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MEMORANDUM

DATE: January 18, 2017

TO: Mr. Glenn Meeks; glenn.meeks@waterboards.ca.gov;
CC: Mr. Scott Hatton, RWQCB – Central Valley

FROM: Mr. James Blair, Keller/Wegley Engineering

SUBJECT: STRATFORD PUBLIC UTILITY DISTRICT (DISTRICT)

Thank you for discussing with me on January 17, 2017, the proposed amendment to the Water Quality Control Plan for the Tulare Lake Basin to remove/modify the municipal and domestic supply (MUN) beneficial use for certain portions of the historical Tulare Lake area. It is our understanding that Stratford's Wastewater Treatment Facility (Facility) was not included in the Tulare Lakebed Beneficial Use Exemption Area because the Facility is located upstream from three (3) to four (4) domestic wells that are 25 to 75 feet deep and are pumping groundwater which has an electrical conductivity (EC) concentration of less than 5,000 $\mu\text{S}/\text{cm}$. It is also our understanding that these wells individually provide sufficient water supply producing an average sustainable yield of 200 gallons per day.

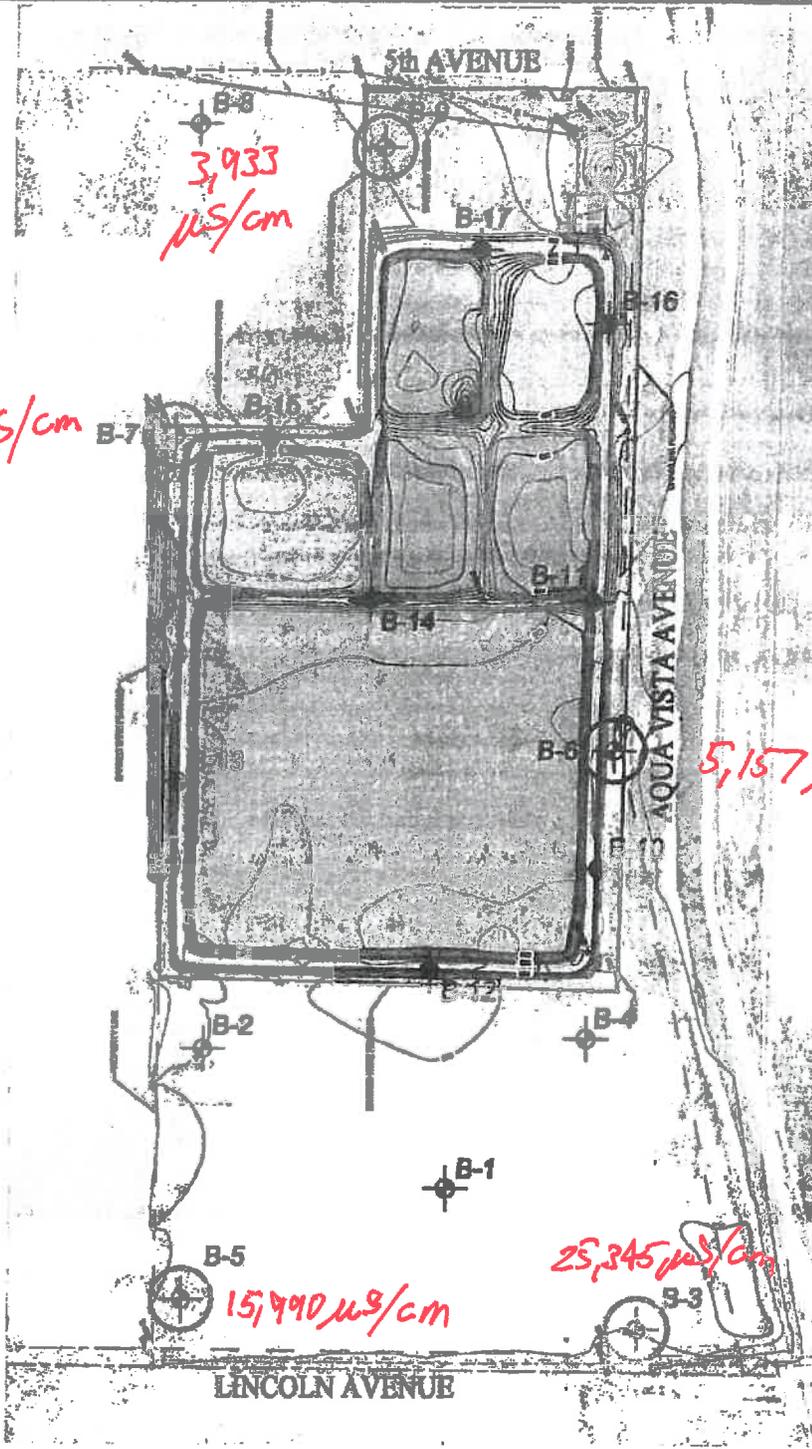
Because of the significant financial impact the District will have in permit fees and possible monitoring, we are requesting on behalf of the Stratford Public Utility District, the information on the three (3) to four (4) wells located downstream from the wastewater facility.

In addition to the District's comment letters furnished on April 30, 2015, to Pam Bufford, several monitor wells were developed and subsequently sampled and analyzed for EC from June, 2015, to September, 2015. The attached information shows that EC's exceed 5,000 $\mu\text{S}/\text{cm}$ for monitor wells located the furthest from the wastewater ponds. Based on this information the District's facility is located over a perched groundwater that does not qualify as a municipal and domestic water supply. As stated in the District's January 8, 2014, letter to Mr. Clay Rodgers, Assistant Executive Officer, RWQCB-Central Valley, "Therefore, due to the location of the District's wastewater treatment facility there is a low threat to water quality and based on our understanding the facility should be placed in Category 3 instead of the present list as a Category 2," (Category 2 is defined as, "those discharges of waste that could impair the designated beneficial uses of the receiving waters, cause short-term violations of water quality objectives, cause secondary drinking standards to be violated, or cause a nuisance").

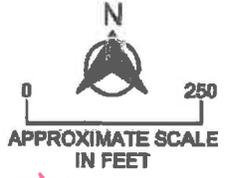
We would appreciate any consideration by the RWQCB regarding the District's Facility and, in addition, request providing some relief with regard to the District's permit fees. We are available to discuss this matter with you further.

If you have any questions regarding this request, please contact me.

SECTION 4
SUMMARY OF GEOTECHNICAL INVESTIGATION
FOR GROUNDWATER MONITOR WELL DEVELOPMENT DATA
WASTEWATER FACILITY IMPROVEMENT PROJECT
STRATFORD PUBLIC UTILITY DISTRICT



- APPROXIMATE TEST BORING LOCATION
- APPROXIMATE HAND AUGER BORING LOCATION
- APPROXIMATE MONITORING WELL / PIEZOMETER LOCATION



15,990 μS/cm 2-sample Average June 15 to Sept 15.

TEST BORING AND MONITORING WELL / PIEZOMETER
 LOCATION MAP
 STRATFORD PUBLIC UTILITY DISTRICT WASTEWATER PONDS
 NEC OF EMPIRE STREET AND LINCOLN AVENUE
 STRATFORD, CALIFORNIA

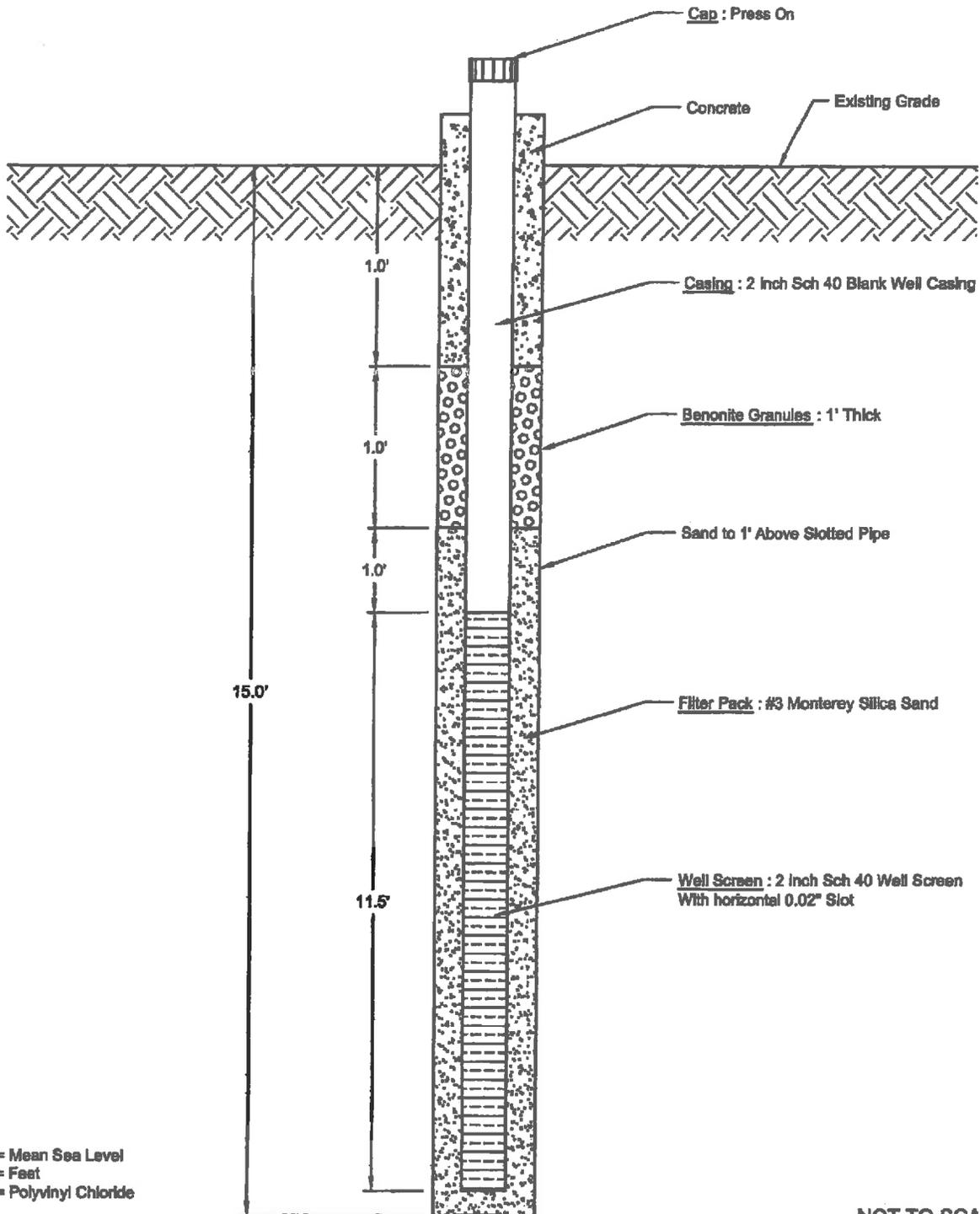
FILE NO.
68301-01-02
 DRAWN BY:
RM
 PROJECT NO.
A68301.01

DATE DRAWN:
11/08/14
 APPROVED BY:
 DRAWING NO.
2



**MOORE TWINING
 ASSOCIATES, INC.**

MONITORING WELL CONSTRUCTION DIAGRAM



NOT TO SCALE

MONITORING WELL COMPLETION DIAGRAM
STRATFORD PUBLIC UTILITY DISTRICT WASTEWATER PONDS
NEC OF EMPIRE STREET AND LINCOLN AVENUE
STRATFORD, CALIFORNIA

FILE NO.
88301-01-02

DATE DRAWN:
11/08/14

DRAWN BY:
RM

APPROVED BY:

PROJECT NO.
A88301.01

DRAWING NO.
3



**MOORE TWINING
ASSOCIATES, INC.**

FIELD RECORD OF WATER SAMPLING

Stratford Public Utility District
Moore Twining Project No. A68301.01
Stratford, California

Groundwater Sampling Event Well Development
 Sampler's Name David Fretwell
 Sampler's Signature *[Signature]*

Well Identification No. <u>B-3</u>	Depth to Water (ft. to TOC) <u>7.37</u>
Casing Type/ Diameter. <u>2 inches</u>	Total Depth <u>7.63</u>
Depth of Well (ft. bgs) <u>15</u>	One Casing Volume <u>1.25</u>
	Three Casing Volumes <u>12.51</u>

Date	Time	Temp (°C)	EC mS/cm	pH	Color	Odor	Purge Volume (Gallons)	Comments	Sampler's Initials
6/15/2015	10:25						0	Begin Purge	<i>[Signature]</i>
	10:26	24.7	20.38	7.45	Light Olive	No	1	Silty	<i>[Signature]</i>
	10:35	23.2	25.08	7.71	Light Olive	No	3	Silty	<i>[Signature]</i>
	10:46	24.4	28.88	7.03	Light Olive	No	4	Silty	<i>[Signature]</i>
	11:18	30.7	28.87	7.34	Light Olive	No	5	Silty	<i>[Signature]</i>
	11:25	23.4	29.66	7.35	Light Olive	No	6	Less Silt	<i>[Signature]</i>
	11:47	22.6	39.64	7.27	Light Olive	No	10	Less Silt	<i>[Signature]</i>
	11:53	22.7	29.72	7.44	Light Olive	No	15	Slightly Silty	<i>[Signature]</i>
	12:19	24	29.69	7.45	Light Olive	No	20	Slightly Silty	<i>[Signature]</i>

Total Purge Volume (Gallons) 20 Purge Volume Measurement: 5 - Gallon Bucket
 Total Purge Time (min.) 114 Purge Rate (Gal./Min.) 0.17
 Conversion Factors: 2" 0.164 gal/ft
 4" 0.654 gal/ft

RECORD OF SAMPLING

Sampling Method : Disposable Bailer Temp _____
 Date of Sample Well Development EC _____
 Sample Time _____ pH _____
 Sample Identification _____

Number of Samples _____ Container Types _____

Measured Parameter	Instrument Used	Instrument No.	Serial	Source	Calibration Date
Water Level				MTA	Well Development
Temperature				MTA	Well Development
EC				MTA	Well Development
pH				MTA	Well Development

Notes: 1 gallon per minute - well repeatedly went dry - let recover - approximately 0.8 feet of sediment in well

FIELD RECORD OF WATER SAMPLING

Stratford Public Utility District
Moore Twining Project No. A68301.01
Stratford, California

Groundwater Sampling Event Well Development
 Sampler's Name David Fretwell
 Sampler's Signature 

Well Identification No.	B-5	Depth to Water (ft. to TOC)	7.05
Casing Type/ Diameter:	2 inches	Total Depth	9.45
Depth of Well (ft. bgs)	16.5	One Casing Volume	1.54
		Three Casing Volumes	15.49

Date	Time	Temp (°C)	EC mS/cm	pH	Color	Odor	Purge Volume (Gallons)	Comments	Sampler's Initials
6/15/2015	12:44						0	Begin Purge	
	12:46	26.7	23.99	7.7	Dark Olive	No	15	Silty	
	12:50	23.4	18	7.77	Dark Olive	No	5	Silty	
	12:54	22.7	15	7.79	Dark Olive	No	10	Silty	
	13:03	22.2	14.38	7.72	Dark Olive	No	15	Less Silty	
	13:11	22.3	13.53	7.78	Dark Olive	No	20		
	13:21	22.3	13.68	7.74	Dark Olive	No	25	Slightly Silty	
	13:30	22.3	13.08	7.71	Dark Olive	No	30	Slightly Silty	
	13:37	22.5	13.12	7.73	Dark Olive	No	35	Slightly Silty	

Total Purge Volume (Gallons) 35 Purge Volume Measurement: 5 - Gallon Bucket
 Total Purge Time (min.) 53 Purge Rate (Gal./Min.) 0.66
 Conversion Factors: 2" 0.164 gal/ft
 4" 0.654 gal/ft

RECORD OF SAMPLING

Sampling Method: Disposable Bailor Temp _____
 Date of Sample Well Development EC _____
 Sample Time _____ pH _____
 Sample Identification _____

Number of Samples _____ Container Types _____

Measured Parameter	Instrument Used	Instrument No.	Serial	Source	Calibration Date
Water Level				MTA	Well Development
Temperature				MTA	Well Development
EC				MTA	Well Development
pH				MTA	Well Development

Notes: 1 gallon per minute - surged well at 5 gallon intervals

FIELD RECORD OF WATER SAMPLING

Stratford Public Utility District
Moore Twining Project No. A68301.01
Stratford, California

Groundwater Sampling Event Well Development
 Sampler's Name David Fretwell
 Sampler's Signature *[Signature]*

Well Identification No.	<u>B-6</u>	Depth to Water (ft. to TOC)	<u>6.99</u>
Casing Type/ Diameter:	<u>2 inches</u>	Total Depth	<u>8.81</u>
Depth of Well (ft. bgs)	<u>15.8</u>	One Casing Volume	<u>1.44</u>
		Three Casing Volumes	<u>14.44</u>

Date	Time	Temp (°C)	EC mS/cm	pH	Color	Odor	Purge Volume (Gallons)	Comments	Sampler's Initials
8/15/2015	14:00						0	Begin Purge	<i>[Initials]</i>
	14:02	25.3	5.08	8.08	Olive	No	1.5	Silty	<i>[Initials]</i>
	14:05	22.1	4.95	7.84	Olive	No	5		<i>[Initials]</i>
	14:13	21.7	5.09	7.9	Olive	No	10	Less Silt	<i>[Initials]</i>
	14:22	21.4	6.08	7.93	Olive	No	15	Slightly Silty	<i>[Initials]</i>
	14:29	21.3	5.17	7.99	Olive	No	20		<i>[Initials]</i>
	14:36	21.1	5.23	7.99	Olive	No	25	Very Slightly Silty	<i>[Initials]</i>
	14:40	21	5.21	7.99	Olive	No	30		<i>[Initials]</i>

Total Purge Volume (Gallons) 30 Purge Volume Measurement: 5 - Gallon Bucket
 Total Purge Time (min.) 40 Purge Rate (Gal./Min.) 0.75
 Conversion Factors: 2" 0.164 gal/ft
 4" 0.654 gal/ft

RECORD OF SAMPLING

Sampling Method: Disposable Baller Temp _____
 Date of Sample Well Development EC _____
 Sample Time _____ pH _____
 Sample Identification _____

Number of Samples _____ Container Types _____

Measured Parameter	Instrument Used	Instrument No.	Serial	Source	Calibration Date
Water Level				MTA	Well Development
Temperature				MTA	Well Development
EC				MTA	Well Development
pH				MTA	Well Development

Notes: 1 gallon per minute - surged well at 5 gallon intervals

FIELD RECORD OF WATER SAMPLING

Stratford Public Utility District
Moore Twining Project No. A68301.01
Stratford, California

Groundwater Sampling Event Well Development
 Sampler's Name David Fretwell
 Sampler's Signature *[Signature]*

Well Identification No. <u>B-7</u>	Depth to Water (ft. to TOC) <u>7.04</u>
Casing Type/ Diameter: <u>2 inches</u>	Total Depth <u>8.76</u>
Depth of Well (ft. bgs) <u>15.8</u>	One Casing Volume <u>1.43</u>
	Three Casing Volumes <u>14.36</u>

Date	Time	Temp (°C)	EC (µmhos/cm)	pH	Color	Odor	Purge Volume (Gallons)	Comments	Sampler's Initials
6/16/2015	11:00						0	Begin Purge	<i>[Signature]</i>
	11:03	22	2609	8.7	Very dark brown	No	1.5	Silty	
	11:30	21.5	3479	9.24	Very dark brown	No	5	Less Silt	
	12:00	21.4	3487	9.17	Very dark brown	No	10	Slightly Silty	
	12:15	21.7	3466	9.12	Very dark brown	No	16	Slightly Silty	

Total Purge Volume (Gallons) 15 Purge Volume Measurement: 5 - Gallon Bucket
 Total Purge Time (min.) 75 Purge Rate (Gal./Min.) 0.2
 Conversion Factors: 2" 0.164 gal/ft
 4" 0.654 gal/ft

RECORD OF SAMPLING

Sampling Method : Disposable Bailer Temp _____
 Date of Sample Well Development EC _____
 Sample Time _____ pH _____
 Sample Identification _____

Number of Samples _____ Container Types _____

Measured Parameter	Instrument Used	Instrument	Serial No.	Source	Calibration Date
Water Level				MTA	Well Development
Temperature				MTA	Well Development
EC				MTA	Well Development
pH				MTA	Well Development

Notes: 1 gallon per minute - surged well at 5 gallon intervals

FIELD RECORD OF WATER SAMPLING

Stratford Public Utility District
Moore Twining Project No. A88301.01
Stratford, California

Groundwater Sampling Event Well Development
 Sampler's Name David Fretwell
 Sampler's Signature *[Signature]*

Well Identification No. <u>B-9</u>	Depth to Water (ft. to TOC) <u>7.55</u>	
Casing Type/ Diameter. <u>2 inches</u>	Total Depth <u>8.85</u>	
Depth of Well (ft. bgs) <u>16.5</u>	One Casing Volume <u>1.451</u>	
	Three Casing Volumes <u>14.51</u>	

Date	Time	Temp (°C)	EC (µmohs/cm)	pH	Color	Odor	Purge Volume (Gallons)	Comments	Sampler's Initials
8/16/2015	9:50						0	Begin Purge	<i>[Initials]</i>
	9:52	21.5	3651	8.56	Olive	No	1.5	Silty	<i>[Initials]</i>
	9:57	20.5	3785	8.58	Olive	No	5	Less Silt	<i>[Initials]</i>
	10:05	20.7	3750	8.53	Olive	No	10	Slightly	<i>[Initials]</i>
	10:13	20.7	3775	8.58	Olive	No	15	Silty	<i>[Initials]</i>
	10:21	20.8	3785	8.59	Olive	No	20	Silty	<i>[Initials]</i>
	10:28	20.9	3763	8.69	Olive	No	25	Clear	<i>[Initials]</i>
	10:35	20.9	3769	8.69	Olive	No	30	Clear	<i>[Initials]</i>

Total Purge Volume (Gallons) 30 Purge Volume Measurement: 5 - Gallon Bucket
 Total Purge Time (min.) 45 Purge Rate (Gal./Min.) 0.66
 Conversion Factors: 2" 0.164 gal/ft
 4" 0.654 gal/ft

RECORD OF SAMPLING

Sampling Method: Disposable Bailer Temp _____
 Date of Sample Well Development EC _____
 Sample Time _____ pH _____
 Sample Identification _____

Number of Samples _____ Container Types _____

Measured Parameter	Instrument Used	Instrument No.	Serial	Source	Calibration Date
Water Level				MTA	Well Development
Temperature				MTA	Well Development
EC				MTA	Well Development
pH				MTA	Well Development

Notes: 1 gallon per minute - surged well at 5 gallon increments

**TABLE G-1
GROUNDWATER DEPTH,
PH AND ELECTRIC CONDUCTIVITY MEASUREMENTS
WASTEWATER FACILITY IMPROVEMENT PROJECT
STRAITFORD PUBLIC UTILITY DISTRICT**

DATE	Notes	Monitor Well No. B-3				Monitor Well No. B-5				Monitor Well No. B-6				Monitor Well No. B-7				Monitor Well No. B-9				
		Top of casing to top of concrete (ft) (D)	Top of casing to water depth (ft)	GW Elev. (ft)	pH	EC (uS/cm)	Top of casing to water depth (ft)	GW Elev. (ft)	pH	EC (uS/cm)	Top of casing to water depth (ft)	GW Elev. (ft)	pH	EC (uS/cm)	Top of casing to water depth (ft)	GW Elev. (ft)	pH	EC (uS/cm)	Top of casing to water depth (ft)	GW Elev. (ft)	pH	EC (uS/cm)
		1.06				1.00				1.92				1.20					1.39			
		201.51				201.28				202.07				203.35					202.94			
10/8/2014	A		6.59	193.93			6.52	194.76	7.49	9.521	6.50	195.57	7.23	5.067	6.50	196.85	7.05	3.489	6.38	196.56	7.29	3.678
1/22/2015	C, E		6.62	194.89	5.87	2,078	6.50	194.78	7.51	9.751	6.50	195.57	6.82	4.976	6.38	196.37	7.25	3.512	6.91	196.03	7.37	3.993
5/6/2015	C, E		7.37	194.14	7.45	29,690	7.05	194.29	7.73	13,120	6.99	195.08	7.99	5.210	7.04	196.31	9.12	3.466	7.55	195.39	8.69	3.769
6/15/2015	B		8.02	193.49	6.02	> 21,000	8.09	193.19	6.54	18,860	7.83	194.24	6.85	5.103	8	195.18	7.81	4.996	8.51	194.43	7.63	4.097
9/11/2015	C		7.00	194.51			6.64	194.64			6.29	195.78			7.1	196.25			7.54	195.40		
5/23/2016	C																					
Average (After Monitor Well Development)		7.46			6.74	25.345	7.26		7.14	15.990	7.04		7.42	5.157	7.61		8.47	4.231	7.87		8.16	3.933
Average EC for Monitor Wells B-6, B-7 & B-9 after development.						4.440																
Average EC for Monitor Wells B-3 & B-5 after development.						20,668																

Note:
A) Measured by MTA when wells were installed. Per MTA, measurements to groundwater were from the concrete base to the water.
B) From Moore Twining well development results done on June 15 and 16, 2015.
C) Measured by Granger Water Specialists.
D) Top of Casing Elevation varies from 1.00 feet to 1.92 feet from the monitor well concrete base.
E) Water quality measurements taken prior to monitor well development.