



### TOPOCK WELL COMPLETION AND ACCEPTANCE REPORT -REMEDIATION WELLS

Well Name: TWB-01 (Note: Documentation referencing TWB-1 is in reference to TWB-01.)

Screen Zone (feet below ground surface [bgs]): 85 - 106' and 110 - 129'

Dates of Pilot Borehole Drilling: 3/15/2022 - 3/30/2022

Dates of Temporary Well Installation (TWB-01-Temp): 3/31/2022

Dates of Temporary Well Development (TWB-01-Temp): 4/25/2022 - 4/27/2022

Dates of Temporary Well Decommissioning (TWB-01-Temp): <u>8/16/2022 – 8/20/2022 and 9/9/2022 –</u> <u>9/12/2022</u>. See the "Meets Design Criteria for Construction" section below for details.

Dates of Pilot Borehole Overdrilling: 8/16/2022 - 8/20/2022 and 9/8/2022

Dates of Well Installation (TWB-01): 9/09/2022 - 9/12/2022

Dates of Well Head Completion (TWB-01): <u>The well vault was installed on 10/27/2022</u>. The well casing <u>stick-up will be cut down during the installation of the well head flange</u>.

Dates of Well Development (TWB-01): <u>9/14/2022 – 9/29/2022 (Well development log [attached] includes</u> some of the documentation associated with the specific capacity test.)

Note: Well Testing was completed successfully and in accordance with Well Specification 33 22 00 unless noted below.

Well Testing Conducted	Required (Y/N)	Dates	Comments
Alignment Test	Y	10/04/2022	None
		4/28/2022 (TWB-01-Temp)	
Specific Capacity Test	Υ	9/28/2022 (TWB-01)	None
Injectivity Test	Ν		
Plumbness Test (Gyroscope)	Ν		
Spinner Log	Ν		
Downhole Video	Y	12/02/2022	None
Other			

## Acceptance Criteria

☑ **Meets Design Criteria for Construction** - Well installed in accordance with well specifications and final design.

Comments: The <u>as-built well construction for TWB-01 is consistent with the TWB-01 final well design</u> (see Attached Design and Well Construction Log). The as-built well construction for TWB-01-Temp well was consistent with the TWB-01-Temp final well design prior to being decommissioned (see Attached Design and Well Construction Log).

The measured alluvial aquifer thickness observed from the pilot boring was approximately 6 feet and appeared to be low a water-producing aquifer. The observations related to thickness and water-bearing features suggested the location would not likely meet the total target design flow rate of approximately 25 gpm for the Transwestern Bench. Although the formation was low producing, the VAS sample results had higher than anticipated Cr (IV) concentrations. Due to the uncertainty of the location meeting the project objectives, a temporary well (TWB-01-Temp) was installed followed by well development and specific capacity testing. The results of the specific capacity testing indicated an extraction well installed in the borehole would produce an estimated sustainable pumping rate of 3 to 5 gpm. The specific capacity testing results suggested the borehole would be a viable option to install a low-producing extraction well. DoR designed the extraction well (TWB-01) and planned to decommission the temporary well (TWB-01-Temp) during the overdrilling of the temporary well and installation of TWB-01 in the same borehole.

Overdrilling of the pilot borehole for decommissioning TWB-01-Temp well and the installation of the TWB-01 began on 8/16/23 (see details on the attached logs). TWB-01-Temp well materials were observed in the drill cuttings from approximately 0 to 75 ft bgs. TWB-01-Temp well materials were no longer observed in the drilling cutting suggesting that the 10-inch diameter drill casing was not aligned with TWB-01-Temp below approximately 75 ft bgs. The boring was advanced to the design depth of approximately 137 ft bgs. A preliminary "Alignment Test" was conducted on the 9.5-inch inner diameter drill casing using the 8-inch outer diameter core barrel. The preliminary "Alignment Test" confirmed the borehole was properly aligned for the proposed installation of TWB-01.

PG&E requested the drill casing remain in the borehole while the drill rig moved to another Phase 2a drilling location to allow time to obtain agency-approval to proceed with TWB-01 well installation. The driller (Cascade) was concerned that the drill casing would become locked up in the formation while waiting for agency-approval. The 10-inch drill casing was retracked to approximately 115 ft bgs to minimize the potential for drill casing to lock up in the formation. The open borehole below the drill casing was temporary backfilled with Cemex #1/20 (20x40) Lapis Lustre Sand to support the drill casing prior to receiving agency-approval.

The agencies approved the installation of TWB-01 in the borehole and installation began on 9/9/2022. The sanitary grout seal used for the installation of the TWB-01 serves as the decommissioning sanitary seal for the decommissioning of the overdrilled portion of TWB-01-Temp well. The TWB-01-Temp well materials not removed during overdrilling below approximately 75 ft bgs are planned to be decommissioned in place during the future decommissioning of TWB-01. The TWB-01 extraction well and the TWB-01-Temp materials below approximately 75 feet bgs will be decommissioned by pressure grouting, during remedy closeout activities, as documented in the TWB-01 Well Construction Log (attached).

Goal from 100% Design:	3 gpm
Tested Rates	
(gallons per minute [gpm]):	1.5, 3.0, 4.5, 6
	0.68 gpm/ft per 2.26 ft of drawdown at an extraction rate of ~1.5 gpm.
	0.48 gpm/ft per 6.15 ft of drawdown at an extraction rate of ~3.0 gpm.
	0.22 gpm/ft per 19.30 ft of drawdown at an extraction rate of ~4.5 gpm.
Specific Injectivity	0.14 gpm/ft per 40.96 ft of drawdown at an extraction rate of ~6.0 gpm.
	The tested rates exceeded the proposed 100% design rate of 3 gpm. Well meets the
Comments	design criteria for extraction rates. See attached Well Testing Data Package.

#### Meets Design Criteria for Extraction Rate

#### Well Functions as Designed

Comments: TWB-01 is free of blockages and meets the design criteria for the intended use.

Meets Design Criteria for Plumbness and Equipment Install – The well was free of blockages and of sufficient plumbness and alignment to allow for well development, well testing, and well sampling and alignment test tool deployment to total depth.

Comments:Downhole equipment has not been installed as of the submittal of this Completion Report. Installation

### Meets Design Criteria for Turbidity (Turbidity less than 50 NTU)

Comments: Turbidity following well development meets the design criteria.

#### Final Turbidity at End of Well Development

Screen Zone	Turbidity (NTUs)
85 – 106' and 110 – 129' (no seal between screens)	0.99

### ☑ Other Water Quality Parameters

Water Quality Parameters at end of development

Screen Depths	Temp (C)	рН	ORP (mV)	Cond (uS/cm)	DO
<u>85 – 106' and</u> 110 – 129"	31.1	7.78	235.3	10256	3.62

### ATTACHMENTS

- Final Well Design
- Boring Log
- Drilling Log
- Well Construction Logs (TWB-01-Temp and TWB-01)
- Well Development Records (TWB-01-Temp and TWB-01)
- Specific Capacity Testing Package
- Photo Logs (TWB-01-Temp and TWB-01)
- Video Survey Report

NOTE: Field documentation for all phases of well installation, well development and testing are included in the Daily Well Construction Reports. The Daily Well Construction Reports and DoR Daily Well Construction Quality Control Reports are compiled and organized by date on AutodeskBuild. The parent folder for both daily reports are located on AutodeskBuild in the following location: Files/For the Field/DOR Drilling Quality Control/01 QC Documentation. Analytical reports are compiled and uploaded to AutodeskBuild in the same folder. The technical scopes were performed by or under the direct supervision of Designer of Record (DoR) Professional Geologists (see attached Certification Statement).

### ACCEPTANCE APPROVAL

DoR Approver Name: Greg Foote

Approval Signature/Date:

Areg S. Jew 15

February 16, 2023

Final Well Design

<b>ARCADIS</b>	
Conductor casing Dia:	

## TWB-01 Temporay Final Well Design 3/31/22 Well Casing Outer Diameter:

Well Casing Inner Diameter:

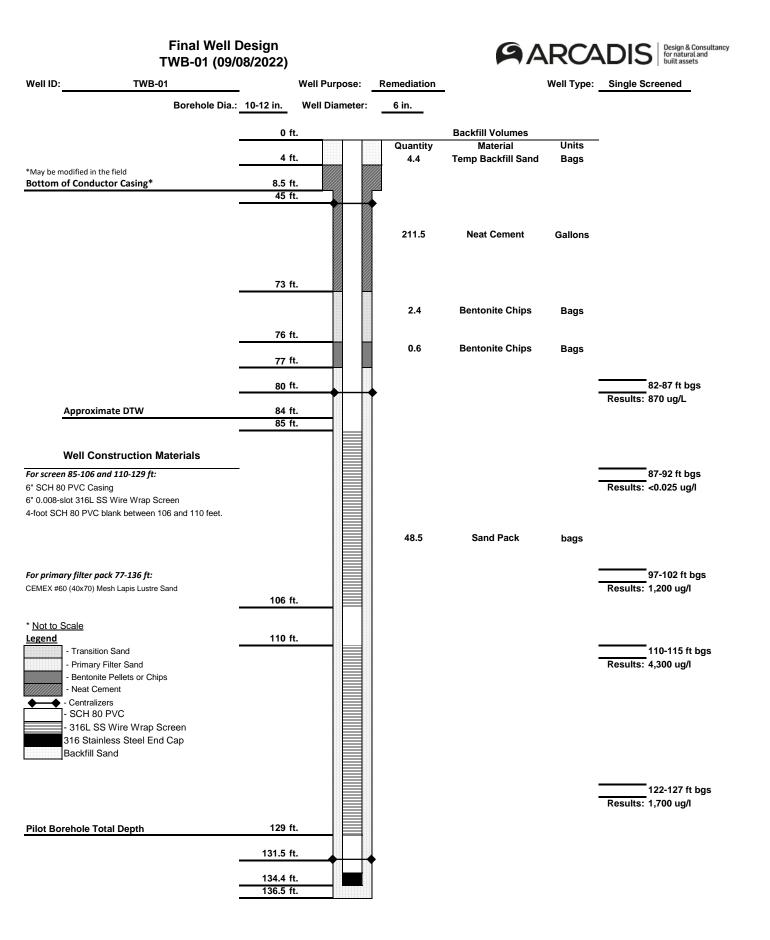


Drill casing Dia: Rathole Dia:

7

6

						Surface Completio	n: TBD	
		Ground surface	0.0	ft.			Annular Materials	
			0.0			Quantity	Material Type	Units
			2.0	ft.		0.0	Native Material	Bags
		Conductor Casing	8.0	ft.				
	Well Materials			6				
	Sch 80 PVC 0.0 Sch 80 PVC Bla		20.0	ft.	< <b>┼</b> ┝			
	► Centralizer							
	Transition San							
	Bentonite Chip Cemex #3	os or Pellets						
	Cernex no							
Well Materials	Length	10 ft Sections						
sing	77	7.7						
per Screen	50.0	5						
			43.0	ft.				
					• •			
						24.4	Comou #CD	Dama
						24.4	Cemex #60	Bags
			72.0					
			73.0	ft.	┝┼┼┝			
			74.5	ft.				
						0.1	Bentonite Chips	Buckets
			75.0	ft.				
			77.0	ft.				
	۸	proximate DTW	83.5	ft.				
	A		03.5	16				
						17.3	Comov #2	Page
						17.3	Cemex #3	Bags
			127.0	ft.				
			127.3	ft.	∙∐•			
					$\neg \vdash$			
			129.0	ft.				



Boring Log

<u> </u>	CAD	IS		Bo	pring	Log	Sh	eet: 1 of	7
ate Started:		/2022		Surface			Boring No	.: TWB-01	Pilot
ate Complet				Northir			-		
vrilling Co.: vrilling Metho	<u>Casc</u> d: Sonic			Easting		33): <u>7615929.94</u> <u>129.5 ft bgs</u>	Client: <u>PG&amp;E</u> Project: <u>Final GW Remedy Pha</u>		2250.24
rill Rig Type:		Longyear drill		Boreho	•	C C	Location: PG&E	•	
vriller Name:		Arnold				Water: <u>82.0 ft bgs</u>			
rilling Asst:	<u>D Ho</u>	eppner / R We	est	Sampli	ng Met	nod: <u>4 inch x 10 ft. Core Barrel</u>	Project Number:	30126255	
ogger:		<u> Grane / G Will</u>		Sampli	•		-		
ditor:	<u>Sean</u>	McGrane	-	Conve	ted to	Vell: 🛛 Yes 🗌 No			1
Depth (ft) Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			Fill	N/A		(0-0.5 ft) Grading for the drill pad.		(0.0 - 5.2') Air knifed for	(0.0 - 5.2') No drilling flu
_ 1 			Alluvium Deposits	SM		(0.5-3 ft) Silty sand with gravel (SM); brown (7 very coarse grained, angular to subround; little pebbles, angular to subangular; little silt; little subround; trace clay; dry; NOTE: Logged from	small to very large granules, angular to	utility clearance. Logged soils disturbed.	used
_ 4 _ 4 _ 5			Alluvium Deposits	SW-SM		(3-5 ft) Well-graded sand with silt and gravel ( (7.5YR 5/3); very fine to very coarse grained, a little small to very large pebbles, angular to su granules, angular to subround; little silt; trace Logged from air-knife cuttings. (5-7 ft) Well-graded sand with silt and gravel (	ngular tó subround; bround; little clay; dry; NOTE:		
2 2 7			Alluvium Deposits	SW-SM		(7.5YR 5/3); very fine to very coarse grained, a little small to very large pebbles, angular to su granules, angular to subround; little silt; dry. (7-11.75 ft) Silty sand with gravel (SM); brown	ngular to subround; bround; little		
- 8 - 9 - 10 -11 7.8	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(i The origonal sector of the	ome small to very nules, angular to		
_12  _13			Alluvium Deposits	GW-GN		(11.75-14 ft) Well-graded gravel with silt and s brown (7.5YR 4/3); small to very large pebbles angular to subangular; and very fine to very co angular to subround; little silt; dry.	, little granules,		
_14			Alluvium Deposits	ML		(14-15.5 ft) Sandy silt with gravel (ML); brown plasticity, no dilatancy; and very fine to very co angular to subround; little small to large pebbl subangular; little granules, angular to subroun	arse grained sand, es, angular to	(15.0') Hard drilling	(15.0') No drilling flu
_161.5 			Alluvium Deposits	SW-SM		(15.5-17 ft) Well-graded sand with silt and gra (10YR 5/3); very fine to very coarse grained, a little small to very large pebbles, angular; little subround; little silt; trace clay; dry.	ngular to subround; granules, angular to	had to trip back in to collect 15 to 17 ft. bgs.	used
 _18 8.8 _19			Alluvium Deposits	SW-SM		(17-19.5 ft) Well-graded sand with silt and gra (10YR 5/3); very fine to very coarse grained, a some small to very large pebbles, angular to s granules, angular to subangular; trace small c little silt; trace clay; dry.	ngular to subround; ubangular; little	(17.0 - 27.0') Hard drilling	(17.0 - 27.0 No drilling flu used
20			Alluvium	SM					
bbreviations	: USCS =	Unified Soil Cl	lassification	n Syster	m, ft = f	eet, bgs = below ground surface, am	sl = above mean se	ea level, NR =	No Recove
						n, Notes: Solid blue and hollow blue			
gs.) first enc	ountered f	rom logging ar	nd depth to	water	measur	ed during the first VAS interval, respe	ctively. Apparent p	artial recoverie	s can be th
		action of sedim				, · · · · ·	, <u>, ,</u>		

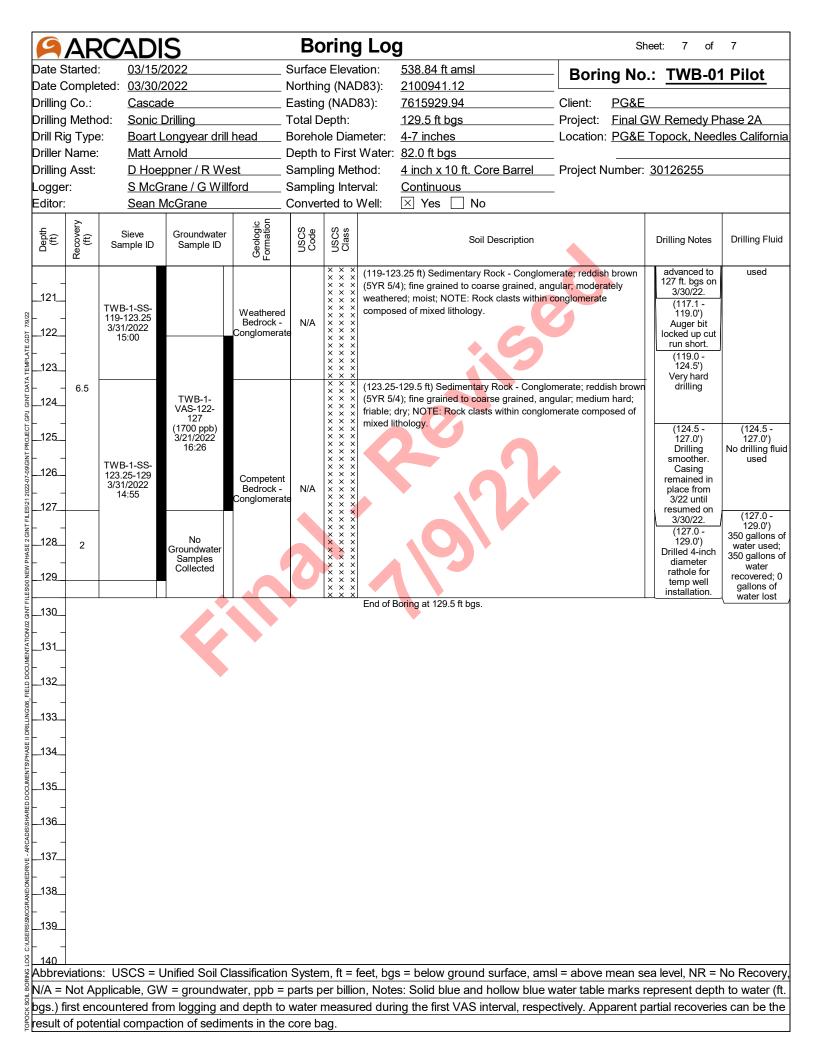
e Completed: 0 ing Co.: 0 ing Method: <u>S</u> Rig Type: <u>B</u> er Name: <u>M</u> ing Asst: <u>D</u> ger: <u>S</u>	Matt Arnc D Hoeppr 6 McGrar Sean Mc eve	22 Iling ngyear drill I old ner / R Wes ne / G Willfo	head [ st 5]	Surface Northin Easting Fotal D Boreho Depth t Samplin Samplin Conver	g (NAI epth: le Diar lo First ng Met ng Inte	2100941.12 83): 7615929.94 129.5 ft bgs neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 fr val: Continuous Well: X Yes (19.5-22 ft) Silty sand with to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very carse grained, a angular to subangular; subangular; subangular; little silt; dy	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit iry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Client: Project: Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	PG&E Final GV PG&E T Jumber: 3 Jumber: 3 Small angular	TWB-01	ase 2A
ing Co.: <u>C</u> ing Method: <u>S</u> Rig Type: <u>B</u> er Name: <u>M</u> ing Asst: <u>D</u> ger: <u>S</u> $(E) \xrightarrow{1}{2} (E) Sie Samp 1$	Cascade Sonic Dril Boart Lor Matt Arno D Hoeppi S McGran Sean McG	lling ngyear drill I old ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Easting Fotal D Boreho Depth t Samplir Conver	(NAD epth: le Diar o First ng Met ng Inte ted to	83): 7615929.94 129.5 ft bgs neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 f rval: Continuous Well: X Yes (19.5-22 ft) Silty sand with very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; sithe silt; dry	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit fry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Client: Project: Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	PG&E Final GV PG&E T Jumber: 3 Jumber: 3 Small angular	V Remedy Ph opock, Needl	ase 2A es Californi
ing Method: S Rig Type: B er Name: M ing Asst: D ger: S for: S f	Sonic Dril Boart Lor Matt Arnc D Hoeppi S McGrar Sean McC eve	ngyear drill <u> </u> ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Fotal D Boreho Depth t Samplir Conver	epth: le Diar o First ng Met ng Inte ted to	129.5 ft bgs         neter:       4-7 inches         Water:       82.0 ft bgs         hod:       4 inch x 10 ft         rval:       Continuous         Well:       X Yes         (19.5-22 ft) Silty sand with         very fine to very coarse of to very large pebbles, and to subangular; little silt; of         (22-27 ft) Silty sand with         to subangular; little silt; dry	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular to sub gular to subangular; lit fry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Project: Location: Project N sh brown (10' round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	opock, Needl	es Californ
Rig Type:       B         er Name:       M         ing Asst:       D         ger:       Sie         cor:       Sie         Sie       Sie         Samp       Sie         -       8.8         4       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       8.8         -       -       -         -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -       -         -       -       -       -       -         -       -       -       -       -         -       -	Boart Lor Matt Arno D Hoeppi S McGrar Sean McC eve	ngyear drill <u> </u> ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Soreho Depth t Samplir Samplir Conver	le Diar o First ng Met ng Inte ted to	neter:       4-7 inches         Water:       82.0 ft bgs         hod:       4 inch x 10 ft         trval:       Continuous         Well:       X Yes         (19.5-22 ft)       Silty sand wit         very fine to very coarse gt       to subangular; little silt; dt         (22-27 ft)       Silty sand with         to subangular;       little silt; dt	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	opock, Needl	es Californ
er Name: $\underline{M}$ ing Asst: $\underline{D}$ ger: $\underline{S}$ for: $\underline{S}$ $(\underline{E}  \overset{\lambda_{D}}{OO} \underbrace{E}  \overset{Sie}{Samp}$ $1  \vdots  \vdots  \overset{\lambda_{D}}{OO} \underbrace{E}  \overset{Sie}{Samp}$ $1  \vdots  \vdots  \vdots  \vdots  \vdots  \vdots  \vdots  \vdots  \vdots  $	Matt Arnc D Hoeppr 6 McGrar Sean Mc eve	ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Depth t Samplir Samplir Conver SM SM	o First ng Met ng Inte ted to	Water: 82.0 ft bgs hod: 4 inch x 10 f rval: Continuous Well: Yes (19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit lry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	30126255	
ing Asst: ger: <u>S</u> for: <u>S</u> $E$ $\frac{1}{200}$ $E$ Sie Samp - 8.8 - 9.8 -	D Hoeppi S McGrar Sean McC	ner / R Wes ne / G Willfo Grane Groundwater	St Stand	Samplir Samplir Conver System SM	ng Met ng Inte ted to	hod: <u>4 inch x 10 f</u> rval: <u>Continuous</u> Well: X Yes ( (19.5-22 ft) Silty sand wit very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; subangular; s	No Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular ry fine		Drilling Flui
ger: <u>S</u> cor: <u>S</u> (E) <sup>\$20</sup> (E) <sup>\$20</sup> (E	S McGrar Sean McGrar	ne / G Willfo Grane Groundwater	Alluvium	Samplir Conver	ng Inte	Continuous         Well:       Yes         (19.5-22 ft) Silty sand with very fine to very coarse (to very large pebbles, and to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; little silt; dry	No Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular ry fine		Drilling Flui
Or:     Sie       E: <sup>1</sup> / <sub>2</sub> , (£) <sup>2</sup> / <sub>2</sub> , (£) <sup>2</sup> / <sub>2</sub> , (£) <sup>1</sup> / <sub>2</sub> , (E) <sup>1</sup> / <sub>2</sub> , (E)	Sean Mc eve C	Grane Groundwater	Alluvium	SM	ted to	Well: X Yes (19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
E Sie Samp	eve C	Groundwater	Deposits	Code		(19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
- 8.8 - 8.8 4			Deposits Alluvium Deposits Alluvium	SM	Class	very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	th gravel (SM); yellowis rained, angular to sub gular to subangular; lit ry. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
2			Alluvium Deposits Alluvium			very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	rained, angular to subi gular to subangular; lit iry. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine		
- 8.8 4 - 8.8 4				SM		to very coarse grained, a angular to subangular; s subangular; little silt; dry	ngular to subround; so ome small to very large	me granules	ry fine		
- - - D Sampl						potentially caliche. (25 ft) Trace small cobbl	; NOTE: Cementation i	with white m	ngular to		
		No roundwater	Alluvium Deposits	SM		(27-29 ft) Silty sand with to very coarse grained, a angular to subround; sor subangular, little silt; dry cemented with white ma (29-33 ft) Silty sand with to very coarse grained, a angular to subround; littl to subround; little silt; dr	ngular to subround; so ne small to very large p NOTE: Some sedime trix, potentially caliche. gravel (SM); brown (7. ngular to subround; so e small to very large pe	5YR 4/3); ve bbles, ang 5YR 4/3); ve me granules	ry fine		
2 7	ctod	Samples Collected	Alluvium Deposits	SM		matrix, potentially calich	, No FL. Come center 3.			(32.0 - 37.0') hard drilling	(32.0 - 37.0 No drilling flu used
3  4						(33-37 ft) Silty sand with to medium grained, som angular to subround; sor subangular to subround;	e coarse to very coarse ne silt; some small to l	e grained sar arge pebbles	nd, s,		
5			Alluvium Deposits	SM		(34.5 ft) Trace very large					
7						(36 ft) Rip up clasts of w potentially caliche. (37-40.5 ft) Silty sand wi	th gravel (SM): brown (	7.5YR 4/4): \	verv fine		
- 3 - 2.9 9 -			Alluvium Deposits	SM		to very coarse grained, a angular to subround; littl subround; little silt; dry; l matrix, potentially calich	ngular to subround; so e small to very large pe NOTE: Some weak cer	ome granules ebbles, angul	s, lar to		
						eet, bgs = below gro					
= Not Applicabl	le, GW =	groundwa	ter, ppb =	parts p	er billic	n, Notes: Solid blue	and hollow blue w	ater table	marks re	present depth	to water (
.) first encounter	red from	logging and	d depth to	water r	neasu	ed during the first V	AS interval, respec	tively. App	parent par	rtial recoveries	can be th

9	AR		D	S		Bo	oring	<mark>g Lo</mark> g	g				Sh	eet: 3 of	7					
Date S	started:	03	/15/2	2022		Surface			<u>538.84 ft a</u>			Borin	na No.	: TWB-01	Pilot					
		ted: <u>03</u>				Northir			<u>2100941.</u>				-	<u></u>						
Drilling			ISCad			Easting		83):	7615929.9			Client:	PG&E							
-	Metho			Drilling		Total D	•		<u>129.5 ft be</u>	-		Project:		W Remedy Pl						
	g Type Name:			<u>ongyear drill</u> mold		Boreho Depth			4-7 inches 82.0 ft bgs			Location	PG&E	Topock, Need	les Californi					
	Asst:			opner / R We		Sampli				) ft. Core Ba	rrel	Project N	lumber <sup>.</sup>	30126255						
_ogge				rane / G Will		Sampli	-		Continuou			Појсост	umber.	00120200						
Editor:				/IcGrane		Conve	-		X Yes	No										
Depth (ft)	Recovery (ft)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class			Soil Descrip	tion			Drilling Notes	Drilling Fluid					
						SM														
_4142	2.9				Alluvium Deposits	SM		to medi angular to subro	um grained, ar to subround; a ound; little grar	with gravel (SM) nd very fine to ve and silt; little sm nules, angular to ed with white ma	ery coarse all to larg subroun	e grained sai e pebbles, a d; dry; NOTE	nd, ingular E: Some							
43 44 45 46 46 47 48 49	5.5										No	Alluvium Deposits SM		ranúles, angula , angular to su reak cementat	ion with white m	some sm ;; trace cl atrix, pote	all to very la ay; dry; NOT entially calic	rge E: he.	(47.0 - 50.0') Soft drilling	(47.0 - 50.0') No drilling fluid used
_ _50 _ _51		No Siev Sample Collecte	s	No Groundwater Samples Collected	Alluvium Deposits Alluvium Deposits	SW SM		4/3); ver granules angular (50-52 f to medi subangu subrour	y fine to very o s, angular to s to subangular t) Silty sand w um grained, so ular to subrour id; little small   TE: Some wea	coarse grained, a ubround; some s ; trace silt; trace ith gravel (SM); j ome coarse to ve nd; and silt; little pebbles, subang	angular to small to la clay; dry brown (7. ery coarse granules jular to su	arge pebbles, /. .5YR 4/3); very fine e grained sand,								
_52 _53 _54	6.2				Alluvium Deposits	SM		to medi subangi angular clay; dry	um grained, so ular to subrour to subround; t	with gravel (SM) ome coarse to ve nd; and silt; little race granules, a e weak cementa	ery coarse small to angular to	e grained sa medium peb subround; t	nd, bles, race	(53.0 - 57.0') Hard drilling	(53.0 - 57.0') No drilling flu used					
_55 _56 _56					Alluvium Deposits	SW-SM		(7.5YR some si granule cobbles	5/3́); very fine mall to very lar s, angular to s	ed sand with silt to very coarse g ge pebbles, ang ubround; little si NOTE: Trace w che.	rained, ar jular to su lt; trace c	ngular to sub bangular; lit lay; trace sn	oround; tle nall							
_57 _58 _59 _	7.7				Alluvium Deposits	SW-SM		(7.5YR some si granule	4/4); very fine mall to very lar	l sand with silt a to very coarse g ge pebbles, ang ubround; little si	rained, ar Jular to su	igular to sub bround; little	pround;	(57.0 - 77.0') Normal drilling	(57.0 - 77.0' No drilling flu used					
\bbre	viations	USCS	S = ι	Jnified Soil C	lassificatior	n Syster	n, ft = 1	feet, bg	s = below <u>c</u>	round surfac	e, ams	l = above	mean se	a level, NR = l	No Recover					
														epresent depth						
		•	-											artial recoverie						
• /				tion of sedim	•				-				•							

9	<u> </u>	<u> CADI</u>	S		Bo	oring	Log	S	heet: 4 of	7		
	tarted:				Surface			Boring No	.: TWB-01	l Pilot		
	•	eted: <u>03/30//</u>			Northin			-				
)rilling		Casca			Easting			Client: <u>PG&amp;E</u>		-		
-	Metho		•		Total D	•	<u>129.5 ft bgs</u>	Project: Final (	•			
	g Type Name:		<u>_ongyear drill</u>		Boreho Donth t		neter: <u>4-7 inches</u> Water: 82.0 ft bgs	Location: <u>PG&amp;E</u>	<u>TOPOCK, Need</u>	les Callom		
	Asst:		ppner / R We		Sampli			- Project Number	30126255			
.oggei			Grane / G Willf		Sampli	-			. <u>30120233</u>			
Editor:			McGrane		Conver	-		-				
		<u></u>										
Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid		
_61 _62				Alluvium Deposits	SW-SM		(57-62 ft) Well-graded sand with silt and grave (7.5YR 4/4); very fine to very coarse grained, a some small to very large pebbles, angular to s granules, angular to subround; little silt; trace cobbles, angular; dry.	ingular to subround; ubround; little				
_02 _63	7.7			Alluvium Deposits	SM		(62-63.5 ft) Silty sand with gravel (SM); brown to very coarse grained, angular to subround; s angular to subround; little small to very large p subround; little silt; trace clay; dry; NOTE: Sor with white matrix, potentially caliche.	ome granules, ebbles, angular to ne weak cementation				
.64				Alluvium Deposits	SW		(63.5-64.5 ft) Well-graded sand with gravel (S (5/R 4/4); very fine to very coarse grained, an some granules, angular to subround; some sn trace very large pebbles, angular angular to su	gular to subround; nall to large pebbles,				
_65 _66 _67				Alluvium Deposits	SM		trace clay; dry. (64.5-67 ft) Silty sand with gravel (SM); reddisi very fine to very coarse grained, angular to sub to very large pebbles, angular to subround; littl to subround; little silt; trace clay; dry; NOTE: T cementation with white matrix, potentially callo	n yellow (5YR 6/6); pround; some small e granules, angular race weak				
-68 -68 -69 -70		No Sieve Samples Collected	No	No Groundwater	Groundwater	Alluvium Deposits	SM		(67-70.5 ft) Silty sand with gravel (SM); brown to very coarse grained, angular to subround; li very large pebbles, angular to subround; little subround; trace clay; trace small cobbles, ang	ttle silt; littlé smáll to granules, angular to ular; dry.		
			Samples Collected	Alluvium Deposits	SW-SM		(70-72 ft) Well-graded sand with silt and grave brown (5YR 4/4); very fine to very coarse grain subround; some granules, angular to subround; large pebbles, angular to subround; little silt, ti	ed, angular to d; some small to				
- .72_	7			Alluvium Deposits	SC		Some moderate cementation with white matrix (71-72 ft) Clayey sand with gravel (SC); reddis very fine to very coarse grained, angular to sub	k, potentially caliche. h brown (5YR 4/3); pround; little				
- .73 _ .74				Alluvium Deposits	SM		granules, angular to subround; little small to la to subround; little clay; trace silt; dry. (72-74.5 ft) Silty sand with gravel (SM); reddisi very fine to very coarse grained, angular to sub to very large pebbles, angular to subround; littl to subround; little silt; trace clay; trace small c	n brown (5YR 4/4); pround; some small e granules, angular				
- 75_ - 76_ -				Alluvium Deposits	SW-SM		(74.5-77 ft) Well-graded sand with silt and gra brown (5YR 4/4); very fine to very coarse grain subround; some granules, angular to subround large pebbles, angular to subround; trace silt; small cobbles, subangular; dry.	ed, angular to d; some small to very	-			
.77 .78 .79 .80	6.3	TWB-1-SS- 77-83 3/31/2022 15:45		Alluvium Deposits	SM		(77-83 ft) Silty sand with gravel (SM); dark red very fine to very coarse grained, angular to sub very large pebbles, angular to subround; little subround; little silt; little clay; trace small cobb	pround; some large to granules, angular to	(77.0') Driller stated he things they drilled trough a boulder.	(77.0') No drilling flu used		
bbre	/iations	s: USCS = l	Jnified Soil Cl	assification	Syster	n, ft =	eet, bgs = below ground surface, am	sl = above mean s	ea level, NR = l	No Recove		
/A =	Not Ap	plicable, GV	V = groundwa	ater, ppb =	parts p	er billic	n, Notes: Solid blue and hollow blue v	vater table marks	represent depth	n to water (		
		•					ed during the first VAS interval, respe		· · ·			
- /			ction of sedim									

2	<u> </u>	<u>RCA</u>	DIS			DU	pring		1				eet: 5 of	7
	tarted		/15/2022				e Eleva		<u>538.84 ft amsl</u>		Borin	g No.	: TWB-01	Pilot
	omple		/30/2022				g (NAI		2100941.12			-		
	Co.:		ascade			•	) (NAD	83):	7615929.94		Client:	PG&E		
	Metho		nic Drilling			Fotal D	•		<u>129.5 ft bgs</u>		-		<u>W Remedy Ph</u>	
	д Туре Магара		oart Longy	ear drill			le Diar		4-7 inches		Location:	PG&E	Fopock, Need	les Califorr
	Name:		att Arnold	/ D \\/o		•			82.0 ft bgs	Parrol	Draigat N	umbor: '	30126255	
•	Asst:		<u>Hoeppner</u> McGrane /			-	ng Met ng Inte		4 inch x 10 ft. Core E Continuous	Darrei	Projectin		30120233	
oggeı ditor:	•		an McGra			-	ted to		$\overline{\times}$ Yes $\Box$ No					
	~													
(ft) (ft)	Recovery (ft)	Siev Sample		ndwater nple ID	Geologic Formation	USCS Code	USCS Class		Soil Desc	·			Drilling Notes	Drilling Flui
_ _81  _82			Groun Sam	lo dwater pples ected	Alluvium Deposits	SM		very fine very larg subrour	t) Silty sand with gravel (SM to very coarse grained, an ge pebbles, angular to subr d; little silt; little clay; trace	igular to subr ound; little gr	ound; some anules, ang	large to lar to	2	
.83  .84	6.3	TWB-1-5 83-84. 3/31/202 15:40	5 22 TW	B-1- 82-87	Alluvium Deposits	SM		very fine granule pebbles	ift) Silty sand with gravel ( to very coarse grained, an s, angular to subround; little , angular to subround; mois tion white matrix, potential	ngular to subr e silt; little sm st to wet; NO	ound; some all to very la	rge 🛛	2	
 .85 .86		TWB-1-5	—— (870 3/18, 10	ppb) /2022 :51				(84.5-89 very fine granule	1.5 ft) Silty sand with gravel to very coarse grained, an s, angular to subangular; lit to subangular; little silt; tra	(SM); reddis Igular to suba Ittle small to v	ingular; little ery large pel			
87 88 89		84.5-89 3/31/20: 15:35	.5 22 TW VAS-	B-1- 87-92	Alluvium Deposits	SM		(87 ft) N	loist to wet.				(87.0 - 97.0') Hard drilling	(87.0 - 97.0 30 gallons water used gallons o water recovered; gallons o water los
90_ _ 91_ _ 92_ _	7.3		` 3/20/	25 ppb) (2022 :50				(5YR 5/	ft) Sedimentary Rock - C 4); fine grained to coarse <u>c</u> Rock pulverized into mostl blogy.	grained; angu	ılar; friable; o	dry.		
93 94 95 96		TWB-1-5 89.5-9 3/31/20 15:30	7 22		Competent Bedrock - Conglomerate	N/A								
.97		TWB-1-5 97-98 3/31/202 15:25	22	B-1-	Alluvium Deposits	SP-SM	×××	(5YR 5/ silt; trac	t) Poorly graded sand with 4); very fine to medium gra e clay; wet.	ained, angula	r to subroun	d; little	(97.0 - 102.0') Core barrel got stuck had to	(97.0 - 102. 50 gallons water used
.99	8	TWB-1-5 98-99.5 3/31/202 15:20	SS- (1200 3/20/ 16	97-102 97-102 9pb) 2022 :26	Alluvium Deposits	SM		(98-99. very fine granule	ft) Silty sand with gravel ( to very coarse grained, an s, angular to subangular; lit to subangular; little silt; we	ngular to suba ttle small to v	ingular; little		use water and run casing over core barrel. Lost core sample	gallons of water recovered; gallons of water lost
100						N/A	$\times \times \times$						down hole, tripped back in	
	/iation	s: USCS	S = Unified	Soil Cl	assification				s = below ground sur	face, amsl	= above r	nean sea		No Recove
									s: Solid blue and hole					
									ng the first VAS interv					
, J. J. II			npaction o	ອາເອ al				Ja aun		a, icopee	ποιλ. Ψh	a on po		

	CAD				oring	-			7
Date Started:	<u>03/15/</u>			Surface			Boring	No.: TWB-01	Pilot
ate Complete				Northin			_		
Drilling Co.:	<u>Casca</u>			Easting		,		G&E	
Drilling Method		Drilling		Total D		<u>129.5 ft bgs</u>	•	inal GW Remedy Pl	
Drill Rig Type:		Longyear drill		Boreho Donth (			_ Location: <u>P</u>	G&E Topock, Need	les Californ
Driller Name: Drilling Asst:	Matt A	eppner / R We		•		Vater: <u>82.0 ft bgs</u> od: <u>4 inch x 10 ft. Core Barrel</u>	– – – Droiget Num	abor: 20126255	
•		Grane / G Will		Sampli Sampli	-			ibel. <u>30120233</u>	
Logger: Editor:		McGrane		Convei	-		_		
Depth (ft) Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Flui
					× × × × × × × × × × × ×	99.5-106 ft) Sedimentary Rock - Conglomer 5YR 5/4); fine grained to coarse grained, ar		n to recover, core disturbed.	
_101						veathered; moist; NOTE: Very dark gray to			
_									
_102								(102.0 -	(102.0 -
	WB-1-SS-		Weathered					106.0')	106.0')
103 . 9	99.5–106 3/31/2022		Weathered Bedrock -	N/A				Drilled to 106 ft bgs to plug	No drilling flue
-	15:15		Conglomerat	e				the core barrel and retrieve	
_104								the 97 to 102 sample.	
_105					× × × × × × × × ×				
_106					× × ×	106-110 ft) Sedimentary Rock - Conglomera	ate; reddish brow	n (106.0 -	(106.0 -
					$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$	5YR 5/4); fine grained to coarse grained, ar	•	/ 110.0') Very hard	110.0') No drilling flu
_107						veathered; moist; NOTE: Rock clasts within composed of mixed lithology.	conglomerate	drilling could not advance a	used
	WB-1-SS-		Weathered		$\times$ $\times$ $\times$ $\times$	composed of mixed inhology.		full 10 ft.	
	106-110 3/31/2022		Bedrock - Conglomerat	N/A					
	15:10		Congiomerat						
_109					$  \times \times$				
· _		. •							
_110					× × × × × ×	110-119 ft) Sedimentary Rock - Conglomera	ate; reddish brow	n	
· _					$  \times \times$	5YR 5/4); fine grained to coarse grained, ar		;	
						NOTE: Rock clasts within conglomerate con ithology.	iposed of mixed		
_112_		TWB-1-			× × × × × × × × ×	65			
		VAS-110- 115			$  \times \times$				
_113_		(4300 ppb) 3/21/2022			$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$				
		11:16							
- 5 _114_ 5									
	WB-1-SS- 110-119		Competent Bedrock -	N/A	× × × × × × × × ×				
	3/31/2022 15:05		Conglomerat						
					× × × × × × × × ×				
_116									
.									
_117									
.					$  \times \times$			(117.0') Depth 6-inch	(117.0') No drilling flu
_1181.5								diameter casing was	used (117.1 -
					$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$			drilled 4-inch	`119.0')
_119					$  \times \times \times$			diamter rathole to 127	No drilling flu used
6.5			Weathered Bedrock -	N/A				ft bgs. 6-inch diameter	(119.0 - 124.5')
120			Conglomerat	е				casing	No drilling flu
						et, bgs = below ground surface, am			
I/A = Not Appl		÷				, Notes: Solid blue and hollow blue d during the first VAS interval, respo			
									a con ha th



**Drilling Log** 

		<u>ADIS</u>		Drilling Log		Sheet:	1 of 7
Date Start	-	08/16/202		Surface Elevation:	538.84 ft amsl	Boring No.: TV	VB-01
	npleted: (		22	Northing (NAD83):	2100941.12	_	<u> </u>
Drilling Co		Cascade		Easting (NAD83):	7615929.94	_ Client: <u>PG&amp;E</u>	
Drilling Me		Sonic Dril	•	Total Depth:	<u>137.0 ft bgs</u>	_ ,	emedy Phase 2A
Drill Rig T	• •	Boart Lon	•••	•		_ Location: <u>PG&amp;E Topo</u>	ock, Needles
Driller Nar	-	Matt Arno		Drill Casing Diameter:	<u>10.5 inches</u>	<u>California</u>	
Drilling As		<u></u>		Drill Bit:	v	e_Project Number: 30126	0255
Fool-Push	-	Arnold La J.A. / K.L.	mon	Depth to First Water: Converted to Well:	82.0 ft bgs	_	
Rig Geolo	•				Yes No		
(ff) a	illing Run (f ind Average netration Ra	Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01	ations during overdrilling for the Temp Well and borehole reamin f TWB-01 extraction well.	ng Drilling Fluid
		N/A		(0-0.5 ft) Grading for the drill pad.		sing so that the TWB-01 Temp on DR drill casing. Observed	(0.0 - 7.0') No drilling fluid used
1				(0.5-3 ft) Silty sand with gravel (SM); brown (7.5YR 5/4).	Cemex #60 (40x70) Lapis	Lustre Sand and formation	
				(1.511(0,-)).		coarse grained sand with trace approximately 7 ft of 2-inch	
_ 2		SM			Schedule 80 PVC well cas		
3							
	0.0 - 7.0)			(3-5 ft) Well-graded sand with silt and gravel (SW-SM).			
	43 mins/ft						
		SW-SM					
_ 5							
_ o				(5-7 ft) Well-graded sand with silt and gravel			
				(SW-ŚM); brown (7.5YR 5/3).			
_ 6		SW-SM		1			
_ +							
_ 7				(7-11.75 ft) Silty sand with gravel (SM); brown		nex #60 (40x70) Lapis Lustre	(7.0 - 17.0')
_				(7.5YR 5/4).	Sand, and formation sedin grained sand with trace sn	nent including very fine to coarse nall pebbles. Removed	No drilling fluid use
_ 8						-inch Schedule 80 PVC well	
· _					casing.		
_ 9							
-		SM					
_10							
_11_							
_12 (7	7.0 - 17.0) .80 mins/ft			(11.75-14 ft) Well-graded gravel with silt and	11		
				sand (GW-ĠM); brown (7.5YR 4/3).			
_13		GW-GM					
_14				(44.45.5.4) Conductive and (44.)	_		
				(14-15.5 ft) Sandy silt with gravel (ML); brown (10YR 5/3).			
_15		ML					
_16_				(15.5-17 ft) Well-graded sand with silt and grav (SW-SM); brown (10YR 5/3).			
		SW-SM					
_17							
				(17-19.5 ft) Well-graded sand with silt and grav (SW-SM); brown (10YR 5/3).		emex #60 (40x70) Lapis Lustre nent including very fine to coarse	(17.0 - 27.0') No drilling fluid use
_18					grained sand with trace sn	nall pebbles. Removed	
(1)	7.0 - 27.0)	SW-SM			approximately 10 feet of 2 casing.	e-inch Schedule 80 PVC well	
	.70 mins/ft						
20		SM			71		
bbreviati	ions: US	CS = Uni	fied Soil	Classification System, ft = feet, bgs =	below ground surface, an	nsl = above mean sea leve	l, GW =
				er table marks represent depth to wa			
				materials not removed by overdrilling b	alour approximatoly 75 ft		

	ARC	ADIS	5	Drilling Log		Sheet: 2	2 of 7
	started:	08/16/20		Surface Elevation:	538.84 ft amsl	Boring No.: TW	B-01
	completed:	09/08/20	)22	Northing (NAD83):	2100941.12		
Drilling		Cascade		Easting (NAD83):	7615929.94	Client: <u>PG&amp;E</u>	
	Method:	Sonic Dr	•	Total Depth:	<u>137.0 ft bgs</u>		medy Phase 2A
	g Туре:	Boart Lo	•••	•		Location: <u>PG&amp;E Topoc</u>	k, Needles
	Name:	Matt Arn		Drill Casing Diameter:	10.5 inches	<u>California</u>	
Drilling		L.A. / I.S		Drill Bit:	8 & 10-inch Cutting Shoe	Project Number: $301262$	255
	usher:	Arnold L		Depth to First Water: Converted to Well:	82.0 ft bgs	-	
	eologist:	<u>J.A. / K.I</u>					
Depth (ft)	Drilling Run and Averag Penetration R			Description (See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01 T	ons during overdrilling for the Femp Well and borehole reaming FWB-01 extraction well.	Drilling Fluid
				(19.5-22 ft) Silty sand with gravel (SM); yellowis	h		
21				brown (10YR 5/4).			
_21		SM		-			
~_ <sup>_</sup>				}			
_22				(22-27 ft) Silty sand with gravel (SM); brown			
23				(7.5YR 5/3).			
_23	(17.0 - 27.0)						
<u> </u>	(17.0 - 27.0) 0.70 mins/ft			}			
_24						<b>▼</b>	
-		SM		1			
_25				(25 ft) Trace small cobble; subangular.			
-							
_26				}			
-				-			
_27		-		(27-29 ft) Silty sand with gravel (SM); brown	(27.0 - 34.0') Observed Cem	nex #60 (40x70) Lapis Lustre	(27.0 - 34.0')
-				(7.5YR 4/4).	Sand, and formation sedime grained sand with trace sma	ent including very fine to coarse	No drilling fluid used
_28		SM			approximately 7 feet of 2-in	•	
-					casing.		
_29				(29-33 ft) Silty sand with gravel (SM); brown			
				(7.5YR 4/3).			
_30							
-	(27.0 - 34.0) 0.29 mins/ft						
_31		SM					
-							
_32							
-							
_33				(33-37 ft) Silty sand with gravel (SM); brown			
-				(7.5YR 4/3).			
.34				1	(34.0 - 44.0') Observed Cerr	nex #60 (40x70) Lapis Lustre	(34.0 - 44.0')
_				{(34.5 ft) Trace very large pebble; angular.	Sand, and formation sedime	ent including fine to coarse	No drilling fluid used
_35		SM			schedule 80 PVC was not o	all to medium pebbles. 2-inch bserved when the core barrel	
_				}	was retrieved. The core bar emoved approximately 7 fee	rrel was tripped back in andr et of 2-inch Schedule 80	
_36				(36 ft) Rip up clasts of weakly cemented sand	PVC well casing.		
_				with white matrix, potentially caliche.			
_37	(34.0 - 44.0) 0.50 mins/ft			(37-40.5 ft) Silty sand with gravel (SM); brown			
4	0.00 mm8/1			(37-40.5  ft) Sifty sand with gravel (Sivi); brown $(7.5 YR  4/4)$ .			
_38				1			
4		SM		·}			
_39							
_				1			
40							
hhro				Classification System, ft = feet, bgs =	-		
				tor table marks represent depth to wat	ter (tt. has ) denth to water	r moneurod during the fire	t VAS intorval of
ound				ter table marks represent depth to wat materials not removed by overdrilling b			

9	ARC	٩D	S		Drilling Log				Sheet	: 3	of 7
Date S	Started:	08/16/	202	2	Surface Elevation:	<u>53</u>	8.84 ft amsl	Boring	y No.:	TWF	3-01
Date C	Completed:	09/08/	202	2	Northing (NAD83):	<u>21</u>	00941.12	Douni	<b>J</b> 110		<u>5-01</u>
Drilling	J Co.:	<u>Casca</u>	de		Easting (NAD83):	<u>76</u>	15929.94	Client:	PG&E		
Drilling	Method:	<u>Sonic</u>	Drilli	ing	Total Depth:	<u>13</u>	7.0 ft bgs	Project:			nedy Phase 2A
Drill Ri	g Type:	<u>Boart I</u>	ong	gyear S	Conductor Casing Diameter:	<u>12</u>	inches	Location:			k, Needles
	Name:	<u>Matt A</u>	rnol	d	Drill Casing Diameter:		.5 inches		<u>California</u>		
Drilling	Asst:	<u>L.A. / I</u>	.S. /	′ D.H.	Drill Bit:	<u>8 8</u>	<u>&amp; 10-inch Cutting Shoe</u>	Project Nu	ımber: <u>30</u>	1262	55
	Pusher:	<u>Arnold</u>	Lar	non	Depth to First Water:	<u>82</u>	.0 ft bgs				
Rig Ge	eologist:	<u>J.A. / ł</u>	<.L.		Converted to Well:	$\left  \times \right $	Yes 🗌 No				
Depth (ft)	Drilling Run ( and Average	e   03	CS	USCS Class	Description (See Pilot boring log for	de	Drilling notes and observatio ecommissioning of TWB-01 T	emp Well and	borehole re		Drilling Fluid
(11)	Penetration Ř	ate			full geologic descriptions)		for the installation of T	WB-01 extrac	tion well.		
		S	М		(40.5-42 ft) Silty sand with gravel (SM); brown						
41 。		s	м		(7.5YR 4/4).						
42	(34.0 - 44.0) 0.50 mins/ft				(42-48.75 ft) Well-graded sand with silt and	_					
					gravel (SW-SM); brown (7.5YR 4/4).						
43											
44											
_45_											
		S	м								
46											
_47_											
							(47.0 - 54.0') Observed Cem			re	(47.0 - 54.0')
48_							Sand, and formation sedime grained sand with trace sma	II pebbles. Re	moved		No drilling fluid used
40							approximately 7 feet of 2-inc	ch Schedule 8	0 PVC well		
	(440 540)						casing.				
49	(44.0 - 54.0) 0.80 mins/ft				(48.75-50 ft) Well-graded sand with gravel (SW brown (7.5YR 4/3).	);					
		S	w								
50					(50-52 ft) Silty sand with gravel (SM); brown	_					
					(7.5YR 4/3).						
51		S	м								
52					(52-54.5 ft) Silty sand with gravel (SM); brown	$\neg$					
					(52-54.5  ft) Silty sand with gravel (SM); brown $(7.5YR 4/4)$ .						
53											
		S	М								
54											
							(54.0 - 57.0') Observed Cem Sand, and formation sedime			re	(54.0 - 57.0') No drilling fluid used
					(54.5-57 ft) Well-graded sand with silt and grave (SW-SM); brown (7.5YR 5/3).	el	grained sand with trace sma	Il to medium p	ebbles.		
	(54.0 - 57.0)						Removed broken fragments	of 2-inch Sch	edule 80 PV	C w	
	4.33 mins/ft	SW	-SM		·		casing.				
57		+			(57-62 ft) Well-graded sand with silt and gravel	$\neg$	(57.0 - 67.0') Observed Cem				(57.0 - 67.0')
					(SW-SM); brown (7.5YR 4/4).		Sand, and formation sedime with trace small to medium p	nt including fir	ne grained sa		No drilling fluid úsed
58							fragments of 2-inch Schedul				
<u>-</u>	(57.0 - 67.0) 2.10 mins/ft	SW	-SM								
59	2.10 mm5/ll										
60					s						
					Classification System, ft = feet, bgs =						
-					er table marks represent depth to wat				•		
- <u>-</u>					materials not removed by overdrilling b	elov	v approximately 75 ft. bo	gs will be de	ecommiss	ioned	in place when the
TIMD	01 outroation	المبيد		aammi	scioned by pressure arouting						

E completel: 08/08/2022 Northing (NAD83): 210984112 ED010 (PC: 17/05/0) ing Co.: Cascada gestada Sonic Drilling Total Depth: 137.0.1 bg. Project: Enal GW Remedy Phase 2A. Rg Type: Boat Longyear Sonic Conductor Casing Diameter: 12 Inches Location: Ed28E TopoCK. Needles enal Armoid Lamon Depth to First Water: 82.0.1 bgs. Project: Location: Ed28E TopoCK. Needles Control Lamon Depth to First Water: 82.0.1 bgs. Project: Location: Ed28E TopoCK. Needles Control Lamon Depth to First Water: 82.0.1 bgs. Georgist: JA./KL Converted to Well: Yes No Description Well: Yes No Sw SM (100, 70, 64); Silly and with gravel (SM); Incom SW (20,	ARC	ADIS		Drilling Log		Sheet:	4 of 7
E competent: 09/08/2022 Northing (NAU83): 210094:112 Client: FG&E Tig Method: Sonic Drilling. Total Depth: 137.0 Hbgs. Project: FG&E Ramedy Phase 2A. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Authors and Author and Authors and Authors and Authors and Aut	ate Started:	08/16/2022	2	Surface Elevation:	538.84 ft amsl	Boring No · T	WB-01
ing Method:       Sonie Drilling       Total Depth:       13.0.0.10gs       Project:       Enal W Remedy Phase 2A.         Rig Type:       Beart Longysar Sonic       Conductor Casing Diameter:       12.Inches       Location:       EG8E Types, Needles         Ing Assi:       LA./LS./D.H.       Drill Casing Diameter:       12.Inches       California       California         Ing Assi:       LA./LS./D.H.       Drill Bit:       82.01.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	•	09/08/2022	2		2100941.12		
Pig Type:       Bast Longuear Sonic       Conductor Casing Diameter:       La A.18.       Conductor Casing Diameter:       Conductor Casing Diameter: <td>rilling Co.:</td> <td></td> <td></td> <td>- , ,</td> <td></td> <td></td> <td></td>	rilling Co.:			- , ,			
er Namer ing Asst: LA./LS./D.H. Prolie Drill Bit: Drill Bit:	rilling Method:		•	•	•		
ing Asst:       LA./LS./D.H.       Drill Bit:       8 & 10-inch Cutting Shoe Project Number: 30126255         eBoolgist:       JA./KL.       Converted to Welt:       8 & 10-inch Cutting Shoe Project Number: 30126255         igh       Drilling Run (N) execution First Water:       8 & 10-inch Cutting Shoe Project Number: 30126255       Description         igh       Drilling Run (N) execution First Water:       8 & 10-inch Cutting Shoe Project Number: 30126255       Description         igh       Drilling Run (N) execution First Water:       8 & 10-inch Cutting Shoe Project Number: 30126255       Drilling First Water:       8 & 10-inch Cutting Shoe Project Number: 30126255         igh       Drilling Run (N) execution First Water:       Stree First Water:	rill Rig Type:			0		-	oock, Needles
H-Pursher:         Armold Lemon         Depth to First Water:         82.0 ft bgs           Geologist:         J.A. / K.L.         Converted to Well:         X Yes         No           minimative mark versage         USCS         USCS         Description         description           generation Rate         USCS         USCS         Description         description           generation Rate         USCS         USCS         Description         description           generation Rate         USCS         USCS         USCS         USCS         Description           generation Rate         USCS         USCS         USCS         USCS         USCS         USCS         Description           generation Rate         SW         USCS         USCSS         USCS         USCSS         U	riller Name:			•		-	
Geologist       J.A. / K.L.       Converted to Well:       Yes       No         min       Diffing Run (ft) and Average Penetration Run       USCS Coses       USCS Cos       USCS Cos       USCS	rilling Asst:				•	Project Number: 301	26255
in boling Run (t) protection     USCS Code     USCS (See Pito boring log for full grades and with silt and grave (SM); Protection     Description	ool-Pusher:		non	•			
Image:	ig Geologist:	<u>J.A. / K.L.</u>					
1       SW-SM       SW-SM, brown (7.5 YR 44).         2       SW       SW       (62-63.5 ft) Silly sand with gravel (SM); brown (7.5 YR 44).         3       (62-63.5 ft) Silly sand with gravel (SM); reddish       SW         3       (64.5 67 ft) Silly sand with gravel (SM); reddish       (67.0 - 72.0)         3       (64.5 67 ft) Silly sand with gravel (SM); reddish       (67.0 - 72.0)         3       (64.5 67 ft) Silly sand with gravel (SM); reddish       (67.0 - 72.0)         3       (67.0 - 72.0)       Served cemex #00 (d0x70) Lapis Lustre Sand and formation sediment fullung fine to coarse doweabered beatrock. Removed approximately 7 feet of 2-inch schedule       (67.0 - 72.0)         3       (7.7 - 72.0)       SM       (7.7 - 72.0)         3       (7.7 - 72.0)       Served cemex #00 (d0x70) Lapis Lustre Sand and formation sediment fulling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule       No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule         3       SM       (7.7 - 72.0)       No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule       No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule         4       SM       (7.4 - 77.0) KM - gravel (SM); reddish       (72.0 - 85.0) Observed Cemex #0 (bbacroc demover #0 (bbacroc demov	(ff) and Averag			(See Pilot boring log for	decommissioning of TWB-01 T	emp Well and borehole rear	
3       (57.0 - 67.0)         4       (57.0 - 67.0)         5       (57.0 - 67.0)         5       (57.0 - 67.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         6       (57.0 - 72.0)         5       (57.0 - 72.0)         6       (57.0 - 72.0)         5       (57.0 - 72.0)         6       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         5       (57.0 - 72.0)         6       (57.0 - 72.0)	.61	SW-SM				0	
SW       SW       (SW): reddish brown (SYR 4/4).         SM       (64.5-67 ft) Silty sand with gravel (SM); reddish velow (SYR 6/6).         SM       (67.70.5 ft) Silty sand with gravel (SM); reddish sand to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles.       (67.0 - 72.0)       No drilling fluid use         SM       SW-SM       (7.72.7) I) Garge sand with gravel (SM); reddish forwn (SYR 4/4).       (7.2.0 - 85.0)       No drilling fluid use         SW-SM       (7.2.7.7 ft) Clarge sand with gravel (SM); reddish forwn (SYR 4/4).       (7.2.0 - 85.0)       No drilling fluid use         SM       (7.2.7.7 ft) Clarge sand with gravel (SM); reddish forwn (SYR 4/4).       (7.2.0 - 85.0)       No drilling fluid use         SM       (7.2.0 - 85.0)       No drilling fluid use       (7.2.0 - 85.0)       No drilling fluid use         SM       (7.2.0 - 85.0)       No drilling fluid use       (7.2.0 - 85.0)       No drilling fluid use         SM       (7.2.7 ft) Weil-graded sand with gravel (SM); reddish       (7.2.0 - 85.0)       No drilling fluid use         SM       (7.2.7 ft) Weil-graded sand with gravel (SM); reddish       No drilling fluid use       No drilling fluid use	.62  63(57.0 - 67.0)	SM				3	
5       SM       yellow (5YR 6/6).       (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); brown (7.5YR 5/4).       (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); brown (7.5YR 5/4).       (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); reddish brown (5YR 4/4).       (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand with gravel (SC); reddish forwn (5YR 4/4).       (67.0 - 72.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles.       (72.0 - 85.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles.       (72.0 - 85.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles.       No drilling fluid use 0.2 inch schedule 80 PVC well casing materials was not aligned with the TWB-01-Temp well blow approximately 75 feet bys. Well casing materials observed in the drill cuttings suggest the overd full casing materials observed in the drill cutting are well on the TWB-01-Temp well blow approximately 75 feet bys. Well casing materials observed in the drill cutting are granted and yranue well bit approximately 75 feet bys. Well casing materials observed in the drill cutting are well bits approximately 75 feet bys. Well casing materials observed in the drill cutting area y (SYR 4/4).       No drilling fluid use 0.2 inch schedule 80 PVC well casin		SW		(SW); reddish brown (5YR 4/4).			
3       (67.0 - 72.0)       (67.70.5 ft) Silty sand with gravel (SN); brown       (57.0 - 72.0)       (67.0 - 72.0)       (70.0 - 72.0)	.65 .66	SM			3		
SW-SM       SW-SM, reddish brown (5YR 4/4).         SC       (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4).         SC       (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4).         SC       (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4).         SC       (72.0 - 85.0)         SM       (72.0 - 85.0)					Sand, and formation sedime grained sand with small to n bedrock. Removed approxin	ent including fine to coarse nedium pebbles of weathered	No drilling fluid úse
SM SM SM SM SM SM SM SM SM SM SM SM SM S	.71			(SW-SM); reddish brown (5YR 4/4). (71-72 ft) Clayey sand with gravel (SC); reddish			
6       (72.0 - 85.0)         1.00 mins/ft       SW-SM         7       (77-83 ft) Silty sand with gravel (SM); dark reddish gravel (SM); dark reddish gravel (SYR 4/2).	72 73	SM			and formation sediment incl grained sand, granules and 2-inch schedule 80 PVC we observed. The lack of well c drill cuttings suggest the over	uding fine to very coarse small to medium pebbles. Il casing material was not asing materials observed in erdrill casing was not aligned	No drilling fluid úse
_ (77-83 ft) Silty sand with gravel (SM); dark _ reddish gray (5YR 4/2).	1.00 mins/ft	SW-SM			bgs. Well casing materials r is planned to be decommiss 01 extraction well is decom	not removed during overdrilli sioned in place when the TW	ng
	.77  .78 .79 .80	SM					
previations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	bbreviations: US	SCS = Unifie	ed Soil	Classification System, ft = feet, bgs =	pelow ground surface, ams	sl = above mean sea le	vel, GW =
undwater, Notes: Solid blue water table marks represent depth to water (ft. bgs.) depth to water measured during the first VAS interval of				· · ·			
t borehole. TWB-01 Temp Well materials not removed by overdrilling below approximately 75 ft. bgs will be decommissioned in place when t				<u> </u>		•	

9	ARC	4	DIS	5	Drilling Log			Sheet: 5	of 7
Date S	Started:	08	/16/202	22	Surface Elevation:	538.84 ft amsl	Borin	g No.: <u>TW</u>	R_01
Date C	Completed:	09	/08/202	22	Northing (NAD83):	2100941.12	DOLIN	g 140 <u>1 44</u>	<u>5-01</u>
Drilling	•		ascade			7615929.94	Client:	PG&E	
-	, Method:		nic Dril	llina	- , ,	137.0 ft bgs	Project:		nedy Phase 2A
-	g Type:			ngyear S	•	U	Location:	PG&E Topoc	-
Driller			att Arno	•••	-	10.5 inches	Loodion.	California	(, 11000100
Drilling				/ D.H.	C C	8 & 10-inch Cutting Shoe	Project Nu		55
-	usher:		nold La			82.0 ft bgs	појесни	111ber. <u>501202</u>	.55
	eologist:		4. / K.L.		•	× Yes No			
i tig Ot		0.7	<u>., , ,</u>	•					
Depth (ft)	Drilling Run and Averag Penetration R	e	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observation decommissioning of TWB-01 T for the installation of T	emp Well and	l borehole reaming	Drilling Fluid
					(77-83 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2).				
81									
82			SM						
02	(72.0 - 85.0)				(82 ft) Wet to moist				
i	1.00 mins/ft								
83					(83-84.5 ft) Silty sand with gravel (SM); dark				
					reddish gray (5YR 4/2).	¥			
84			SM						
					.) (84.5-89.5 ft) Silty sand with gravel (SM); reddish				
85					J(64.5-69.5 ft) Sitty sand with gravel (Sivi), reddisr Jbrown (5YR 4/3).		<u> </u>		(05.007.0))
						(85.0 - 87.0') Observed Cem and moist formation sedime			(85.0 - 87.0') No drilling fluid used
86	(85.0 - 87.0)					coarse grained sand, granul			5
	8.00 mins/ft					pebbles.			
					······································				
0/			SM		(87 ft) Moist to wet.	(87.0 - 95.0') Observed Cem			(87.0 - 95.0')
						and moist formation sedimer			No drilling fluid used
88						pebbles.	,		
89									
					(89.5-97 ft) Sedimentary Rock; reddish brown				
90				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	(5YR 5/4).				
				× × × × × × × × ×					
91	(87.0 - 95.0)			$\begin{array}{c} \times \times \times \\ \times \times \times \\ \times \times \times \end{array}$					
	1.13 mins/ft								
92				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	*				
				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2 2				
	1		N/A	× × × × × × × × ×					
94	1								
- 94				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	*				
				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2				
95		$\neg$				(95.0 - 100.0') Observed Cer			(95.0 - 100.0')
				$\begin{array}{c} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$		Sand and moist formation se very coarse grained sand, sr	ediment includ	ling medium to	No drilling fluid used
96						moist.		, granuics,	
;				$\times \times $					
97				XXX	(07.00 ft) Depring grand and a read in the in (00.01 th	41			
	(95.0 - 100.0		SP-SM		97-98 ft) Poorly graded sand with silt (SP-SM); reddish brown (5YR 5/4).				
98	1.80 mins/ft								
					(98-99.5 ft) Silty sand with gravel (SM); reddish brown (5YR 5/4).				
99	]		SM						
			N/A			11			
Abbre	viations: 119	50.5		<u> </u>	ا Classification System, ft = feet, bgs = b	elow ground surface ams	l = above n	iean sea level	GW =
1					ter table marks represent depth to wate	•			
					materials not removed by overdrilling be				
		י-ט		<u>יף אי פו</u>	inatonalo not removed by overuniling be				

9	ARC	ADIS		Drilling Log	Sheet: 6 of 7
Date S	Started:	08/16/202	22	Surface Elevation:	538.84 ft amsl Boring No.: <u>TWB-01</u>
	Completed:		22	Northing (NAD83):	2100941.12
Drilling		<u>Cascade</u>		Easting (NAD83):	<u>7615929.94</u> Client: <u>PG&amp;E</u>
	Method:	<u>Sonic Dri</u>	•	Total Depth:	137.0 ft bgs Project: Final GW Remedy Phase 2A
	д Туре:	Boart Lor	<u>igyear S</u>	•	
	Name:	Matt Arno		Drill Casing Diameter:	10.5 inches California
Drilling		<u>L.A. / I.S.</u>			8 & 10-inch Cutting Shoe Project Number: 30126255
	usher:	Arnold La	mon	Depth to First Water:	82.0 ft bgs
Rig Ge	eologist:	<u>J.A. / K.L</u>		Converted to Well:	
Depth	Drilling Run	(ft) USCS	USCS	Description	Drilling notes and observations during overdrilling for the
(ft)	and Averag Penetration R	e   Codo	Class	(See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01 Temp Well and borehole rearning Drilling Fluid for the installation of TWB-01 extraction well.
	(100.0 - 107.0 0.57 mins/ft		× × × × × × × × × × × × × × × × × × ×	(99.5-106 ft) Sedimentary Rock - Conglomerate reddish brown (5YR 5/4).	(100.0 - 107.0') Observed Cemex #3 (8x20) Lapis Lustre Sand and moist formation sediment including medium to coarse grained sand, silt, granules, and small to medium pebbles.
		_	× × × × × × × × × × × × × × × × × × ×	reddish brown (5YR 5/4).	(107.0 - 112.0') Observed moist formation sediment (107.0 - 112.0')
108 108 109 110	(107.0 - 112. 2.40 mins/ft		× × × × × × × × × × × × × × × × × × ×		including medium to very coarse grained sand, silt, granules and small pebbles. Cemex #3 (8x20) Lapis Lustre Sand was not observed. The lack of Cemex #3 (8x20) Lapis Lustre Sand in the drill cutting suggests that the overdrill casing was not aligned with the TWB-01 Pilot borehole used to install the TWB-01-Temp well below approximately 107 feet bgs.
			× × × × × × × × × × × × × × × × × × ×	(110-119 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).	(110.0') After reaching total depth PG&E requested the drill casi ng remain in the borehole during discussions with stakeholders to discuss options to determine a path forward for the decommis oning of TWB-01 Temp Well materials left in place below approx imately 75 ft. bgs. Cascade had concerns that the 10-inch drill c asing would lock up in the formation. To prevent the casing from becoming locked up the 10-inch casing was retracted to (112.0 - 120.0')
 113 			× × × × × × × × × × × × × × × ×		approximately 110 ft. bgs and the borehole below temporarily backfilled with Cemex #1/20 (20x40) Lapis Lustre Sand to support the casing and allow the rig to be moved to and alternate location until a path forward could be determined.
114  115		N/A	$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \\ \times & \times &$		(112.0 - 120.0') Observed formation sediment including very fine to coarse grained sand, granules, and trace small pebbles.
116	(112.0 - 120.0		<pre></pre>		(115.0') Observed temporary backfill Cemex #1/20 (20x40) Lapis lustre sand in drill cuttings.
	2.13 mins/ft		× × × × × × × × × × × ×		
 118 			<pre></pre>		
119  _ 120		N/A	× × × × × × × × × × × × × × ×	(119-123.25 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).	
J					pelow ground surface, amsl = above mean sea level, GW =
groun	dwater, Not	es: Solid b	olue wat	ter table marks represent depth to wat	er (ft. bgs.) depth to water measured during the first VAS interval of the
pilot b	orehole. TW	B-01 Tem	np Well	materials not removed by overdrilling be	elow approximately 75 ft. bgs will be decommissioned in place when the

9	ARC/	١D	IS			Drilling Log					She	et: 7	of 7
		08/16/				Surface Elevation:	<u>538.8</u>	84 ft a	imsl	Boring	NO .	тw	B-01
		09/08/		22		Northing (NAD83):		941.1			-		
Drilling		Casca				Easting (NAD83):		929.9		Client:	PG&E		
-		Sonic		-		Total Depth:		0 ft bg	S	Project:			medy Phase 2A
		Boart			S	-				Location:		-	k, Needles
		Matt A				Drill Casing Diameter:		inche			Californ		
Drilling		L.A. / Arnold				Drill Bit: Depth to First Water:		<u>ft bgs</u>	h Cutting Shoe	Project NU	imber: 3	301262	255
		<u>Amoic</u> J.A. / I		mon		Converted to Well:		it bys es	No				
i tig O		J.A. / 1	I.L.					es _					
Depth	Drilling Run ( and Average	103	sçs	USC		Description	D	Drilling r mmissi	notes and observation ioning of TWB-01 T	ons during ove emp Well and	rdrilling for borehole	r the reaming	Drilling Fluid
(ft)	Penetration Ř		ode	Clas		(See Pilot boring log for full geologic descriptions)		for	the installation of T	WB-01 extrac	tion well.		
	-			× × × × × × × × × × × × × × × × × × ×	× ) × )	(119-123.25 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).			125.0') Observed m medium to very co				(120.0 - 125.0') No drilling fluid used
_121_	-				×		gr	ranules	, small pebbles.				
	-		I/A	× × × × × × × × × × × × × × × × × × ×	×								
	-		I/A		×					<b>n</b> h			
i 5	(120.0 - 125.0			× × × × × × × × × × × × × × × × × × ×	× I								
_123_	1.80 mins/ft				× ‡								
	-			×××	×	(123.25-129 ft) Sedimentary Rock -	-						
	-				×	Conglomerate; reddish brown (5YR 5/4).							
	-			× × × × × × × × × × × × × × × × × × ×	×								
				$  \times \times $	×		(1	125.0 -	131.0') Collect and	logged from 12	9-131 fee	t has	(125.0 - 131.0')
	-				× ‡		(s	see Des	cription) to supplened to approximately	nent TWB-01 I	Pilot Boreh	nole	Water used for drilling,
126	-	N	I/A		×			ore barı	rel became stuck in	the formation,	flushed th	ie i	volumes used and
	-				× I		IT I	he 10-ii	diameter drill casing nch diameter drill ca	asing almost b	ecame stu	ick.	recovered not documented
	-				×				Observed temporar		ex #1/20 (2	20x40)	
	-			$  \times \times \rangle$	×			apie 146					
128	(125.0 - 131.0 1.50 mins/ft			× × × × × × × × × × × × × × × × × × ×	× I								
	-			$  \times \times \rangle$	×								
	-				X	(129-131 ft) Sedimentary Rock - Conglomerate;							
	-				×	reddish brown (7.5YR 5/4); fine grained to coarse grained, subangular; weathering fresh;							
130_	-	N	I/A		×	medium hard; rock clasts within conglomerate composed of mixed lithology; NOTE: Competer	t						
 131	-				× 1	bedrock pulverized by drilling process.							
				××;	× 1	(131-136 ft) Sedimentary Rock - Conglomerate;			136.0') Collect and				(131.0 - 136.0')
	1			XXX	x ł	reddish brown (7.5YR 5/4); fine grained to coarse grained, subangular; weathering fresh;			scription) to supplened to approximately		not boref	UC	Water used for drilling, volumes used and
	1			× × × × × × × × × × × × × × × × × × ×	×	medium hard; moderately fractured; massive; NOTE: Majority of larger clasts within matrix							recovered not
				× × × × ×	×	composed of metadiorite. From 131-132' the bedrock is fractured into 2-4 inch thick pieces							documented
	(131.0 - 136.0			IX X '	¥ 1	(131-131.3 ft) Fracture, 90 degree vertical, smooth, fracture surface covered with silt.							
_134_	`2.20 mins/ft		I/A		×	(132-133 ft) Mechanical fracture, horizontal, rough surface on fracture face.							
			<i>41</i> (	$I \times X > Z$	X I	(133-134.16 ft) Mechanical fracture, horizontal,							
_135_				× × × × × × × × × × × × × × × × × × ×	× ‡	rough surface on fracture face. (134.2-135.08 ft) Mechanical fracture, horizonta	,						
					x ł	rough surface on fracture face. (135.08-136 ft) Mechanical fracture, horizontal,							
136					×	rough surface on fracture face.		126 01 4	proliminant al'anna d'	toot wee earth 1	ad by		
	-				× }		ru	inning 40	preliminary alignment ) feet of 8-inch outer di	ameter core barr	el within		
137				× × ; × × ;		End of Doving at 407.6 km			ch inner diameter of the ately 136 ft bgs. During				(136.5') 900 gallons of water
	-					End of Boring at 137 ft bgs.	en		any resistance indicat				used; 150 gallons of water recovered; 750
138	-								Flushed casing in p	reparation for v	well install	ation.	gallons of water lost
	-												
_139_	-												
	-												
140	viationa: US	<u> </u>	الم	find C	-11	Classification System ft - fast here -		are	ad ourfood area		000 000		CW/ -
1					_	Classification System, ft = feet, bgs = l er table marks represent depth to wat		-					
						naterials not removed by overdrilling b		<u> </u>			÷		
				r				rr					

TWB-01 extraction well is decommissioned by pressure grouting.

Well Construction Logs (TWB-01 Temp and TWB-01)

MARC	ADIS		Well Const	TUCTION LOG	`	Sheet: 1 of 7
ate Started:	03/31/2022		_Surface Elevation:	<u>538.84 ft amsl</u>		VB-01 Temp
ate Completed:	03/31/2022		_Shallow Well Elevation:	538.34 ft amsl		
Drilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;E</u>	
-	Sonic Drilling		Northing (NAD83):	2100941.12		GW Remedy Phase 2A
oriller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: <u>PG&amp;E</u>	<u>E Topock, Needles Californi</u>
Drilling Asst:	D Hoeppner		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner		_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGra	ne	Development End Date:			
otal Depth:	<u>129.5 ft bgs</u>		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Fill	N/A	(0.0 - 1.0') Temporary well	► (0.0 - 8.0') 7" Diameter		Note: 12-inch diameter vault
- 1 - 2 - 3	Alluvium Deposits	SM	vault (0.3 - 76.7') 2" Sch. 80 PVC Casing	Borehole		
4 	Alluvium Deposits	SW-SM				
6 7	Alluvium Deposits	SW-SM				
- 8	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) Lapis Lustre Sand	(8.0 - 127.0') 6" Diameter Borehole	(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
 _13 _14	Alluvium Deposits	GW-GM				
 _15	Alluvium Deposits	ML		•         •		
_ 16  _ 17	Alluvium Deposits	SW-SM		>         >		
 .18 .19	Alluvium Deposits	SW-SM				
20	Alluvium	SM	××××××××××××××××××××××××××××××××××××××			
			ation System, ft = feet, bgs			
						table marks represent dep
		st developmen				

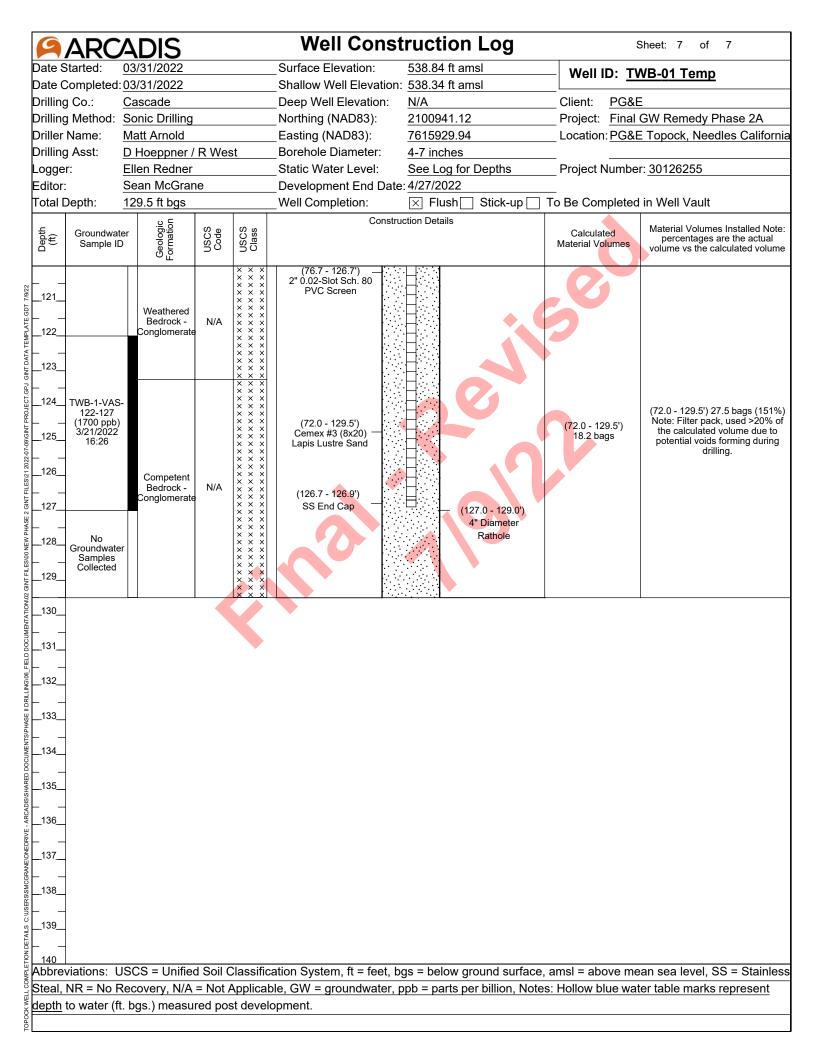
<b>ARC</b>	<u>ADIS</u>			nstruction Log		Sheet: 2 of 7
	03/31/2022		Surface Elevation:	538.84 ft amsl	Well ID: T	VB-01 Temp
ate Completed:			Shallow Well Eleva	tion: <u>538.34 ft amsl</u>		
•	Cascade		Deep Well Elevatio		Client: <u>PG&amp;</u>	
-	Sonic Drilling		Northing (NAD83):			GW Remedy Phase 2A
	Matt Arnold		Easting (NAD83):	<u>7615929.94</u>	Location: PG&E Topock, Needles Calif	
	<u>D Hoeppner /</u>	R West	Borehole Diameter			
00	Ellen Redner		Static Water Level:		Project Numbe	r: <u>30126255</u>
	Sean McGrar	le	Development End			
otal Depth:	129.5 ft bgs		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwate Sample ID	Geol	USCS Code USCS	Class	onstruction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
21	Alluvium Deposits	SM	(0.3 - 76.7') – 2" Sch. 80 PVC Casing		60	
 _23 _24 _25 _26  _27	Alluvium Deposits	SM				
28	Alluvium Deposits	SM				
No Groundwater Samples Collected	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) <sup>–</sup> Lapis Lustre Sand		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
	Alluvium Deposits	SM				
	Alluvium Deposits	SM				
			•	bgs = below ground surface,		
-	A A A A A A A A A A A A A A A A A A A		icable GW - groundwat	er, ppb = parts per billion, Note	s. Hollow blue water	table marks represent der

ARC/	<u>ADIS</u>		Well Const	ruction Log		Sheet: 3 of 7
Date Started: <u>(</u>	3/31/2022		Surface Elevation:	538.84 ft amsl	Well ID: T	NB-01 Temp
ate Completed: <u>C</u>			Shallow Well Elevation:			<u> </u>
Prilling Co.: <u>(</u>	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;I</u>	
Drilling Method: S	Sonic Drilling		Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name: <u>N</u>	/latt Arnold		Easting (NAD83):	7615929.94	Location: PG&	<u> E Topock, Needles Californi</u>
)rilling Asst: <u>[</u>	Hoeppner	R West	Borehole Diameter:	4-7 inches		
.ogger: <u>E</u>	Ellen Redner		Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor:	Sean McGra	ne	Development End Date:	4/27/2022	-	
otal Depth: <u>1</u>	29.5 ft bgs		Well Completion:	⊠ Flush  Stick-up	To Be Completed	in Well Vault
Groundwater	Geologic Formation	USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
		SM	(0.3 - 76.7') (0.3 - 76.7') (0.3 - 76.7')			
_41			Casing	> 6%% > 6%%		
	Alluvium Deposits	SM .				
42	Deposito					
_42						
· _						
_43						
· _						
_44			·			
_						
_45						
	Alluvium	SM				
	Deposits					
.46						
_						
.47						
_48						
10						
_49	Alluvium					
No	Deposits	SW				
_50 Groundwater			(1.0 - 70.5') Cemex #60 (40x70)		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
Samples Collected			Lapis Lustre Sand		20.0 bago	noto: romporary dana ddar
_51	Alluvium	SM				
	Deposits					
_52						
_ 52						
-						
_ 53	Alluvium	SM .				
_	Deposits	SM				
_ 54						
_55			ब •			
			•			
· -	Alluvium	SW-SM	•   စိုစိုစိုစိုစိုစိုစိုစိုစိုစိုစိုစိုစိုစ			
_ 56	Deposits		•			
_			•			
.57			4			
_58						
	Alluvium					
	Deposits	SW-SM				
_ 59						
60   bbreviations: LIS	CS = Unifier	Soil Classific	گُنْهُمْ اللَّهُ اللَّهُ اللَّهُ اللَّهُ ation System, ft = feet, bgs	្យ <u>ែនន័ង</u> = below ground surface	amsl = above mean	sea level SS = Stainless
			ble, GW = groundwater, pp	•		
	÷	st developmer	÷	per samon, non		
water nr. bos m						

<u> ARC</u>	ADIS		Well Const	ruction Log		Sheet: 4 of 7
Date Started:	03/31/2022		_Surface Elevation:	<u>538.84 ft amsl</u>		NB-01 Temp
Date Completed:	03/31/2022		_Shallow Well Elevation:	<u>538.34 ft amsl</u>		<u> </u>
Drilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;I</u>	
-	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
Driller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: PG&	<u>E Topock, Needles Californi</u>
Drilling Asst:	<u>D Hoeppner</u>		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner		_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGra	ne	Development End Date:			
otal Depth:	129.5 ft bgs		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Alluvium Deposits	SW-SM	(0.3 - 76.7')		60	
 _63	Alluvium Deposits	SM				
_ 64	Alluvium Deposits	SW				
65  66 	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) Lapis Lustre Sand		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
_67	Alluvium Deposits	SM				
_70 Groundwate Samples Collected	r Alluvium Deposits	SW-SM				
_71	Alluvium Deposits	SC	(70.5 - 72.0') Holeplug 3/8" — Bentonite Chips		(70.5 - 72.0') 0.4 bags	(70.5 - 72.0') 0.5 bags (125%) Note: Benotnite seal
_ 72  _ 73 74	Alluvium Deposits	SM				
	Alluvium Deposits	SW-SM	(72.0 - 129.5') Cemex #3 (8x20) Lapis Lustre Sand (76.7 - 126.7')		(72.0 - 129.5') 18.2 bags	(72.0 - 129.5') 27.5 bags (151% Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling.
-77 -78 -79	Alluvium Deposits	SM	(76.7 - 126.7') 2" 0.02-Slot Sch. 80 PVC Screen			
			ation System, ft = feet, bgs O(0) = G(0) = coundwater, pr			sea level, SS = Stainless table marks represent dept
	-		÷	ou – parts per billion, Note		table marks represent dep
o water (ft. bgs.)	measureu po	si uevelopmen	ı.			

ARC	ADIS			well Const	ruction Log	Ś	Sheet: 5 of 7
ate Started:	03/31/2022			Surface Elevation:	538.84 ft amsl		VB-01 Temp
ate Completed:	03/31/2022			Shallow Well Elevation:	538.34 ft amsl		
rilling Co.:	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;</u>	
rilling Method:	Sonic Drilling			Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
riller Name:	Matt Arnold			Easting (NAD83):	7615929.94	Location: <u>PG&amp;</u>	<u>E Topock, Needles Californ</u>
rilling Asst:	D Hoeppner /	R West		Borehole Diameter:	4-7 inches		
ogger: ditor:	Ellen Redner Sean McGrar			Static Water Level: Development End Date:	See Log for Depths	Project Numbe	r. <u>30126255</u>
otal Depth:	<u>129.5 ft bgs</u>			Well Completion:	× Flush Stick-up	 To Be Completed	in Well Vault
Groundwat (#) Sample II		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu volume vs the calculated volum
81 No Groundwate Samples Collected 82 83		SM		(76.7 - 126.7') 2" 0.02-Slot Sch. 80 PVC Screen		60	
.84 — TWB-1-VAS 82-87 — (870 ppb) 2(19)2022	Alluvium J- Deposits	SM					
.85 10:51 	Alluvium Deposits	SM					
90 (<0.025 ppb 3/20/2022 08:50			······································	(72.0 - 129.5') Cemex #3 (8x20) Lapis Lustre Sand		(72.0 - 129.5') 18.2 bags	(72.0 - 129.5') 27.5 bags (1519 Note: Filter pack, used >20% the calculated volume due to potential voids forming during drilling.
91  92							anning.
93 94	Competent Bedrock - Conglomerate	N/A					
95 96							
~		×					
97	Alluvium		Ĭ				
98 TWB-1-VAS	Deposits	SP-SM					
98 TWB-1-VAS 97-102 (1200 ppb) 3/20/2022 99 16:26		SM					
-		N/A					
100   bbreviations: U	SCS = Unified			<u>l l∵∵</u> on System ft = feet bas	」 <u>⊡⊡d</u> = below around surface	amsl = above mean	sea level, SS = Stainless
							table marks represent de
		· · • • • • • •		,	r r		

ARC	ADIS			Well Const	uction Log		Sheet: 6 of 7
Date Started:	03/31/2022			Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01 Temp
ate Completed:	03/31/2022			Shallow Well Elevation:	538.34 ft amsl		
Prilling Co.:	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: PG&E	
Prilling Method:	Sonic Drilling			Northing (NAD83):	2100941.12	•	GW Remedy Phase 2A
oriller Name:	Matt Arnold			Easting (NAD83):	7615929.94	Location: PG&E	<u>E Topock, Needles Californi</u>
Prilling Asst:	D Hoeppner /	R West		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner			Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor: Total Depth:	Sean McGran 129.5 ft bgs	е		Development End Date: Well Completion:	<u>4/27/2022</u> ⊠ Flush  Stick-up [	 ] To Be Completed in Well Vault	
				-	tion Details		
Groundwat Ge Sample II			USCS Class	(76.7 - 126.7')	1.1.1.1.1	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Weathered Bedrock - Conglomerate	N/A		2" 0.02-Slot Sch. 80 PVC Screen			
	Weathered Bedrock - Conglomerate	N/A	X X X X X X	(72.0 - 129.5') Cemex #3 (8x20)		(72.0 - 129.5')	(72.0 - 129.5') 27.5 bags (151% Note: Filter pack, used >20% o the calculated volume due to
	Competent Bedrock - Conglomerate	N/A		Lapis Lustre Sand		18.2 bags	potential voids forming during drilling.
	Weathered Bedrock - Conglomerate	N/A ××××××××××××××××××××××××××××××××××××					
bbreviations: U				· · ·			sea level, SS = Stainless
	N · · · · · · · · · · · · · · · ·		nlicabla	CM = aroundwater pr	h — manta man hillian Nati	o: Hollow blue water	table marks represent dep



ARCADIS		Well Construction Log		Sheet: 1 of 7		
Date Started: 09/09/2022		Surface Elevation:	538.84 ft amsl	Well ID: TWB-01		
Date Completed:	: <u>09/12/2022</u> Cascade		Shallow Well Elevation:	<u>N/A</u>		
Drilling Co.:			Deep Well Elevation:	N/A	Client: <u>PG&amp;E</u>	
Drilling Method: <u>Sonic Drilling</u>		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A	
Driller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: <u>PG&amp;E</u>	<u>E Topock, Needles Californ</u>
Drilling Asst:	L.A. / I.S. / D		Borehole Diameter:	10.5-12 inches		
.ogger: Editor:	Kim Lapszyn Sean McGra		Static Water Level: <u>See Log for Depths</u> Development End Date: <u>9/28/2022</u>		Project Numbe	r: <u>30126255</u>
otal Depth:	<u>137 ft bgs</u>	ne	Well Completion:		] Well Vault	
	-		-	ction Details		
Groundwat Ge Sample II		USCS Code USCS Code Class			Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Fill	N/A				
_ 1  _ 2 _ 3	Alluvium Deposits	SM	(0.0 - 4.0') Well Vault			Note: Well vault dimensions 4x feet by 4 feet deep.
	Alluvium Deposits	SW-SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing	(4.0 - 8.5') 12" Diameter Borehole		3
	Alluvium Deposits	SW-SM	(4.0 - 11.0')			(4.0 - 11.0') 6 bags (80%) Note: Grout seal third lift. Six bag of portland cement were added directly into the annular space ar
	Alluvium Deposits r	SM	Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite	(8.5 - 137.0') 10.5" Diameter Borehole	(4.0 - 11.0') 7.48 bags	hydrated with water to top of the grout seal. The extraction well sanitary seal also serves as the sanitary seal for decommissionir of TWB-01 Temp Well from approximately 4 to 11 ft. bgs.
	Alluvium Deposits	GW-GM	(13.0 - 14.0') Kwik-Zip Centralizer			Note: Kwik-Zip Centralizer had i be trimmed down to fit inside th sonic drill casing. (11.0 - 32.0') 100 gallons (159%
	Alluvium Deposits	ML	(11.0 - 32.0') Type I, II, and V		(11.0 - 32.0')	Note: Grout seal second lift, use >20% of the calculated volume d to potential voids that formed during drilling and grout migratic into the formation. The extraction
_ 16  _ 17	Alluvium Deposits	SW-SM	Portland Cement with up to 6% Quik-Gel bentonite		62.8 gallons	well sanitary seal also serves as the sanitary seal for decommissioning of TWB-01 Temp Well from approximately 1 to 32 ft. bgs.
	Alluvium Deposits	SW-SM				
20	SCS = Unifie	d Soil Classific	ation System, ft = feet, bgs	= below ground surface a	amsl = above mean	sea level. SS = Stainless
			able, GW = groundwater, j	-		
			velopment.			

ARC	ADIS		Well Const	truction Log	:	Sheet: 2 of 7	
ate Started:	<u>09/09/2022</u> : <u>09/12/2022</u>		Surface Elevation:	538.84 ft amsl	Well ID: TWB-01		
ate Completed:			Shallow Well Elevation				
rilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: PG&I		
rilling Method:	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A	
riller Name: rilling Asst:	Matt Arnold L.A. / I.S. / D.	u	Easting (NAD83): Borehole Diameter:	<u>7615929.94</u> 10.5-12 inches	Location: <u>PG&amp;I</u>	<u> E Topock, Needles Califorr</u>	
ogger:	Kim Lapszyns		Static Water Level:	See Log for Depths	Project Numbe	r: 30126255	
ditor:	Sean McGrar		Development End Date			1. 00120200	
otal Depth:	137 ft bgs		Well Completion:		S Well Vault		
Groundwat Sample II		USCS USCS USCS	Constr	uction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actuvolume vs the calculated volume	
 _21 	Alluvium Deposits	SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing				
 23 24 25 26 27	Alluvium Deposits	SM	(11.0 - 32.0') Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite		(11.0 - 32.0') 62.8 gallons	(11.0 - 32.0') 100 gallons (159) Note: Grout seal second lift, us >20% of the calculated volume to potential voids that formed during drilling and grout migrat into the formation. The extracti well sanitary seal also serves the sanitary seal for decommissioning of TWB-0'	
 28  29	Alluvium Deposits	SM				Temp Well from approximately to 32 ft. bgs.	
- No 30 - Groundwate Samples Collected 31 - - 32 -	r Alluvium Deposits	SM					
	Alluvium Deposits	SM	(32.0 - 73.0') Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite		(32.0 - 73.0') 122.6 gallons	(32.0 - 73.0') 200 gallons (163 Note: Grout seal first lift, use >20% of the calculated volume to potential voids that formed during drilling and grout migrat into the formation. The extracti well sanitary seal also serves the sanitary seal for decommissioning of TWB-0	
38 38 39	Alluvium Deposits	SM				Temp Well from approximately to 73 ft. bgs.	
			fication System, ft = feet, bg: icable, GW = groundwater,				
eel INK = NO h	vecovery, IN/A	. – пос Аррі	icable, Gw = groundwater,	ppp – parts per billion, No	nes. Solia plue wate	er table marks represent	

ARC	ADIS		Well Const	ruction Log		Sheet: 3 of 7
ate Started:	09/09/2022		Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed:			Shallow Well Elevation:			
•	Cascade		Deep Well Elevation:	N/A	Client: PG&E	
•	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
	Matt Arnold		Easting (NAD83):	<u>7615929.94</u>	Location: <u>PG&amp;E</u>	<u> E Topock, Needles Californi</u>
•	L.A. / I.S. / D. Kim Lapszyn:		Borehole Diameter:	10.5-12 inches		r: 20126255
	Sean McGrai		Static Water Level: Development End Date	See Log for Depths	Project Numbe	1. <u>30120233</u>
	<u>137 ft bgs</u>		Well Completion:		Well Vault	
	-			ction Details	_	Meterial Valumas Installed
Groundwate Gae Sample ID		USCS Code USCS Class			Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
			(3.5 - 85.0') - 6" Sch. 80 PVC			
_41	Alluvium		Casing			
	Deposits	SM				
_42						
_						
_43						
_						
_44						
-						
. 45	Alluvium					
_	Deposits	SM				
.46						
_						
_47						
_						
_48						Note: Kwik-Zip Centralizer had
_			(48.0 - 49.0')			be trimmed down to fit inside th
_49			Kwik-Zip Centralizer			sonic drill casing. (32.0 - 73.0') 200 gallons (163%
— No	Alluvium Deposits	SW .	(32.0 - 73.0')			Note: Grout seal first lift, used
50 Groundwater Samples			Type I, II, and V Portland Cement		(32.0 - 73.0') 122.6 gallons	>20% of the calculated volume d to potential voids that formed
Collected			with up to 6% Quik-Gel bentonite		122.0 galions	during drilling and grout migration into the formation. The extraction
.51	Alluvium	SM				well sanitary seal also serves a
_	Deposits					the sanitary seal for decommissioning of TWB-01
.52						Temp Well from approximately: to 73 ft. bgs.
_						
_53	Allundumo					
	Alluvium Deposits	SM				
_54						
_						
_ 55						
_	All					
_ 56	Alluvium Deposits	SW-SM	1			
			]   🕅			
_57						
_ 58						
	Alluvium	SW-SM				
_59	Deposits		]   )//			
60						
			ation System, ft = feet, bgs			
	-		able, GW = groundwater,	opb = parts per billion, No	tes: Solid blue wate	er table marks represent
	has mose	ured post dev	elonment			

ARCADIS		Well Construction Log		Sheet: 4 of 7		
Date Started:	09/09/2022		Surface Elevation: <u>538.84 ft amsl</u>		Well ID: TWB-01	
Date Completed:	: <u>09/12/2022</u> <u>Cascade</u>		_Shallow Well Elevation:	<u>N/A</u>		
Drilling Co.:			_Deep Well Elevation:	<u>N/A</u>	Client: PG&E	<u> </u>
Drilling Method:	Sonic Drilling		Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name:	Matt Arnold		_Easting (NAD83):	7615929.94	Location: PG&E	<u> E Topock, Needles Californ</u>
Drilling Asst:	<u>L.A. / I.S. / D</u>	.Н.	Borehole Diameter:	10.5-12 inches		
.ogger:	Kim Lapszyn	ski	_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor:	Sean McGra	ne	Development End Date:			
otal Depth:	<u>137 ft bgs</u>	<del></del>	_Well Completion:		Well Vault	1
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu- volume vs the calculated volum
	Alluvium Deposits	SW-SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing			
- – _63	Alluvium Deposits	SM				0
64	Alluvium Deposits	SW				
_ 65  _ 66  _ 67	Alluvium Deposits	SM	(32.0 - 73.0') Type I, II, and V Portland Cement with up to 6%		(32.0 - 73.0') 122.6 gallons	(32.0 - 73.0') 200 gallons (163% Note: Grout seal first lift, used >20% of the calculated volume d to potential voids that formed during drilling and grout migratic into the formation. The extractic well sanitary seal also serves a
68 69 69	Alluvium Deposits	SM	Quik-Gel bentonite			the sanitary seal for decommissioning of TWB-01 Temp Well from approximately 3 to 73 ft. bgs.
70 Groundwate Samples Collected	r Alluvium Deposits	SW-SM				
	Alluvium Deposits	sc				
	Alluvium Deposits	SM	(73.0 - 76.0')			(73.0 - 76.0') 4 bags (167%) Note: Transition sand, used >20
	Alluvium Deposits	SW-SM	Cemex #60 Mésh (40x70) Lapis Lustre Sand	0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000           0         0.000         0.000	(73.0 - 76.0') 2.4 bags	of the calculated volume due to potential voids forming during drilling.
77			(76.0 - 77.0') Pel-Plug Bentonite — Pellets 3/8" (TR30)		(76.0 - 77.0') 0.6 buckets	(76.0 - 77.0') 0.5 buckets (83% Note: Bentonite seal
 _78 _79	Alluvium Deposits	SM	(77.0 - 136.5') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(77.0 - 136.5') 48.5 bags	(77.0 - 136.5') 58 bags (120% Note: Filter pack, used >20% the calculated volume due to potential voids forming during drilling or filter pack filling voi space in the remaining tempora well screen. Swabbed the filte pack for approximately 60 minu prior to the installation of the bentonite seal.
<sub>80</sub> l \bbreviations: U	SCS = Unified	d Soil Classifica	ition System, ft = feet, bgs	= below ground surface,	amsl = above mean	
			ble, GW = groundwater, p			
epth to water (f						
pth to water (f	t. bgs.) measi	ured post deve	lopment.			

ARC	ADIS			Well Const	ruction Log	S	Sheet: 5 of 7
ate Started:	09/09/2022			_Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed:	09/12/2022			_Shallow Well Elevation:	<u>N/A</u>		
rilling Co.:	Cascade			_Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&amp;E</u>	
rilling Method:	Sonic Drilling			_Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name:	Matt Arnold			_Easting (NAD83):	7615929.94	Location: <u>PG&amp;E</u>	<u>E Topock, Needles Californ</u>
rilling Asst:	L.A. / I.S. / D.			_Borehole Diameter:	<u>10.5-12 inches</u>		
ogger:	Kim Lapszyns			Static Water Level:	See Log for Depths	Project Number	r: <u>30126255</u>
ditor:	Sean McGran	e		_Development End Date:			
otal Depth:	<u>137 ft bgs</u>			_Well Completion:		To Be Completed	in Well Vault
Groundwat Groundwat Sample I		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu volume vs the calculated volum
- No 81 _ Groundwate Samples _ Collected 82 83 _	Alluvium Deposits	SM		(80.0 - 81.0') Kwik-Zip Centralizer (3.5 - 85.0') 6" Sch. 80 PVC Casing		2	Note: Kwik-Zip Centralizer had be trimmed down to fit inside th sonic drill casing.
<sup>63</sup> <sup>84</sup> TWB-1-VAS <sup>82-87</sup> (870 ppb) <sup>85</sup> 3/18/2022	Alluvium 5- Deposits	SM					3
85		SM		(85.0 - 106.0') 6" 8-Slot 316L SS Wire Wrap Screen		3	(77.0 - 136.5') 58 bags (120% Note: Filter pack, used >20% the calculated volume due to
90	,		× × × × × × × × × × × × × × × × × × ×	(77.0 - 136.5') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(77.0 - 136.5') 48.5 bags	potential voids forming during drilling or filter pack filling voi space in the remaining tempor: well screen. Swabbed the filt pack for approximately 60 minu prior to the installation of the bentonite seal.
 93 94 95 96 97	Competent Bedrock - Conglomerate		× × × × × × × × × × × × × × × × × × ×				
 98 TWB-1-VAS	Alluvium Deposits	SP-SM					
97-102 (1200 ppb) 3/20/2022 16:26	Alluvium Deposits	SM	× × ×				
100 hreviations: U	SCS = Unified	Soil Cla	$\times \times \times$	ion System, ft = feet, bgs	H	amsl = above mean	sea level SS = Stainless
				ble, GW = groundwater, p			
	VCCOVELY, IV/A	- NUL P	vhhingr	no, Gw – groundwaler, j	יוטוווטוו, ואפ – אמינס אבי אווווטוו, ואנ	Sica. Solid blue wale	a capie mains represent

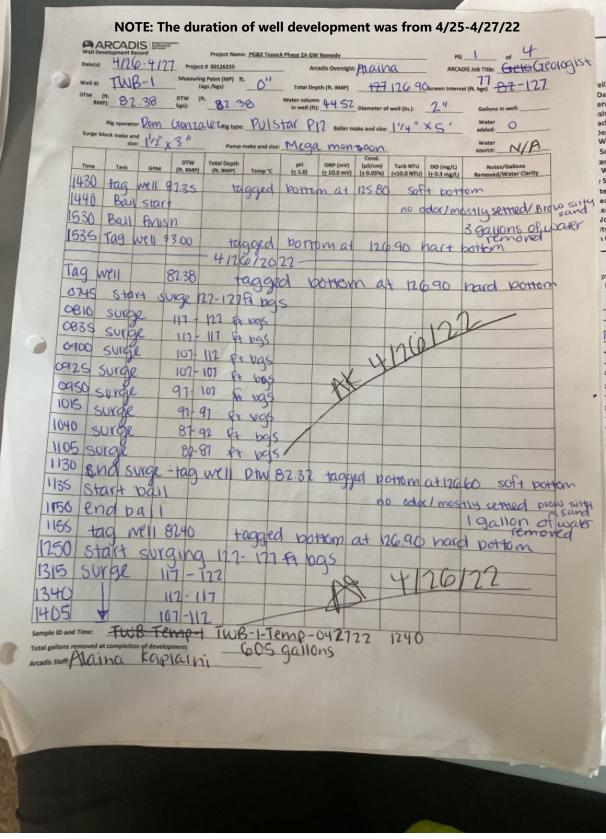
ARC	ADIS			Well Const	ruction Log	5	Sheet: 6 of 7
ate Started:	09/09/2022			_Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed	09/12/2022			_Shallow Well Elevation:	<u>N/A</u>		
Drilling Co.:	Cascade			_Deep Well Elevation:	<u>N/A</u>	Client: PG&E	<u></u>
Prilling Method:	Sonic Drilling			_Northing (NAD83):	2100941.12	Project: Final	GW Remedy Phase 2A
oriller Name:	Matt Arnold			_Easting (NAD83):	7615929.94	Location: PG&E	<u>E Topock, Needles Californi</u>
Prilling Asst:	<u>L.A. / I.S. / D.I</u>			Borehole Diameter:	10.5-12 inches		
ogger:	<u>Kim Lapszyns</u>			Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGran	е		_Development End Date:			
otal Depth:	<u>137 ft bgs</u>			_Well Completion:		To Be Completed	in Well Vault
Groundwa Geb Sample II		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volum
TWB-1-VAS 97-102 (1200 ppb) 3/20/2022 16:26 102 102 103 103 103 104 104 105 105		N/A	x x x x x x x x x x x x x x x x x x x	(85.0 - 106.0') 6" 8-Slot 316L SS Wire Wrap Screen			
_106	Weathered Bedrock - Conglomerate		xx x x x x x x x x x x x x x x x x x x	(77.0 - 136.5') Cemex #60 Mesh	(106.0 - 110.0') 6" Sch. 80 PVC Casing	(77.0 - 136.5') 48.5 bags	(77.0 - 136.5') 58 bags (120%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling or filter pack filling void
		NVA	****	(40x70) Lapis Lustre Sand	6" 8-Stot 316L SS Wire Wrap Screen		space in the remaining tempora well screen. Swabbed the filte pack for approximately 60 minut prior to the installation of the bentonite seal.
	Weathered Bedrock - Conglomerate		× × × × × × × × × × × × × × × × × × ×				
	Ţ	Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	amsl = above mean	sea level, SS = Stainless
					opb = parts per billion, No		
teel, NR = No I epth to water (f			• •		ppb = parts per billion, No	ies: Solia diue Wate	er table marks represent

ARC	ADIS		Well Const	ruction Log	5	Sheet: 7 of 7	
ate Started: ate Completed	09/09/2022		_Surface Elevation: _Shallow Well Elevation:	538.84 ft amsl	Well ID: TV	VB-01	
rilling Co.:	. <u>09/12/2022</u> Cascade		_ Deep Well Elevation:	N/A	Client: <u>PG&amp;E</u>	=	
rilling Method:	Sonic Drilling		Northing (NAD83):	2100941.12		- GW Remedy Phase 2A	
riller Name:	Matt Arnold		_Easting (NAD83):	7615929.94	•	E Topock, Needles Californ	
rilling Asst:	L.A. / I.S. / D.H		Borehole Diameter:	10.5-12 inches			
ogger:	Kim Lapszynsk		Static Water Level:	See Log for Depths	Project Number	r: 30126255	
ditor:	Sean McGrane		Development End Date:	÷ .		1. 00120200	
otal Depth:	<u>137 ft bgs</u>	, 	_Well Completion:		 ] To Be Completed	in Well Vault	
Groundwa (11) Groundwa Sample		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume	
	Weathered Bedrock - Conglomerate	N/A × × × × × × × × × × × × × × × × × × ×		(110.0 - 129.0') 6" 8-Slot 316L SS Wire Wrap Screen			
124TWB-1-VA 122-127 (1700 ppb 3/21/2022 16:26  126 127 128		N/A	(77.0 - 136.5') Cemex #60 Mesh		(77.0 - 136.5')	(77.0 - 136.5') 58 bags (120%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling or filter pack filling void	
	Competent Bedrock - Conglomerate	N/A	(40x70) Lapis Lustre Sand	(129.0 - 134.0') 6" Sch. 80 PVC Sump	48.5 bags	space in the remaining temporal well screen. Swabbed the filter pack for approximately 60 minute prior to the installation of the bentonite seal.	
- Groundwat Samples Collected - 133_ 134_ - 135_ - 136_	competent Bedrock - Conglomerate	N/A	(131.0 - 132.0') Kwik-Zip Centralizer	(134.0 - 134.4') 6" 316L SS End Cap		Note: Kwik-Zip Centralizer had t be trimmed down to fit inside the sonic drill casing.	
137			(136.5 - 137.0')  · Slough			Note: Formation not removed during borehole clean-out or material that settled in drill casing.	
140 bbreviations: teel, NR = No F		Not Applicable	e, GW = groundwater,			bgs = below ground surface, amsl = above mean ppb = parts per billion, Notes: Solid blue water table	

## **Attachment 5**

Well Development Records (TWB-01 Temp and TWB-01)





TWB-1 Temp - Well development record



	Well Development Record Project Name: PG&E Topock Phase 2A GW Remedy Project Name: PG&E Topock Phase 2A GW Remedy PG_2 of 4
	Deters) -4/26-4/27 Project # 30126255 Arcadis Oversight Analysis Acadis Job Title: GREGIOGISt
	Weti in         TWB-[         Measuring Points (MP)         C //         Total Depth (fr. BMP)         [26,90]         Screen Interval (fr. bgs)         77-127           DTW         (fr.         82.38         DTW         (fr.         82.38'         Water column in well (ft): (44.52' Diameter of well (in.);         2''         Gallons in well:
	Als operator: Dom Gonzour Rig type: PUISTON P12 Baller make and size: 114" × 5' Water odded: Surge block make and 112"× 3" Pump make and size: MEGA MGNSOON Weter
	Time Text DTW Total Depth pH ORP (mV) (LS/cm) Turb NTU DD (me/L) Notes/Gallons
	Time         Task         GPM         (ft. BMP)         Temp *C         (ft. 10)         (ft. 0.01%)         (cl.0.0 mV)         (cl.0.0 mV)
	1455 97-102 102
	1520 92.97 1 1000
	1645 87-92 X 4
	1635 end surge
	NOSO TAA ANGI GALAN IN
	4/27/2022
	LACTI SCIUS SLAS LIL III
	DOLL STORT WHITE
	0831 end pail 1 gallon pailed
	agis show a sign theored bottom at 1700 go bard bottom
	22
	0925 30 9070 796 796 190 alle new 3.15 @ 105 Ft 1055
	0920 20 90 91 901 101 1000 4.6
	0935 3.0 90.79 28.4 7.95 142.0 8.20 70 110
	0940 3.0 90.95 78.8 7 94 132 149 414 1911 - 22
	10,00 18.8 90 1330 858 155 4111
	28.9 7.91 130.7 8.002711 3.92
	20 101 200 1.90 130.48.188 168 4.13
	0.000 0.0 1.0 1.0 1.00 1.00 1.00 1.00 2.00
	1005 V 3.0 9100 18.8 186 1361 9.01 5.93
0	Total gallons removed at completion of development: SLQ VQQL 100
	Arcadis Staff:
1	

TWB-1 Temp - Well development record



Project Name: PG& Topock Phase 2A GW Remedy SCE Page 1 pe 3 of 4
Well ID TW/B-1 Measuring Point (MP) ft. O'' Total Depth (ft. BMP) 17.6.00 Screen Interval (ft. bgs)
Rig operators DEM GIONZAICZ Rig type: SCC ROGOR Well [In.]: Gallons in well:
size: Pump make and size: Water source:
Inter         Task         GPM         (fr. BMP)         (fr. BMP)         Temp *C         (p1)         OPP (mV)         (p5/cm)         Turb NTU         D0 (mg/L)         Notes/Gallons           IUIU         PUMP         73.0         90.99         79.0         1.90         (c10.0 mV)         (c40.0 MV)         (
1015 30 90.99 28.9 786 133.1 9.177 98.7 4.18
1025 3.0 91.25 28 9 2 96 1220 24 19 222 11:18
1030 3.0 9175 29.0 7.85 136.0 9.40108 4.42
$\frac{1040}{1016}  2.5  91.45  79.1  7.84  133.4  95.1  90.04  10$
1054 2.5 91 08 29:27.84 134.0 166 88.9 4.08 iswered pump
1055 2.5 91 50 29.1 1.84 1.30 6 9.81 7100 4.16 10.465
1105 26 01 20 1.84 130.91 9.86 135 4.21
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
1150 25 93.98 29.3 7.87 130 1 10 711211-7 was the column
7 1160 15 93.05 29.1 7.95 1749 10.21 2012114 51
146 1.5 94.01 29-1 7.82 130 8 10 70 21 2 4.60 move to 117 \$ 1095
1150 2.5 94.20 2.9.2 7.80 1355 10 10 17 411 CO MOVE TO US
1200 2.59415 291 179 111 30.0 10.5515.1 4.66
1205 2.59412 19.1 7.79 141.3 10.38 93.2 4.56 move to 107 1210 2.5 91412 19.1 7.18 143,010.40 8.89 4.49
sample 10 and Time: 19.1 11.19 149.1 10.49420 4.53 MOVE to 102
Total gallons removed at completion of development: See Page 1 to kgs

#### TWB-1 Temp - Well development record



Date(s)	ADIS Entrant	Project #	Project Name 30126255 Point (MP) ft	e: <u>PG&amp;E Topock</u> t.	- Arca	dis Oversight:				ts Job Title:	
Well ID DTW (ft.		(ag DTW (ft.	s /bgs)	0	Water Jolumn		n	20.	Screen unterva	Gallons in wel	II:
BMP):		bgs):		Se	Leven (re).	P	ake and size	X.	+	Water added:	
Surge block m	ake and size:		Rig type	make and size:			2	)		Water source:	
		DTW	Total Depth		pH	ORP (mV)	Cond. (µS/cm)	Turb NTU	DO (mg/L)	Notes/Gall Removed/Wate	ions er Clarit
Contraction of the	UNIP2.5	(FE. BMP) 94.10	(ft. BIMP)	79.1	(+1.0)	(+ 10.0 mV)	(± 0.03%)	19.5	(+0.3 mg/l) 4.73	trave	
1220	I	94.05		29.1	7.77	1462	10.62	47.8	States of the second		10
1225		94.13		29.1	1.77	148.4	10 64	6.97			
1230		94.04	5	29.1	7.76	149.9	10.90		54.63		
1235	XX	94.0		29.0	17.76	1503	10.6		+ 4.6	2	-
	Sample		t,	29.1		-		1.96			
nus	Sam	plee	nol.	29.0				7.0	2		
			1897			1	7				
			-		-	A	V	/			
					1	10	/				
			1	11	1	/		-			
	1		U		/	200					
		2	19192	1	Mar In		23.7				
			/								
		24	-		287472	11. 2	188		0		
	X	X					1999				
	TX	1					1202				
	A	13220				1. 1. 1. 1. 1. 1.					
	/				191013		2				
/		122		226		19-12-1					
									1000		
le ID and Time:			-	0	-		1. 12 10				
gallons removed i is Staff:	it completion of d	evelopment:	C	RP	-E	AC	re	1			
			6	A	1	(	)	-			

#### TWB-1 Temp - Well development record



**Attachments for TWB-01** 

Date(s) Well ID	9/14 9/29/20 TWB	2022-	Project # Measuring F (age	30126255 Point (MP) ft.	_34.5"		Remedy Idis Oversight th (ft. BMP)	137.7	4	C ARC	s 1 of 1( NDIS JOB TITLE: Staff ( val (ft. bgs) 85-106,
	85.61 85.23 NP 9[24] 2 Rig operator: lock make and	ArnoldL	bgs):		Pulsta	P 1200	9/29/22 Bailer m	_ Diameter of	55 3"	5.690	Gallons in well: 4
Time	size: Task	GPM	c 5.5" DTW (ft. BMP)	Pump Total Depth (ft. BMP)	make and size:	Brundfi pH (±1.0)	ORP (mV) (± 10.0 mV)	Cond. (µS/cm)	Turb NTU	DO (mg/L)	Water source: NA Notes/Gallons
9/14/11 15:30			85.23		(133.5	Contraction of the		(20.03%)	(<10.0 NTO)	(± 0.3 mg/L)	Removed/Water Clarity
-	- 9/1	End 5/29	of	day					and an		
07:24		1-1	85.34	NR							282.46 f+ bgs
07:35	5 beg	en bo	NR	137.15	(134.2	7 51 40	-) -	ofter	444	bail	resurred bailin
08:30	Tag			and the second s			1-	ALC: NOT A		1	p for swabbing
08:2	4 beg	1 12 1	abbin	4	rubbe	ninch		per s	creer		
09:2	resur	ned s	wabbi	19-		NP 9/5/22	and a start of the second				
10:2		ished	S and a second	5	lower sc	Contraction of the	en (	15 m	inutes	)	
11:3	4 fin	ished	swat	bing	upper		n for	tode	ay -	will re	sume, suab-
11:3	bed 7 Tag	for		minu:	tes						
-	- 91	Er	d a	fd	ay -	-					
14:2	6 Tag	20/20		137.1							
-	o resu 5 finis			ing up	per scr	een					
	3 Tag		85.45	137,1	apper .					1	
15:4	D bee 2 Sto 12 Sto 120122 120122 10 and Time:	sped t	bailing	g for	day						
Total ga	Ions removed Staff: Nick	at completion	of developm	nent:		-					

TWB-01 - Well Development Record



te(s) 9	14/2022-	9/29/2022	Project #	30126255		Arcadi	s Oversight:	Nichol	as fibr	ARCA	DIS Job Title: Staff Geo
Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН ( <u>+</u> 1.0)	ORP (mV) ( <u>+</u> 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)		
:09	Tag	302	85.42	137.2	(05. 1	1953	1 10 1	9250.			
2	End	of	da	v —	28.2	- 12	199. 4	111-50	13.800	-	
-	- 9	1211	2022		-	1. (Pa.)	10.3	746.3	13.3		
8:31	Tag		85.44	137.2	in m	A					
			Contraction of the	s (opp	ove b	(ora)	. 2 h 1-1	mit B	-	1.4	HIRE THE AND
							ad a	had	of sh	abbi	is (clearish)
4-10	Tag	<u> </u>		137.2	np 10		100				brown)
0:20	5	. Craw	S OTALER		or so	C000	all a la	185 mg	452	A 12	about 1
			-	s low	Constant of the state						
	1.0		And the second second	bing							
			The second second	eri	· · · · · · · · · · · · · · · · · · ·	Contract of the second s	eri -				
	to maintain 1	nea :	and the second	137.15	pper 3	LIEEN	- Andrews	11111	346		
	Tag	2	C. C. C. C. C. C.	100000000000000000000000000000000000000			ha			12/2	
	10			wat	and the second second		A Balley, colourly		10.5	S. 85	
	Tag	shed	a second s	137.2	ater	brow	-	1			
	)	E		of de							
NI	PE22	2022	10000		Y		1				
8:15	1	LULL	85.45	-				1			
9:30	Tag		100000000	The second second second	100 -	betch	altat	1 7 3 9	007	12 18	
9:55				se cy	and the second second second	Contractor Contractor Inc.	and the second se	1000	00100	et bat	rdh
The second			1000		m (95				, ,	4.10	
10:0	J Dega	5 pum	ping a	T SSP	32.7	7.74	101.9	8582	74.5	4.31	
10:0	-	4.22	92.18	-	39.4	7.86	56.9	7355	129	6.54	end pumping
10:22		4.92	91.82		29.4	7.84	- 19,1	10037	120	- '	Start (100 ft brock
10:27		4.74	93.50		30.0	7.95	-26.9	7576		4.62	and the same
10:30		p pur	State and	ma	82.88						
	ID and Time	the second second second	.P		00.00	راندو					

TWB-01 - Well Development Record



ate(s)	9/14/22-	-9/29/22	Project #	30126255		Arcad	s Oversight:	Nichol	as film	ARCAD	IS Job Title: Staff Geo
Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН ( <u>+</u> 1.0)	ORP (mV) ( <u>+</u> 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
0:42	Pump	set	st 10	5 ft b	TOC :	7.85.5	5 f+ 1	FOC			
0:48	pump	5.16	91.3	-	29.1	7.88	28.5	11082	141	3.62	Slightly doudy
0:52	-	4.64	93.1	-	29.9	8.04	25.7	A A STACK OF	43.9	4.03	clear
0:54	pump	off	, ba	tch 1	7.09	gal					
				115 +		-	ft be	10w +	op of la	owers.	creen
11:05	Pump	4.55	90.35		30.5	8.01	43.2	7572	61.7	7.17	clear
11:10		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	93.35		30.2	8.00			45.2		clear
11:12	ou m	i de la competition de la comp	1.	atch 1	10000		01.5		45.2		Cicai
		No. of the		25 ft	100.000	1					
11:25			85.58	Children							
11:30	and the second second	4.52	1000 00 20 10	-	29.5	7.90	83.0	16605	54.5	3.79	clear
11:35	and the second s	4.84	T. Martin	-	30.1	8.00	1	9130			very slightly clandy
11:40		4.72	-	- 3	29.9	8.02		8495		3.47	clear
11:56	pump	off	bate	h 291	.88 0	al su	war w	ater 1	evel m	eters	
	tag Sub			and the second se		0.		Edward I.		2	
	1	10000	and the second se	and the second s	TOC.	~2f+	above	both	om of	lower	screen
1. 12.	tag		85.46		and			1 Ta			
12:54	pump	4.48	91.3	-	29.9	8.04	82.8	16905	56.4	3.16	clear
13:00		4.77	93.8	-	30.1	8.06	65.7	8977	55.1	4.52	clear
13:05		4.71	95.3	-	30.1	8.05	64.0	8318	30.7	4.32	clear
3:07	pump	off	bat	ch 34	9.29	Ser. 1	135 101	02 14			
13:21	and the second second		85.56	-		NUL N	13 104	10 . 11	1.150	1	M. Astronom
13:22	pump	9.22	-	-	30.0	8.01	76.3	10560	38.4	4.19	clear
13:33		5.04	-	-	29.6	7.93	77.3	9837	453	Nº 9/2/20	claudy brown
13:35	pur	p o'	FF,	batch	470	0.49	Sec. 1	a state			
	and Time:	d at compl	etion of de	- velopment:	100	2022					
	aff: Nic	A DECEMBER OF									

TWB-01 - Well Development Record



ate(s)	9/1	4/22	-9/21/22	Project #	30126255		Arcadis	Oversight:	Vichol	aspilar	Well ID	TWB-01
Time		ask	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C		ORP (mV) + 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
4:31				85.46	-		2022		Wing .	in the		transducer deployed
4:4	2 12	ate a	18 apr 22	85.44	-							at 126 ft bTac
14:4				85.44								
14:4	Ser	mp	-	86.69	14:45:08					30.5	1	
14:4	5		-	88.42	14:45					1.73		
14:49	5:23	1	-	88.97	14:4523			122		14.84		
14:45	5:30	-	-	89.49	31					3 3 4		
14:4			-	89.52	41							
	5:49		-	89.62	. 49					2745	1	
Same a	15:5	3	-	89.70	53					20th	in the second	
	5:4			89.77								
-	16:0		4.84	89 80						244		
1.1000	47:0		and the second second	90.09					-	1.67		
-	48:0		102200.0000	92.2-	5 5 6 TO 1 1 1 1 1 1							
14:0			4.96	1 200.000			alash at t			225		
1	50:10		The second second	8 94:1	9 -	30.4	9222023			146		
1	1		5.04		and the second second	29.8	8.17	81.5	8490		5.64	clear
14:1	1000		4.98	all and the		29.9	8.09	89.3	CONTRACTOR OF STREET, ST.		5.55	
15:	Same		4.94			29.8	8.07	90.2	9049		5.50	
	05		4.94			29.5	8.08	96.9	8982	4.91	5.72	
15:			4.91	and all states of	and the second	29.8	8.06	927	9298	14.6	5.98	
1000	:15		1 m	8 111.	1000	29.7	8.07	98.1	9724	And a second sec		
	:20			4 113.		29.8	8.07	105.2	9970			
	:25			2 115.	the second second second second second	29.8	8.05	98.4	987	4 17.4	5.90	clear
1000	:30				and the second se	29.8	8.03	96.9	5 1020	2 50 9	5.26	clear
3000	:35		4.7	8 118	and Provide and	29.7	8.01				5.68	s clear pump
	:40					29.8	8.07		1014	D 11.7	5.73	
15	5:45		4.5	0 121	1 Contract	2						batch 772.02
-	-						a series			1		~ 789 gallois re
-	-				- En 9/29/22	d of	day	1-		-	-	
-	-	-	D		0/0/22			-				

TWB-01 - Well Development Record



e(s) 9	114/22 -	9/29/22	Project #	30126255		Arcadi	s Oversight:	Nichol	as Pilar	Well ID	TWB-01
Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН ( <u>+</u> 1.0)	ORP (mV) (+ 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
	Task	GPM	(ite billing		The second second second	2022			1		
7:50	tag	Sing.	85.48	-							
	tag		85.50	-	at 1	Letes					
	SC tes		88.82	1990 ( 19	201	igen			17.6		
	SC test		88.88	0-000000000-0-7	april 1	199.2			7.28		
	SC tes		88.93	1 200 C 100 C 100 C					3.40		
	Sctes	Contraction of the	88.98						3.38		
	SC tes	Constraints of the second	89.02				14/2		3.01		
and the second	SC tes	1000000.0000	89.04		1 mary	Calle 1	- the all		2.65		
20100000	SC tes	1000	91.71	a state of the second		11/1		-	2.87		
	SC tes	Sector Sector	92.09		1. 19 5.	1			6.09		
	Sc tes	and the second second	92.4	5 -					2.04		
	SC +est	1000	92.6	0 -	1 della		1 1 34		1.67		
09:45	· SC test	r	92.7	0 -	(and the		1252	1215	-		
09.50	SC tes	+	92.77	-			131 G	\$2.96	3.86		1
09:5	5 Sc tes	;+	92.8	5 -	- Martin		118.00	tat)	1.30		
09:5	8 posts	ic test	199 5	- 07.78			200		-		
	tag	and the second	86.6		1	1 2 2	adam	10.00	1000		
10:0	2 tag		86.0	- 19	1 million						
10:0	+ tag		85.8	9 -							
10:1	2 + 99		85.6	-	-						
11:3	3 + ag		85.5	1 137.4							
12:30	) tag		85.4	6 137.4	-			8 2 - 2 4			
12:3	2 be	an 1	oaiti.	- Swa	bbing	lawe	sci	reen	221		
14:0	7 fini	shed	Swa	bbing	lower	scree.	1		1000		
				bing u	pper	Scree	20	-			
Concernance of	State of the second			bbing		ers	scree	1			
16:1	20 ta	3 -		5 137.		-					
-	-			fda				1-	-		9/24/22
073	TAC	2	85	51 137.4	9 (50	FTB	OTTOM.	1			yriter
074	BATCH		1	.5T 0	-	1	10	mon	ENT	DATK	BROWN

TWB-01 - Well Development Record



	Glue 1		12 Project #	oject Name:		Arcadi	s Oversight	NELT	to man	Well ID _	TWB-01
te(s)			DTW	Total Depth	Temp °C	pH (+1.0)	ORP (mV) (+ 10.0 mV	Cond. (µS/cm) (+3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
Time	END	GPM	Gr. BMIP)	Iso Ha	200	DVED	~3	Gall	ans s	TIT SE	TITLEN LEDE
7603		-									
18:35	Swab	bing	lowe	r scr	een						
0;11	end	SW	abbi	13 19	wer	Scree	1		1		
10:1	5 500	166	ing	upper	scr	een					
12:0	dena	1 52	abbi	Bul	per:	screa	7	1 111		122	
	tag		85.5	6 137.3	5	14.50		0			
12:4	5 tag	20 10 20	85.5	1 137.3	3	40	1000	11	-		
1000	5 bai		sil	ty sedi	hart	4/ 501	ne sa	nd -	dark	pum	
The second	Fina	i _		21 137.4	cem	oved	~20	gallor	ns, silt	y sedim	ent - 1+ brown
13:1	and income	-	86	15 -		- and	4	1	2 5 8 4		
14:1	1 tag	-	105.	inge	at 90	ft b	TOC	- 50	ycle	5	
and the second second	and the second second	-	85.	AIL -	-				1 12		
14:4	+1 tag	3	82.	41		195	£+	b TOC		-	
14:	43 pm	mp	on	at ~4	32.0	100	220.	2 981	114	5.24	slightly cloudy
14:	48 oun	np 3.	93 90	.55	32.0	10.1	8 211.			4.13	clear
14	53 pur	np 4	06 91	.50 -	and the second second						
14	54 pm	mpof	F - 5	64.63	gallon	s rem	noveo	(TOTA)	1		all and the second second
ALC: NOT ALC		- T	- SE	12 -	and the second second second	and the second					
15	:09 P	rege	and	surge	at 10	00 f+	6100		cycles		
T	5:18 p	mp	00 8	5.38 -	-	-	0				
14	5:19 p	umo	off				- A - A	No. of Street			
T.	5:24	neno (	0 8	5.47 -		3.	19 10				
1	5:25 P	mp	off	1.52		17.	17 14			~	
H.	5:32 p		00 8	5.37 5	et to	~4	gpm	(100	Ft bTC	) )	class
H	15:37 P	nip	3.98 9	0.76	- 30	5 8	01 124	.2 86	71 30	5 3.26	clear
	and the second				- 30	.2 8.	00 13	2.2 84	64 22	100 M 100 M 100 M	2 clear
+	15:42 P	nmp	ff	- 123	94 +	otal	gallo	ns re	moved		
H				88.40	-				- 79	-	The second second second
	15:44	5		85.6	-					-	
	15:52	tag	Ene		day -				-		
	-	1.18.191	2 00			1 25 20	122-	-	-	-	
2	-	-	-	85.51	and the second se	- Jack		and a			
1	07:59		-	8551	-			-			
	08:29	toa	And Personne states	000.							

TWB-01 - Well Development Record



Date(s	s) 9	14 22	-9/2	1/22	Project #	30126255		Arcadi	s Oversight:	Nichola	as fibr	Well ID	TWB-01	
Tim	ne	Task	G	PM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН ( <u>+</u> 1.0)	ORP (mV) (± 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity	
08:	44	purg	e	and	Shra	e at	105 f	+ 600	C - 1	cycl	es			
08:	1.	pur		0	85.45	-			4 51	,				
		pump			90.41	13-11	30.1	7.22			16.5	3.58	clear	
09	:03	pump	4	.00	91.59	-	29.9	1.71	229.4	9435	12.7	2.96	clear	
09	:04	phm	0	off	- 5	58.46	tota	Gall	lons r	moved	1			
09	:13	Dural	1	10000	85.57		15 ft							
	0.00000			0	85.51	A STATE OF THE STA	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		~4 g					
					92.81				193.8		21.2	3.20	clear	
09	.33	pro	*	1.00	93.16	5-2	30.0	7.99	171.4	9848	17.3	2.95	clear - pump	off 09:
					85.61		125 f	+ 67	N CONTRACTOR		10.5 C			
		pun			85.40	and the second second	set		~49					
					91.11	and the second se	30.1	7.96	141.4	11660	33.6	3.10	clear	
10	n. 14	Pun	P	4.05	92.11	-	30.0	8.91		9956			clear	
1	1.15	pun	np	ff	-	183	T tota		ans re			2		
				off			NP SQ+	4125/22	4 0	2000 (	f at	130 ft	bTOC-5 cycles	
		10			85.6		Set		2 4 9	1				
1	0:40	pn	mp	395	91.5	and the second second second	30.1	7.97	115.00	10089	54.0	4.50	clear	
						, -	30.2	7.97	1	10313	32.2	3,29	clear	
	0.55	pho	np	3.95	of the state of the		36 to	tal a	allons	rem	oved			
				off	85.6	The State Line			~59					
		5 pm			A CONTRACTOR OF	State of the second second	30.1	7.99			15.2	3.46	clear	
-	N: 10	phi	mp	4.90		Sector States	30.0	7.99	114.6	9886	18.3	3.30	clear	
F		5 pur	110		0.0	- 11	30.1	7.98		9884		3.35	clear	
		pm		Contraction of the	-	329	.26 -	total	gallo,	ns ra	emov	ed		
		2 pm		-	86.		deal	loved	trans	duce	r at	126 ft	6TQC	
		8 ta		29	6 89.		dep		-		67.1			
F	14:11	2 2	e val	1	-	-			-	-	73.8		1	
ł	14:2	esc	040	2.9	8 90.0	4 -			122.1	-	22.1	-		
-	14:2	92	and	129	5 90.	17 -		_	-	-	25.0	-		
	H:3	1 50	eve ou	129	3 90.	บ -			1	-	29,6	-	114.16 gallons	
1	4:	45 5	T	-	85.	74 -		3 30.00	-	-	-	-	pumped duringeral End of day	
	14:	45 p 50 t		-	85.	00.000			-	-	-	-	End of day	

TWB-01 - Well Development Record



Da	ate(s)	1/14/22-	9/29/27	Project #	30126255		Arcadis	Oversight:	Nichola	s Pilar	Well ID	TWB-01
-	Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН (±1.0)	ORP (mV) (± 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
0	7:IQ	Tag	-	85.51	137.4	-1/	26/2	2022-				
	All States	tag	1	85.51	137.4							
			n su	abbi	ng la	her s	creet				1	
	Street and Street	-		10000	ing la		Contraction of the second s				1	
0	States and the second			10 10 10 10 10 10 10 10 10 10 10 10 10 1	ng np	and the second second	subgrade with					
	1:40				bing .		10000000000000000	0				
	11:46		-	a the state of the	137.4						(This	
		5	+ 60	No. of Contraction of Contraction	fine	silty s	edime	at t	race s	and	brown	
		fine	Contraction of the		Contraction of the second			100000000000000000000000000000000000000			10 10 10 10 10 10 10 10 10 10 10 10 10 1	llons removed
		tag	-	a strategy and the	137.4	1		1 3		,		
	3:01		-	A CONTRACTOR	137.4							
2		5	0 5		19 100	er so	reen			1498		
		pan	12.0		Ropm			ies - s	safet	, and	+	
		1.000		No.	bbing							
		1.		Contract of the	abbina	lave	rscr	en				
	15:15	and the second se		The Party of the Party of the	ing		Constant Property of the					
Ī	16:00	Swatt	ina-	85.49	137.4	fin	ished	swab	bing .	forda	y - 6	Omigntes remain
			13			nd o-	A 1	Training and			1	
7/22	07:34	5 + 99	-	85.5	2 137.4			1				
	and the second	) res	me	d sw	abbin	a inp	per so	reen	1			
	and the second second	end	and the second	State of the second sec	137.4							
		the second s		Contraction of the	ty s	edime	n+ tr	ace	sand	bra	wn	
	09:41	fina	1 bai	1- 51	ty sedi	iment	light	+ brow	n tig	11 00	wn~	25 gallons removed
	19:45	+ + 0	-	85.7	1 137.4				100m	14.5	140.00	
NP	11:03	Tar	e and	SUG	e - on	mo at	97 f+	broc	5	cycle	s Z	85.51
42.142				85.5	-	set	to ~	15 gp	m		1	
		prmp	10000	0	and the second second in	and the second s	7.89	1 0 1	Della-	44.6	3.78	clear
			and the second second second	4 95.2		29.9	a second		8858	45.4	4.31	clear
	11.21	pump	ooff	- 1	58.80					100		
9	1.26	pum	a cut	SURP S	15.65	- Dun	e at	102 f	+ bTC	C 5	cyc	les
		8 prm			51 -	set	to	~ 5	aom			

TWB-01 - Well Development Record



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te(s)	1/14/22	-9/29/22	Project #	30126255		Arcadi	s Oversight:	Nicholo	s Pilar	Well ID	9 of 10 TWB-01
Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp °C	рН ( <u>+</u> 1.0)	ORP (mV) (+ 10.0 mV)	Cond. (µS/cm)	Turb NTU	1997	Notes/Gallons Removed/Water Clarity
1:53	prime	5.00	93.61	-	30.3	8.03	104.6	9036	21.0	3.44	clear
	prmp	5.24	95.91	-	30.1	8.01	98.2	100000000000000000000000000000000000000	18.1	3.85	
	pump		178 I.S. 199 I.S.	6.99	gallon	s pum	red	01: 64		0.00	Cicqi
	purge a		85.61	Horn Contraction	-	107 1	Contraction of the	G 5	curlo		1
and a star	prmp	100	85.38	- 1	set		500	m	ycie		
3:14	NP 9/27/ Pump NP 9/2	22 ff	-	-			JI				
3:20	Phe siz	122	-		set	to	~5 gp	~			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	pump		94.10	-	31.0	8.13		9376	14.0	3.45	clear
	pump	-	CONCEPTION OF THE PARTY	Statutes of the second	30.0	8.03		2016-2018	13.3	Manine Soll	clear
14:06		off	-	81.57	DATE STATE	ns pm					
	purce	1	0 85.7		pat	117	1990	TOG	5 cy	cles	
	pump		85.40		set		5.96	1.			
	pump		Contraction of the	Constant and the second	30.5	1.	- · ·	and the second second second	26.6	4.12	clear
	prop				30.1	1111111111111111	11866	100000000000	10 C C C C C C C C C C C C C C C C C C C	3.60	
	pump		10000	100000	8 60	llons	ormoe	d			
	3 purge			and the second se			ft b		5 cyc	les	
	primp	-	85.51	and the second second	1241.12	+0 ~	Contraction of the	1.			
	6 pmp		93.2		30.5	8.01			35.1	3.63	clear
	ping	and the second se	96.0	- 1	30.2	8.01	87.8	10010	13.4	3.84	clear
	2 pump	Statistics (	-	53.90	gallo	ins pu	mped				
15:1	1 onral	and are	85.58	pump					ycles		
15:23	pum	0 00	\$5.38	- '	set	to ~	5 90				
	Ophmp				30.6	8.05	88.6	a serie and a serie of the	21.1	3.91	clear
COLUMN THE REAL	5 pump	12 12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Contraction of the second	and the second se	30.0	8.02		9981	the second s	4.55	clear
15:40	pump	4.98	and the second second	and the second se	30.0	7.97		10107	14.9	3.70	clear
	5 prmp		100.2	2 -	30.0	7.97		10464	1 1 1 1 0 S S 1 1 1 1 2 2	3.82	and the second statements of the
	o pump		101.6	8 -	30.0	7.98			1 14.3	4.12	clear
the second second second	5 pump		102.7	1 -	30.1	7.99	and the second second		+ 12.8		clear
	3 prop	and the second second	103.69	8 -	30.0	8.00	No. of Concession, Name	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Contraction of the		clear
	pump	4.88		-	30.0	7.99	1 2	The second second	7.96	4.65	clear
	s colle	ortod	Th	1B-01-	129-0	09272 allons	2 san	nple			

TWB-01 - Well Development Record



ate(s)	9/14/22-	9/29/22	Project #	30126255		Arcadis	Oversight:	Nichola	s Pilar	Well ID	TWB-01
Time	Task	GPM	DTW (ft. BMP)	Total Depth (ft. BMP)	Temp *C	рН ( <u>+</u> 1.0)	ORP (mV) (± 10.0 mV)	Cond. (µS/cm) (± 3%)	Turb NTU (<10.0 NTU)	DO (mg/L) (± 0.3 mg/L)	Notes/Gallons Removed/Water Clarity
-		-			9/28	12022					
07:40	tag	-	85.55	-						-	
09:02	tag	-	85.61	-			-	7 9/28/27			
	SC 706	1.5	87.87	-	33.9	7.61	197.89	9713	3.27	4.36	clear
	SC tes		91.81	-	32.0	7.90	203.5	10239	1.77	4.27	clear
and the second	5 SC test		105.07	-	32.3	7.95	122.0	12133	1.57	4.63	clear
16:2	1 1000	-	85.68	r —	-						
_		-		Contraction in the second	nd of	day					
2		a chail		-	9/29/2			-			
8:25	0	~ ~ 3	85.5	7 -	post		fic	GOAG	ty te	st sa	mple
1882 M 1999	1		and the second second	5 10 10 10 10	30.7	7.31	218.4		5.39	3.60	13.8 gallons
	o purg			-	30.7	7.64	207.7	15334	5.18	1.99	25.76 gal purged
08:44	5 proge	1	0.0	2 -	30.6	7.69	203.4	13320	3.66	3.08	41.56 gel purged
08:4	- 5	2.4		Sant State	30.5	7.75	215.7	11569	3.73	3.64	57.40 gal purged
	13		0.00	20 COLORADO	30.5	7.73	220.1	10561	4.70	3.65	72.24 gal purged
08:5	o pung			and the second second	30.5	7.72	227.8	10758	3.07	3.74	89.34 gal perged
	15	22	20200	and the second second	30.5	7.75	229.9	1 000 C 1	3.17	3.48	104.44 gal purged
100	0 pug	20			30.5	7.77	232.3	10425	3.03	3.44	120.16 gal purged
09:0	15	21	and a state	The second second	30.4	7.79	231.3	10265	2.37	3.64	134.57 gal purged
09:1	13	-	1000	245	30.6	7.81	232.2	10203	3.01	4.33	151.38 gal purged
09:	-0	20		and the second second	30.4	7.80	239.5	10247	3.38	4.22	168.42 gal purged
	1-		100 Mar 100		30.4	7.86	245.3 3095	10319	3.23	5.04	
	25 pure	And in case of the local division of the loc	1000 Bassienes	aller and the second	30.5	7.81	246.3	10334	1.90	4.39	196.22 gal puged
	30 pre				30.7		244.0	10341	1.45	4.07	210.38 gel purged
	:45 purg		3 93.9 10 93.9		31.0	1 1 1 1 1	241.3			3.66	240.06 gal purged
01	TO purg		0 93.9	and the second se	31.0		238.3	10249	1.32	3.63	254.86 gal purged
07	.50 pm	2.	90 93.	81 -	31.1	Street States	235.3	Contraction of		a second s	
01	10 1	ge le	- 609	in co	2	and the the	1000	h sie	0.79 -	post s	sampling turbidity
01	101 5	ane	TWB	-01-50	- 85 - 12	9 col	ected				29570gal purged
		inpe	Cionin	ant	0.00	nd pr	mp	2.0.1			- 1 - 1
100		3	85	65 137.4	t trie	oed a	t dee	ando	mp		
10	:49				- En	d of	day	-		-	

TWB-01 - Well Development Record

# **Attachment 6**

Specific Capacity Testing Package

#### Specific Capacity Test



Location/Well ID	TWB-01-Temp
Date	4/28/2022
Screened Interval Tested	77 to 127 ft bgs
Packer Set Depth	N/A
Packer Seal Test	N/A
Tests Conducted	three-step specific capacity test (1, 2, and 2.75 gpm)
Purpose	Well performance test
Summary	Specific capacity: ; 1 gpm = 1.01 gpm/ft, 2.0 gpm = 0.62 gpm/ft, and 2.75 gpm = 0.32 gpm/ft.
Notes	The third step of test started at 3 gpm but the pumping rate dropped to 2.75 gpm after the first 7 minutes because of rapid drawdown.
Oversight Signature	Ch. Saild
Date	7/27/2022



Location/Well ID	TWB-01-Temp
Date	4/28/2022
Screened Interval	77 - 127 ft.
Pump Depth (ft btoc)	126
Packer Depth (ft btoc)	N/A
Packer Leak Test (Pass/Fail)	N/A
Initial Water Level (ft btoc)	82.45
Initial Totalizer Reading (gal)	N/A
Final Totalizer Reading (gal)	N/A
Approx Pumped Volume (gal)	580
Calculated Volume Purged (gal)	626.5
Difference in Volume Pumped vs. Calculated	-46.5
Number of Specific Capacity Steps	3
Pumping Rates (in order)	1, 2, and 2.75 gpm

Step 1	Change in Time					
(1.0 GPM)	Between	Elapsed	Pumping			
Time	Measurements	Time	Rate	Total Volume	Depth to	Drawdown
(HR:MN:SEC)	(min)	(min)	(gpm)	Pumped (gal)	Water (ft)	(ft)
8:00:36	0.00	0.00	0.00	0.00	82.45	0.00
8:51:00		0.00	1.00	0.00	82.45	0.00
8:52:00	1.00	1.00	1.00	1.00	82.45	0.00
8:52:26		1.43	1.00	1.43	83.85	1.40
8:52:50 8:53:14	0.40	1.83 2.23	1.00 1.00	1.83 2.23	83.60 83.55	1.15
8:53:30	0.40	2.23	1.00	2.23	83.50	1.10
8:53:44		2.50	1.00	2.30	83.50	1.05
8:54:14		3.23	1.00	3.23	83.50	1.05
8:55:00	0.30	4.00	1.00	4.00	83.49	1.03
8:55:00		5.00	1.00	4.00	83.49	1.04
8:50:00		6.00	1.00	6.00	83.45	1.00
8:57:00		7.00	1.00	7.00	83.40	0.95
8:59:00		8.00	1.00	8.00	83.34	0.89
9:00:00		9.00	1.00	9.00	83.35	0.90
9:01:00		10.00	1.00	10.00	83.34	0.89
9:02:00		11.00	1.00	11.00	83.37	0.92
9:04:00		13.00	1.00	13.00	83.35	0.90
9:06:00		15.00	1.00	15.00	83.36	0.91
9:08:00		17.00	1.00	17.00	83.35	0.90
9:10:00		19.00	1.00	19.00	83.34	0.89
9:12:00		21.00	1.00	21.00	83.33	0.88
9:14:00		23.00	1.00	23.00	83.33	0.88
9:16:00		25.00	1.00	25.00	83.33	0.88
9:18:00		27.00	1.00	27.00	83.33	0.88
9:20:00		29.00	1.00		83.32	
9:22:00		31.00	1.00	31.00	83.33	0.88
9:24:00		33.00	1.00	33.00	83.34	0.89
9:26:00		35.00	1.00	35.00	83.36	0.91
9:30:00		39.00	1.00	39.00	83.33	0.88
9:32:00		41.00	1.00	41.00	83.33	0.88
9:34:00		43.00	1.00	43.00	83.33	0.88
9:40:00	6.00	49.00	1.00	49.00	83.36	0.91
9:45:00		54.00	1.00	54.00	83.36	0.91
9:50:00		59.00	1.00	59.00	83.34	0.89
10:00:00		69.00	1.00	69.00	83.38	0.93
10:10:00	10.00	79.00	1.00	79.00	83.42	0.97
10:20:00	10.00	89.00	1.00	89.00	83.45	1.00
10:30:00	10.00	99.00	1.00	99.00	83.44	0.99
10:37:00	7.00	106.00	1.00	106.00	83.44	0.99
otal Volume Pumpe	ed for Step 2 (gal)		106.00			
verage Pumping Ra	ite (gpm)		1.00			
pecific Capacity (gp	m/ft)		1.01			



	Locati		TWB-01-	Tomp			
	Locati	on/Well ID					
		Date	4/28/202				
		ed Interval	77 - 127 f	τ.			
		th (ft btoc)					
		oth (ft btoc)					
	Packer Leak Test		N/A				
	Initial Water Lev		82.45				
	Initial Totalizer Re	0.0	N/A				
	Final Totalizer Re	eading (gal)	N/A				
I	Approx Pumped V	olume (gal)	580				
Са	Iculated Volume P	urged (gal)	626.5				
Difference in Vo	olume Pumped vs.	Calculated	-46.5				
Num	ber of Specific Cap	acity Steps	3				
	Pumping Rate	s (in order)	1, 2, and	2.75 gpm			
Step 2	Change in Time	Elapsed					Elapsed
(2.0 GPM)	Between	Time from	Pumping				Time from
Time	measurements	Test Start	Rate	Total Volume	Depth to	Drawdown	Step 2 Start
HR:MN:SEC)	(min)	(min)	(gpm)	Pumped (gal)	Water (ft)	(ft)	(min)
10:33:00	0.00	102.00	2.00		83.44	0.99	0.00
10:42:00	9.00	111.00	2.00		83.45	1.00	9.00
10:43:00	1.00	112.00	2.00		83.55	1.10	10.00
10:43:16	0.27	112.27	2.00		83.60		10.00
10:43:23	0.12	112.38	2.00		83.70		10.27
10:43:36	0.12	112.60	2.00		83.80	1.25	10.50
10:43:48	0.22	112.80	2.00		83.80	1.35	10.00
10:43:48	0.20	112.80	2.00		83.90	1.45	11.00
10:44:00	1.35	113.00	2.00		84.00	1.35	12.35
10:45:21	0.65	114.35					
10:48:00		115.00	2.00 2.00		84.68 84.87		13.00
						2.42	
10:48:00	1.00	117.00	2.00		84.95		15.00
10:49:00					85.04		16.00
10:50:00		119.00			85.05		17.00
10:51:00		120.00			85.09		18.00
10:52:00	1.00	121.00	2.00		85.12	2.67	19.00
10:54:00	2.00	123.00	2.00		85.20		21.00
10:56:00		125.00			85.27	2.82	23.00
10:58:00		127.00			85.31	2.86	25.00
11:00:00	2.00				85.31	2.86	27.00
11:02:00	2.00	131.00	2.00		85.37	2.92	29.00
11:04:00	2.00	133.00	2.00		85.39		31.00
11:06:00	2.00	135.00			85.39		33.00
11:08:00	2.00	137.00	2.00		85.40		35.00
11:10:00	2.00	139.00	2.00	180.00	85.40	2.95	37.00
11:12:00	2.00	141.00	2.00	184.00	85.41	2.96	39.00
11:15:00	3.00	144.00	2.00	190.00	85.48	3.03	42.00
11:20:00	5.00	149.00	2.00	200.00	85.50	3.05	47.00
11:25:00	5.00	154.00	2.00	210.00	85.50	3.05	52.00
11:30:00	5.00	159.00	2.00	220.00	85.50	3.05	57.00
11:35:00		164.00			85.49		62.00
11:40:00	5.00	169.00			85.36		67.00
11:50:00	10.00	179.00			85.56		77.00
12:00:00	10.00	189.00			85.62	3.11	87.00
12:00:00	10.00	199.00			85.66		97.00
12:10:00	10.00	209.00			85.68		107.00
	ed for Step 2 (gal)	209.00	2.00 214.00		03.00	5.23	107.00
•							
rage Pumping Ra			2.00				
cific Capacity (gp	111/1L)		0.62	1			



	locat	ion/Well ID	TWB-01-1	Temn			
		Date	4/28/202	-			
	Screen	ed Interval	77 - 127 f	t.			
	Pump Dep	oth (ft btoc)	126				
	Packer Dep	oth (ft btoc)	N/A				
	Packer Leak Test		N/A				
	Initial Water Lev		82.45				
	Initial Totalizer R		N/A				
	Final Totalizer Ro Approx Pumped V		N/A 580				
	Iculated Volume F		626.5				
	plume Pumped vs.		-46.5				
	ber of Specific Cap		3				
	Pumping Rate		1, 2, and	2.75 gpm			
Step 3	Change in Time	Elapsed					Elapsed
(2.75 gpm)	Between	Time from	Pumping	Total Volume			Time from
Time	Measurements	Test Start	Rate	Pumped	Depth to	Drawdown	Step 3 Start
(HR:MN:SEC)	(min)	(min)	(gpm)	(Gallons)	Water (ft)	(ft)	(min)
12:22:00		211.00	3.00	326.00	85.72	3.27	0.00
12:29:00		218.00	3.00	347.00	85.75	3.30	7.00
12:30:00			3.00	350.00	86.00	3.55	8.00
12:30:19	0.32	219.32	3.00	350.95	86.70	4.25	8.32
12:30:38		219.63	3.00	351.90	88.00		8.63
12:30:47 12:30:56		219.78 219.93	3.00 3.00	352.35	88.20 88.35	5.75 5.90	8.78 8.93
12:30:56		219.93	3.00	352.80 353.00	88.35 88.55	5.90 6.10	8.93 9.00
12:32:00		220.00	3.00	356.00	89.25	6.80	9.00
12:33:00		222.00	3.00	359.00	89.57	7.12	11.00
12:34:00			3.00		89.60	7.15	12.00
12:35:00	1.00	224.00	3.00	365.00	89.65	7.20	13.00
12:36:00			3.00	368.00	89.70		14.00
12:37:00		226.00	2.75	370.75	89.74	7.29	15.00
12:38:00			2.75	373.50	89.71	7.26	16.00
12:39:00 12:40:00		228.00 229.00	2.75 2.75	376.25 379.00	89.25 89.13	6.80 6.68	17.00 18.00
12:40:00		231.00	2.75	379.00	89.13	7.25	20.00
12:44:00		233.00	2.75	390.00	89.89	7.44	22.00
12:46:00			2.75	395.50	90.02	7.57	24.00
12:50:00	4.00	239.00	2.75	406.50	90.03	7.58	28.00
12:52:00	2.00	241.00	2.75	412.00	90.06	7.61	30.00
12:54:00		243.00	2.75	417.50	90.08		32.00
12:56:00		245.00	2.75	423.00	90.11	7.66	34.00
12:58:00			2.75	428.50	90.39	7.94	36.00
13:00:00 13:05:00		249.00 254.00	2.75 2.75	434.00 447.75	90.46 90.58		38.00 43.00
13:10:00		259.00	2.75	461.50	90.38		43.00
13:15:00		264.00	2.75	475.25	90.60		53.00
13:20:00			2.75	489.00	90.57	8.12	58.00
13:25:00	5.00	274.00	2.75	502.75	90.56	8.11	63.00
13:30:00			2.75	516.50	90.61	8.16	68.00
13:35:00		284.00	2.75	530.25	90.81	8.36	73.00
13:40:00		289.00	2.75	544.00	90.37	7.92	78.00
13:50:00 14:00:00		299.00 309.00	2.75 2.75	571.50 599.00	90.80 90.80	8.35 8.35	88.00 0.00
14:00:00			2.75	626.50	90.80	8.35	10.00
14:20:00		319.00	0.00	626.50	91.11	8.66	20.00
14:20:12		329.20	0.00	626.50	86.55	4.10	20.20
14:20:27	0.25	329.45	0.00	626.50	84.40	1.95	20.45
14:20:41	0.23	329.68	0.00	626.50	83.80	1.35	20.68
14:21:04			0.00		83.50		21.07
14:21:21			0.00		83.30		21.35
14:21:53			0.00		83.10		21.88
14:22:07 14:23:52			0.00	626.50 626.50	83.00 82.80		22.12 23.87
14:23:52			0.00		82.80		23.87
Total Volume Pumpe		555.57	<b>306.50</b>		52.70	0.25	20.37
Average Pumping Ra			2.75				
Specific Capacity (gp			0.32				

Acronyms & Abbreviations

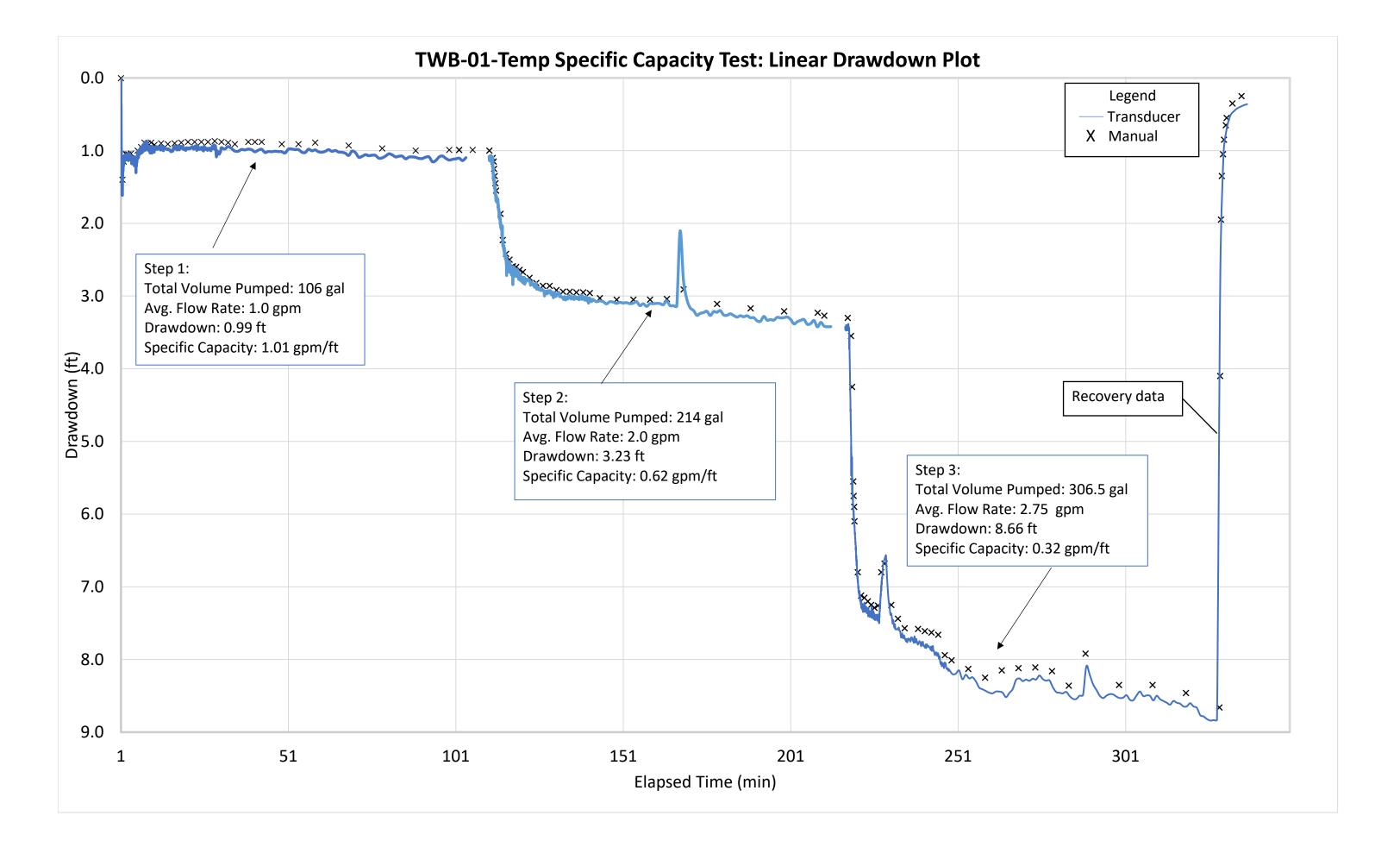
bgs = below ground surface btoc = below top of casing ft = feet gal = gallons

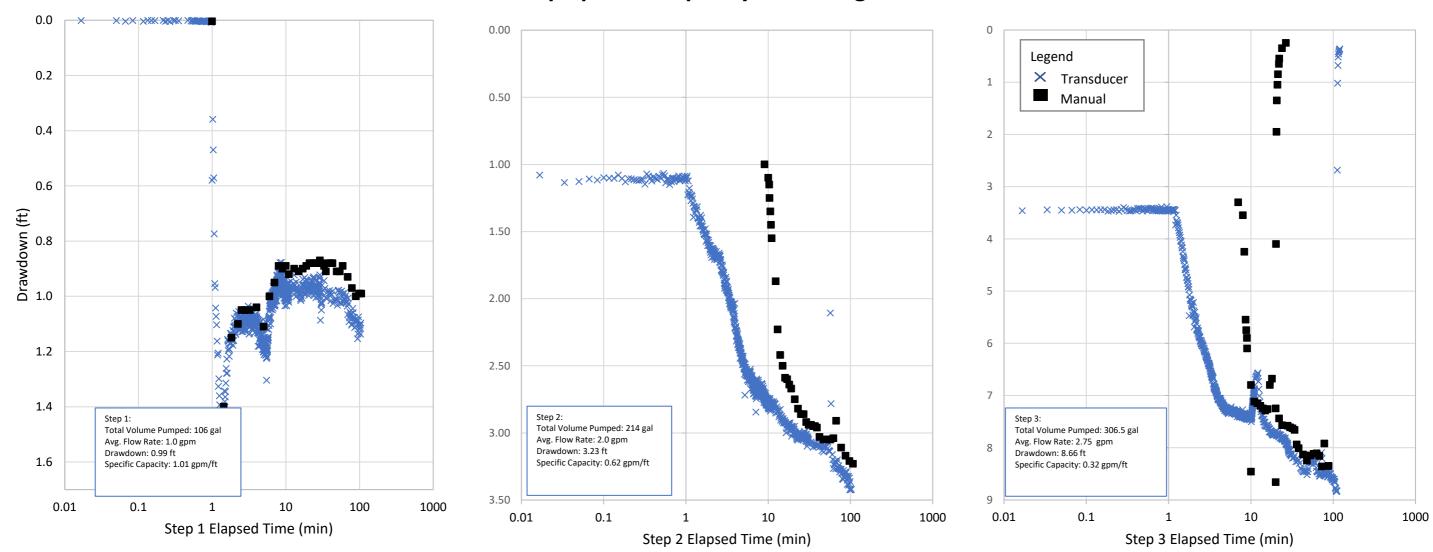
gpm = gallons per minute



Location/Well ID	TWB-01-Temp
Date	4/28/2022
Screened Interval	77 - 127 ft.
Pump Depth (ft btoc)	126
Packer Depth (ft btoc)	N/A
Packer Leak Test (Pass/Fail)	N/A
Initial Water Level (ft btoc)	82.45
Initial Totalizer Reading (gal)	N/A
Final Totalizer Reading (gal)	N/A
Approx Pumped Volume (gal)	580
Calculated Volume Purged (gal)	626.5
Difference in Volume Pumped vs. Calculated	-46.5
Number of Specific Capacity Steps	3
Pumping Rates (in order)	1, 2, and 2.75 gpm

min = minutes





## TWB-01-Temp Specific Capacity: Semi-Log Drawdown Plot

#### Specific Capacity Test



Location/Well ID	TWB-01
Date	9/28/2022
Screened Interval Tested	85-129 ft bgs
Packer Set Depth	N/A - Single Screen
Packer Seal Test	N/A - Single Screen
Tests Conducted	Four-step specific capacity test (1.5, 3, 4.5, and 6 gpm)
Purpose	Specific Capacity Test
Summary	Specific capacity; 1.5 gpm = 0.68 gpm/ft, 3.0 gpm = 0.48 gpm/ft, 4.5 gpm = 0.22 gpm/ft, and 6.0 gpm = 0.14 gpm/ft.
Notes	Manual data and transducer data for TWB-01 match well. Transducer at MW-59 malfuctioned during test and did not record data. Manual measurements from MW-59 were collected and plotted.
Oversight Signature	Ch. Saild
Date	10/14/2022



Location/Well ID	TWB-01
Date	9/28/2022
Screened Interval	85-129 bgs
Pump Depth (ft btoc)	132 ft bgs
Packer Depth (ft btoc)	N/A - Single Screen
Packer Leak Test (Pass/Fail)	N/A - Single Screen
Initial Water Level (ft btoc)	85.61
Initial Totalizer Reading (gal)	241290
Final Totalizer Reading (gal)	242549
Approx Pumped Volume (gal)	1187
Calculated Volume Purged (gal)	1259
Difference in Volume Pumped vs. Calculated	-72
Number of Specific Capacity Steps	4
Pumping Rates (in order)	1.5, 3, 4.5, and 6 gpm

Step 1 (1.5 GPM) Time (HR:MN:SEC)	Change in Time Between Measurements (min)	Elapsed Time (min)	Pumping Rate (gpm)	Total Volume Pumped (gal)	Depth to Water (ft)	Drawdown (ft)
	0.00	0.00	0.00	0.00	85.61	0.00
9:05:34	0.00	0.00	0.50	0.00	88.61	3.00
9:05:43	0.15	0.15	1.00	0.15	88.55	2.94
9:06:00	0.28	0.43	1.49	0.57	88.42	2.81
9:07:00	1.00	1.43	1.59	2.16	88.03	2.42
9:08:00	1.00	2.43	1.52	3.68	87.86	2.25
9:09:00	1.00	3.43	1.56	5.24	87.83	2.22
9:10:00	1.00	4.43	1.56	6.80	87.79	2.18
9:11:00	1.00	5.43	1.52	8.32	87.78	2.17
9:12:00	1.00	6.43	1.56	9.88	87.77	2.16
9:13:00	1.00	7.43	1.56	11.44	87.77	2.16
9:14:00	1.00	8.43	1.56	13.00	87.77	2.16
9:15:00	1.00	9.43	1.56	14.56	87.78	2.17
9:17:00	2.00	11.43	1.54	17.64	87.78	2.17
9:19:00	2.00	13.43	1.51	20.66	87.79	2.18
9:21:00	2.00	15.43	1.54	23.74	87.80	2.19
9:23:00	2.00	17.43	1.54	26.82	87.81	2.20
9:25:00	2.00	19.43	1.54	29.90	87.82	2.21
9:27:00	2.00	21.43	1.52	32.94	87.82	2.21
9:29:00	2.00	23.43	1.52	35.98	87.82	2.21
9:31:00	2.00	25.43	1.52	39.02	87.82	2.21
9:33:00	2.00	27.43	1.52	42.06	87.82	2.21
9:35:00	2.00	29.43	1.52	45.10	87.83	2.22
9:40:00	5.00	34.43	1.54	52.80	87.83	2.22
9:45:00	5.00	39.43	1.52	60.40	87.83	2.22
9:50:00	5.00	44.43	1.52	68.00	87.86	2.25
9:55:00	5.00	49.43	1.52	75.60	87.85	2.24
10:00:00	5.00	54.43	1.52	83.20	87.85	2.24
10:05:00	5.00	59.43	1.52	90.80	87.85	2.24
10:15:00	10.00	69.43	1.52	106.00	87.86	2.25
10:25:00	10.00	79.43	1.52	121.20	87.87	2.26
10:35:00	10.00	89.43	1.61	137.30	87.87	2.26
10:45:00	10.00	99.43	1.52	152.50	87.87	2.26
Total Volume Pumpe	ed for Step 1 (gal)		152.50			
Average Pumping Ra			1.54			
Specific Capacity (gp			0.68			



	Locati	on/Well ID	TWB-01				
		Date	9/28/202				
Screened Interval			85-129 bgs				
Pump Depth (ft btoc)			132 ft bg	132 ft bgs			
Packer Depth (ft btoc)			N/A - Single Screen				
Packer Leak Test (Pass/Fail)				N/A - Single Screen			
	Initial Water Lev		85.61				
	Initial Totalizer Reading (gal)			241290			
	Final Totalizer Re	eading (gal)	242549				
Approx Pumped Volume (gal)			1187				
	culated Volume P		1259				
	lume Pumped vs.		-72				
Numl	per of Specific Cap						
	Pumping Rate	s (in order)	1.5, 3, 4.5	5, and 6 gpm			
Step 2	Change in Time	Elapsed					Elapsed
(3 GPM) 	Between	Time from			<b>D</b>	- ·	Time from
Time	measurements	Test Start	Rate	Total Volume	Depth to	Drawdown	Step 2 Start
(HR:MN:SEC)	(min)	(min)	(gpm)	Pumped (gal)	Water (ft)	(ft)	(min)
10:50:00	0.00	105.00	1.50	152.50	07.07	2.26	0.00
10:50:10	0.17	105.17		152.50	87.97	2.36	0.17
10:50:18	0.13	105.30		152.50	88.11	2.50	0.30
10:50:50	0.53	105.83	2.00	152.50	88.54	2.93	0.83
10:51:00	0.17	106.00	2.96	153.00	88.65	3.04	1.00
10:52:00 10:53:00	1.00 1.00	107.00 108.00	2.90 2.88	155.90 158.78	89.06	3.45 3.75	2.00
					89.36 89.37		3.00
10:54:00	1.00	109.00	3.14	161.92		3.76	4.00
10:55:00	1.00	110.00	3.06	164.98	89.89	4.28	5.00
10:56:00	1.00	111.00	3.02	168.00	90.05	4.44	6.00
10:57:00 10:58:00	1.00	112.00 113.00	3.00 3.00	171.00 174.00	90.17 90.29	4.56	7.00
10:58:00	1.00	113.00		174.00	90.29	4.68	9.00
10:59:00	1.00	114.00	3.00	177.00	90.40	4.79	9.00
11:00:00	2.00	115.00		180.00	90.47	4.86	10.00
11:02:00	2.00	117.00		185.84	90.57	4.96	12.00
11:04:00	2.00	119.00	2.92	191.68	90.61	5.00	14.00
11:08:00	2.00	121.00	2.90	203.24	90.65	5.04	18.00
11:10:00	2.00	125.00	2.88	203.24	90.67	5.07	20.00
11:12:00	2.00	123.00		209.00	90.68	5.08	20.00
11:12:00	2.00	127.00	2.88	220.52	90.89	5.08	22.00
11:16:00	2.00	131.00			90.71	5.10	
11:18:00	2.00	133.00	2.88	232.00	90.72	5.10	28.00
11:20:00	2.00	135.00	2.86	232.00	90.73	5.11	30.00
11:25:00	5.00	140.00	2.86	252.02	90.77	5.16	35.00
11:30:00	5.00	145.00	2.86	266.32	90.81	5.20	40.00
11:35:00	5.00			280.62	90.83	5.20	45.00
11:40:00	5.00	155.00		294.92	90.85	5.24	50.00
11:45:00	5.00	160.00	2.93	309.57	91.32	5.71	55.00
11:50:00	5.00	165.00	2.88	323.97	91.19	5.58	60.00
12:00:00	10.00	175.00	2.98	353.77	91.52	5.91	70.00
12:10:00	10.00	185.00		384.37	91.62	6.01	80.00
12:20:00	10.00	195.00	3.02	414.57	91.81	6.20	90.00
12:30:00	10.00	205.00			91.81	6.20	100.00
12:40:00	10.00	215.00	2.96	473.77	91.81	6.20	110.00
12:50:00	10.00	225.00	2.93	503.07	91.76	6.15	120.00
al Volume Pumpe			350.56				
erage Pumping Ra	1 10 /		2.94				
			2.94				



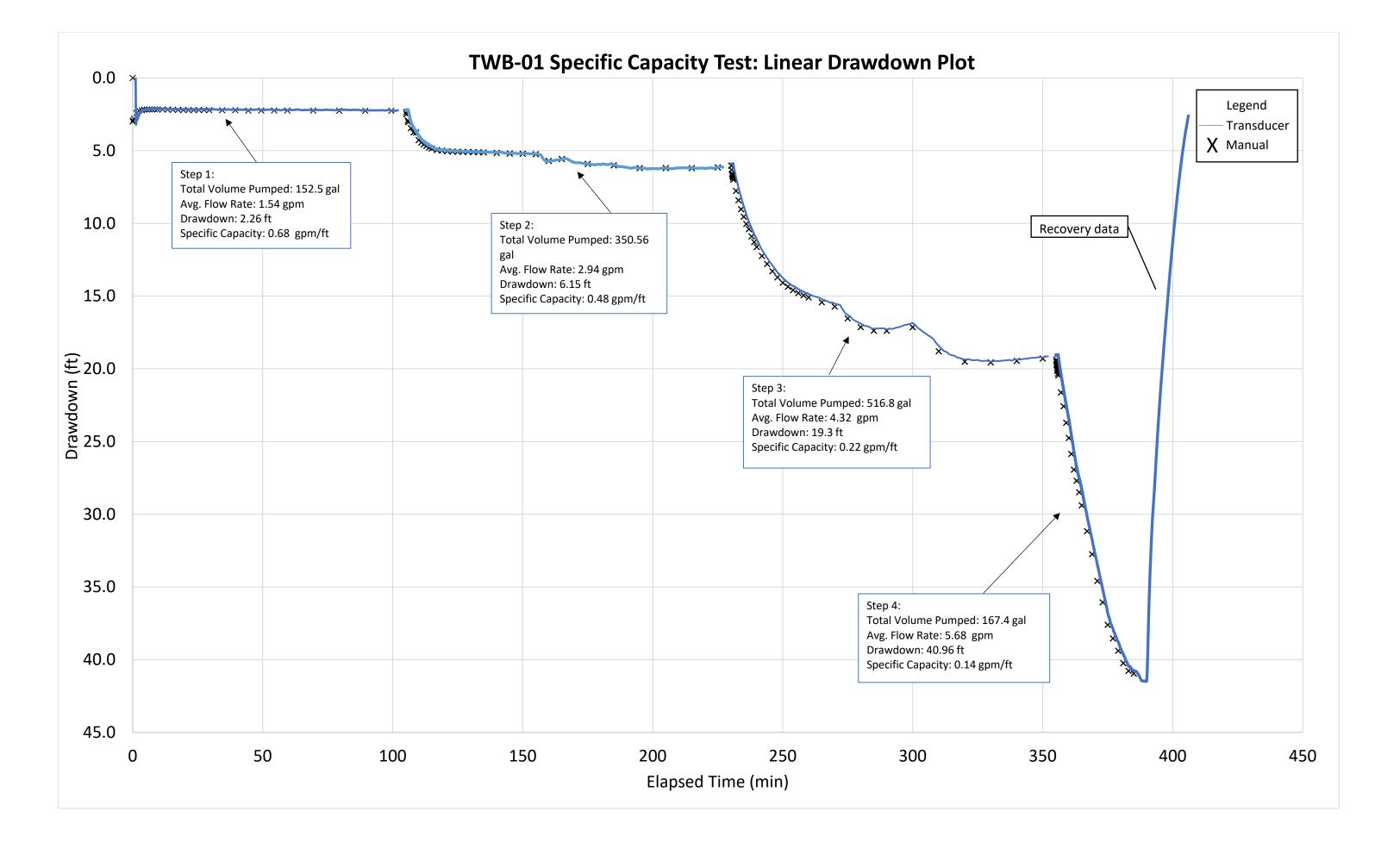
	Locati	on/Well ID		2			
	Concern	Date ed Interval	9/28/202				
				-			
		th (ft btoc)					
	•	th (ft btoc)		gle Screen			
Packer Leak Test (Pass/Fail) Initial Water Level (ft btoc)			N/A - Single Screen 85.61				
	Initial Totalizer Re	. ,	241290				
	Final Totalizer Re	0.07					
	Approx Pumped V	0.07					
	culated Volume P						
	lume Pumped vs.	<b>U</b> . <b>U</b> .					
	per of Specific Cap						
	Pumping Rate			5, and 6 gpm			
		- (		,			
Step 3	Change in Time	Elapsed					Elapsed
( 4.5 gpm)	Between	Time from	Pumping	Total Volume			Time from
Time	Measurements	Test Start	Rate	Pumped	Depth to	Drawdown	Step 3 Star
(HR:MN:SEC)	(min)	(min)	(gpm)	(Gallons)	Water (ft)	(ft)	(min)
12:55:00	0.00	230.00		503.07			0.0
12:55:12	0.20	230.20		503.70	91.65	6.04	0.2
12:55:21	0.15	230.35	3.37	504.21	91.93	6.32	0.3
12:55:34	0.22	230.57	3.56	504.98	92.18	6.57	0.5
12:55:40	0.10	230.67	3.74	505.35	92.27	6.66	0.6
12:55:44	0.07	230.73	3.93	505.61	92.35	6.74	0.7
12:55:51	0.12	230.85	4.11	506.09	92.41	6.80	0.8
12:55:54	0.05	230.90	4.30	506.31	92.48	6.87	0.9
12:56:00	0.10	231.00	4.48	506.76	92.61	7.00	1.0
12:57:00	1.00	232.00	4.47	511.23	93.38	7.77	2.0
12:58:00 12:59:00	1.00 1.00	233.00 234.00		515.68 520.12	94.02 94.64	<u>8.41</u> 9.03	3.0
12:39:00	1.00	234.00	4.44	520.12	94.04	9.03	5.0
13:01:00	1.00	235.00	4.44	528.96	95.65	10.04	6.0
13:02:00	1.00	237.00	4.38	533.34	96.01	10.04	7.0
13:03:00	1.00	238.00	4.37	535.54	96.51	10.40	8.0
13:04:00	1.00	239.00		542.08	96.89	11.28	9.0
13:05:00	1.00	240.00	4.37	546.45	97.24	11.63	10.0
13:07:00	2.00	242.00	4.36	555.17	97.85	12.24	12.0
13:09:00	2.00	244.00	4.34	563.85	98.40	12.79	14.0
13:11:00	2.00	246.00	4.32	572.49	98.90	13.29	16.0
13:13:00	2.00	248.00	4.25	580.99	99.32	13.71	18.0
13:15:00	2.00	250.00	4.25	589.49	99.69	14.08	20.0
13:17:00	2.00	252.00	4.20	597.89	99.97	14.36	22.0
13:19:00	2.00	254.00	4.22	606.33	100.20	14.59	24.0
13:21:00	2.00	256.00	4.22	614.77	100.40	14.79	26.0
13:23:00	2.00	258.00	4.20	623.17	100.56	14.95	28.0
13:25:00	2.00	260.00	4.20	631.57	100.71	15.10	30.0
13:30:00	5.00	265.00	4.18	652.47	101.04	15.43	35.0
13:35:00	5.00	270.00	4.20	673.47	101.33	15.72	40.0
13:40:00	5.00	275.00		695.37	102.15	16.54	45.0
13:45:00	5.00	280.00	4.34	717.07	102.74	17.13	50.0
13:50:00	5.00	285.00	4.25	738.32	102.99	17.38	55.0
13:55:00	5.00	290.00	4.15	759.07	103.00	17.39	60.0
14:05:00	10.00	300.00	4.47	803.77	102.75	17.14	70.0
14:15:00	10.00	310.00		849.47	104.40	18.79	80.0
14:25:00	10.00	320.00	4.34	892.87	105.12	19.51	90.0
14:35:00	10.00	330.00		935.67	105.17	19.56	100.0
14:45:00	10.00	340.00	4.22	977.87	105.07	19.46	110.0
14:55:00	10.00	350.00	4.20	1019.87	104.91	19.30	120.0
al Volume Pumpe			516.80				
erage Pumping Ra	tolanmi		4.32				

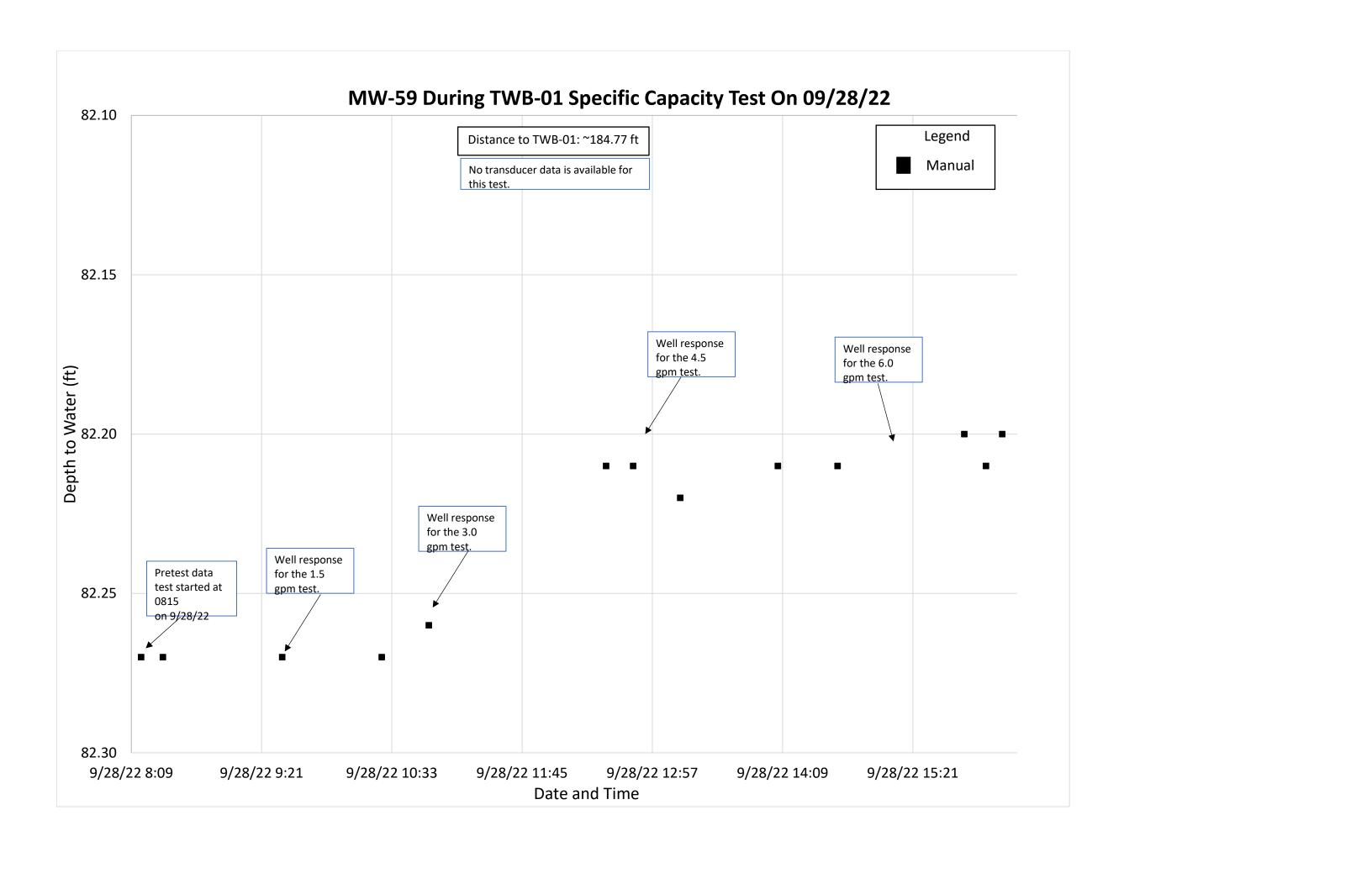


	Locati		TWB-01				
Location/Well ID				2			
Date Sereened Interval			9/28/2022				
Screened Interval			85-129 bgs				
Pump Depth (ft btoc)			132 ft bgs				
Packer Depth (ft btoc) Packer Leak Test (Pass/Fail) Initial Water Level (ft btoc) Initial Totalizer Reading (gal) Final Totalizer Reading (gal) Approx Pumped Volume (gal) Calculated Volume Purged (gal) Difference in Volume Pumped vs. Calculated Number of Specific Capacity Steps Pumping Rates (in order)			N/A - Single Screen 85.61 241290 242549 1187 1259 -72 4				
	Pumping Rate	s (in order)	1.5, 3, 4.5, and 6 gpm				
Step 4 (6 gpm) Time (HR:MN:SEC)	Change in Time Between Measurements (min)	Elapsed Time from Test Start (min)	Pumping Rate (gpm)	Total Volume Pumped (Gallons)	Depth to Water (ft)	Drawdown (ft)	Elapsed Time from Step 3 Start (min)
15:00:00	0.00	355.00	4.50	1019.87			0.00
15:00:11	0.18	355.18	4.65	1020.72	104.99	19.38	0.18
15:00:14	0.05	355.23	4.80	1020.96	105.12	19.51	0.23
15:00:20	0.10	355.33	4.95	1021.45	105.28	19.67	0.33
15:00:26	0.10	355.43	5.10	1021.96	105.35	19.74	0.43
15:00:33	0.12	355.55	5.25	1022.58	105.50	19.89	0.55
15:00:38	0.08	355.63	5.40	1023.03	105.63	20.02	0.63
15:00:42	0.07	355.70	5.55	1023.40	105.69	20.08	0.70
15:00:45	0.05	355.75	5.70	1023.68	105.76	20.15	0.75
15:00:54	0.15	355.90	5.85	1024.56	105.94	20.33	0.90
15:01:00	0.10	356.00	6.10	1025.17	106.06	20.45	1.00
15:02:00	1.00	357.00	6.04	1031.21	107.24	21.63	2.00
15:03:00	1.00	358.00	6.00	1037.21	108.19	22.58	3.00
15:04:00	1.00	359.00	5.96	1043.17	109.32	23.71	4.00
15:05:00	1.00	360.00	5.95	1049.12	110.37	24.76	5.00
15:06:00	1.00	361.00	5.92	1055.04	111.47	25.86	6.00
15:07:00	1.00	362.00	5.70	1060.74	112.55	26.94	7.00
15:08:00	1.00	363.00	5.44	1066.18	113.31	27.70	8.00
15:09:00	1.00	364.00	6.00	1072.18	114.10	28.49	9.00
15:10:00	1.00	365.00	5.96	1078.14	115.00	29.39	10.00
15:12:00	2.00	367.00	5.93	1090.00	116.78	31.17	12.00
15:14:00		369.00	5.92	1101.84	118.36	32.75	14.00
15:16:00	2.00	371.00	5.90	1113.64	120.20	34.59	16.00
15:18:00	2.00	373.00	5.90		121.67	36.06	18.00
15:20:00	2.00	375.00	5.46	1136.36	123.21	37.60	20.00
15:22:00	2.00	377.00	5.30	1146.96	124.15	38.54	22.00
15:24:00		379.00	5.30		125.00	39.39	24.00
15:26:00	2.00	381.00	5.21	1167.98	125.85	40.24	26.00
15:28:00		383.00	4.96		126.38		28.00
15:30:00	2.00	385.00	4.69		126.57	40.96	
otal Volume Pumpe			167.41				
verage Pumping Rate (gpm)			5.68				
pecific Capacity (gp			0.14				

#### Acronyms & Abbreviations

bgs = below ground surface btoc = below top of casing ft = feet gal = gallons gpm = gallons per minute min = minutes





## **Attachment 7**

Photo Logs (TWB-01 Temp and TWB-01)

### **ARCADIS**

CLIENT NAME: PG&E **PROJECT NAME / LOCATION: OVERDRILL PHOTO LOG:** Topock Compressor Station, Needles, **TWB-01-TEMP WELL/TWB-01 PILOT BOREHOLE** California Arcadis PROJECT NO: 30126255 PHOTOS LAST ADDED: 9/8/2022 TWB-01 0 to 136 ft Core Depth: 0 to 7 Core Depth: 7 to 17 Core Depth: 17 to 27 Description: TWB-01-Temp Well 2-inch diameter Description: TWB-01-Temp Well 2-inch diameter

SCH 80 PVC removed by overdrilling Date: 8/16/2022



SCH 80 PVC removed by overdrilling Date: 8/16/2022

Description: Cemex #60 (40x70) Lapis Lustre Sand removed by overdrilling Date: 8/16/2022



Core Depth: 17 to 27 SCH 80 PVC removed by overdrilling Date: 8/16/2022



Core Depth: 17 to 27 Description: TWB-01-Temp Well 2-inch diameter Description: TWB-01-Temp Well 2-inch diameter SCH 80 PVC removed by overdrilling Date: 8/16/2022



Core Depth: 27 to 34 Description: TWB-01-Temp Well 2-inch diameter SCH 80 PVC removed by overdrilling Date: 8/16/2022

### **ARCADIS**

**CLIENT NAME: PG&E** 

Arcadis PROJECT NO: 30126255

**OVERDRILL PHOTO LOG: TWB-01-TEMP WELL/TWB-01 PILOT BOREHOLE** 

TWB-01 0 to 136 ft

**PROJECT NAME / LOCATION:** Topock Compressor Station, Needles, California

PHOTOS LAST ADDED: 9/8/2022



Core Depth: 34 to 44 Description: Cemex #60 (40x70) Lapis Lustre Sand removed by overdrilling Date: 8/16/2022



Core Depth: 34 to 44 Description: TWB-01-Temp Well 2-inch diameter SCH 80 PVC removed by overdrilling Date: 8/16/2022



Core Depth: 44 to 54 Description: TWB-01-Temp Well 2-inch diameter SCH 80 PVC removed by overdrilling Date: 8/17/2022



Core Depth: 44 to 54 Sand removed by overdrilling Date: 8/17/2022

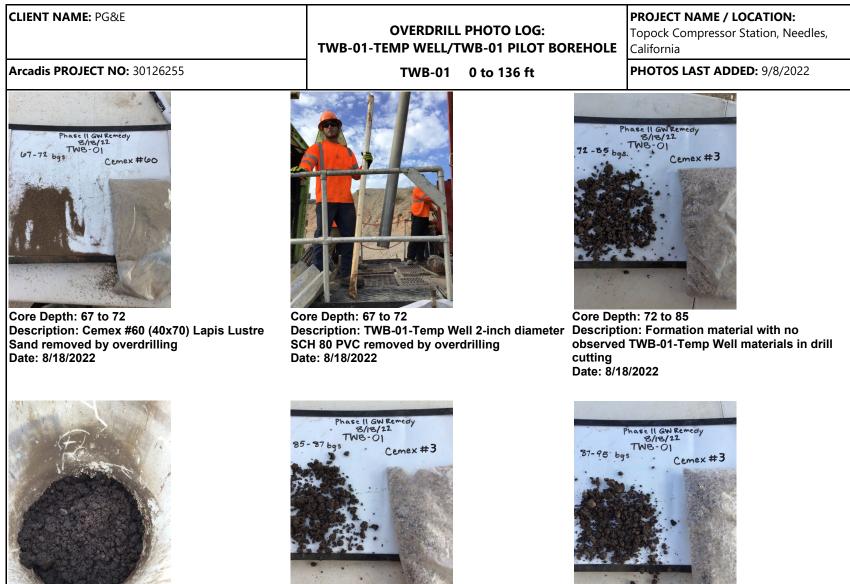


Core Depth: 54 to 57 Description: Cemex #60 (40x70) Lapis Lustre Description: Cemex #60 (40x70) Lapis Lustre Sand Description: Cemex #60 (40x70) Lapis Lustre removed by overdrilling Date: 8/17/2022



Core Depth: 57 to 67 Sand removed by overdrilling Date: 8/17/2022

### **ARCADIS**



Core Depth: 72 to 85 Description: Formation material with no observed TWB-01-Temp Well materials in drill cutting Date: 8/18/2022

Core Depth: 85 to 87 Description: Formation material with no observed TWB-01-Temp Well materials in drill cutting Date: 8/18/2022

Core Depth: 87 to 95

Description: Formation material with no observed TWB-01-Temp Well materials in drill cutting Date: 8/18/2022

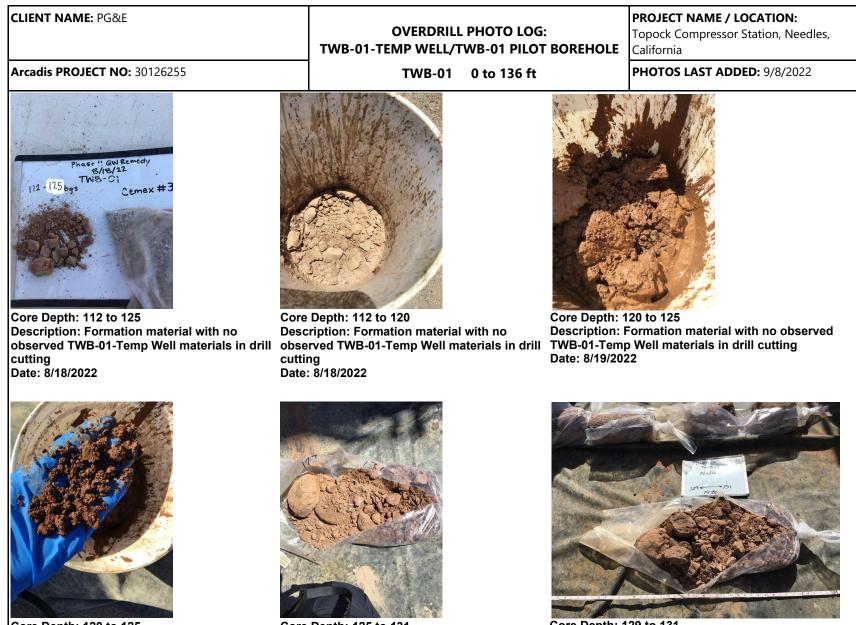
**CLIENT NAME: PG&E PROJECT NAME / LOCATION: OVERDRILL PHOTO LOG:** Topock Compressor Station, Needles, **TWB-01-TEMP WELL/TWB-01 PILOT BOREHOLE** California Arcadis PROJECT NO: 30126255 PHOTOS LAST ADDED: 9/8/2022 TWB-01 0 to 136 ft Cemex #3 Core Depth: 87 to 95 Core Depth: 95 to 100 Core Depth: 95 to 100 Description: Formation material with no Description: Formation material with no Description: Formation material with no observed observed TWB-01-Temp Well materials in drill TWB-01-Temp Well materials in drill cutting observed TWB-01-Temp Well materials in drill Date: 8/18/2022 cutting cutting Date: 8/18/2022 Date: 8/18/2022 Phase II GW Remedy 8/18/22 ase II GW RE 8/18/22 TW3-01 101-112 bas Cemex #3 Cemex #3

Core Depth: 100 to 107 Description: Formation material with no observed TWB-01-Temp Well materials in drill cutting Date: 8/18/2022



Description: Formation material with no observed TWB-01-Temp Well materials in drill cutting Date: 8/18/2022





Core Depth: 120 to 125Core DeDescription: Formation material with noDescriptionobserved TWB-01-Temp Well materials in drillloggingcuttingDate: 8/19/2022

Core Depth: 125 to 131 Description: Core sample collected for logging Date: 8/19/2022

Core Depth: 129 to 131 Description: Core sample collected for logging Date: 8/19/2022

CLIENT NAME: PG&E

Arcadis PROJECT NO: 30126255

#### OVERDRILL PHOTO LOG: TWB-01-TEMP WELL/TWB-01 PILOT BOREHOLE

TWB-01 0 to 136 ft

PROJECT NAME / LOCATION:

Topock Compressor Station, Needles, California

PHOTOS LAST ADDED: 9/8/2022

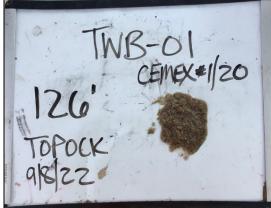


Core Depth: 133.5 to 136 Description: Core sample collected for logging Date: 8/19/2022



Core Depth: 131 to 136 Description: Core sample collected for logging Date: 8/19/2022 TWB-01 CEMEX#1/20 115' TOPOCK 9/8/22

Core Depth: 115 Description: Confirmation that Cemex #1/20 used to support drill casing was removed from borehole Date: 9/8/2022



Core Depth: 126 Description: Confirmation that Cemex #1/20 used to support drill casing was removed from borehole Date: 9/8/2022

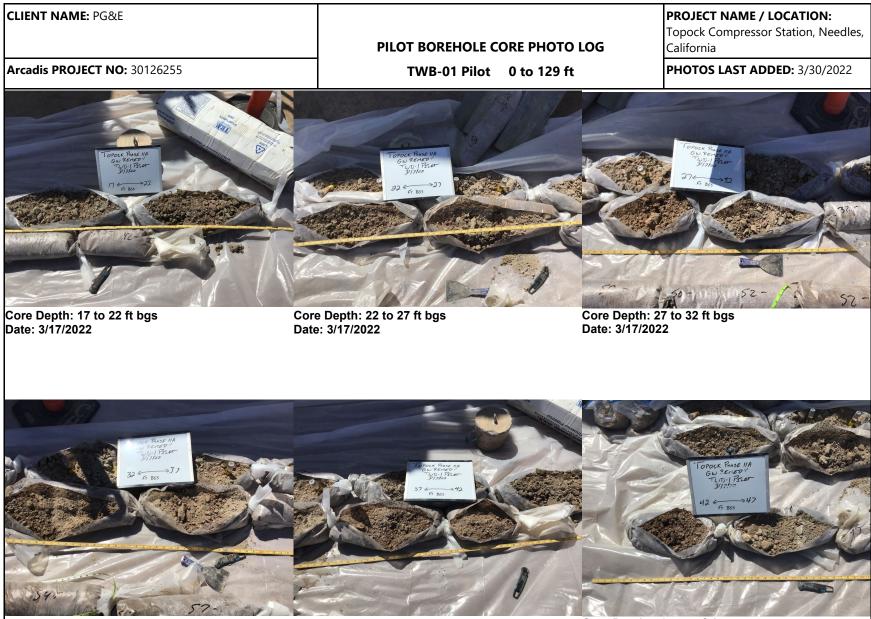
CLIENT NAME: PG&E	PILOT BOREHOLE CORE PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Topock Compressor Station, Needles, California
Arcadis PROJECT NO: 30126255	TWB-01 Pilot 0 to 129 ft	PHOTOS LAST ADDED: 3/30/2022
Core Depth: 0 to 5.2 ft bgs	Core Depth: 0 to 5.2 ft bgs	Foreigner       Foreigner         Tub Tip Tage       Tip
Description: Samples (0-5' bgs) previously collected for logging during air knifing activities. Date: 3/15/2022	Description: Samples (0-5' bgs) previously collected for logging during air knifing activities. Date: 3/15/2022	Date: 3/17/2022
Topos Rase (1) Guiderepy	Teroce Ruse III	TOPOLK RASE IIA Gw Reaspy TWISTON FRANT

Core Depth: 7 to 11 ft bgs Date: 3/17/2022



Core Depth: 11 to 15 ft bgs Date: 3/17/2022

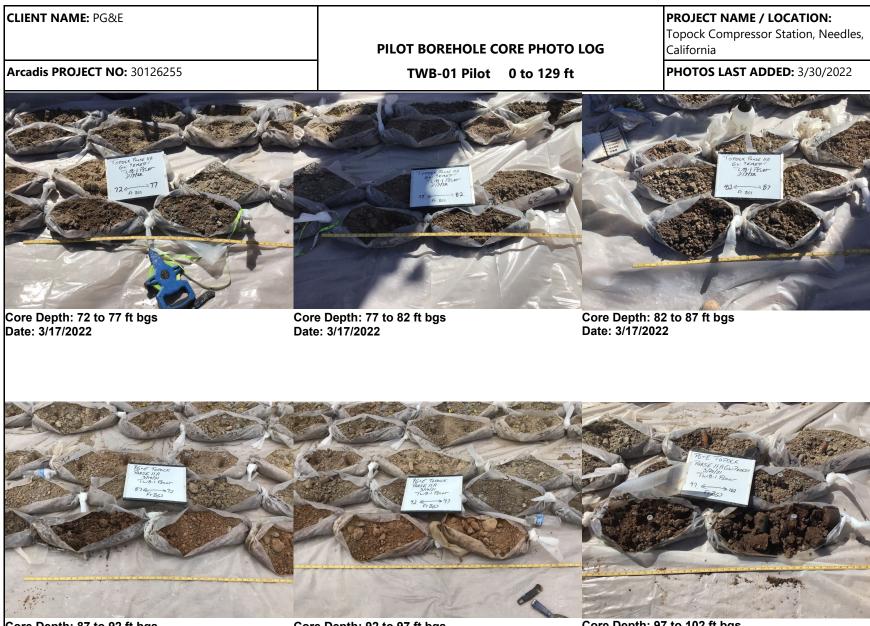
Core Depth: 15 to 17 ft bgs Date: 3/17/2022



Core Depth: 32 to 37 ft bgs Date: 3/17/2022 Core Depth: 37 to 42 ft bgs Date: 3/17/2022 Core Depth: 42 to 47 ft bgs Date: 3/17/2022



Core Depth: 57 to 62 ft bgs Date: 3/17/2022 Core Depth: 62 to 67 ft bgs Date: 3/17/2022 Core Depth: 67 to 72 ft bgs Date: 3/17/2022



Core Depth: 87 to 92 ft bgs Date: 3/19/2022 Core Depth: 92 to 97 ft bgs Date: 3/19/2022 Core Depth: 97 to 102 ft bgs Date: 3/20/2022



Date: 3/21/2022

Date: 3/21/2022

Date: 3/21/2022

CLIENT NAME: PG&E	PILOT BOREHOLE CORE PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Topock Compressor Station, Needles, California
Arcadis PROJECT NO: 30126255	TWB-01 Pilot 0 to 129 ft	PHOTOS LAST ADDED: 3/30/2022
<image/> <image/>		



CLIENT NAME: PG&E	TEMP WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01-Temp
		3/30/2022 – TWB-01-Temp: 2-inch diameter schedule 80 PVC casing and screen
		3/30/2022 – TWB-01-Temp: 2-inch diameter schedule 80 PVC screen, 20- slot size confirmation
		3/30/2022 – TWB-01-Temp: 2-inch diameter schedule 80 PVC screen, 20- slot size confirmation



CLIENT NAME: PG&E	TEMP WELL CONSTRUCTION PHOTO	PROJECT NAME / LOCATION: Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
	LOG	
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01-Temp
		3/30/2022 – TWB-01-Temp: Stainless steel centralizers
		3/30/2022 – TWB-01-Temp: 2-inch diameter 316L stainless steel end caps
Scipia duitie Cipia duitie Cipia duitie Cipia duitie Cipia duitie Cipia duitie Cipia duitie		3/30/2022 – TWB-01-Temp: Cemex #60 (40x70) Lapis Lustre Sand used for transition sand



CLIENT NAME: PG&E	TEMP WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01-Temp
AD A AND A A		3/30/2022 – TWB-01-Temp: Cemex #3 (8x20) Lapis Lustre Sand used for filter pack
		3/31/2022 – TWB-01-Temp: Installing 2-inch diameter schedule 80 PVC 20 slot well screen, with centralizer and end cap
		3/31/2022 – TWB-01-Temp: Installing 2-inch diameter schedule 80 PVC 20 slot well screen



CLIENT NAME: PG&E	TEMP WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01-TEMP
		3/31/2022 – TWB-01-Temp: Installing 2-inch diameter schedule 80 PVC casing with stainless steel centralizer
		3/31/2022 – TWB-01-Temp: Installing 2-inch diameter schedule 80 PVC casing
		3/31/2022 – TWB-01-Temp: Installing 2-inch diameter schedule 80 PVC casing



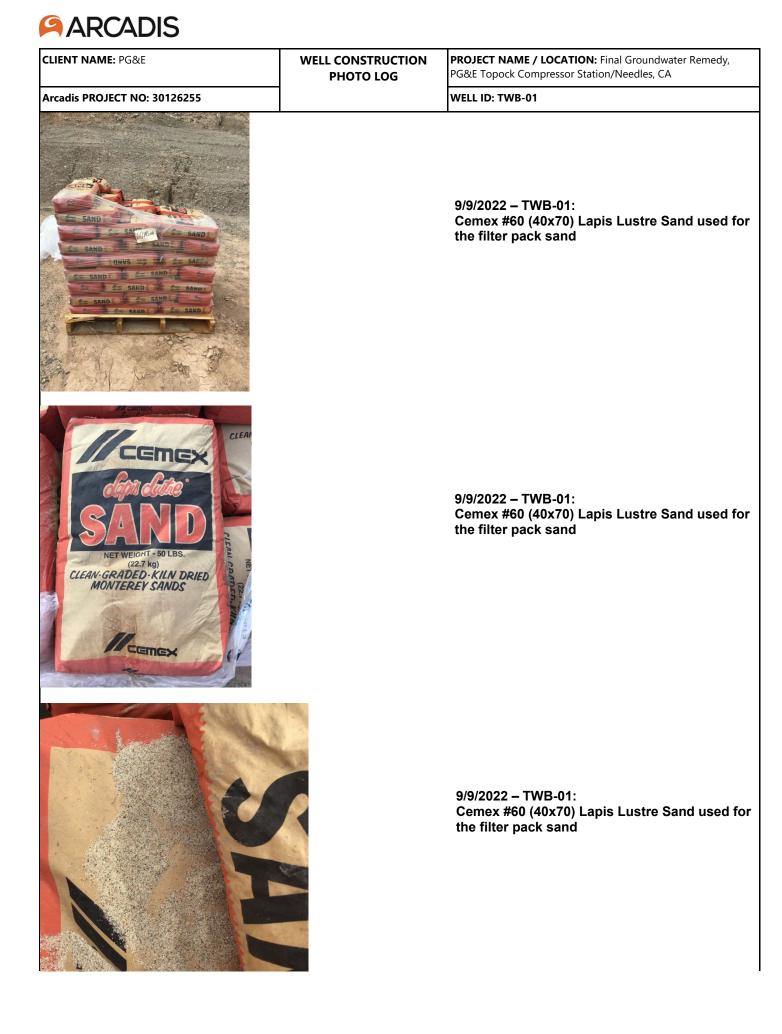
CLIENT NAME: PG&E	TEMP WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01-Temp
		3/31/2022 – TWB-01-Temp: Halliburton 3/8" Holeplug Wyoming Bentonite chips used for bentonite seal
		3/31/2022 – TWB-01-Temp: Well installation complete
		3/31/2022 – TWB-01-Temp: Manhole cover for flush mount install



CLIENT NAME: PG&E	WELL CONSTRUCTION	PROJECT NAME / LOCATION: Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255	PHOTO LOG	WELL ID: TWB-01
		9/9/2022 – TWB-01: 6-inch diameter schedule 80 PVC casing
		9/9/2022 – TWB-01: 6-inch diameter 8-slot 316L stainless steel wire wrap screen
		9/9/2022 – TWB-01: 6-inch diameter 8-slot 316L stainless steel wire wrap screen staged over coring tooling



CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	PROJECT NAME / LOCATION: Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: 6-inch diameter 8-slot 316 L stainless steel wire wrap screen slot-size confirmation
		9/9/2022 – TWB-01: 6-inch diameter Stainless Steel 316L end cap
		9/9/2022 – TWB-01: Kwik-Zip centralizers





CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: Stainless steel end cap on Schedule 80 PVC sump with Kwik-Zip centralizer
		9/9/2022 – TWB-01: Installing sump and stainless-steel screen
		9/9/2022 – TWB-01: Installing stainless steel screen



CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: Installing blank between well screens
		9/9/2022 – TWB-01: Installing blank between well screens
		9/9/2022 – TWB-01: Installing stainless steel screen



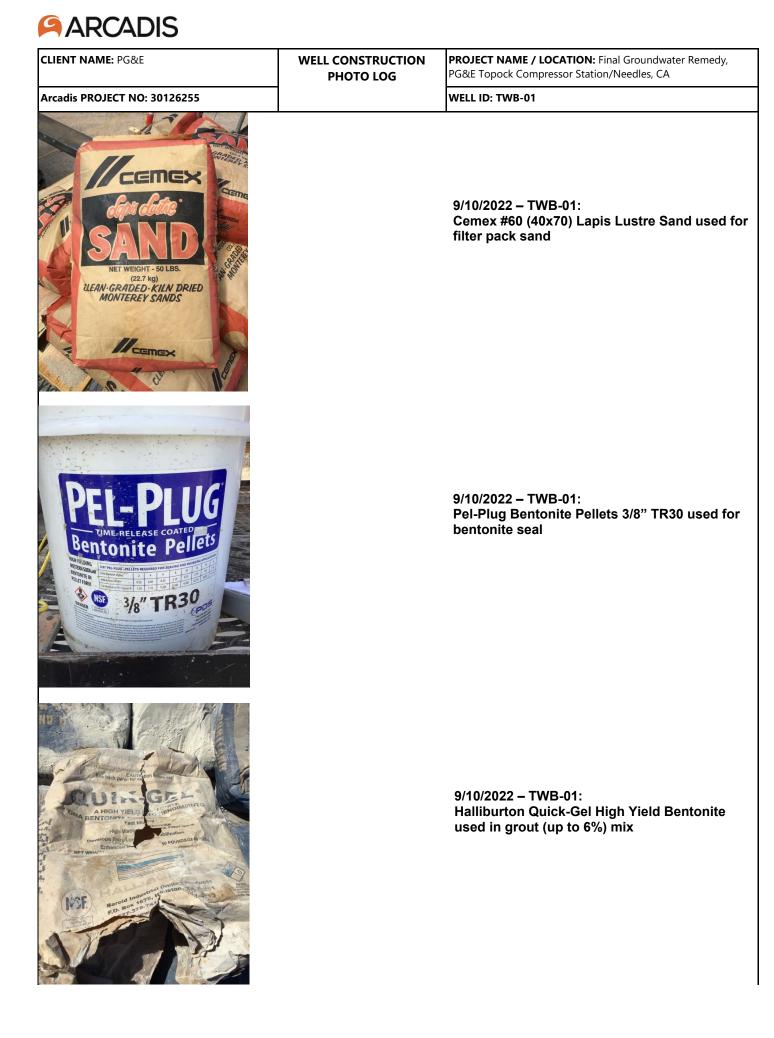
CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: Installing stainless steel screen and schedule 80 PVC casing with Kwik-Zip Centralizer
		9/9/2022 – TWB-01: Installing schedule 80 PVC casing
		9/9/2022 – TWB-01: Schedule 80 PVC casing joint to be lowered to approximately 65 feet bgs



CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	PROJECT NAME / LOCATION: Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: Installing schedule 80 PVC casing with Kwik- Zip centralizer and joint at approximately 55 ft bgs
		9/9/2022 – TWB-01: Schedule 80 PVC casing joint to be lowered to approximately 55 ft bgs
		9/9/2022 – TWB-01: Schedule 80 PVC casing joint to be lowered to approximately 35 ft bgs



CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	PROJECT NAME / LOCATION: Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		9/9/2022 – TWB-01: Schedule 80 PVC casing joint to be lowered to approximately 25 ft bgs
		9/9/2022 – TWB-01: Installing schedule 80 PVC casing with Kwik- Zip centralizer at approximately 13 ft bgs
		9/9/2022 – TWB-01: Installing schedule 80 PVC casing







CLIENT NAME: PG&E	WELL CONSTRUCTION PHOTO LOG	<b>PROJECT NAME / LOCATION:</b> Final Groundwater Remedy, PG&E Topock Compressor Station/Needles, CA
Arcadis PROJECT NO: 30126255		WELL ID: TWB-01
		10/4/2022 – TWB-01: Measuring outer diameter of "Dummy Tool" used to conduct the well alignment test (5.382 inches)
		10/4/2022 – TWB-01: Conducting the alignment test using the inductor drop pipe "Dummy Tool"
		10/4/2022 – TWB-01: Conducting the alignment test using the inductor drop pipe "Dummy Tool"



CLIENT NAME: PG&E

 
 WELL CONSTRUCTION PHOTO LOG
 PROJECT NAME / LOCATION: Final Groundwater Remedy,

 PG&E Topock Compressor Station/Needles, CA

Arcadis PROJECT NO: 30126255

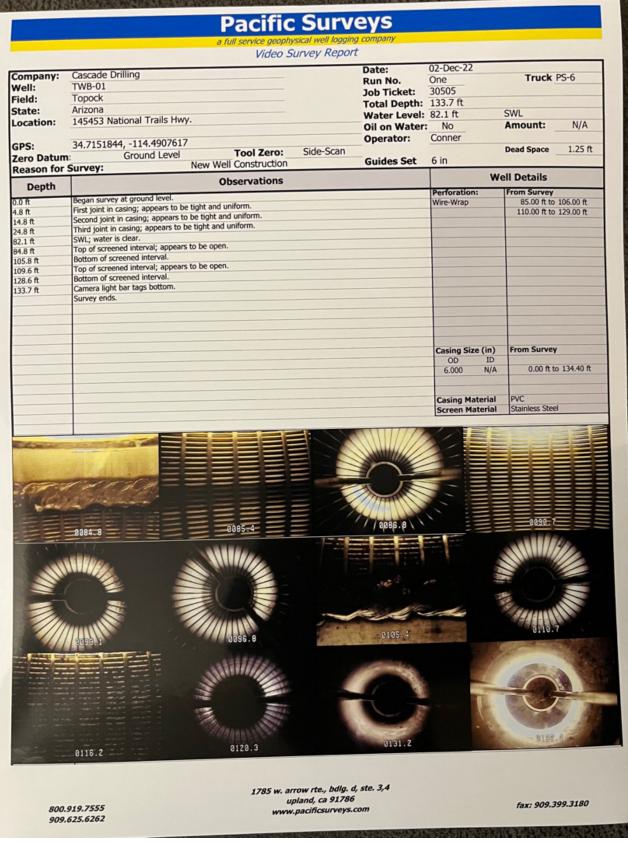
WELL ID: TWB-01



10/4/2022 – TWB-01: Secured well following installation

# **Attachment 8**

Video Survey Report



TWB-01 - Pacific Surveys video log description