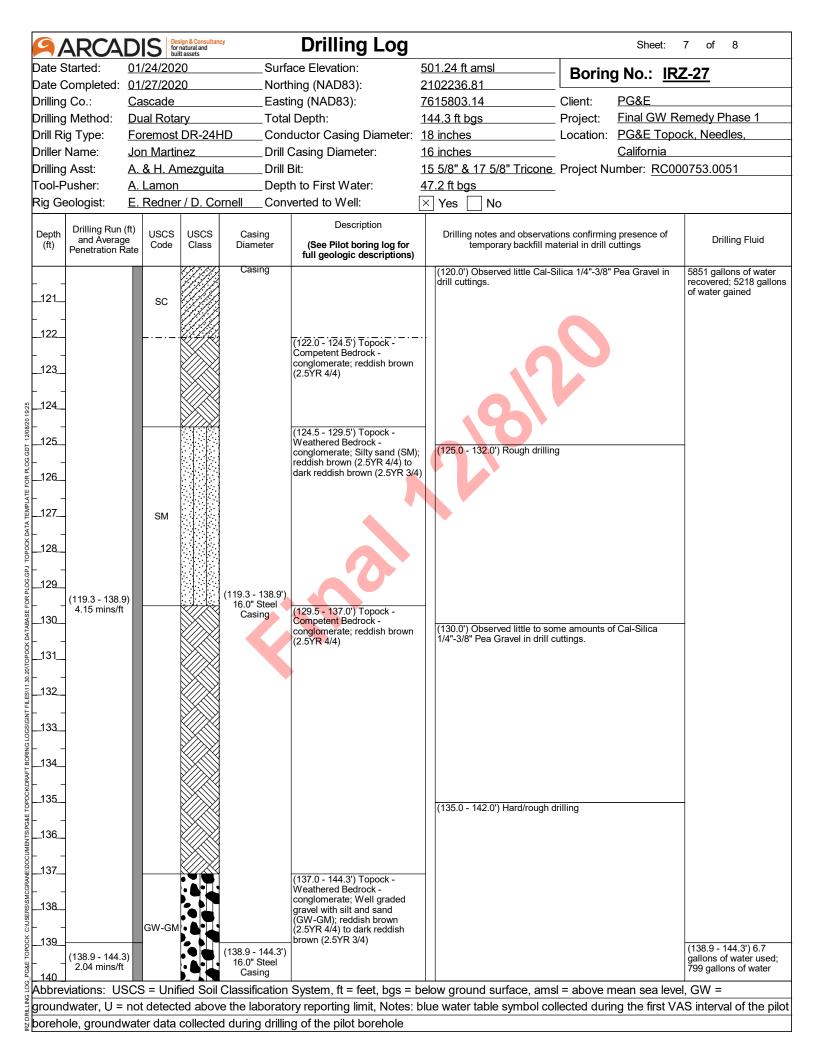
ARCA	DIS Design & Consultancy for natural and built assets	Drilling Log		Sheet:	2 of 8
Date Started:	01/24/2020	Surface Elevation:	<u>501.24 ft amsl</u>	Boring No.: IRZ	-27
Date Completed:	01/27/2020	Northing (NAD83):	2102236.81		- 21
Drilling Co.:	Cascade	Easting (NAD83):	7615803.14	_ Client: <u>PG&amp;E</u>	
Drilling Method:	Dual Rotary	Total Depth:	<u>144.3 ft bgs</u>	Project: Final GW Re	medy Phase 1
Drill Rig Type:	Foremost DR-24H	DConductor Casing Diamete	r: <u>18 inches</u>	Location: PG&E Topo	ck, Needles,
Driller Name:	Jon Martinez	Drill Casing Diameter:	<u>16 inches</u>	California	
Drilling Asst:	A. & H. Amezguita	Drill Bit:	<u>15 5/8" &amp; 17 5/8" Tricone</u>	Project Number: RC00	0753.0051
ool-Pusher:	A. Lamon	Depth to First Water:	47.2 ft bgs		
Rig Geologist:	E. Redner / D. Cor	-	⊠ Yes 🗌 No		
Donth Drilling Run	(ft)	Description			
(ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)		Casing Diameter (See Pilot boring log fo full geologic description	r temporary backfill m s)	ions confirming presence of aterial in drill cuttings	Drilling Fluid
	GM O	(19.5 - 21.0') Topock - Fluv Deposits; Silty gravel with s		unts of Cal-Silica 1/4"-3/8" Pea	
_21	Polor	(GM); grayish brown (10YF 5/2) to dark grayish brown	(20.5 - 25.0') Rough/hard dri	lling. Stopped at approximately	(20.6 - 25.0') 133 gallons of water used;
		dark yellowish brown (10YF		id lack of advancement.	30 gallons of water
_22_	GW-GM	4/2) (21.0 - 22.0') Topock - Fluv			recovered; 103 gallons of water lost
		Deposits; Well graded grav	el		
(20.6 - 25.0)		(20.6 - 25.0') with silt and sand (GW-GM 18.0" Steel brown (7.5YR 5/3) to brown			
_23 15.57 mins/f		Casing (7.5YR 4/3)			
		(22.0 - 27.0') Topock - Flux Deposits; Well graded san			
_24		with silt and gravel (SW-SM dark yellowish brown (10YF	1);		
-	SW-SM	4/4) to brown (10YR 5/3)			
_25					
			check cuttings for metal sha	lling, driller's use magnet to vings coming off of downhole	(25.0 - 41.0') 534 gallons of water used;
_26			equipment. Observations of not documented in notes.	metal shavings in cuttings was	180 gallons of water recovered; 354 gallon
			not documented in notes.		of water lost
_27					
_21		(27.0 - 32.0') Topock - Allu			
-		Deposits; Silty sand with gr (SM); brown (7.5YR 4/4) wi	avel     th		
_28		brown (7.5YR 5/2)			
-					
_29					
	SM ·····				
_30					
_			(30.0') Drilling not as hard. ( Cal-Silica 1/4"-3/8" Pea Gra		
_31				C C	
_32_		•			
(25.0 - 41.0)	SM	(25.0 - 41.0') (32.0 - 32.8') Topock - Allu	ium		
14.31 mins/f		18.0" Steel Casing Deposits; Silty sand (SM); reddish brown / moderate			
_33		brown (5YR 4/4)	<u> </u>		
-		(32.8 - 44.5') Topock - Allu Deposits; Silty sand with gr	avel		
_34		(SM); brown (7.5YR 4/4) wi brown (7.5YR 5/2)			
_					
_35					
_36					
	SM				
37					
_37					
-					
_38					
4					
_39					
40		(39.5') brown (10YR 5/3) to			
		Classification System, ft = feet, bgs	<u> </u>		
roundwator II -	not detected above	e the laboratory reporting limit, Note	s: blue water table symbol co	llected during the first VA	S interval of the pi
		l during drilling of the pilot borehole			

9/-	ARCA		sign & Consultanc r natural and ilt assets	y	Drilling Log		Sheet:	3 of 8
Date S	tarted:	01/24/202			ace Elevation:	501.24 ft amsl	Boring No.: IR	Z-27
	ompleted:		20		hing (NAD83):	2102236.81	_	<u> </u>
Drilling		Cascade			ing (NAD83):	7615803.14	_ Client: <u>PG&amp;E</u>	
-		Dual Rota	•		I Depth:	<u>144.3 ft bgs</u>	_ ,	emedy Phase 1
	g Type:	Foremost			ductor Casing Diameter:		_ Location: <u>PG&amp;E Top</u>	DCK, Needles,
	Name:	Jon Marti			Casing Diameter:	<u>16 inches</u>	<u>California</u>	00760 0064
Drilling	Asst: usher:	<u>A. &amp; H. A</u> <u>A. Lamon</u>	-		Bit: th to First Water:	<u>15 5/8" &amp; 17 5/8" Tricone</u> 47.2 ft bgs	Project Number: <u>RCU</u>	00753.0051
	ologist:	E. Redne			verted to Well:		_	
<u> </u>					Description			
Depth (ft)	Drilling Run and Averag Penetration R	e   Codo	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)	temporary backfill m	tions confirming presence of naterial in drill cuttings	Drilling Fluid
41	(25.0 - 41.0) 14.31 mins/f			(25.0 - 41.0') 18.0" Steel Casing	pale brown (10YR 6/3)	(40.0') Observed trace amo Gravel in drill cuttings.	unts of Cal-Silica 1/4"-3/8" Pea	
42 43 43		SM				(41.0 - 46.0') Rough/hard dr	illing	(41.0 - 60.2') 250 gallons of water used; 1400 gallons of water recovered; 1150 gallor of water gained
45 46 47		SM			(44.5 - 47.0') Topock - Alluviu Deposits; Silty sand (SM); brown (7.5YR 4/3) (47.0 - 49.5') Topock - Alluviu			
 48  49		ML			Deposits; Sandy silt with grave (ML); brown (7.5YR 4/4)	9		
_50 _51 _52 _53 _53 _54	(41.0 - 60.2) 2.77 mins/ft		N.0 N.0 N.0 N.0 N.0 N.C	(41.0 - 60.2') 16.0" Steel Casing	(49.5 - 57.0') Topock - Alluviur Deposits; Silty gravel with san (GM); brown (7.5YR 4/3) (54.5') brown (7.5YR 5/3) to	d	unts of Cal-Silica 1/4"-3/8" Pea	
55 56 57					brown (10YR 4/3) (57.0 - 61.0') Topock - Alluviui	<u></u>		
 58  59		SM			Deposits; Silty sand with grave (SM); brown (7.5YR 4/4)			
 60					(59.3 - 61.0') brown (7.5YR 4/- and dark yellowish brown	4)		
	iations: US	SCS = Uni	fied Soil (	Classification	System, ft = feet, bgs =	below ground surface, am	sl = above mean sea lev	el, GW =
						blue water table symbol co		
	la ground	votor data	aallaataa	during drillin	ng of the pilot borehole			



ARCA	DIS Design & Consulta for natural and built assets	Drilling Log		Sheet:	5 of 8
Date Started:	<u>01/24/2020</u>	Surface Elevation:	<u>501.24 ft amsl</u>	Boring No.: IRZ	2_27
Date Completed:		Northing (NAD83):	2102236.81		<u>1</u>
Drilling Co.:	Cascade	Easting (NAD83):	7615803.14	_ Client: <u>PG&amp;E</u>	
Drilling Method:	Dual Rotary	Total Depth:	<u>144.3 ft bgs</u>	_ Project: Final GW Re	medy Phase 1
Drill Rig Type:	Foremost DR-24	HD Conductor Casing Diamete	r: <u>18 inches</u>	_ Location: PG&E Topod	ck, Needles,
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	<u>California</u>	
Drilling Asst:	A. & H. Amezgui	taDrill Bit:	<u>15 5/8" &amp; 17 5/8" Tricone</u>	Project Number: RC00	0753.0051
Fool-Pusher:	A. Lamon	Depth to First Water:	47.2 ft bgs	_	
Rig Geologist:	E. Redner / D. C	ornell Converted to Well:	× Yes No		
Depth Drilling Run		Description		tions confirming presence of	Drilling Fluid
(ft) Penetration F		Diameter (See Pilot boring log for full geologic description		aterial in drill cuttings	Drining Fland
 _81 	SM		(80.0') Observed little Cal-Si cuttings.	ilica 1/4"-3/8" Pea Gravel in drill	540 gallons of water recovered; 223 gallons of water gained
82	SM	(82.0 - 82.8') Topock - Allu Deposits; Silty sand (SM);	<i>i</i> um		
_83	SW-SM	brown (7.5YR 4/4) (82.8 - 83.5') Topock - Allu Deposits; Well graded san			
84	SW	with silt (SW-SM); brown (7.5YR 4/4) (83.5 - 84.5') Topock - Allu	vium		
85		Deposits; Well graded san (SW); brown (7.5YR 4/4) (84.5 - 88.5') Topock - Allu			
86		Deposits; Sifty sand with gr (SM); reddish brown (5YR to reddish brown (5YR 5/3)	avel 4/3)		
	SM				
88		(88.5 - 89.5') Topock - Allu			
_89	SM	(79.4 - 99.5') (79.4 - 99.5') (79.4 - 99.5') (79.4 - 99.5')			
(79.4 - 99.5 _901.84 mins/f 91		16.0" Steel Casing (SM); reddish brown (5YR to reddish brown (5YR 5/3)	avel (90.0') Observed little to son 4/3) Gravel in drill cuttings.	ne Cal-Silica 1/4"-3/8" Pea	
_93 _ _94 _ _95	SM				
96 96 97		(95.3') reddish brown / moderate brown (5YR 4/4) yellowish red (5YR 4/6)			
98	SM	(97.0 - 98.0') Topock - Allu Deposits; Silty sand (SM); brown (7.5YR 4/4)			
99	SM	(98.0 - 107.0') Topock - Alluvium Deposits; Silty sa with gravel (SM); brown (7. 4/4)			
					(99.5 - 119.3') 200
	SCS = Unified Soi	I Classification System, ft = feet, bgs	= below ground surface. am	sl = above mean sea level	, GW =
		ve the laboratory reporting limit, Note			
roundwater II =		assistery reporting innit, NOIO			
		ed during drilling of the pilot borehole			

91	ARCA	DIS	Design & Consultance for natural and built assets	У	Drilling Log		Sheet:	6 of 8
	Started:	01/24/20			ace Elevation:	501.24 ft amsl	Boring No.: I	RZ-27
	Completed:	01/27/20			ning (NAD83):	2102236.81		
Drilling		Cascade			ing (NAD83):	7615803.14	Client: <u>PG&amp;E</u>	
-	Method:	Dual Rot	-		Depth:	<u>144.3 ft bgs</u>	· · · · · · · · · · · · · · · · · · ·	Remedy Phase 1
	ig Type:		<u>st DR-24⊢</u>		ductor Casing Diameter:		Location: PG&E Top	pock, Needles,
	Name:	Jon Mar			Casing Diameter:	<u>16 inches</u>	California	000750 0054
Drilling	y Assi: Pusher:	<u>A. &amp; H. /</u> <u>A. Lamo</u>	Amezguita n		h to First Water:	<u>15 5/8" &amp; 17 5/8" Tricone</u> 47.2 ft bgs	Project Number: <u>RU</u>	000753.0051
	eologist:		er / D. Co		verted to Well:	<u>47.2 it bgs</u> X Yes		
i tig Ot								
Depth (ft)	Drilling Run and Averag Penetration F	e Code		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observati temporary backfill ma	ons confirming presence of aterial in drill cuttings	Drilling Fluid
 101	2.16 mins/ft					(100.0') Observed little Cal-S drill cuttings.	silica 1/4"-3/8" Pea Gravel in	gallons of water used; 1250 gallons of water recovered; 1050 gallons of water gained
102  103							<b>O</b>	
		SM						
 107					(107.0 - 118.0') Topock -			
					Alluvium Deposits; Silty sand with gravel (SM); brown (7.5Y 4/4) to dark yellowish brown	۲		
					(10YR 4/4)			
110	(99.5 - 119.3 2.16 mins/ft			(99.5 - 119.3') 16.0" Steel Casing				
				cusing		(110.0') Observed little Cal-S drill cuttings.	ilica 1/4"-3/8" Pea Gravel in	
111								
		SM						
	1							
114								
 116	1							
 117								
					(118.0 - 122.0') Topock - Alluvium Deposits; Clayey sar	(118.0 - 137.0') represents w air-lifting of lower screen inte		3
5 5119		SC		(110.0	(SC); reddish brown / modera brown (5YR 4/4) to yellowish red (5YR 4/6)		n vcal	(110.0
 120_	(119.3 - 138.9 4.15 mins/ft	<i>,</i>		(119.3 - 138.9') 16.0" Steel				(119.3 - 138.9') 633 gallons of water used;
					· ·	below ground surface, ams		
-						blue water table symbol co	liected during the first	vAS interval of the pilot
porend	ble, ground	water data		a during drillin	g of the pilot borehole			



Date Completed:       ()         Drilling Co.:       ()         Drilling Method:       []         Drill Rig Type:       []         Driller Name:       []         Drilling Asst:       []         Cool-Pusher:       []	01/24/2020 01/27/2020 Cascade Dual Rotary Foremost DR-2	North	ace Elevation: ning (NAD83):	501.24 ft amsl 2102236.81	Boring	g No.: <u>IR</u>	<u>Z-27</u>
Orilling Co.:       0         Orilling Method:       1         Orill Rig Type:       1         Oriller Name:       2         Orilling Asst:       2         Orol-Pusher:       2	Cascade Dual Rotary		,	2102236.81		,	
Orilling Method: [ Orill Rig Type: F Oriller Name: Orilling Asst: Cool-Pusher: A	Dual Rotary	Easti					
Orill Rig Type: <u>F</u> Oriller Name: <u></u> Orilling Asst: <u>A</u> Cool-Pusher: <u>A</u>	-		ng (NAD83):	7615803.14	Client:	PG&E	
Oriller Name: Drilling Asst: Tool-Pusher:	Foremost DR-2	Total	Depth:	144.3 ft bgs	Project:	Final GW R	emedy Phase 1
Orilling Asst:		4HD Cond	ductor Casing Diameter:	18 inches	Location:	PG&E Topo	ock, Needles,
ool-Pusher: <u>/</u>	Jon Martinez	Drill (	Casing Diameter:	16 inches		<u>California</u>	
	A. & H. Amezgı	<u>uita</u> Drill E	Bit:	15 5/8" & 17 5/8" Tricone	Project Nu	mber: <u>RC00</u>	0753.0051
lia Geologist <sup>.</sup>	A. Lamon	Dept	h to First Water:	47.2 ft bgs			
	E. Redner / D. (	Cornell Conv	verted to Well:	🛛 Yes 🗌 No			
Depth Drilling Run (ft			Description		<b>c</b>		
(ft) Penetration Ra	Code Clear		(See Pilot boring log for full geologic descriptions)	Drilling notes and observation temporary backfill ma			Drilling Fluid
- 141				(140.0') Observed some Cerr Luster Sand in drill cuttings.	ex #3 Mesh (8	3x20) Lapis	recovered; 792.3 gallor of water gained
(138.9 - 144.3) 2.04 mins/ft 	GW-GM	(138.9 - 144.3') 16.0" Steel Casing					
_144			End of Boring at 144.3 ft bgs.				
145							
_ 146_			•				
-							
147							
151							
_ 152			-				
_							
154							
156							
_156							
_157							
_							
<u>160</u> bbreviations: US(	CS = Unified S	nil Classification	System ft = feet bas - k	pelow ground surface, ams	= ahove m	ean sea levr	4 GW =

	<b>AD</b>	S Design & Consultancy for natural and built assets		Bo	ring	Log	She	et: 1 of	8
ate Started		/14/2019		Surface			Boring No.:	IRZ-27-P	ilot
ate Comple				Northing			-		
rilling Co.:		<u>scade</u>		Easting	•	,	Client: <u>PG&amp;E</u>		
rilling Metho rill Rig Type		nic Drilling osonic Truck Mo		Borehol	•	ter: <u>4-12 inches</u>		<u>N Remedy Pr</u> Conock Need	
riller Name:		eve Vasquez				/ater: 47.2 ft bgs	Californ	-	
rilling Asst:		Flores / L. Amay		Samplin		•			51
ogger:		Jeffers / J. Wan		Samplin	-				•
ditor:	Ga	ntt Jeffers		Convert	-		-		
Depth (ft) Recovery (in)	Sieve Sample		Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Flui
_ 1 _ 2 _ 3 _ 4			Topock - Fill	SM		(0.0 - 5.0') Topock - Fill; Silty sand (SM); yello moderate yellowish brown (10YR 5/4); very fi coarse grained, angular to subround; some s granules to small pebbles, angular to subround dry	ne <mark>gr</mark> ained to very ilt; little clay; trace	(0.0 - 5.0') Hand cleared for utility clearance.	
_ 5 			Topock - Fluvial Deposits Topock - Fluvial	SW SW-SM		(5.0 - 5.5') Topock - Fluvial Deposits; Well gr gravel (SW); brown (10YR 4/3); very fine grai grained, angular to round; and very fine to ver sand; little granules to very large pebbles, and	ned to very coarse y coarse grained		
_ 7			Deposits Topock - Fluvial Deposits	SW-SM		trace silt; trace clay; dry (5.5 - 6.5') Topock - Fluvial Deposits; Well gr gravel (SW-SM); dark yellowish brown (10YR 4/3); very fine grained to very coarse grained, and granules to large pebbles, angular to sub	4/4) to brown (10YR angular to round; round; and very fine	(7.0 - 11.0') Drilled through	(7.0 - 17.0') 200 gallons
- 8 _ _ 9			Topock - Fluvial Deposits	GP		to very coarse grained sand, subangular to su subangular to round; trace silt; trace clay; dry (6.5 - 7.0') Topock - Fluvial Deposits; Well gr gravel (SW-SM); dark yellowish brown (10YR grained to very coarse grained, subangular to	aded sand with 4/4); very fine	boulder	water used 200 gallons water recovered; gallons of
 _10			Topock - Fluvial Deposits Topock - Fluvial Deposits	sc sw		to large pebbles, subangular to round; trace s (7.0 - 9.0') Topock - Fluvial Deposits; Poorly g weak red (2.5YR 5/2) to pale brown (10YR 6/ boulders, subangular to round; trace clay; dry has been pulverized during drilling	silt; trace clay; dry graded gravel (GP); 3); small cobbles to		water lost
11 12134.4			Topock - Fluvial Deposits	GW-GM		(9.0 - 9.5') Topock - Fluvial Deposits; Clayey (SC); dark yellowish brown (10YR 4/4); very fi coarse grained, angular to round; some grant pebbles, subangular to round; little clay; trace	ine grained to very ules to very large		
- 13			Topock - Fluvial Deposits	GP		dry (9.5 - 10.8') Topock - Fluvial Deposits; Well <u>c</u> gravel (SW); brown (10YR 5/3); very fine grai grained, angular to round; little granules to lar subangular to round; trace silt; dry	ned to very coarse		
- 14 -			Topock - Fluvial Deposits	SM		(10.8 - 12.0') Topock - Fluvial Deposits; Well silt and sand (GW-GM); grayish brown (10YF very large pebbles, angular to round; little ver grained sand, subangular to round; little silt; t	8 5/2); granules to y fine to very coarse race subround to		
15 16 17			Topock - Fluvial Deposits	SW-SM		round; trace clay; dry; cobbles have been public (12.0 - 13.0') Topock - Fluvial Deposits; Poori (GP); gray (10YR 5/1); small pebbles to bould cobbles and boulders have been pulverized b (13.0 - 14.5') Topock - Fluvial Deposits; Silty (SM); brown (7.5YR 5/3); very fine grained to subangular to round; some granules to very to	y graded gravel ders, subround; dry; y drilling sand with gravel very coarse grained, arge pebbles,		
_ 18			Topock - Fluvial Deposits	GW-GC	$  \mathbf{V} \mathbf{A}  $	subangular to round; little silt; little clay; trace subround; dry; cobbles have been pulverized (14.5 - 17.0') Topock - Fluvial Deposits; Well and gravel (SW-SM); brown (10YR 5/3); very coarse grained, subangular to round; some g	graded sand with silt fine grained to very ranules to very large		(17.0 - 127.) No used
- 60 19 -			Topock - Fluvial Deposits	GW-GM GM		pebbles, subangular to round; little silt; trace subround; trace clay; dry (17.0 - 18.5') Topock - Fluvial Deposits; Well clay and sand (GW-GC); brown (7.5YR 4/4); large pebbles, subangular to round; little very	graded gravel with granules to very		
breviations	USCS	s = Unified Soil C	lassification	-	<u>ام الع</u> n, ft = fe	et, bgs = below ground surface, ams		a level, GW =	
						aboratory reporting limit, NR = no re			symbol
		•				apparent partial recoveries can be t			
165611511			~~	5. 07.0					

ARC/	<u>ADIS</u>	Design & Consultancy for natural and built assets		Bo	ring l	og	She	eet: 2 of	8
Date Started:	<u>03/14/2</u>				Elevatior		Boring No.:	IRZ-27-F	Pilot
ate Complete				-	g (NAD83				
Prilling Co.:	Cascad Social			-	(NAD83)		Client: <u>PG&amp;E</u>	W Domody D	
rilling Method: rill Rig Type:		nic Truck Mou	nt		e Diamet	r: 4-12 inches	_ Project: <u>Final G</u> _ Location: <u>PG&amp;E</u> <sup>_</sup>	W Remedy P	
Filler Name:		√asquez				ter: <u>47.2 ft bgs</u>	_ Location: <u>r G&amp;L</u> Californ	•	163,
rilling Asst:		<u>res / L. Amaya</u>			ig Method	- V			)51
ogger:		ers / J. Wann		•	ig Interva				
ditor:	<u>Gantt</u>	Jeffers		Convert	ed to We	I: 🛛 Yes 🗌 No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_2160			Topock - Fluvial Deposits	GM		ained sand, angular to subround; little silt; bround; trace clay; dry 3.5 - 19.5') Topock - Fluvial Deposits; Well	graded gravel with		
			Topock - Fluvial Deposits	GW-GM	si (1 lit	t and sand (GW-GM); dark grayish brown / DYR 4/2); granules to very large pebbles, s le very fine to very coarse grained sand, su le very filte ailt active and sand, so	ubround to round; bangular to		
22 23 23 24 24 66 25 26 26 27 28 29 70.8 30			Deposits Topock - Fluvial Deposits	SW-SM	sin rr oj (2000) sin rr	(e) very fine to very coarse grained sand, super orround; little silt; trace subangular to subroca; dry; fractured cobble to boulder fragmensist of metadiorite (a) 5 - 21.0') Topock - Fluvial Deposits; Silty M); grayish brown (10YR 4/2); granules to very gular to subangular; some fine to medium gular to subangular; little silt; little clay; traca; dry; trace coarse to very coarse sand, 1 (a) - 22.0') Topock - Fluvial Deposits; Well anules to very large pebbles, angular to subangular to subangular to subround; trace clay; little fraguents (a) - 27.0') Topock - Fluvial Deposits; Well d gravel (SW-SM); dark yellowish brown (1)YR 5/3); very fine grained to very coarse graind; some granules to very large pebbles, ind; some granules to very large pebbles, is subround to round; little silt; dry; little fragulder fragments, larger class consist of mit work (7.5YR 4/4) with brown (7.5YR 4/4) with brown (7.5YR 4/4) with grave (SW-SM); dark yellowish brown (1); brown (7.5YR 4/4) with brown (7.5YR 5/3); very coarse grained, angular to subangular; little silt; dry; little silt ger clasts consist of metadiorite	pund; trace clay; trace ints, larger clasts gravel with sand sh brown / dark large pebbles, grained sand, ce angular; trace arger clasts consist graded gravel with o brown (7.5YR 4/3); bround; little silt; actured cobble and graded sand with silt (0YR 4/4) to brown grained, angular to subangular to round; ctured cobble and etadiorite ty sand with gravel y(2); very fine grained r; some granules to		
31 31 32 33 34 93.6 35			Topock - Alluvium Deposits	SM	5000 0000 0000 0000 0000 0000 0000 000	2.0 - 32.8') Topock - Alluvium Deposits; Sil own / moderate brown (5YR 4/4); some silt ich is subangular, very fine to medium 2.8 - 44.5') Topock - Alluvium Deposits; Sil M); brown (7.5YR 4/4) with brown (7.5YR 5 very coarse grained, angular to subangular ry large pebbles, angular to subangular; litt anule and pebbles, color change	; possible trace pyrite ty sand with gravel 5/2); very fine grained r; little granules to		
36 37 38 39			Topock - Alluvium Deposits	SM		9.5') brown (10YR 5/3) to pale brown (10YR	₹ 6/3); some silt		
40	USCS = 1	Inified Soil Cl	assification	n Sveter		bgs = below ground surface, am		 a level GW/ -	<u> </u>
				-		boratory reporting limit, NR = no re			
		•				oparent partial recoveries can be t			
PICOCIIIO UCDI	in to water	เกษสรมเช่น นิเ	ang ule l	ISLVA3	niterval, a	phareni harian recoveries can be t	no result of poterilla	ล บบทายสนแบก	JI SEUIIIEI

	<b>CADIS</b>	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sh	eet: 3 of	8
ate Started	: <u>03/1</u> 4	1/2019			Elevation:	501.24 ft amsl	Boring No.	: IRZ-27-P	Pilot
ate Comple					g (NAD83):	2102236.81			
rilling Co.:				Easting Total De	(NAD83):	<u>7615803.14</u> <u>156 ft bgs</u>	_ Client: <u>PG&amp;E</u> _ Project: <u>Final G</u>	W Romody Dk	2000 1
Drilling Method: <u>Sonic Drilling</u> Drill Rig Type: <u>Prosonic Truck Mount</u>					eptri. le Diameter:	<u>4-12 inches</u>	Location: <u>PG&amp;E</u>	W Remedy Pr Topock Need	
riller Name:		e Vasquez			o First Water		Californ		103,
rilling Asst:		ores / L. Amay		•	ng Method:	4 inch x 10 ft. Core Barrel			)51
ogger:		ffers / J. Wanr			ig Interval:	Continuous	_ ,		
ditor:	<u>Gant</u>	t Jeffers		Convert	ed to Well:	🛛 Yes 🗌 No			
Leptn (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
41 42 43 444			Topock - Alluvium Deposits	SM			20		
45 46 47			Topock - Alluvium Deposits	SM	(7.5YF some silt; tra		a grained, angular; ar to subangular; little		
_ 48 49 _	IRZ-27-SS- 47.0-52.0 3/21/2019		Topock - Alluvium Deposits	ML	(ML); mediu very la very si clasts	49.5') Topock - Alluvium Deposits; S orown (7.5YR 4/4); low plasticity, no c m grained sand, angular to subround; litt iff; no staining; trace coarse to very c consist of meta-diorite. 57.0') Topock - Alluvium Deposits; S	lilatency; some fine to ar; little granules to le clay; moist; stiff to oarse sand, larger	Σ.	
50 51 52116.4	13:44				(GM); to sub angula	brown (7.5YR 4/3); granules to very la angular; some very fine to very coars ar to subround; little silt; trace mica; d ler of metadiorite	arge pebbles, angular e grained sand,	(50.0') Approximate depth to water	
_ 53 54 55 56	IRZ-27-SS- 52.01-57.0 3/21/2019 13:48	IRZ-27-VAS- 52-57-EB (4400 ppb) 3/15/2019 16:15	Topock - Alluvium Deposits	GM		brown (7.5YR 5/3) to brown (10YR 4	/3); color change		
57 58 59 60	IRZ-27-SS- 57.0-62.0 3/21/2019 13:50		Topock - Alluvium Deposits	SM	(SM); angula pebble blocky (59.3	61.0') Topock - Alluvium Deposits; S brown (7.5YR 4/4); very fine grained t r to subangular; some silt; little grann es, angular to subangular; trace angul ; weak cementation; larger clasts cor 61.0') brown (7.5YR 4/4) and dark ye ttle clay; dry; mottling	o very coarse grained, ules to very large ar; trace mica; moist; usist of metadiorite		
	s: USCS =	Unified Soil C	lassificatio	n System	n, ft = feet, bg	s = below ground surface, an	nsl = above mean se	a level, GW =	
oundwater	, ppb = par	ts per billion, U	= not dete	ected ab	ove the labor	atory reporting limit, NR = no	recovery; Notes: blu	e water table	symbol
	anth to wat	er measured d	urina the f	irst VAS	interval; appa	arent partial recoveries can be	the result of potenti	al compaction	of sedimer
presents de									

9	<u>AR</u>	<b>ADIS</b>	Design & Consultancy for natural and built assets		Во	ring	Log	S	neet: 4 of	8
Date S	started	03/14/	2019		Surface	Eleva	ion: <u>501.24 ft amsl</u>	Boring No	: IRZ-27-F	Pilot
	ate Completed: 03/20/2019					g (NAE	-	_		
•	-				Easting			_ Client: <u>PG&amp;E</u>		
· · · · · · · · · · · · · · · · · · ·					Total De	epth:	<u>156 ft bgs</u>		SW Remedy P	
	д Туре		<u>nic Truck Mou</u>		Borehol			_ Location: <u>PG&amp;E</u>		lles,
	Name:		Vasquez				Water: <u>47.2 ft bgs</u>	Califor		
0	Asst:		<u>res / L. Amaya</u>		Samplin	-		Project Number:	RC000753.0	051
ogge			<u>ers / J. Wanr</u>		Samplin	-		_		
ditor:		<u>Gantt</u>	Jetters		Convert	ed to \	Vell: 🛛 Yes 🗌 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	L USCS Class	Soil Description		Drilling Notes	Drilling Fluid
61	60	IRZ-27-SS- 57.0-62.0 3/21/2019		Topock - Alluvium Deposits	SM					
62		3/21/2019 13:50		Topock - Alluvium Deposits	GM		(61.0 - 62.0') Topock - Alluvium Deposits; S (GM); brown (7.5YR 4/4); granules to very la to subangular; some very fine to very coarse angular to subround; some silt; dry; weak ce	rge pebbles, angular grained sand,		
_ _63				Topock - Alluvium Deposits	SM		(clasts consist of metadiorite (62.0 - 63.5') Topock - Alluvium Deposits; S (SM); brown (7.5YR 4/4); very fine grained to angular to subangular; little granules to meo to subangular; little clay; dry; blocky; weak c	Ity sand with gravel overy coarse grained, ium pebbles, angular		
_64 _65 _66 _67				Topock - Alluvium Deposits	SM		(62.75'); trace clay; moist to wet; increase in (63.5 - 68.0') Topock - Alluvium Deposits; S (SM); yellowish red (5YR 4/6) to reddish bro (5YR 4/4); very fine grained to very coarse g subangular; little granules to large pebbles, subround; little silt; wet; larger clasts consis (65.25'); some silt; trace angular	sand, decrease in silt Ity sand with gravel wn / moderate brown rained, angular to subangular to		
_ _68 _ _69		IRZ-27-SS-		Topock - Alluvium Deposits	SW-SM		(68.0 - 68.8') Topock - Alluvium Deposits; W silt and gravel (SW-SM); gray (5YR 5/1) to c 4/2); very fine grained to very coarse grained granules to very large pebbles, angular to su	ark reddish gray (5YR I, angular; and		
_70 _70 _71 _72	180	67-72 67/2 4/3/2019 14:04	V	Topock - Alluvium Deposits	SM		angular; trace silt; trace clay; wet; larger cla metadiorite (68.8 - 74.0') Topock - Alluvium Deposits; S (SM); yellowish red (5YR 4/6) to reddish bro (5YR 4/4); very fine grained to very coarse g subangular; little granules to very large pebt silt; trace subangular; trace clay; wet; moder trace very large pebbles	Ity sand with gravel wn / moderate brown rained, angular to les, subround; little		
_ _73 _74 _		IRZ-27-SS- 72-77 4/3/2019	IRZ-27-VAS- 72-77 (<0.033 U nnh)	Topock -	SM		(74.0 - 75.5') Topock - Alluvium Deposits; S yellowish red (5YR 4/6) to reddish brown / n	oderate brown (5YR		
_75 _ _76		16:09	`ppb) 3/17/2019 13:15	Alluvium Deposits			<ul> <li>4/4); very fine grained to very coarse grained little granules to very large pebbles, angular wet</li> <li>(75.5 - 82.0') Topock - Alluvium Deposits; S</li> <li>(SM); yellowish red (5YR 4/6) to reddish bro</li> </ul>	little silt; trace clay;		
_ _77				Topock - Alluvium	SM		(SYR 4/3); very fine grained to very coarse g subangular; some granules to very large pel subangular; little silt; trace angular; trace mi	rained, angular to obles, angular to		
.78 - .79 - 80	235.2	IRZ-27-SS- 77-82 4/3/2019 16:11		Deposits						
bbre	viations	s: USCS = l	Jnified Soil C	assification	n System	n, ft = f	eet, bgs = below ground surface, am	sl = above mean s	ea level, GW =	:
					-		a laboratory reporting limit, NR = no r			
			-				l; apparent partial recoveries can be	-		-
pres								- · · · · · · · · · · · · · · · · · · ·		

<b>,</b>	<b>AK</b>	<u>ADIS</u>	Design & Consultancy for natural and built assets		БО	ring	l Log		eet: 5 of	8
	started:				Surface			Boring No.:	IRZ-27-F	Pilot
	•	ted: <u>03/20/2</u>			Northing		•			
	Co.:	Casca			Easting	•	•	Client: PG&E		
-	Metho		-		Total De	•	<u>156 ft bgs</u>	•	W Remedy P	
	g Type Name:		<u>iic Truck Mou</u> /eoguo <del>z</del>		Borehol			Location: <u>PG&amp;E</u> Californ	•	lies,
	Asst:		/asquez es / L. Amaya		Samplir		Water: <u>47.2 ft bgs</u> nod: <u>4 inch x 10 ft. Core Barrel</u>			151
ogge			ers / J. Wann		Samplir	-		Troject Number.	10000733.00	551
ditor:		Gantt .			Convert	-				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Flui
_81		IRZ-27-SS- 77-82 4/3/2019 16:11		Topock - Alluvium Deposits	SM		_0	0		
.82				Topock - Alluvium	SM		(82.0 - 82.8') Topock - Alluvium Deposits; Silt (7.5YR 4/4); very fine grained to very coarse g	rained, angular to		
.83				Deposits Topock - Alluvium	SW-SM		subangular; little granules to medium pebbles trace angular; trace clay; wet			
-				Deposits Topock -			(82.8 - 83.5') Topock - Alluvium Deposits; We silt (SW-SM); brown (7.5YR 4/4); very fine gra	ained to very coarse		
.84		IRZ-27-SS- 82-87		Alluvium	SW		grained, angular to subangular; little granules pebbles, angular to subangular; little silt; wet;	includes a very large		
.85_		4/3/2019 16:17		Deposits			pebble of conglomerate having angular aggre	gate to 9mm and		
_		-					(83.5 - 84.5') Topock - Alluvium Deposits; We (SW); brown (7.5YR 4/4); very fine grained to	ell graded sand verv coarse grained.		
.86							angular to subangular; trace granules to very angular to subangular; trace silt; wet	large pebbles,		
_				Topock - Alluvium	SM		(84.5 - 88.5') Topock - Alluvium Deposits; Silt			
.87				Deposits			(SM); reddish brown (5YR 4/3) to reddish brow fine grained to very coarse grained, angular to			
_							silt; little granules to very large pebbles, angu	lar; trace clay; wet		
_88										
_	235.2			Topock -			(88.5 - 89.5') Topock - Alluvium Deposits; Silt	v sand (SM): reddish		
_89		IRZ-27-SS-		Alluvium	SM		brown (5YR 4/3) to reddish brown (5YR 5/3); very coarse grained, angular to subangular; li	very fine grained to		
-		87-92 4/3/2019		Deposits			very large pebbles, angular; wet; trace sandy	silt nodules		
_90		16:22					(89.5 - 97.0') Topock - Alluvium Deposits; Silt (SM); reddish brown (5YR 4/3) to reddish brov			
-							fine grained to very coarse grained, angular; s very large pebbles, angular to subangular; littl			
_91							angular; wet			
_92										
_93							-			
_95				Topock - Alluvium	SM		-			
_94				Deposits						
		IRZ-27-SS- 92-97								
_95		4/3/2019 16:23								
_							] ; (95.3') reddish brown / moderate brown (5YR	4/4) to vellowish red		
_96							(5YR 4/6); little granules to very large pebbles change, decrease in silt, no cobbles			
_							i shango, doorodae in air, no cobbies			
_97				L	<u> </u>			v aand (CM): building		
-				Topock - Alluvium	SM		(97.0 - 98.0') Topock - Alluvium Deposits; Silt (7.5YR 4/4); very fine grained to very coarse g	rained, angular to		
_98		IRZ-27-SS-		Deposits			subangular; little silt; trace granules to mediu (98.0 - 107.0') Topock - Alluvium Deposits; Si			
-	122.4	97-102 4/3/2019		Tene-li			(SM); brown (7.5YR 4/4); very fine grained to	very coarse grained,		
_99		16:07		Topock - Alluvium	SM		angular; little granules to very large pebbles, a little clay; trace small cobbles, angular; wet	angular; little silt;		
-				Deposits						
100	101:		Inified Oritical			: :[:				
					-		eet, bgs = below ground surface, ams e laboratory reporting limit, NR = no re			
			•				al; apparent partial recoveries can be t			
6014	uns ut	-pur to water	การสอนเฮน นิเ	anny uie Ill	JUL VAJ		יי, מטףמיטיוג ףמוומי ובטטיבוובט טמון טפ נו	To Toour OI POLEI Illa	ล งงกายสงแบก	JI SECILITED

	<u>ADIS</u>	<b>Design &amp; Consultancy</b> for natural and built assets		Bo	ring Lo	g	Sheet: 6 of 8				
ate Started					Elevation:	<u>501.24 ft amsl</u>				Pilot	
•	ted: <u>03/20/</u>				g (NAD83):	2102236.81		-			
illing Co.: <u>Cascade</u> illing Method: <u>Sonic Drilling</u>		-	(NAD83):	<u>7615803.14</u>	_ Client:	PG&E		1			
rilling Metho		-		_ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Sampling Method:		<u>156 ft bgs</u>			V Remedy Pl		
rill Rig Type riller Name:		nic Truck Mou				<u>4-12 inches</u>	_ Location:	Californi	opock, Need	ies,	
rilling Asst:		Vasquez res / L. Amaya				4 inch x 10 ft. Core Barrel	— Project N		a RC000753.00	)51	
ogger:		fers / J. Wann			ig Interval:	<u>Continuous</u>			10000733.00	51	
ditor:		Jeffers			ed to Well:	$\times$ Yes $\square$ No	_				
			0 5								
Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	Class C Class	Soil Description			Drilling Notes	Drilling Flui	
_ 101 _ 102	IRZ-27-SS- 97-102 4/3/2019 16:07						<b>20</b>				
- 103_ - 122.4 104_ 105_ 106_ -	IRZ-27-SS- 102-107 4/3/2019 16:19	IRZ-27-VAS- 102-107 (<0.17 U ppb) 3/18/2019 16:10	Topock - Alluvium Deposits	SM			3				
107 108 109 110 110 111 112	IRZ-27-SS- 107-112 4/3/2019 16:22		Tapack	0	(SM) fine g	0 - 118.0') Topock - Alluvium Deposits brown (7.5YR 4/4) to dark yellowish b irained to very coarse grained, angular iles to very large pebbles, angular; little cobbles, angular; dry	rown (10YR 4/4 to subround; s	1); very ome	(111.0 - 114.0') Rough drilling		
- 113_ - 114_ - 115_ - 33.6 116_	IRZ-27-SS 4/3/2019 16:20		Topock - Alluvium Deposits	SM					(114.0') Core barrel plugged off, driller had to go back into hole to recover 114.0-117.0 ft.		
117 118 119 120	IRZ-27-SS- 117-122 4/3/2019 16:12		Topock - Alluvium Deposits	sc	//////////////////////////////////////	0 - 122.0') Topock - Alluvium Deposits sh brown / moderate brown (5YR 4/4) very fine grained to very coarse graine clay; trace granules to medium pebb ser clasts composed of metadiorite; mo	to yellowish rec d, angular to su es, angular; tra	l (5YR bround;			
	: USCS =	Unified Soil Cl	assificatio	n System	n, ft = feet, b	gs = below ground surface, an	ısl = above ı	mean sea	a level, GW =		
						ratory reporting limit, NR = no				symbol	
oundwater		, •								-	
	epth to wate	r measured d	uring the f	irst VAS	interval: app	arent partial recoveries can be	the result of	f potentia	l compaction	of sedimer	

9/	ARC	<b>ADIS</b>	Design & Consultancy for natural and built assets			-	Log	She	eet: 7 of	8
	started:				Surface			Boring No.: IRZ-27-Pilot		
		ted: <u>03/20/</u>			Northing	•	-			
Drilling		<u>Casca</u>			Easting	•		Client: <u>PG&amp;E</u>		
-	Metho		-		Fotal De	•	<u>156 ft bgs</u>		<u>W Remedy Ph</u>	
	g Type Name:		nic Truck Mo		Borehole		eter: <u>4-12 inches</u> Vater: 47.2 ft bgs	Location: <u>PG&amp;E</u> Californ		les,
	Asst:		<u>Vasquez</u> es / L. Amay		Sampling					51
_ogge			ers / J. Wani		Samplin	-			<u>KC000733.00</u>	51
Editor:		Gantt .			Converte	-		-		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_ _121	62.4	IRZ-27-SS- 117-122 4/3/2019 16:12		Topock - Alluvium Deposits	SC		C			
122				L			(120.0. 124.5) Tanagk, Competent Badaak		(122.0')	
_							(122.0 - 124.5') Topock - Competent Bedrock reddish brown (2.5YR 4/4); dry; moderate cer	nentation; friable	(122.0') Core barrel	
123_				Topock - Competent			conglomerate bedrock		plugged off, driller thinks	
-				Bedrock - conglomerate		$\qquad \qquad $			there was a formation	
124		IRZ-27-SS-							change going back into wet	
	60	122-127 4/3/2019					(124.5 - 129.5') Topock - Weathered Bedrock		soil material (122.0 -	
125_		16:08					Silty sand (SM); reddish brown (2.5YR 4/4) to (2.5YR 3/4); very fine grained to very coarse c	dark reddish brown rained, angular to	127.0') Core barrel got	
100							subround; little silt; little clay; trace granules,		stuck, driller	
126									advanced casing using	
 127				Topock - Weathered					water to retrieve the	
.121				Bedrock -	SM				core barrel. Conglomerate	(127.0 -
				conglomerate					bedrock with	156.0') 200 gallons
_120_									alternating zones of fine	water used 200 gallons
129_									grained matrix and coarser	water recovered;
-120		IRZ-27-SS- 127-132							grained matrix, potential	gallons of water lost
130_		4/3/2019 16:02					(129.5 - 137.0') Topock - Competent Bedrock reddish brown (2.5YR 4/4); and very fine to ver	- conglomerate;	stratigraphic	Water 103t
						$\sim$	sand, angular to subround; little silt; little clay	; trace granules,	high point of the	
131_							subangular; dry; friable conglomerate bedrocl	<	conglomerate or	
_									conglomerate.	
132	126					$\longrightarrow$			(100.0	
_									(132.0 - 137.0')	
133_				Topock - Competent					Sample collected	
_				Bedrock -					during the installation of	
134		IRZ-27-SS-	IRZ-27-VAS-	conglomerate					temporary	
_		132-137 4/3/2019	132-137 (1300 ppb)						backfill.	
135		16:04	3/20/2019 15:30							
-										
_136						$\sim$				
-										
_137							(137.0 - 151.0') Topock - Weathered Bedrock	- conglomerate:		
							Well graded gravel with silt and sand (GW-G (2.5YR 4/4) to dark reddish brown (2.5YR 3/4	M); reddish brown		
_138		IRZ-27-SS-		Topock -			pebbles, angular to subangular; some very fin	e to very coarse		
400	60	137-142 4/3/2019		Weathered Bedrock -	GW-GM	· 4I	grained sand, angular to subangular; little silt	, mue day, ury		
_139		15:58		conglomerate						
440										
<u>140</u> bbrev	/iations	s: USCS = I	Jnified Soil C	lassification	System	. ft = fe	et, bgs = below ground surface, ams	   = above mean se	a level. GW =	
							laboratory reporting limit, NR = no re			symbol
			•				apparent partial recoveries can be t			
•	core ba	•		-					· ·	

<b>P</b> A	ARCADIS Design & Consultancy for natural and built assets					ring Lo	g	Sheet: 8 of 8			
Date Sta		03/14/	2019			Elevation:	501.24 ft amsl	Boring No.:	IRZ-27-F	Pilot	
	-	d: <u>03/20/</u>				g (NAD83):	2102236.81		<u></u>		
Drilling C		<u>Casca</u>			-	(NAD83):	7615803.14	_ Client: <u>PG&amp;E</u>			
-	Orilling Method:         Sonic Drilling           Orill Rig Type:         Prosonic Truck Mount		Total De	-	<u>156 ft bgs</u>	•	N Remedy P				
					e Diameter:	4-12 inches	_ Location: <u>PG&amp;E</u>		les,		
Driller Na			Vasquez		•	o First Water	0	Californ			
Drilling A	sst:		res / L. Amay		-	ng Method:	4 inch x 10 ft. Core Barrel	_ Project Number:	RC000753.00	)51	
Logger:		<u>G. Jen</u> Gantt	f <mark>ers / J. Wanr</mark>	<u>ier</u>		ng Interval:	Continuous     X   Yes   No	_			
Editor:		<u>Ganu .</u>			Conven	ted to Well:	X Yes No				
Depth (ft) Recoverv	(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid	
	~~	Z-27-SS- 137-142 \$/3/2019 15:58		Topock - Weathered	01/ 01						
_146 _147 _148				Bedrock - conglomerat	GW-GN						
	31.2			5	0						
			no sample-			reddis	- 156.0') Topock - Competent Bedroc h brown (2.5YR 4/4) to dark reddish b on VAS interval that did not produce	k - conglomerate; rown (2.5YR 3/4);			
_153  _154			(Interval did not produce.) 3/20/2019	Topock - Competent Bedrock - conglomerat							
			3/20/2019 10:15	songionierat							
_1553	34.8										
156											
						*****	End of Boring at 156.0 ft I	ogs.		•	
_157											
_158											
_1.00											
_159											
_109_											
160											
<u>160</u>	ations:	USCS = I	Jnified Soil C	lassification	1 Svsten	n, ft = feet. bo	s = below ground surface, am	sl = above mean se	a level. GW =		
					-						
	/ater. p	pb = parts	sperbillion. L	l = not dete	ected ab	ove the labor	atory reporting limit. NR = no r	ecovery: Notes: blu	e water table	symbol	
roundw			-				atory reporting limit, NR = no r arent partial recoveries can be			-	

