



April 17, 2017
Project No. 2015.0171

Mr. Jim Bennett, CHG
County of San Diego
Planning and Development Services
5510 Overland Avenue
San Diego, CA 92123

MONTHLY GROUNDWATER MONITORING REPORT – MARCH 2017
TULE WIND CONSTRUCTION PROJECT
EAST SAN DIEGO COUNTY, CALIFORNIA

On behalf of Avangrid Renewables, LLC (Avangrid), Geo-Logic Associates (GLA) is pleased to provide this letter presenting March 2017 daily water level data and weekly flowmeter readings from project construction-related wells (production wells 6, 6a, and 8, and piezometer PZ-1) on Rough Acres Ranch. In accordance with the requirements established in the County of San Diego Planning and Development Services in the Major Use Permit 3300 09-019, weekly groundwater production data must be recorded from wells 6, 6a and 8, and daily water level data measured in the piezometer (PZ-1) and in wells 6 and 8. This report presents a summary of the collected data obtained in March 2017.

Following initial training by GLA on water level and flowmeter protocols for the Tule Wind construction project, daily water levels and weekly flowmeter readings are being obtained by Carol Brady with LG Equipment. Additionally, wells 6, 8, 8a and PZ-1 are each equipped with a pressure transducer to measure and record water level data, which can be uploaded to corroborate the manual measurements throughout the construction program. Well 6a is a non-community public water supply well, supplying water to Rough Acres Ranch, and a pressure transducer cannot be inserted into this well; collection of water levels in this well is not required.

Weekly Flow Meter Readings. Flowmeter readings at each well are recorded on field forms, provide in Attachment 1. Based on the flow meter readings obtained during the March 2017 period, the following water volumes were pumped, and stored or applied:

March 2017 Water Production Totals

Well	Gallons Pumped	Acre-Feet Pumped
Well 6	1,622,400	4.98
Well 6a	2,136,100	6.56
Well 8	1,233,594	3.79
Project Monthly Total		15.33

Note: Total volumes represent water pumped to storage (lake or tanks)

Over the past four months, since the start of the project in December 2016, the total volume of water pumped is 31.81 acre-feet; approximately 8.53 acre-feet from well 8 and the balance (23.28 acre-feet) from wells 6 and 6a (Attachment A – Groundwater Production Summary).

Daily Water Level Data. During the March 2017 period, water levels were measured manually in pumping Wells 6, 8, and piezometer PZ-1 each construction day and recorded on field forms (Attachment A). However, the pressure transducer in Well 8, at a depth of about 240 feet, prevented collection of water level data during the month, when the water level dropped during regular well pumping. In lieu of measurements from Well 8, Ms. Brady measured water levels in Well 8a located 286 feet east of Well 8. Table 1 presents a summary of the manual measurements obtained during the month.

CLOSING

This monthly report pertains to the Avangrid Tule Wind Project. It may not be appropriate for other projects or for other sites. If you have any questions, please contact me.

Sincerely,
Geo-Logic Associates



Sarah J. Battelle, CHG 609
Principal Geologist

Attachments:
Table 1 – Manual Water Level Measurements
Attachment A - Groundwater Production Summary

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
11/18/2016	30.68	31.30	242.90	30.70
12/6/2016	106.50	30.00	156.10	30.00
12/7/2016	105.10	31.90	212.35	31.90
12/8/2016	117.10	31.20	>240	31.20
12/9/2016	123.80	33.90	>240	33.90
12/12/2016	122.30	32.20	>240	35.30
12/13/2016	125.80	32.30	>240	35.70
12/14/2016	129.40	32.40	>240	37.80
12/15/2016	128.90	32.30	>240	38.00
12/16/2016	120.30	NA	>240	NA
12/19/2016	48.50	32.30	>240	36.00
12/20/2016	NA	32.30	>240	37.30
1/4/2017	37.60	32.45	>240	31.50
1/5/2017	71.60	32.50	>240	36.00
1/6/2017	78.60	32.35	>240	35.90
1/7/2017	103.80	32.50	>240	36.50
1/9/2017	77.80	32.40	>240	34.60
1/10/2017	74.70	32.40	>240	33.30
1/11/2017	99.40	32.40	>240	33.10
1/12/2017	66.20	32.45	>240	35.10
1/16/2017	33.10	32.30	44.70	32.40
1/17/2017	118.70	32.40	>240	34.50
1/18/2017	33.80	32.40	>240	36.60
1/30/2017	38.20	31.70	25.70	32.70
1/31/2017	88.00	31.70	>240	35.80
2/1/2017	35.80	31.60	>240	35.80
2/3/2017	93.90	31.60	>240	35.70
2/6/2017	34.20	31.40	>240	34.20
2/7/2017	36.40	31.30	>240	35.70
2/8/2017	36.80	31.30	42.50	36.50
2/9/2017	37.60	31.30	>240	36.70
2/10/2017	32.30	31.30	>240	37.00
2/11/2017	34.40	31.30	>240	36.20
2/13/2017	36.20	31.30	75.80	36.70
2/14/2017	36.70	31.30	>240	37.20
2/15/2017	111.50	31.30	>240	37.20
2/16/2017	36.10	31.30	>240	38.40
2/17/2017	37.10	31.30	>240	38.50
2/20/2017	96.10	31.30	>240	38.50
2/21/2017	96.10	31.30	>240	40.10
2/22/2017	94.10	31.30	>240	40.90
2/23/2017	96.10	31.30	>240	40.90
2/24/2017	44.60	31.30	>240	41.10
2/25/2017	36.10	31.30	>240	41.70
2/27/2017	36.40	31.30	>240	42.90
2/28/2017	37.10	31.30	>240	43.30

Table 1
Manual Water Level Measurements
Tule Wind Project Monitoring Wells

Well Information	Well			
	6*	PZ-1	8*	8a
Depth below TOC:				
3/1/2017	34.10	31.40	>240	43.50
3/2/2017	34.60	31.60	>240	43.70
3/3/2017	33.10	31.50	>240	44.00
3/4/2017	39.40	31.45	>240	44.50
3/6/2017	38.50	31.50	>240	39.00
3/7/2017	34.60	31.40	>240	39.40
3/8/2017	34.90	31.40	>240	42.90
3/9/2017	35.50	31.50	>240	43.00
3/10/2017	43.80	31.50	>240	44.30
3/11/2017	38.70	31.50	>240	44.50
3/13/2017	40.10	31.50	>240	44.80
3/14/2017	39.70	31.50	>240	44.80
3/15/2017	44.00	31.60	>240	44.90
3/16/2017	33.70	31.60	>240	45.00
3/17/2017	48.20	31.60	>240	45.20
3/20/2017	44.00	31.70	>240	45.90
3/21/2017	53.10	31.70	>240	45.00
3/22/2017	46.60	31.85	>240	45.20
3/23/2017	44.00	31.90	>240	45.30
3/24/2017	36.90	31.90	>240	45.40
3/27/2017	33.80	31.90	>240	45.00
3/28/2017	36.20	32.00	>240	44.50
3/29/2017	46.20	32.00	>240	44.80
3/30/2017	44.10	32.35	>240	45.00
3/31/2017	36.80	32.40	>240	46.10

Notes:

*Production well - Water level measurements are not static levels.

NA - Water level could not be measured.

ATTACHMENT A

Groundwater Production Summary

GROUNDWATER PRODUCTION SUMMARY

GROUNDWATER PRODUCTION SUMMARY						
	Piezometer PZ-1					
Date	Depth to Water					
11/18/2016	31.30		Production Summary		Total Acre Foot	
12/20/2016	32.30		WELL 6/6A	7,587,065	23.283817	
1/31/2017	31.60		WELL 8	2,778,035	8.525464	
2/28/2017	31.30					
3/31/2017	32.40		TOTAL	10,365,100	31.80928051	
Well Location:	WELL 6					
Date	Meter Reading	Date	Meter Reading	Total Gallons	Depth to Water	Comments
11/18/2016	664,935	12/20/2016	1,987,900	1,322,965	30.68	This Well feeds the Lake and the 3 towers at well 6
12/20/2016	1,987,900	1/31/2017	2,519,800	531,900	35.8	
1/31/2017	2,519,800	2/28/2017	3,093,900	574,100	129.2	
2/28/2017	3,093,900	3/4/2017	3,132,100	38,200	37.1	The Lake currently holds 1 million gallons of water for use at a later date
3/4/2017	3,132,100	3/11/2017	3,407,900	275,800	38.7	
3/11/2017	3,407,900	3/18/2017	3,908,800	500,900	44.0	
3/18/2017	3,908,800	3/25/2017	4,326,600	417,800	33.8	
3/25/2017	4,326,600	3/31/2017	4,716,300	389,700	36.8	
TOTAL				4,051,365		
Well Location:	WELL 6A	supplies the pond				

Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
12/20/2016	31,284,500	3/25/2017		32,186,100	901,600		This meter is located at the
3/25/2017	32,186,100	3/31/2017		32,737,200	551,100		one tower labeled Rough Acres
					-		
					-		
					-		
				-	-		
				-	-		
TOTAL					1,452,700		
Well Location:	WELL 6A	Production Portion					
Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
12/5/2016	4,335,200	12/20/2016		4,802,700	467,500		This meter is located at the
12/20/2016	4,802,700	1/31/2017		5,163,400	360,700		one tower labeled Rough Acres
1/31/2017	5,163,400	2/28/2017		5,734,800	571,400		
2/28/2017	5,734,800	3/4/2017		5,890,100	155,300		
3/4/2017	5,890,100	3/11/2017		6,158,400	268,300		
3/11/2017	6,158,400	3/18/2017		6,246,900	88,500		
3/18/2017	6,246,900	3/25/2017		6,344,200	97,300		
3/25/2017	6,344,200	3/31/2017		6,418,200	74,000		
TOTAL					2,083,000		
Well Location:	WELL 8	Cubic Feet					
Date	Meter Reading	Date		Meter Reading	Total Gallons	Depth to Water	Comments
11/18/2016	1,054	12/20/2016		52,650	385,938	242.9	This Well feeds the 3 towers
12/20/2016	52,650	1/31/2017		110,360	431,671		at well 8

1/31/2017	110,360	2/28/2017		207,530	726,832	
2/28/2017	207,530	3/4/2017		227,070	146,159	This well has a blockage at 240ft
3/4/2017	227,070	3/11/2017		262,750	266,886	
3/11/2017	262,750	3/18/2017		300,790	284,539	
3/18/2017	300,790	3/25/2017		337,690	276,012	
3/25/2017	337,690	3/31/2017		372,449	259,997	
TOTAL					2,778,035	