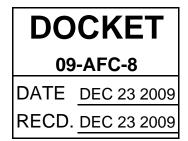


455 Capitol Mall Suite 350 Sacramento CA 95814 Tel· 916.441.6575 Fax· 916.441.6553



December 23, 2009

California Energy Commission Docket Unit 1516 Ninth Street Sacramento, CA 95814-5512

Subject: LOW RESOULTION SCAN OF THE BOREHOLE LOGS FOR OBS-1, OBS-2, TW-1, AND TW-2 FOR GENESIS SOLAR ENERGY PROJECT DOCKET NO. (09-AFC-8)

Enclosed for filing with the California Energy Commission is the original of LOW RESOULTION SCAN OF THE BOREHOLE LOGS FOR OBS-1, OBS-2, TW-1, AND TW-2 FOR GENESIS SOLAR ENERGY PROJECT, for the Genesis Solar Energy Project Docket No. (09-AFC-8).

Sincerely,

Ashley Y Jarner

Ashley Y Garner



A CALIFIC AND ADDRESS OF A CALIFORNIA AND A	°40' 24.91" W		1949	te Drilled: 05/08/2009 to 05/09/2009 illing Method: Air Rotary, 10" Diameter								
imsl	1429-715-52-62-6-62-6	ound Surface Elevation	9540	western was wardlik were	34.5474 (J. 1997) - 1004	54550-5355A	0.020.00					
	NI KARANGANA	atic Water Level: 76.7	4522	C Exploration	and a sub-	and a north	SH SEC	Survey of the				
\$	Well Depth:	tal Depth: 160 ft	at Beal To	Reviewer: N	n Farrel	Ryan I	100.000	eren deta				
								Notes:				
fell Schematic	We	Remarks	cription	Soll Geologic Description								
- Neal Coment	ould be	Collected off top of spoils of blased to liner grains.	ē.	Sand, well graded, dr	1 Silty Sar	SM						
- Neal Cement			- 60% fine - coarse gravel, 10YR 5/4	y Sand, ~ 40% clay, trace fine subangula wish brown)	sand, tra	SC		0				
	35 feet.		gular fine gravel, illowish brown).	ino sand, trace subar y moist, 10YR 5/4 (Y	Surv inte	SM)				
A A A Autor - Woll Casing -	35 feet.	Driller says he feels clay at	high dry strength, toughness, 10YR	/ lean Clay, fine sand im plasticity, medium ellowish brown).	medium	CL						
Sched 80 PVC. 5*	tt 40 foot.	Driller says back into sand a	h sili, 10YR 5/4	r graded fine Sand w ximately 20% silt, dry wish brown).	approxin	SP						
Grout			5/4 (Yellowish	y Sand, moist, 10YR).	Clayey S brown).	SC						
*	*		asticity, low DYR 5/4 (Yellowish	and, fine sand, low p ness, slightly moist, 1).	Silty San toughne: brown).	SM						



Genesis Solar, LLC Project Number: 52004617

	SC	Clayey Sand, fine sand, trace angular gravel, 10YR 5/4 (Yellowish brown)		()	
	CL/SC	Sandy lean Clay/Clayey Sand, fine sand, 10YR			 Transition Seal - Bentonite Chips
	SC	5/4 (Yellowish brown) Claycy Sand, wet, fine sand, 10YR 5/4 (Yellowish brown)	First water/cap fringe observed at approx. 95 feet	-	 Filter Pack - #2/16 Lapris Lustre Sand
1111	СН	Fat Clay, high toughness, high plasticity, 10YR 5/4 (Yellowish brown)	No cuttings. Cuttings discharge hose clogged with sediment. Likely clay. Added water to clear cuttings. Loggod fat clay in adjacont TW-1.		
	SC	Clayey Sand, ~ 60% fine sand, ~ 40% clay, 10YR 5/4 (Yellowish brown).	Water level in borehole at 113 feet bgs on 5/10/09.		
	CL	Sandy lean Clay, med-high plasticity, med toughnoss, 10YR 5/4 (Yellowish brown).			- Screened
	SM	Silty Sand, finc sand, 10YR 5/4 (Yellowish brown).			Sched-60 PVC/0.02 Inches
	SC/CL	Clayey Sand/Sandy lean Clay, line sand, 10YR 5/4 (Yellowish brown)			

Page 2 of 2



Lithologic Log of OBS-2 - 0 fbgs to 75 fbgs

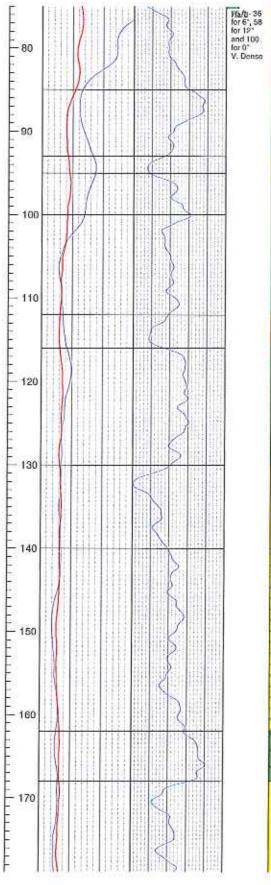
Genesis Solar, LLC Project Number: 52004617

33	- 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	vrilled: 05/2	12418	202021-22	0.000	2010/02/2020			Borehole Location: N	95678 (MED 2) A (2) 25 _ 587/1		
		Method: N	A11400-20	0.00000000	20 ALC: NO	0.000-0040409	ter		Ground Surface Elev		amsl	
2.22	×	Contracto	0.04.0404	04948493493	2802515	2003940-01			Static Water Level: N/A			
ie	olog	gist: Andie	Geh	nlhaus	en I	Reviewe	r: N	at Beal	Total Depth: 900 ft	Well Dept	th: 405 ft	
L	SN a	nd RLS have i mples were co	been (bliecte	correcte d using	d to 77 a Mod	degrees F			nd the geophysical logs Sampler and a standard 140-	pound drive hamme	r	
		GEOPHYS	SICA	2/09/9483	200							
Transfer to the second second	0	(OIIM-M) 15 RSN (OIIM-M) 15	40	Gamm (GAPI		Blows (6*) (% (Recovd Q0)	Graphic Log	USCS Soil Type	Geologic Description	Remarks	Well Schematic	
Î								sw	Well graded Sand with gravel, find to coarse sand sub-			
						5 ft -100		SM	rounded, gravel very angular to angular, color 10YR 5/4 (yellowish brown).			
						V. Dense			Silty Sand, dry			
						10 ft -100 for 6*		SP	Poorly graded Sand, fine to medium, trace gravel and silt.		Cement	
			111			V. Dense		SC	Clayey Sand, ~40% clay,			
						15 /t -100 for 18" V. Dense		SM	~60% line to coarse sand, trace line subangular gravel, 10YR 5/4 (Yellowish brown).			
				r	\$	20 ft - 100 for ? V. Donso		SP	Silly line sand, trace subangular fine gravel, slightly molst, 10YR 5/4 (Yellowish brown).			
				Z		25 It -100 for ? Hard		GL	Poorly graded Sand, line sand, some silt and clay, trace gravel.	25 feet - Tervane: 2.5		
		C			Ś	30 ft -75 for 6" and 100 for 0" Hard			Sandy lean Clay, fine sand, high dry strength, medium plasticity, medium toughness,	30 feet - 3.75 push test, Torvane: 1.0		
		1		5		35 ft -68 for 6" and 100 for 0" Hard			10YR 5/4 (Yollowish brown),	35 feet- 3.25 push test, Torvane: 1.5		
			11			40 k -68 for 6" and		SP	Poorly graded Sand with silt, line, ~20% silt, dry, 10YA 5/4		1 88	
1		16		7		100 for 0* V. Dense		CL	(Yellowish brown).		1 88	
		\sum		X		45 ft - 41 for 6° and 100 for 11° Hard	1		Sandy Clay, fine sand, dry.			
				Z	ξ	50 ft - 62 for 6", 87 for 12" 8 100 for 0" V. Dense 55 ft - 59 for 6" and 100 for		SC	Clayey Sand, moist, 10YR 5/4 (Yellowish brown).			
		2		Κ	<u>S</u>	10" V. Dense 60 ft - 61 for 6" and 100 for 7" V. Dense		SM	Silty Sand, line sand, slightly moist, 10YR 5/4 (Yollowish brown) with clay lenses			
			<	>		65 ft - 65 for 6" and 100 for 7" V. Dense						
t			1			70 ft - 22 for 6*, 34 for 12* 8	11	GL	Clay with silt and sand.	70 feet - 1.5 unconfined	188	
ſ	1111	ALIE NET		13 211		for 12° 8 100 for	1	SC	Clayey Sand, line sand, trace	compressive		

Page 1 of 9



Genesis Solar, LLC Project Number: 52004617

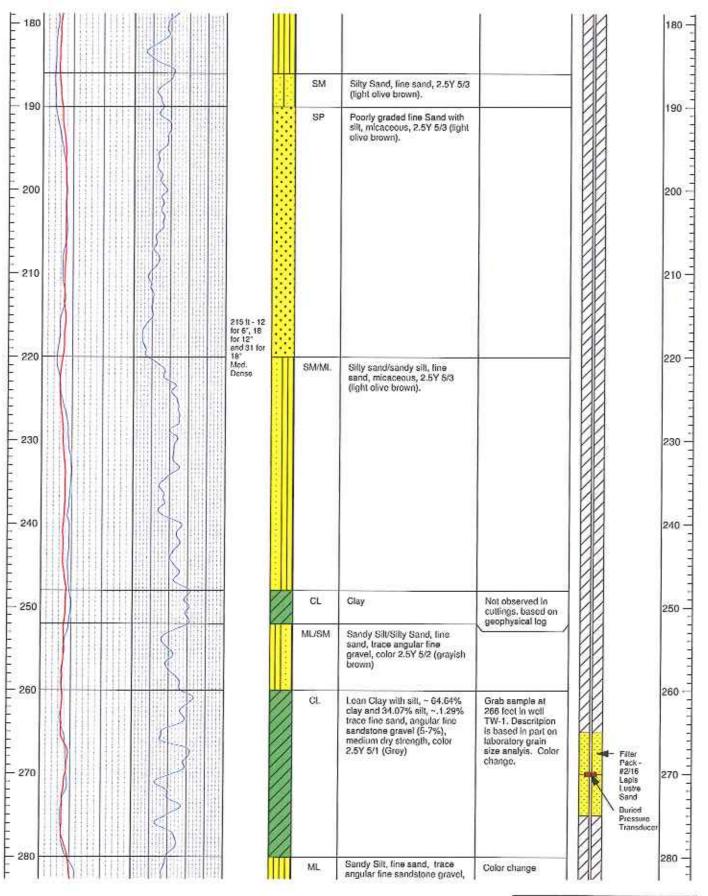


	(Yollowish brown)	75 feet - 0.75 unconfined compressive storigth		8
CL/SC	Sandy lean Clay/Clayey Sand, fine sand, 10YR 5/4 (Yellowish brown)			g
SC	Clayey Sand, fine sand, 10YR 5/4 (Yellowish brown)		- 68	
CL/SC	5/4 (Yellowish brown)	1	199	
СН	Fat Clay, high toughness, high plasticity, 10YR 5/4 (Yollowish brown).			10
SC	Cisyey Sand		- 66	11
CL	Sandy lean Clay, med-high plasticity, med toughness, 10YR 5/4 (Yellowish brown).			12
SM	Silly line Sand, micaceous, 10YR 5/4 (Yellowish brown)			13
SC/CL	Clayey Sand/Sandy Ican Clay, line sand, micaceous, 10YR 5/4 (Yellowish brown)		- Transis Seal - Bentoni Chips	21
				150
0.	Tel Olivert Sector	0. Junit		160
CH	Fat Clay with fine sand, high toughness, high plasticity, 2.5Y 5/2 (grayish brown).	Color change		
ML	Sandy silt, color 2.5Y 5/3 (light olive brown)	Color change		170

Page 2 of 9



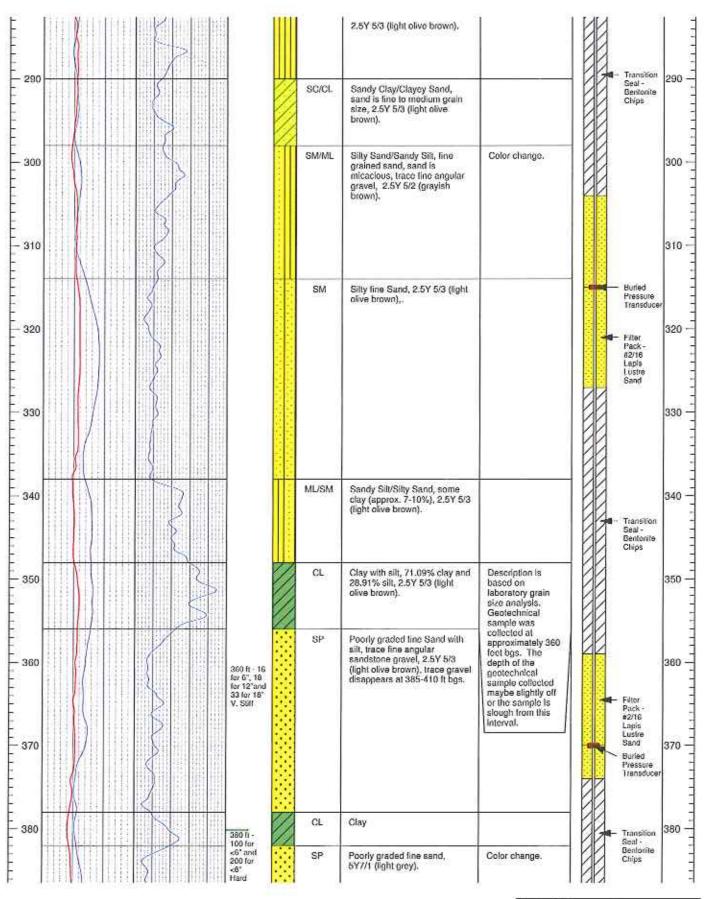
Genesis Solar, LLC Project Number: 52004617



Page 3 of 9



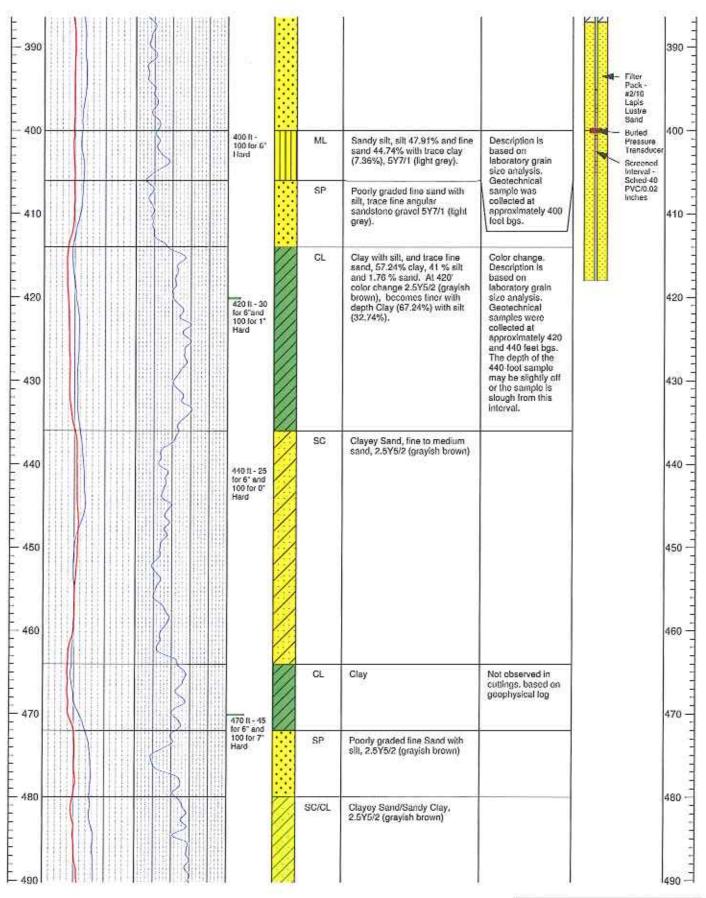
Genesis Solar, LLC Project Number: 52004617



Page 4 of 9



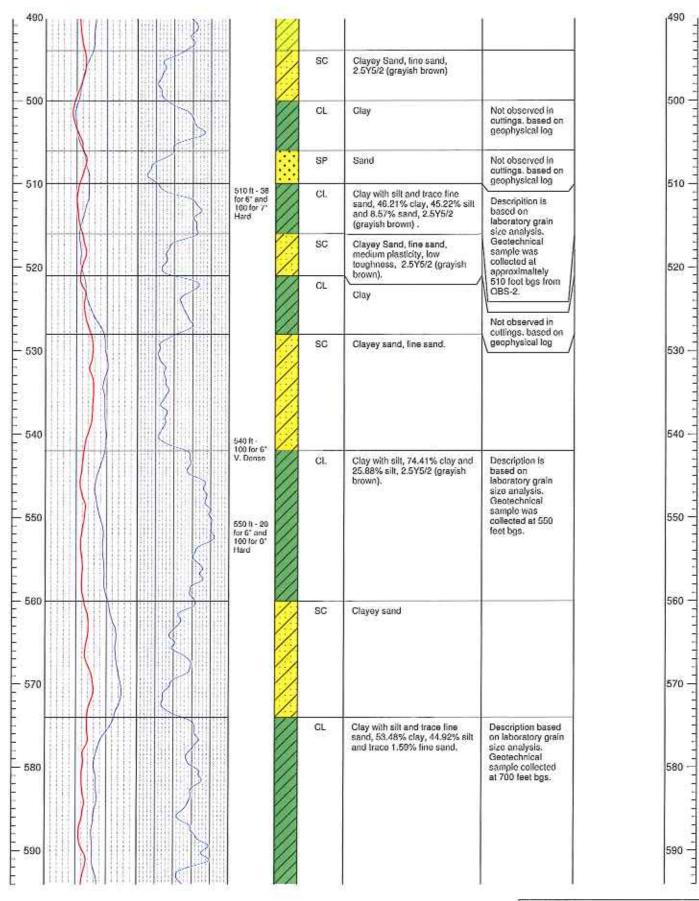
Genesis Solar, LLC Project Number: 52004617



Page 5 of 9



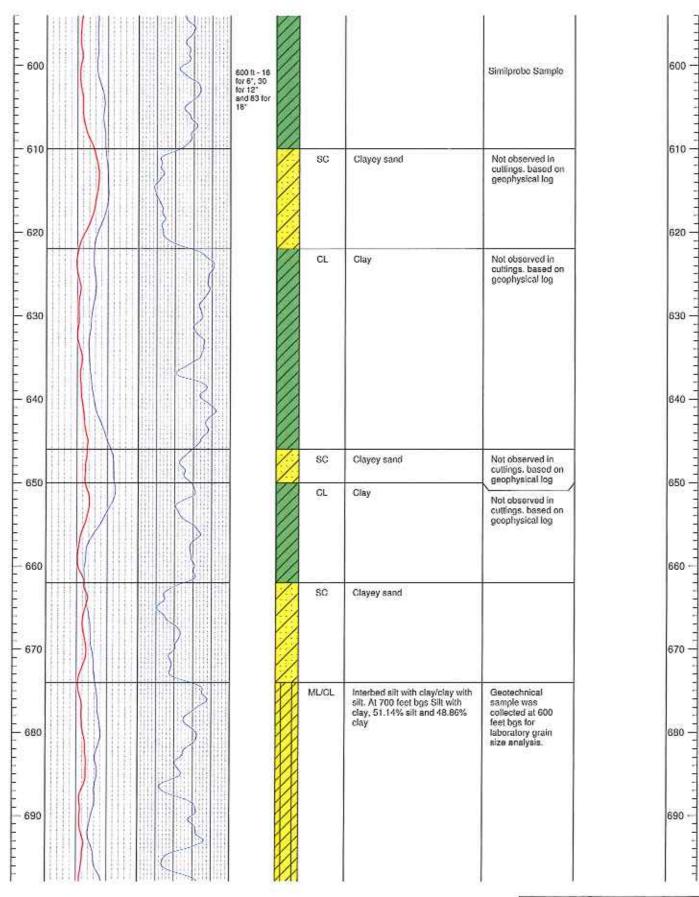
Genesis Solar, LLC Project Number: 52004617



Page 6 of 9



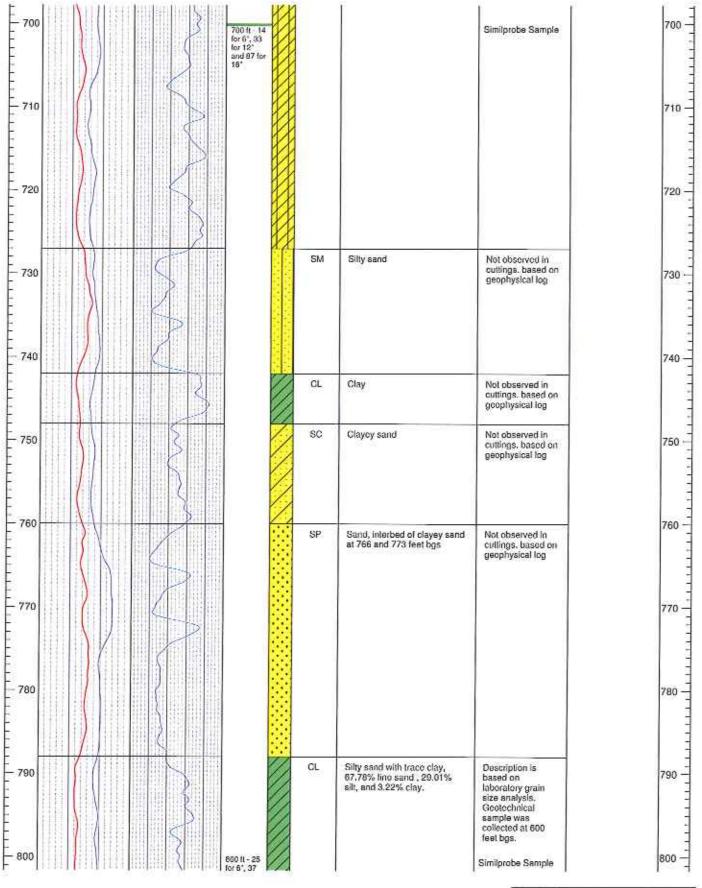
Genesis Solar, LLC Project Number: 52004617



Page 7 of 9



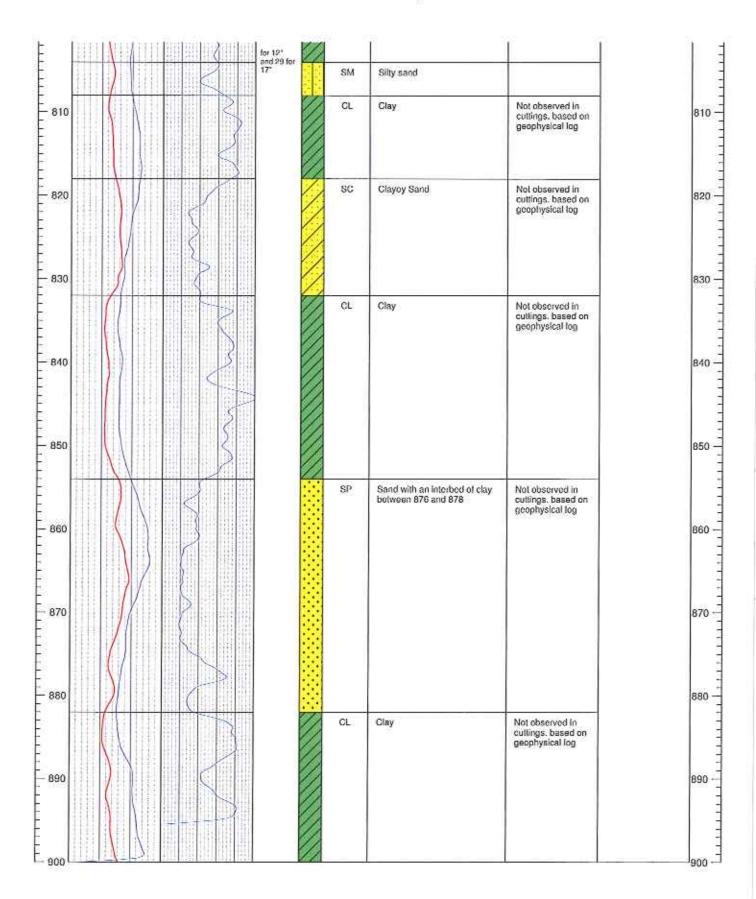
Genesis Solar, LLC Project Number: 52004617



Page 8 of 9



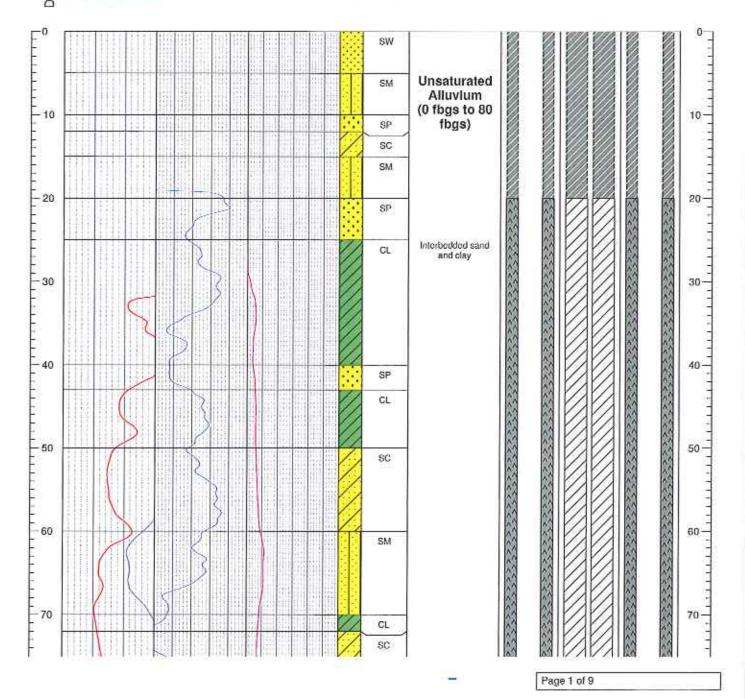
Genesis Solar, LLC Project Number: 52004617



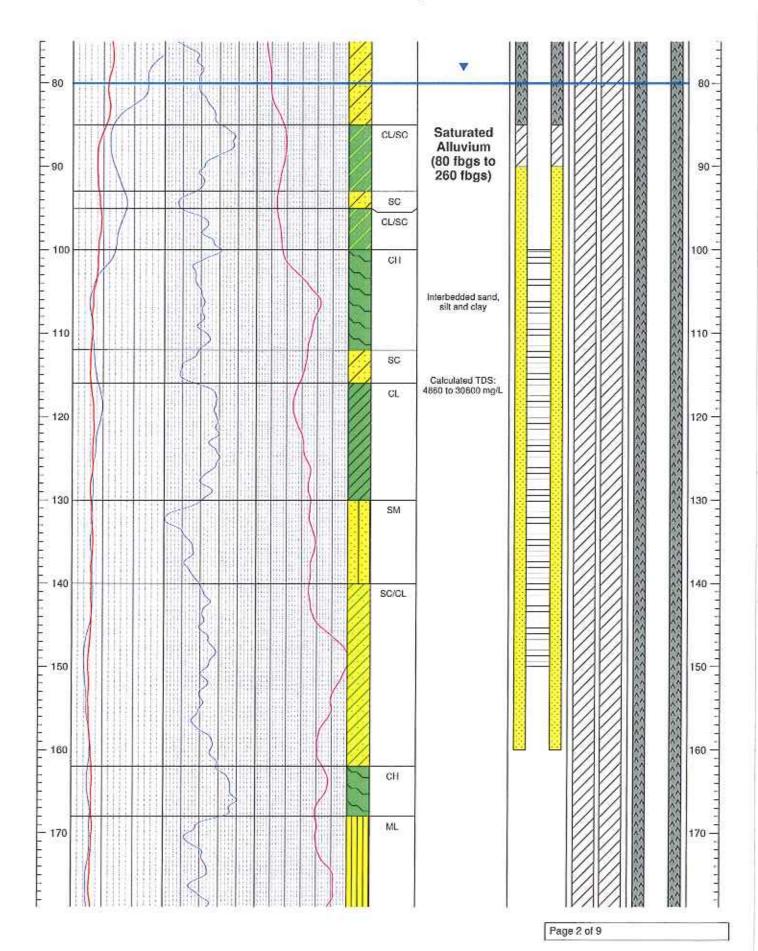
Page 9 of 9



Date	Drilled:	05/28/2	009 to 07	/02/20	09		Boreho	le Location: N	133 %	40.419' W115°03.268					
Drilli	ng Metho	d: Mud	Rotary,	10" Dia	imeter		Ground	Surface Eler	vatior	n: 383 feet amsl					
Drilli	ng Contr	actor: W	/DC Expl	oration	1		First Groundwater: 80 feet bgs								
Geol	ogist: Ar	idie Geh	nlhausen	Revie	ewer: Nat B	eal	Total D	epth: 900 ft		Well	Depth: 40	5 ft			
			ora conference ne	ISCO OIL III											
4) RSN 5) TDS	and RLS hav	e been corre	ected to 77 de	used on the arees F	e borehole geoph	ysical	logs for this v	for this well and TW well. for 0 to 550 fbgs, ar		6 M	eat Coment	Filter Pack Buried Pressure Transducer			
4) RSN 5) TDS lor 550	and RLS has calculated in	re been corri im the forma	ected to 77 de	ased on the grees F inity deterr	e borehole geoph	ysical	logs for this v	well.		6 M					
4) RSN 5) TDS	and RLS has calculated in	re been corri im the forma	ected to 77 de ition water sali	ased on the grees F inity deterr	e borehole geoph	ysical	logs for this v	well.		G Tr	rout	Buried Pressure Transducer Screen			



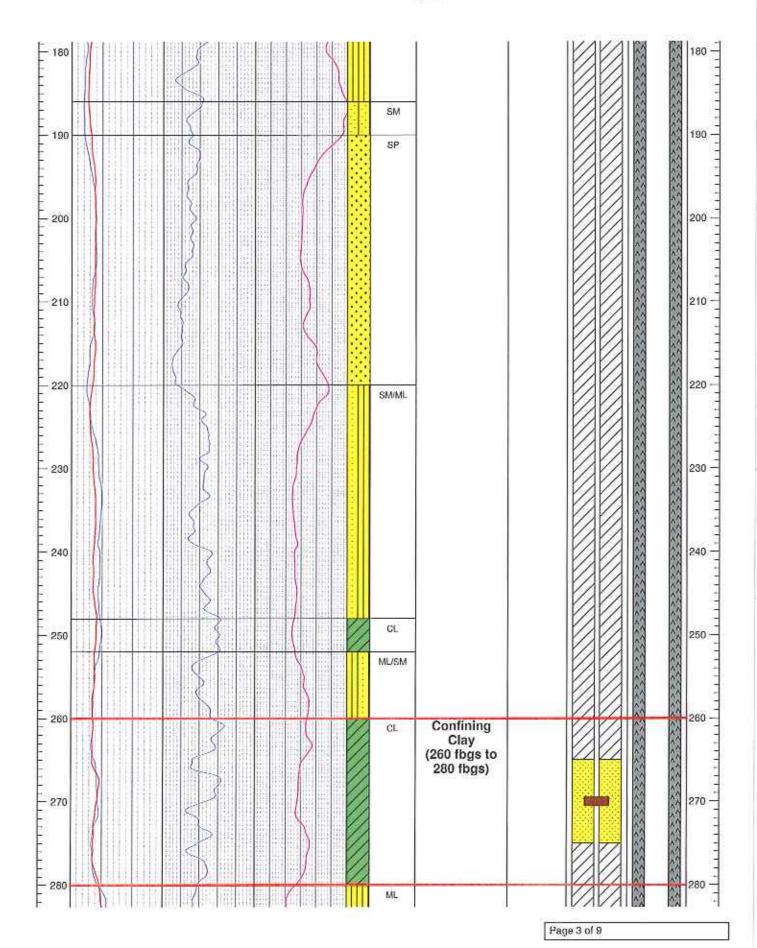




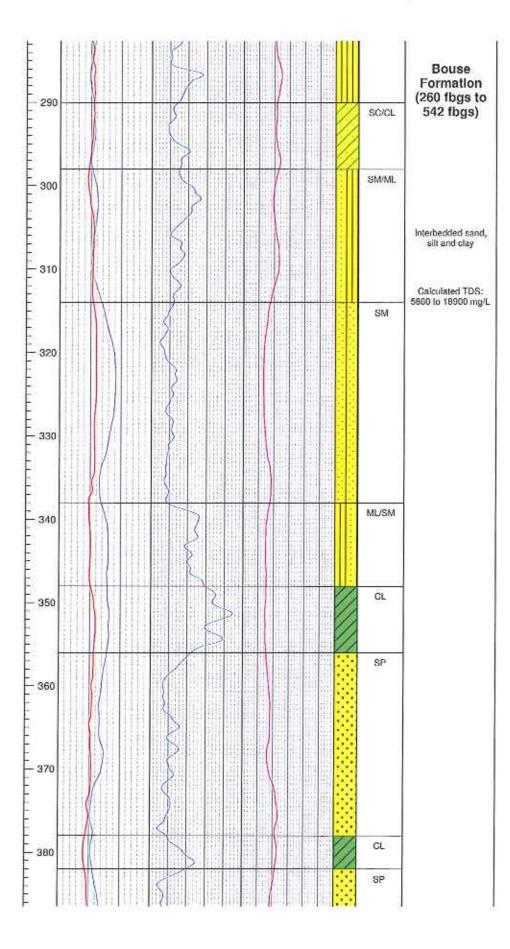
WorleyParsons

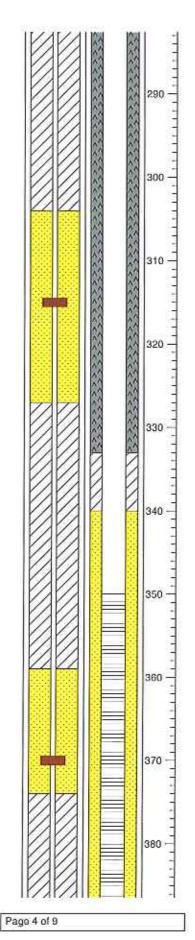
resources & energy

Calculated TDS for OBS-2

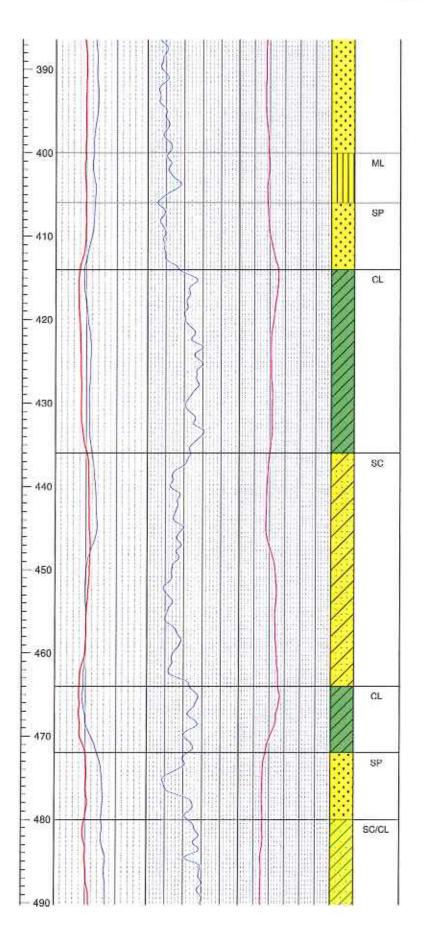


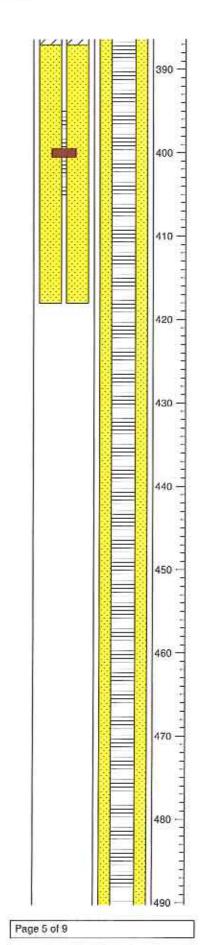










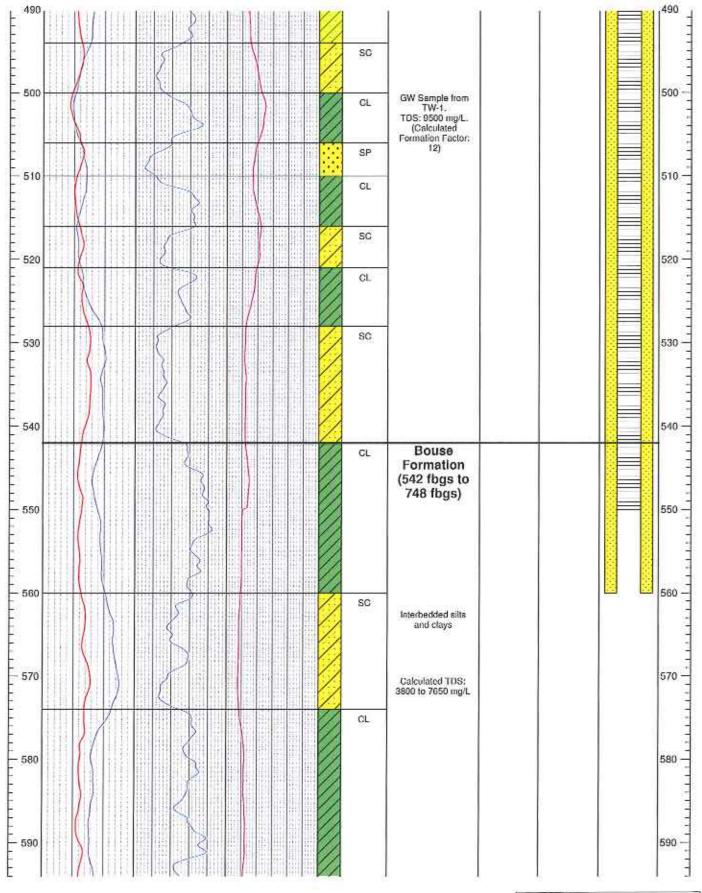


WorleyParsons

tesources & energy

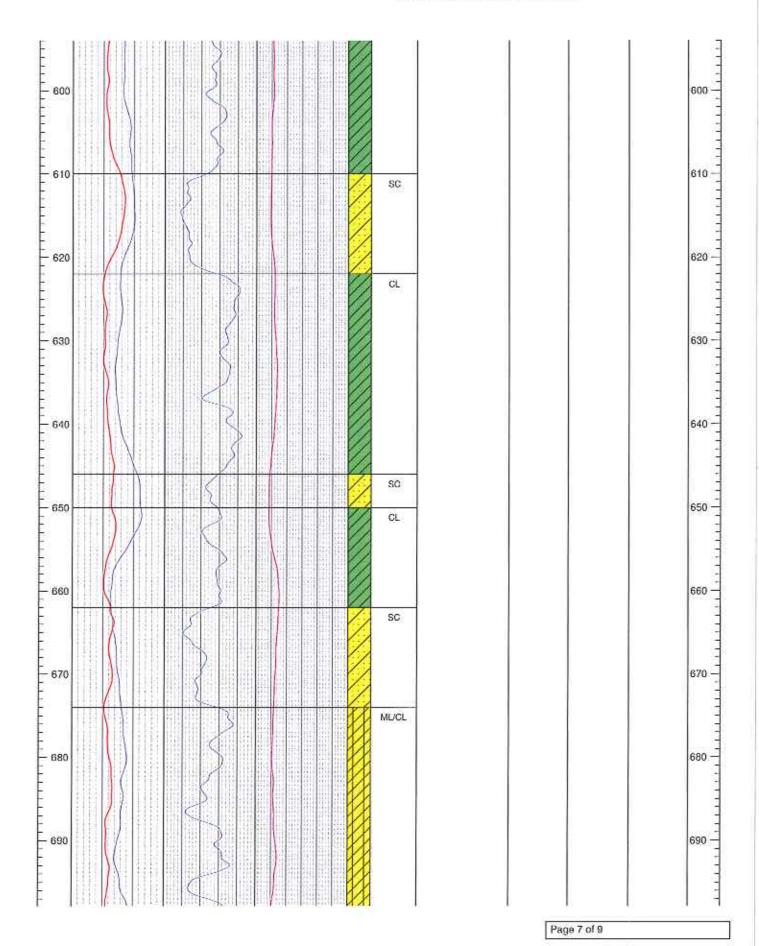
Calculated TDS for OBS-2

Genesis Solar, LLC Project Number: 52004617

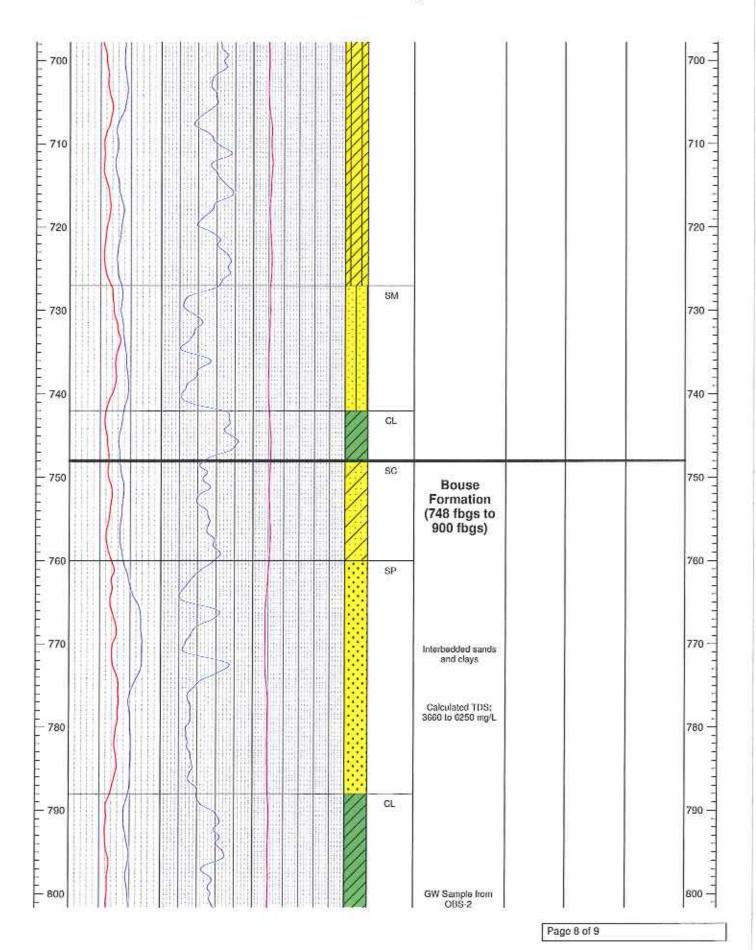


Page 6 of 9



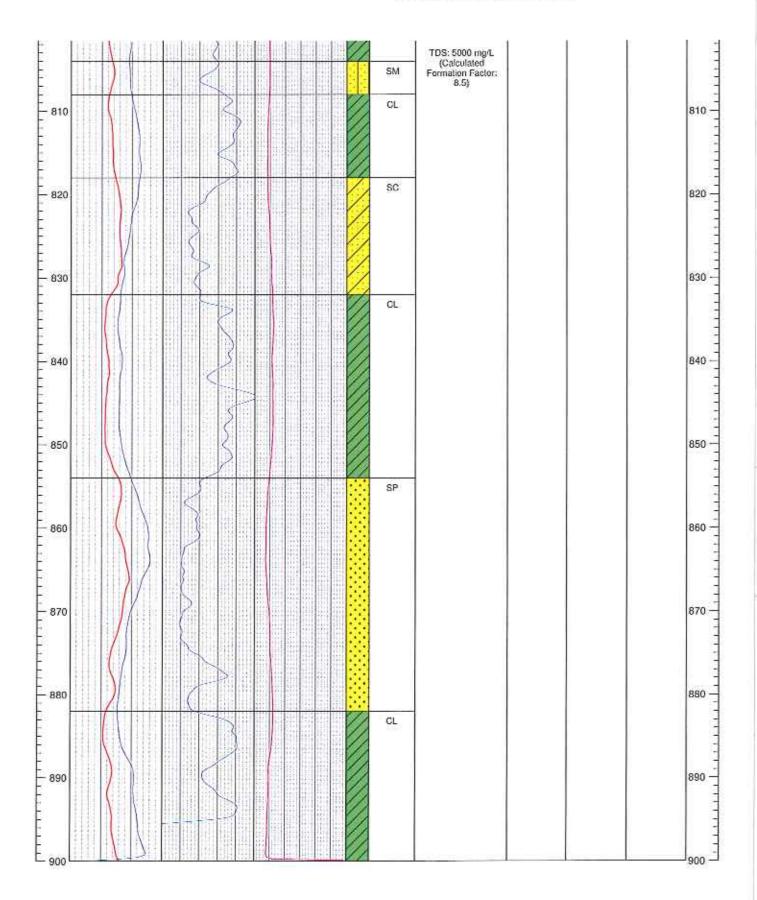








Genesis Solar, LLC Project Number: 52004617



Page 9 of 9

###	###				#####			##
##	#		#		# #			#
##	#	####	#####		# #	####	####	#
# #	#	# #	#		####	# #	# #	ŧ,
# 4	# #	#####	Ħ		# #	****	***	#
# =	# #	# #	#		# #	#	# #	#
#	##	# ##	# #	##	# #	#	# ##	#
###	##	****	###	##	特特特特特	****	*** ***	#####

....

Job : 22 Date: 12/22/2009 Time: 3:04:48 PM



Genesis Solar, LLC Project Number: 52004617

	ling Method: M			0/4-0	09		Borehole Location: N33 °40.419' W115 °03.268			
Drill	ing wethou. w	lud Rota	ary, 10'	Dia	meter		Ground Surface Elevation: 383 feet amsl			
	ling Contractor	: WDC	Explora	ation	1		Static Water Level: 86.26 feet amsl			
Geo	ologist: Nat Be	st: Nat Beal Reviewer: Nat Beal Total Depth: 564 ft Well Depth:							pth: 555 ft	
2) Fro well C	e upper 160 ft were om 160 ft to 550 ft ti OBS-2. .N and RSN logs ha	he log was we been c	adjusted	baso	d on the b	orehole g	5-1 and the geophysical log pophysical logs for this well	s and g	eotechnical sa	mples collected from
lae	GEOPHYSI	0 22								1
Jeptn - Feet	0 (0HM-M) 10 0 (0HM-M) 10 0 (0HM-M) 10	Gan 40 (GA		Graphic Log	USCS Soil Type	Ge	ologic Description	100	Remarks	Well Schemati
0			X		SM SC SM	5/4 (yell Silty sar Clayey S - coarse gravel, 1	jular to angular, color 10Yf owish brown). id, dry. Sand, ~40% clay, ~ 60% fir sand, trace fine subangula 10YR 5/4 (Yellowish brown sand, trace subangular fir			- Neal Cement
0						gravel, s	ilightly moist, 10YR 5/4 sh brown).			
		5	4		CL	strength	an Clay, fine sand, high dr , medium plasticity, mediur ss, 10YR 5/4 (Yellowish	y n		

-40	5	CL	Sandy lean Clay, fine sand, high dry strength, medium plasticity, medium toughness, 10YR 5/4 (Yellowish	â â	40-
		SP	brown). Poorly graded Sand with silt, fine, ~ 20% silt, dry, 10YR 5/4 (Yellowish brown).		1 1 1 1 1 1 1
- 50		sc	Clayey Sand, 10YR 5/4 (Yellowish brown).		50
- 60	2	SM	Silty Sand, tinc sand, low plasticity, low toughness, slightly moist, 10YR 5/4 (Yellowish brown).		60

Page 1 of 6



Genesis Solar, LLC Project Number: 52004617

o				R			SC	Clayey Sand, fine sand, trace angular gravel, 10YR 5/4 (Yellowish			8
0					\$ 			brown)			9
		/	$\left\{ \right\}$				SM	Silty Sand, fine sand, some clay likely (10%), 10YR 5/4 (Yellowish brown).			
00				A A A		1111	СН	Fat Clay, high toughness, high plasticity, 10YR 5/4 (Yellowish brown).	Large chunks of clay came out of the borehole (10-12 inches) between 100 and 120 feet bos.		10
10				5		1111			bijs.		11
20				1			CL	Sandy lean Clay,10YR 5/4 (Yellowish brown).			12
30			ζ				SM	Silly fine Sand, micaceous, 10YR 5/4 (Yellowish brown), interbeds of clay beteween 128 and 130 feet bgs and 142 and 144 feet bgs.			13
40	And a strength of the strength		Ň	\sum							14
50	and the second of the second se			2	\		SC/CL	Claycy Sand/Sandy Ioan Clay, fine sand, micaccous, 10YR 5/4 (Yellowish brown)	Large chunks of clay came out of the borehole (10-12 inches). Color change.		15
50				2						8 8	16
	-			1	1	5	СН	Fat Clay with fine sand, high toughness, high plasticity, 2.5Y 5/2 (grayish brown).	Color change, large chunks of clay came out of		
70			$\langle \rangle$				ML	Sandy Silt, low toughness, low plasticity, 2.5Y 5/3 (light olive brown)	the borehole (10-12 inches). Color change	- Grad	17

Page 2 of 6



Genesis Solar, LLC Project Number: 52004617

180		<						180 -
- 190		8			SM	Silty Sand, fine sand, 2.5Y 5/3 (light olive brown).	Rig chatter at 192 to 195 fcct bgs, could bc boulder/cobble	190 -
- 200					SP	Poorly graded fine Sand with silt, micaceous, 2.5Y 5/3 (light olive brown).	Rig chatter at 192 to 195 foot bgs, could be boulder/cobble	200 -
210		Ş						210 -
220		K			.SM/ML	Silty sand/sandy silt. Poorly graded fine sand, micaceous. Interbeds of clay betwenn 224 and 226 feet bgs	Rig chatter at 215 feet bgs, could be	220 -
- 230						and at 232 feet bgs.	boulder/cobble. Harder to drill around 225 feet bgs. RIg chatter at 237 feet bgs, could be boulder/cobble.	230 -
- 240 -			2		CL	Clay	Not observed in cuttings, based on geopysical log	240 -
250		Ś			ML/SM	Sandy Sill/Silly Sand, fine sand, trace angular fine gravel, color 2.5Y 5/2 (grayish brown)	Color change.	250 -
				4	CL ML/SM	Clay	Not observed in cuttings, based	
- 260	<u> </u>					Sendy Silt/Silty Sand, fine sand, trace angular fine gravel, color 2.5Y 5/2 (grayIsh brown)	on geopysical log	260 -
- 270					CL	Loan Clay with silt, ~ 64.64% clay and 34.07% silt, ~1.29% trace fine sand, medium toughness, med plasticity, angular fine sandstone gravel (5-7%), medium dry strength, color 2.5Y 5/1 (Grey)	Color change. Not observed in cuttings, based on geopysical log Grab Sample at 266 feet. Description is based in part on laboratory grain size analysis. Color change.	270 -
- 280 -		12			ML	Sandy Sill, fine sand, trace angular fine sandstone gravel, 2.5Y 5/3 (light	Color Change	280 -

Page 3 of 6

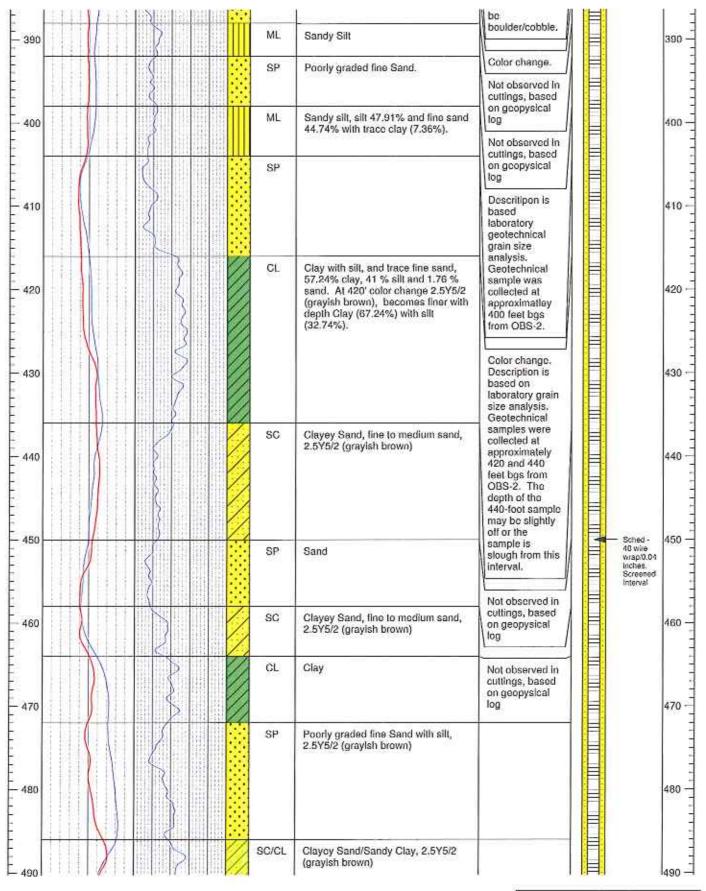


Genesis Solar, LLC Project Number: 52004617

290 -	X				olive brown).		29
290 -	$\sum_{i=1}^{n}$			SC/CL	Sandy Clay/Clayey Sand, sand is fine to medium grain size, 2.5Y 5/3 (light office brown).		23
300	}			SM/ML	Silty Sand/Sandy Silt, fine grained sand, sand is micaclous, trace line angular gravel, 2.5Y 5/2 (grayish brown).	Color change. Rig chatter at 316 ft bgs could be a boulder or large cobble. Chatter did not result in the appearance of larger grain material	30
310						larger grain material	31
320	S			SM	Silty fine Sand, 2.5Y 5/3 (light olive brown),.		32
330	8						33
340	\$			ML/SM	Sandy Sill/Silly Sand, some clay (~ 7-10%), 2.5Y 5/3 (light olive brown).	Seal Benton Chips	ilto 34
50 -	X			CL.	Clay (71.09%) with silt (28.91%),	Description	*3 35
		<u> </u>	<u> </u>	SP	71.09% clay and 28.91% silt, 2.5Y 5/3 (light olive brown).	laboratory grain	
60	Ś			or	Poorly graded line Sand with silt, trace line angular sandstone gravel, 2.5Y 5/3 (light elive brown), trace gravel disappears at 385-410 ft bgs.	size analysis. Geotechnical sample was collected at ~ 360 feet bgs from OBS-2. Depth of the geotechnical sample	36
70	<pre></pre>					collected maybe slightly off or the sample is slough from this interval.	37
	Ş					Rig Chatter at 355 feet bgs. & 375 feet bgs,	
380	$\left \right\rangle$	>		CL	Clay	likely boulder/large cobble. Rig	38
	1			SP	Poorly graded line Sand, 5Y7/1 (light grey).	Chatter 395 to 400 ft bgs could	

Page 4 of 6







Genesis Solar, LLC Project Number: 52004617

		s			
500			plasticity, low toughness, 2.5Y5/2 (grayish brown)		50
	13	c	L Clay	Not observed in cuttings, based on geopysical log	
510		s	C Clayey Sand, fine sand, medium plasticity, low toughness. At 506 ft bgs the percent sand increases slightly, 2.5Y5/2 (grayish brown).		51
	L D	C	Clay with silt and trace line sand, 46.21% clay, 45.22% silt and 8.57%	Descripition is based on laboratory grain	
520		S	Sand, 2.5Y5/2 (grayish brown) . Clayey Sand, fine sand, medium plasticity, low toughness, 2.5Y5/2 (grayish brown).	/ size analysis. Geotechnical sample was collected at approximaltely 510 feet bgs from OBS-2.	52
530				Rig Chatter at 515 and 518 ft bgs could be a boulder or cobble	53
540					54
550	y	c	Clay with silt, 74.41% clay and 25.88% silt, 2.5Y5/2 (grayish brown).	Description is based on laboratory grain size analysis. Geotechnical sample was collected at 550 feet bgs.	56

Page 6 of 6

	\$5	-10	10	
П	LY.	17	4	
		84		
U	100			u,

WorleyParsons

Draft Lithologic Log and Well Completion Details for TW-2

	resources & energy			Genesis Sola Project Number:		
Da	ate Drilled: 11/17/2009 to 12/	09/200	9	Northing 2169119.76		0187.073
Dr	illing Method: Mud Rotary, 10" [Diamete	er Tricone	Ground Surface Elev	ation: 390.12 f	eet amsl
Dr	illing Contractor: WDC Explo	ration		Total Depth: 1841 ft	Well Dept	th: 1830 ft
Ge	eologist: Nat Beal, Ed Baquri	zo, Ry	an Farrell	Reviewer: Mike Tietz	ze l	
No	tes: The cuttings log was adjusted	based (on the inter	pretation of the geophysical logs		
eet	GEOPHYSICAL LOGS					
Depth - Feet	0 (OHM-M) 20 Natural Gamma 0 (OHM-M) 20 (OAPi) 220 0 (OHM-M) 20	Blows / 6*	Soll USCS Soll Type	Geologic Description	Remarks	Well Schematic
0			SP	POORLY GRADED SAND (SP): Brown (10YR 53), fine grained, subrounded, micaccous, dry.	ARCH drilling to 40 feet bgs. Set 11 1/4* conductor casing	10
20					At 30 feet interbeds of clay evident by small cluanks of clay (1/4* - 3/4* in diameter) coming out of cyclone.	20 20 BAGS - CEMENT - PORTLAND TYPE VILV 30 94LB BAGS
50		5	С сілсн	LEAN CLAY/FAT CLAY (CL/CH): Light yellowish brown (10YH 6/4), Some sit (approx. 10-15%), med um to high plasticity, med um to high plasticity, med um toughness, high to very high dry strongth, hard, dry.	Driter remarks hitting clay at 35 feet bgs. Start Mud Rotary at 40 feet bgs. Color Change.	40
50						50 50 50
60			CL	CLAY WITH SILT (CL): Light yellowish brown (10YR 84), approx 20-30% sill, some sand (~10%), Low-medium toughness, medium plasticity , none-slow dilatancy.		6 6 6 6 6 6
70						6 6 5 6 ⁷⁰ 5 6

Page 1 of 19



80

- 90

100

- 110

- 120

- 130

140

- 150

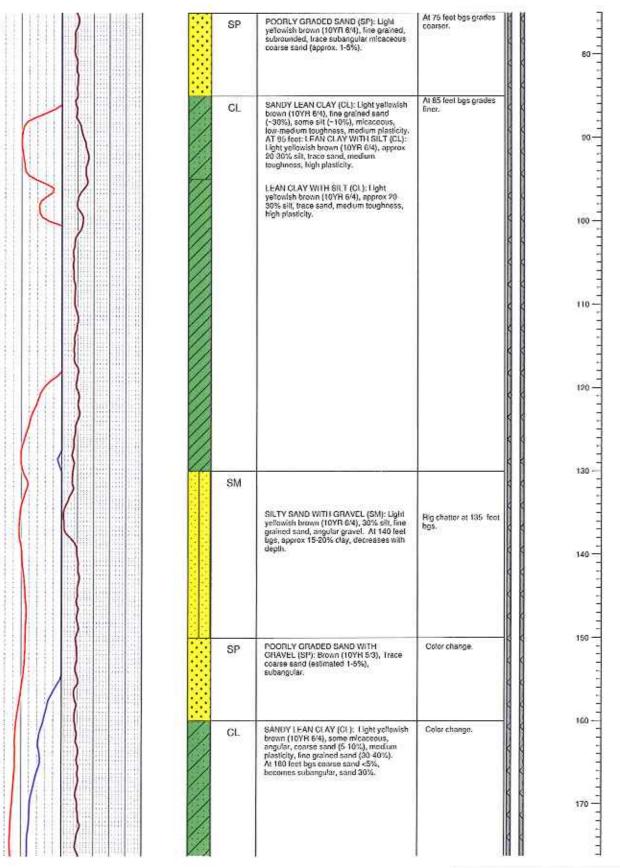
100

170

ŀ

Draft Lithologic Logs and Well Completation Details for TW-2

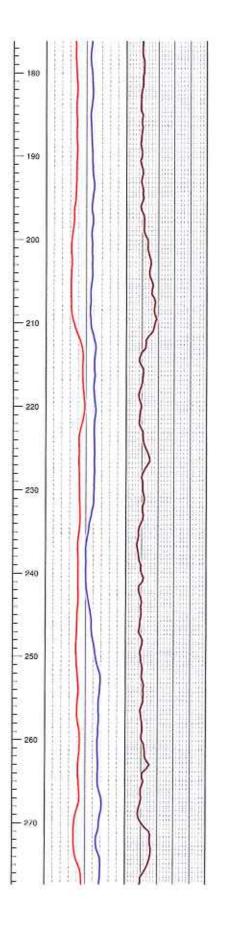
Genesis Solar, LLC Project Number: 52004617



Page 2 of 19



Genesis Solar, LLC Project Number: 52004617



1

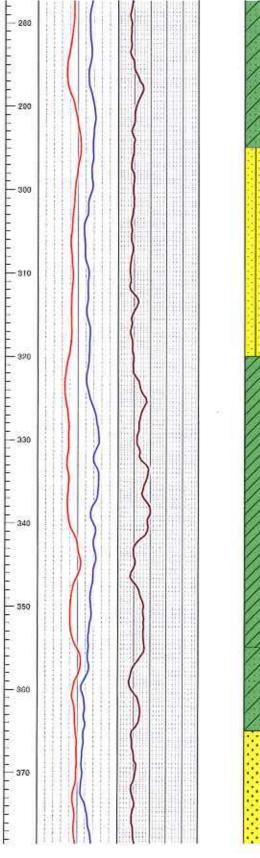
11

	At 195 feet bgs percent sit increases,		180 -
		At 190 feet bgs grades C C finer. C C	190 -
	LEAN CLAY WITH SILT (CL): Dark grayish brown (10YR 4/2), 20% sill, bace sand, micaceous, high plasticity, medium toughness.	At 200 feet bgs some silt,	200 -
	SANDY LEAN CLAY (CL): Brown (7.5YH 4/3), 40% sand, medium plasticity, micaceous.		210 -
		Al 215 feet bgs grades coarser, Color change.	220 -
		At 235 feel bgs grades coarser, Color change.	230 -
			240 -
SC	CLAYEY SAND (SC): Brown (7.5YH 4/3),		250 -
	fine grained sand, micaceous, sub- rounded.		260 -
		At 265 feet bgs slow drifing.	
CL	SANDY LEAN CLAY (CL): Brown (7.5YR 4/3), 40% sand, medium plasticity, micaceous.	At 270 feet bgs becomes finer. At 275 feet bgs drilling becomes faster - lens?	270 -

Page 3 of 19



Genesis Solar, LLC Project Number: 52004617

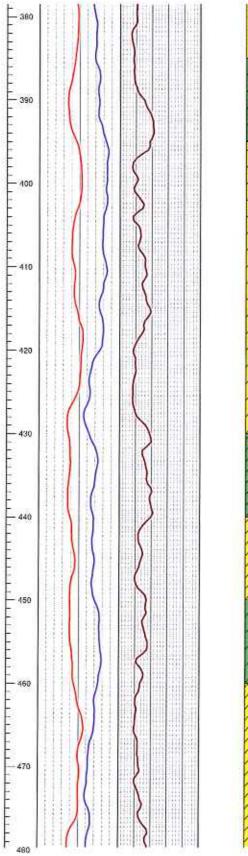


	At 290 feet bgs approx., 30-40% sand.		28
SM	SILTY SAND (SM): Brown (10YR 5/3), micaceous. 20% silt and clay.	Color change.	29 30
CL	LEAN CLAY (CL): Brown (10YR 4/3), medium plasticity, trace fine sand (1-5%), senti-micaceous.		31 32
	At 345 feet bgs trace silt (<5%)	At 325 feet bgs slower & C drilling. C At 331 feet bgs drijling faster & C	33
		At 342 feet bgs rig chatter	34 35
	SANDY LEAN CLAY (CL): Brown (10YR 5/3), approx 20% sand.	Al 360 leet bgs-grades coarser. Color change.	36
SP	PODRLY GRADED SAND (SP): Brown (10YR 5/3), Irace silt and clay.	Color change.	37

Page 4 of 19



Genesis Solar, LLC Project Number: 52004617

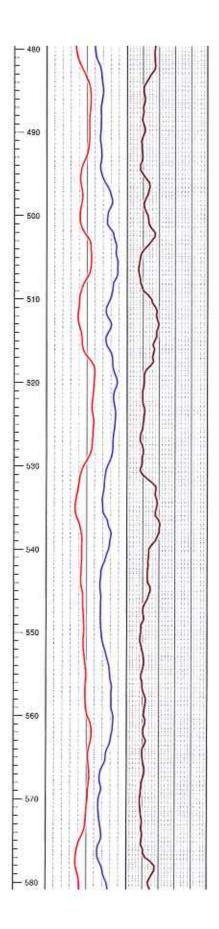


		At 390 feet bgs 30%	GROUT-
CL	SANDY LEAN CLAY (CL): Brown (10YR 4/3), 40% sand, micaceous, modium plasticity.	sand, sou delling (40 minutes to drill 6 feet).	BENTONITE GROUT 50LB 39 BAGS
SC	CLAYEY SAND (SC): Very pale brown (10YB 7/3), fine grained sand.	Faster chiling at 395 feet bgs. Color change.	40
		At 408 feet bos grades finar	41
		At 415 feet bos rig challer. Color change	42
CL	LEAN CLAY WITH SAND AND SILT (CL):		43
	Grayish brown (2:5YR 5/2), 20-30% silt, coarse grained sand (15-20%). At 435 leet bgs, percentage sand decreases. SILTALEAN CLAY (MUCL): Grayish brown		44
ML/CL	(2.5YR 5/2), equal amounts of sit and clay - bordenine, fine grained sand (15%), medium plasticity, low toughness, low dry strength.		
GL	SANDY LEAN CLAY (CL): Grayish brown (2.5YH 5/2), fine grained sand (approx. 30-40%), some silt (10%), medium plasticity, low toughnoss, high dry strength.	At 450 feet bgs hard to collect sample, a lot of sand suspended in mud. At 455 feet bgs rig chatter	45 6
ML/CL	SILTALEAN CLAY (ML/CL): Grayish brown (2.5YR 5/2), equal amounts of silt and clay - bordenine, medium plasticity, low toughness, low dry strength.		6 464 6 6
		8	471

Page 5 of 19



Genesis Solar, LLC Project Number: 52004617

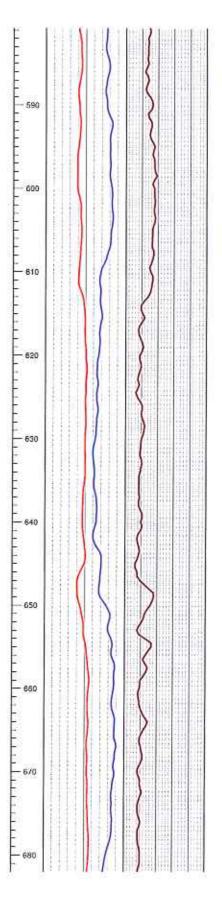


				480 -
1111	CH	FAT CLAY WITH SAND AND SILT (CL): Grayish brown (2.5YR 5/2), spprox. 15% sand, approx. 20-30% silt, medium - high plasticity, low - medium toughness, very high dry strength.		6 C 500
1111			At 510 feet bgs conditioned mud.	510
1111				520
	CL	LEAN CLAY WITH SILT (CL): Gravish brown (2.5YR 5/2), 20% sitt, some fine sand (approx. 10%), medium plasticity, medium to high dry strength, trace fine grained angular gravel.		530 ·
		At 540 feet bgs trace medium sand, very high dry svength.	4 4 4 4	540-
		LEAN CLAY WITH SAND AND SILT (CL): Grayish brown (2:5YR 5/2), approx: 15 20% fino grained sand, approx: 20:3015 sill, low to medium dry strength.		550 -
////		SANDY LEAN CLAY (CL): Grayish brown (2.5YR 5/2), approx. 25:30% fine grained sand, some medium grained sand (approx 10%), some sill (approx 10%). Medium dry strength.		560 -
		LEAN CLAY WITH SILT (CL): Brown (10YR 5/3), approx 20-30% sill, some line grained sand. At 575 feet bigs thin chunks of angular black shafe observed, kace quantities <1/4" in length. Percent sand decreases.	at 575 Color change.	580 -

Page 6 of 19



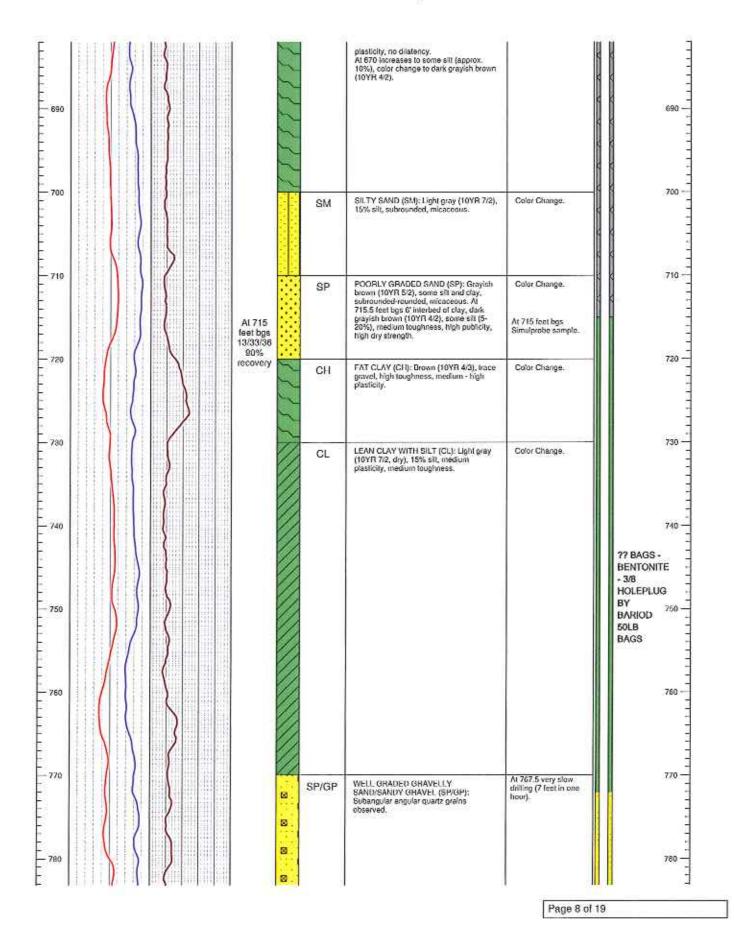
Genesis Solar, LLC Project Number: 52004617



	At 580 to 584 feet bgs small chucks of thin black shale <1/4" in length. At 595 percent sill decreases, clay becomes very slicky.		55
сілен	LEAN CLAY/FAT CLAY (CL/CH): Brown (10YR 5/3), some sill (approx. 10%), medium to high plasticity, medium to high toughness.	At 600 feet bgs drilling stopped for geotech sampling, borehole caves to 330' feet bgs. At 605 feet bgs very slow drilling.	60 C C
СН	FAT CLAY (CII): Brown (10YR 4/3), trace silt, medium to high plasticity, high loughness.	Golor change. At G11 feet bgs driling becomes faster.	61
ML	SILT WITH CLAY (ML): Brown (10YR 5/3) with trace while (10YH 8/1), 30% clay, low - medium plasticity.	At 623 feet bgs rig chalter	63
		At 643 feet bgs rig challe	64
CL	LEAN CLAY WITH SILT (CL): Yellowish brown (10YR 5/4), 30% sill, hace course grained sand, medium - high plasticity, medium to high toughness.	Color change: At 647 very slow ditting. Yellowish red sand observed in shaker, possibly from shallower.	65
		At 668 rig chatter. Color change.	c c c c c c c
сн	FAT CLAY (CH): Dark brown (SYR 3/3), trace sill, high toughness, medium - high		60

Page 7 of 19







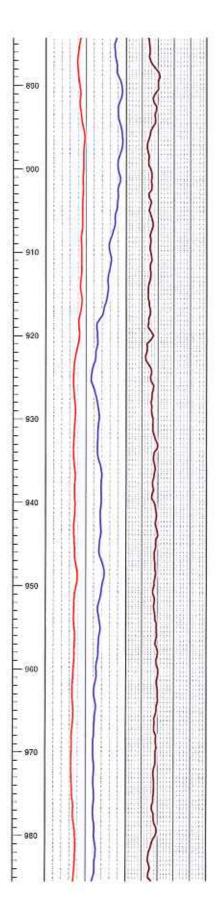
Genesis Solar, LLC Project Number: 52004617

Page 9 of 19

790		8	CL	LEAN CLAY WITH SILT (CL): Dark brown (10YH 3/3), 30-40% sill, medium plasticity.	Color Change.		790 -
800	At 802 feet bgs 17/60/133	0	GW	WELL GHADED GRAVEL WITH SAND (GW): Wry dark gray (10YH 3/1), 20% coarse grained sand, trace medium sand, subrounded.	At 802 feet bgs Simulprobe. At approx 804 feet bgs 30mm cobble observed in gootech sample shoe.	111 111	
- 810	60% recovery		SP	POORLY GRADED SAND (SP): Gravish brown, (10YR 5/2), fine - medium grained sand, rounded, some silt (approx. 10 15%).	Color Change.		810
820		G G	w/sw	WELL GRADED SANDY GRAVELIGRAVELLY SAND (GW/SW): Find gravel, line - coarse sand, some clay.	Possibly interbodded sand and gravel.		820
- 830 -		0					SACKS - SAND -#3 830 - MONTEREY SAND
810		0 0 0					840
- 850 		8 8 8 8 8	GP	POOHLY GRADED CHAVEL WITH SAND (GP): Grayish brown (10YR Sr2), angular to very angular, likely chips of coarse gravel up to 5 mm in diameter.			850
- 870	6	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2					860
880	6 6 8 8 8 8	82 82 83 83 83 83 83 83 83 83 83 83 83 83 83			At 685 feet bgs rig chatter.		880



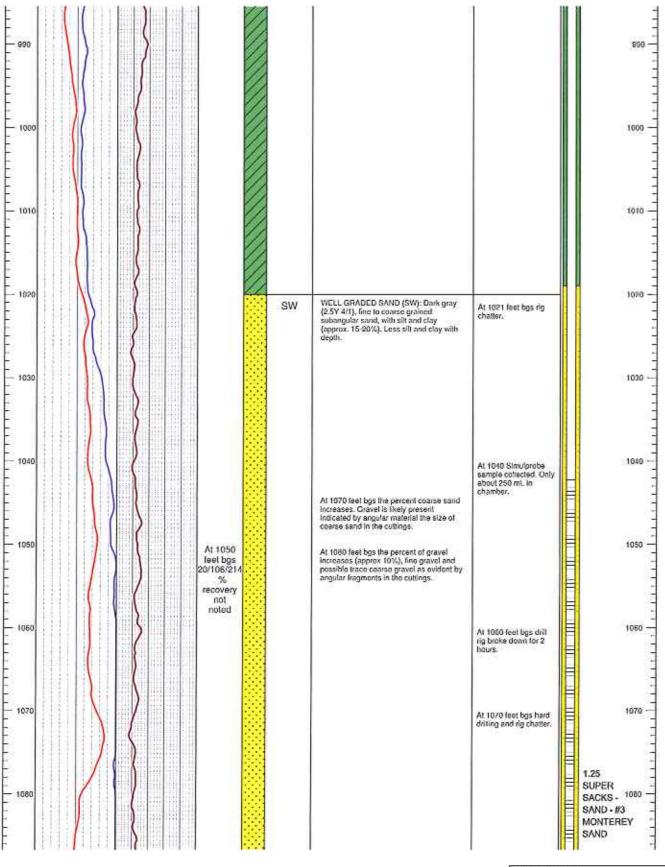
Genesis Solar, LLC Project Number: 52004617



1	CL.	LEAN CLAY (CL)	Based on geophysics.	800 -
	GP	PODRLY GRADED GRAVEL WITH SAND (GP): Grayish brown (10VR 5/2), angular to very angular, likely chips of coarse gravel up to 5 mm in diameter.	At 805-925 feet bgs slow driffing.	900 - 910 -
8	SW/GW	WELL GHADED SAND/WELL GRADED GHAVEL (SW/GW): Grayish brown (10YR 5/2), angular, could be chips of coarse grained gravel, coarse sand and some fine grained sand, trace sill.	Al 925 feel bgs very slow drilling advanced 20 feet in 4 hours.	920 -
	ML.	SILT WITH CLAY: Gray (10VR 6/1), low plasticity, low toughness. Driller noted it could be a sitstone.	Color chàngé. Hard driting.	830 - 940 -
	CL	LEAN CLAY WITH SAND (CL): Dark gray (2.5Y 4/1), high dry strength, fine sand, percent sand decreases with depth. At 970 feet tigs LEAN CLAY WITH SILT:	Color change. Drilling becomes easler.	39 BAGS - 550 - BENTONITE - 3/8 HOLEPLUG BY BARIOD 50LB BAGS 960 -
		approx. 15-20% sill, high dry strength. At 980 feet bgs LEAN GLAY(CL): some sill (soprox. 5-10%), medium to high plasticity, medium toughness, high dry strength.	At 979 feet bgs restricted mud flow, likely a clay ring.	970 -
1111		At 1010 feet bgs LEAN CLAY WITH SILT AND SAND (CL): approx. 20% sill and 10-15% fine grained sand. At 1015 feet bgs formation becomes sandler (approx. 20-25%). At 1020 feet bgs trace coarse sand.	At 980 feet bgs short trip out of the hole to remove clay ring and increase mud flow.	980 -

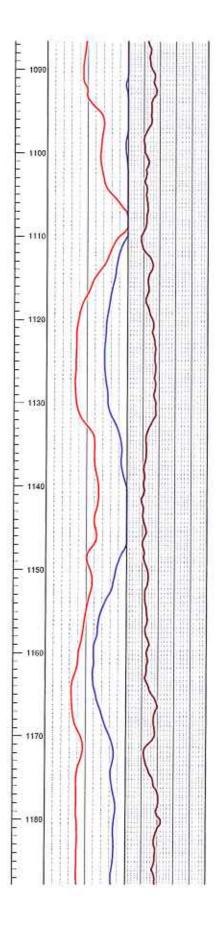
Page 10 of 19







Genesis Solar, LLC Project Number: 52004617

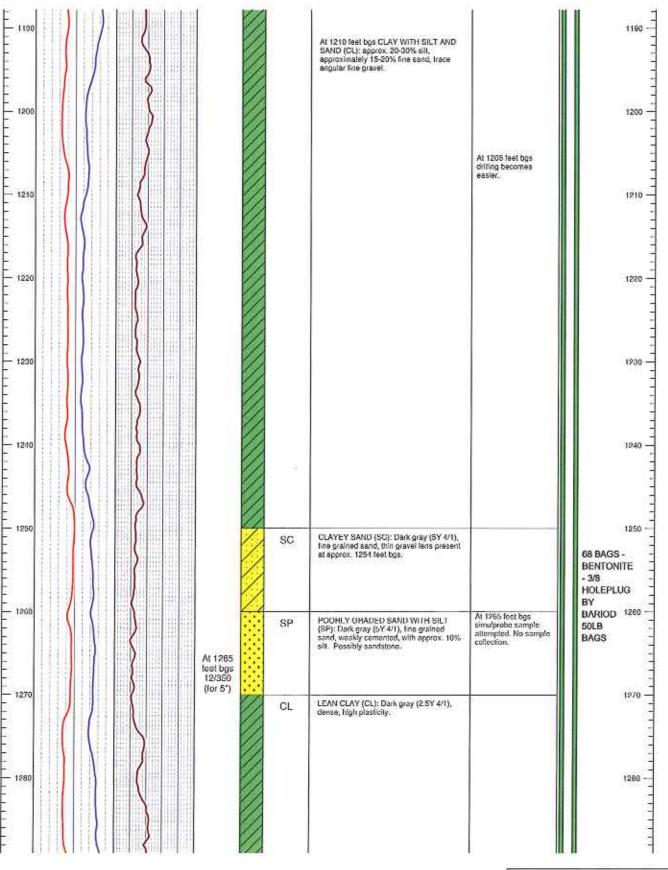


GC	CLAYEY GRAVEL (GC): Dark gray (2.5Y 4/1), fine grained gravel, subrounded to subangular, trace fine sand.		- 10
SW	WELL GRADED SAND (SW): Dark gray (2.5Y 4/1), the to coarse grained sand, some fine gravel (approx. 10%), some silt and clay (approx. 5 to 10%). At 1120 feet bgs the percentage of silt and clay increase (approx. 10-15%).	At 1105 feet bgs vory slow drilfrig. Uniting becomes easler at 1110 feet bgs.	11
GL.	LEAN CLAY WITH SAND (CL): Dark gray (2.5Y 4/1) medium to high plasticity, fine grained sand.	At 1120 feet bgs very slow driling. Driling becomes easler at 1130 feet bgs.	- = 11
SW	WELL GRADED SAND (SW): Dark gray (2.5Y 4/1), medium to coarse grained sand, some fine grained gravel.		-
ML	SILT WITH CLAY (ML): Dark gray (2.5Y 4/f), low plasticity, some fine gravel. At 1160 percentage of gravel increases. At 1170 gravel is angular.	At 1160 leet bos rig chatter.	11
CL	CLAY WITH SILT (CL): Dark gray (5Y 4/1), medium plasticity, medium toughness, high dry strength, approx. 20 30% silt. Possibly claystone or sillistone.	Color Change. At 1180 very hard driting. 1 hour delay to fix shaker.	112

Page 12 of 19



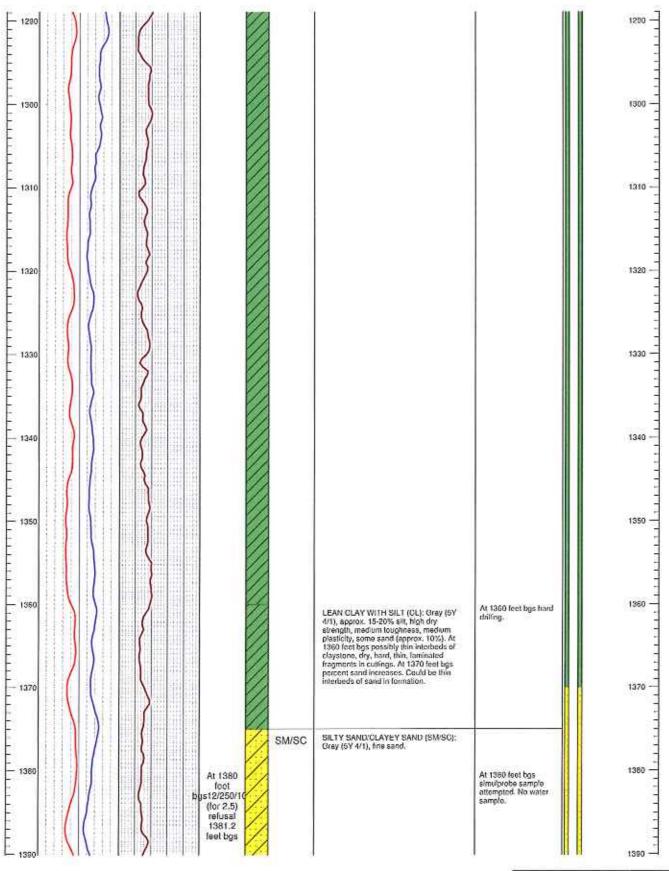
Genesis Solar, LLC Project Number: 52004617



Page 13 of 19

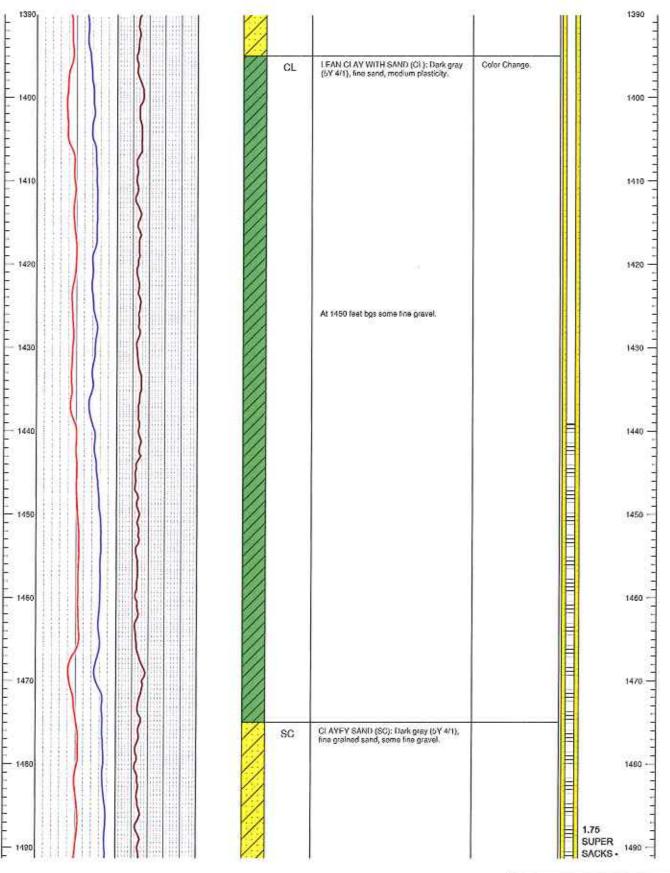


Genesis Solar, LLC Project Number: 52004617



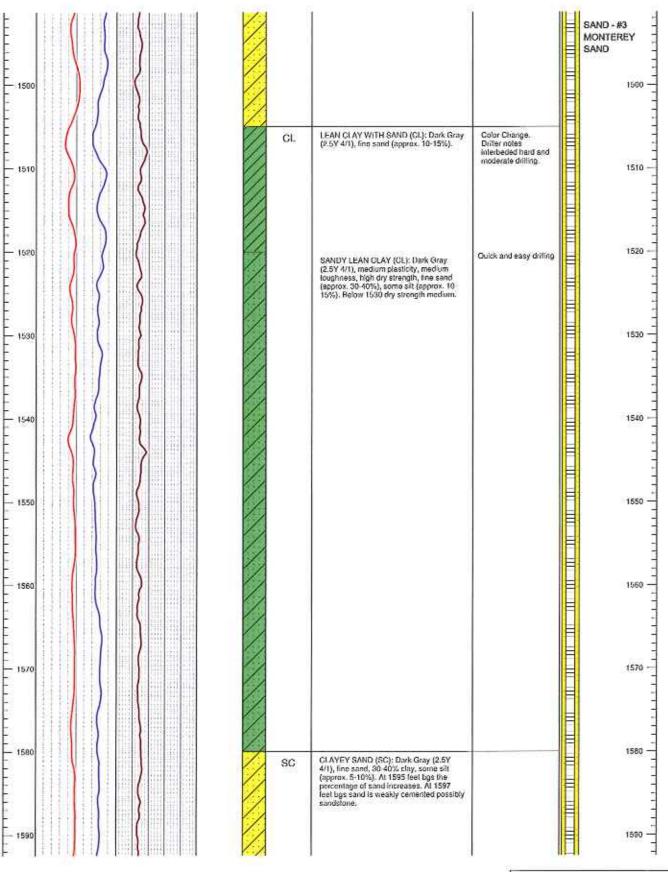
Page 14 of 19







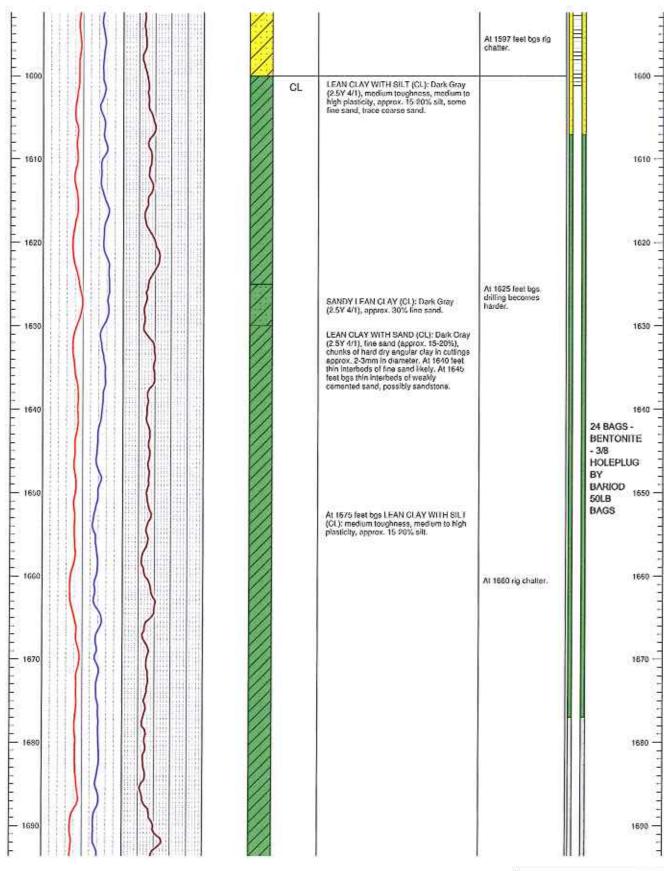
Genesis Solar, LLC Project Number: 52004617



Page 16 of 19

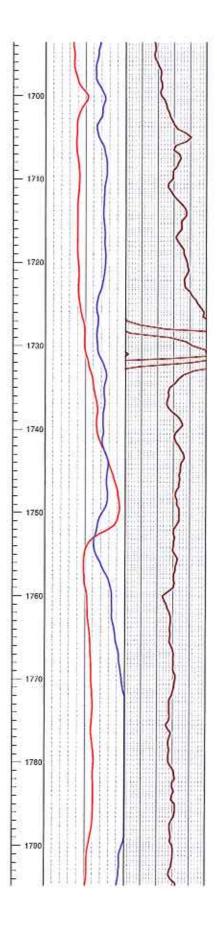


Genesis Solar, LLC Project Number: 52004617



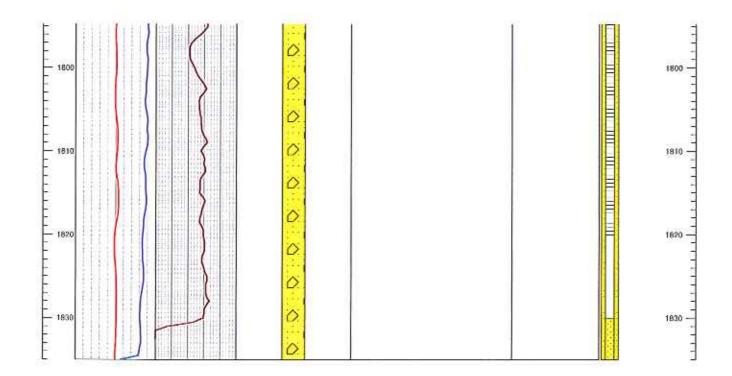
Page 17 of 19





GW	SANDY WELL GRADED GRAVEL (GW): Dark Gray (2:5Y 4/1), coarse sand, angular.	Rig chatter and binding	SLOUGH
СН	FAT CLAY (CH): Dark Crey (10YH 4/1), medium to high toughness, medium to high plasticity, some slit (approx. 10%).	Color change.	1700 -
CL	LEAN CLAY (CL): Greenish Gray (Gley 1 6/10Y), med toughness, medium to high plasticity.	Color change.	1710 -
GW	WELL GRADED GRAVEL (GW): Angular coarse gravel fragments possibly cobbles.	At 1732 rig chatter and binding, hard chilling.	1730 -
			1740 -
			1760 -
	Becomes sandier at 1805 feet bgs. SANDY WELL GRADED GRAVEL (GW): Fine to coarse gravel, possible cobbles, subangular to angular, coarse sand, little to no fines.		1770 -
	At 1820 feet lugs WELL GRADED GHAVEL WITH SAND (GW): Fine to coarse gravel, subangular to angular, possible cobbles, coarse sand (approx. 10-15%)		1.0 SUPER SACK AND 9 1760 - BAGS - SAND - #3 MONTEREY SAND (100LB BAGS)
			1790 -







BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA 1516 NINTH STREET, SACRAMENTO, CA 95814 1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE GENESIS SOLAR ENERGY PROJECT

Docket No. 09-AFC-8

PROOF OF SERVICE (Revised 12/22/09)

APPLICANT

Ryan O'Keefe, Vice President Genesis Solar LLC 700 Universe Boulevard Juno Beach, Florida 33408 Ryan.okeefe@nexteraenergy.com

Scott Busa/Project Director Meg Russel/Project Manager Duane McCloud/Lead Engineer NextEra Energy 700 Universe Boulvard Juno Beach, FL 33408 <u>Scott.Busa@nexteraenergy.com</u> <u>Meg.Russell@nexteraenergy.com</u> <u>Duane.mccloud@nexteraenergy.com</u>

Mike Pappalardo Permitting Manager 3368 Videra Drive Eugene, OR 97405 mike.pappalardo@nexteraenergy.com

Diane Fellman/Director West Region Regulatory Affairs 234 Van Ness Avenue San Francisco, CA 94102 Diane.fellman@nexteraenergy.com

APPLICANT'S CONSULTANTS

Tricia Bernhardt/Project Manager Tetra Tech, EC 143 Union Boulevard, Ste 1010 Lakewood, CO 80228 <u>Tricia.bernhardt@tteci.com</u>

Christo Nitoff, Project Engineer Worley Parsons 2330 East Bidwell Street, Ste.150 Folsom, CA 95630 Christo.Nitoff@Worleyparsons.com

COUNSEL FOR APPLICANT

Scott Galati Galati & Blek, LLP 455 Capitol Mall, Ste. 350 Sacramento, CA 95814 sqalati@gb-llp.com

INTERESTED AGENCIES

California-ISO <u>e-recipient@caiso.com</u>

Allison Shaffer, Project Manager Bureau of Land Management Palm Springs South Coast Field Office 1201 Bird Center Drive Palm Springs, CA 92262 <u>Allison Shaffer@blm.gov</u>

INTERVENORS

Tanya A. Gulesserian, Marc D. Joseph Adams Broadwell Joesph & Cardoza 601 Gateway Boulevard, Ste 1000 South San Francisco, CA 94080 tgulesserian@adamsbroadwell.com

*Michael E. Boyd, President Californians for Renewable Energy, Inc. (CARE) 5439 Soquel Drive Soquel, CA 95073-2659 michaelboyd@sbcglobal.net

<u>Other</u> *Alfredo Figueroa 424 North Carlton Blythe, CA 92225 <u>LaCunaDeAtzlan@aol.com</u>

ENERGY COMMISSION

JULIA LEVIN Commissioner and Presiding Member jlevin@energy.state.ca.us

JAMES D. BOYD Vice Chair and Presiding Member jboyd@energy.state.ca.us

Kenneth Celli Hearing Officer kcelli@energy.state.ca.us

Mike Monasmith Siting Project Manager <u>mmonasmi@energy.state.ca.us</u>

Caryn Holmes Staff Counsel cholmes@energy.state.ca.us

Robin Mayer Staff Counsel rmayer@energy.state.ca.us

Public Adviser's Office publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Ashley Y Garner, declare that on December 23, 2009, I served and filed copies of the attached LOW RESOULTION SCAN OF THE BOREHOLE LOGS FOR OBS-1, OBS-2, TW-1, AND TW-2 FOR GENESIS SOLAR ENERGY PROJECT dated December 23, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/genesis_solar].

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

For service to all other parties:

- __X__ sent electronically to all email addresses on the Proof of Service list;
- X by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

AND

For filing with the Energy Commission:

- __X__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);
- OR

depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION Attn: Docket No. 09-AFC-8 1516 Ninth Street, MS-4 Sacramento, CA 95814-5512 docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Ashley Y Jarmer Ishley Y Garner