TECHNICAL MEMORANDUM

To: Mr. Keith Van Der Maaten
General Manager, Marina Coast Water District

From: Curtis J. Hopkins
Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc.

Date: July 13, 2016

Subject: Proposed Settlement Agreement on Monterey Peninsula Water Supply Project (MPWSP) Desalination Plant Return Water

I. Introduction

Hopkins Groundwater Consultants, Inc. (Hopkins) has reviewed California-American Water Company's (Cal-Am's) proposed return water settlement agreement for groundwater extracted by the Monterey Peninsula Water Supply Project (MPWSP or project), dated June 14, 2016, as requested by Marina Coast Water District (MCWD). Cal-Am's proposed return water settlement agreement provides:

> Pursuant to the terms of this Settlement Agreement, the Parties propose that Cal Am deliver Return Water to the Castroville Community Services District ("CCSD") and to the CSIP ***to satisfy Return Water requirements that may arise out of the Agency Act, CEQA, or California groundwater law,*** in accordance with terms and conditions and general principles contained in this Settlement Agreement and separate Return Water Purchase Agreements between Cal Am as seller and CCSD and the Agency, respectively, as purchasers of Return Water.

(Settlement Agreement on MPWSP Desalination Plant Return Water, p. 4 [¶AA].) As explained below, available information indicates the proposed return water settlement agreement will not satisfy the MPWSP's Return Water requirements under the California Environmental Quality Act (CEQA) or California groundwater law.

Our January 22, 2016 memorandum (entitled "Cal-Am's Return Water Proposal for Monterey Peninsula Water Supply Project") addressed many of the inadequacies in Cal-Am's currently proposed return water settlement agreement, specifically the inadequacies in the amount of water Cal-Am's estimates will need to be returned and its originally preferred return water alternative to return water through Castroville Seawater Intrusion Project (CSIP).[1] This memorandum supplements that analysis and provides our professional opinion on why providing return water to the Castroville area as proposed in the Return Water Settlement Agreement will not mitigate the adverse groundwater impacts caused by the project in the North Marina Area of the 180-400 Foot Aquifer Subbasin[2] within the Salinas Valley Groundwater Basin (SVGB). As explained in our prior memorandum and expanded upon herein, providing return water north of the Salinas River may beneficially effect groundwater in those aquifers, but it will not mitigate the project's primary adverse impacts to the aquifers south of the Salinas River and their water users.

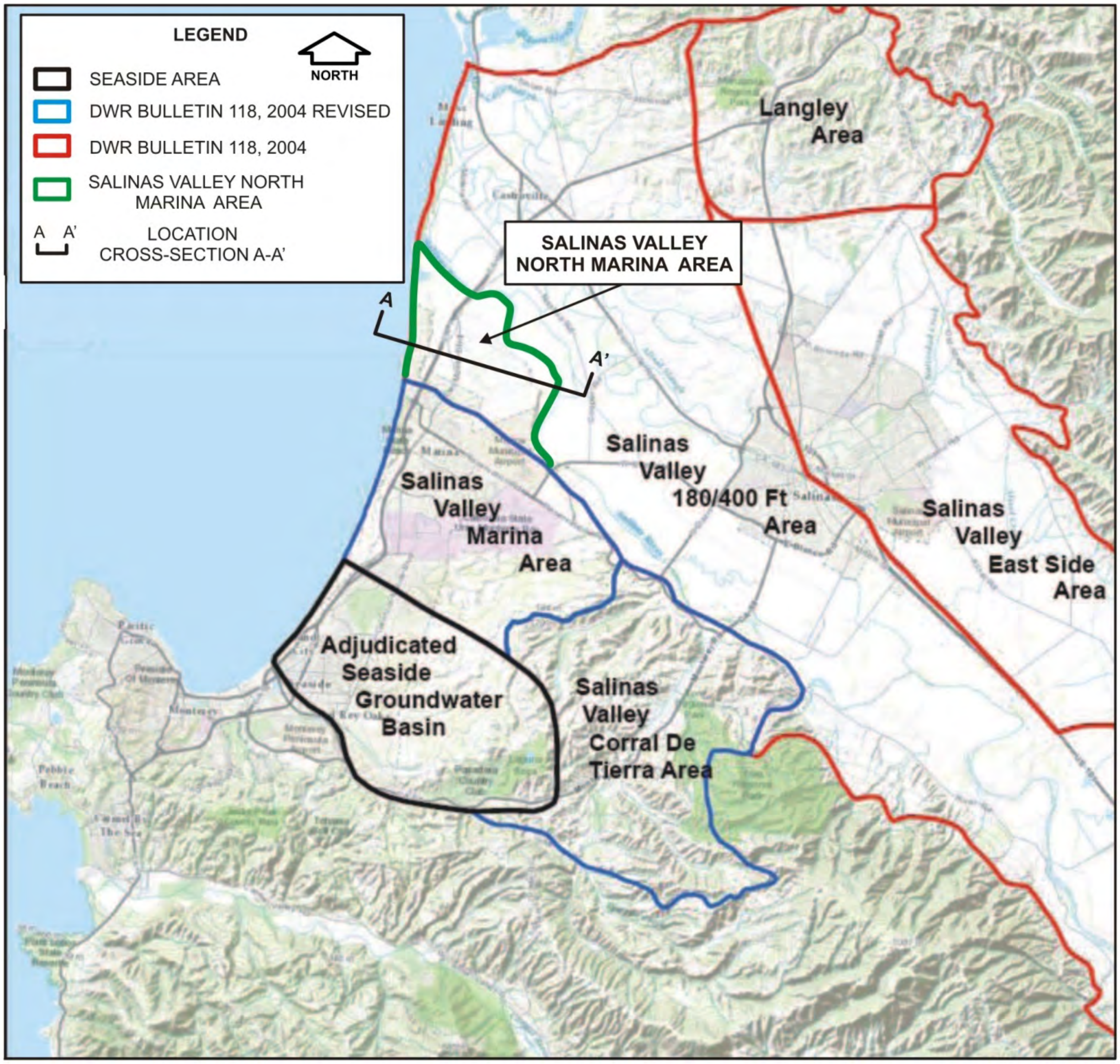
II. North Marina Area Geology Differs from the Geology North of the Salinas River.

The geology in the North Marina Area differs from the geology north of the Salinas River in the main portion of the 180-400 Foot Aquifer Subbasin and has been described in detail by studies conducted for the MPWSP. An interpretation of subsurface deposits within this specific coastal area is provided in Plate 1 – Cross-Section A-A', which is a portion of a subsurface profile constructed by Geoscience Support Services, Inc. from borehole data collected in the area (Geoscience, 2014). The approximate location of Cross-Section A-A' is shown in Figure 1 – Groundwater Basin Boundary Map. As shown and as described by previous study (Geoscience, 2014 and 2015, KJC, 2004), the terrace deposits that comprise the 180-Foot Equivalent Aquifer (180-FTE) in the North Marina Area grade into the alluvial deposits that comprise the 180-Foot Aquifer in the main portion of the basin around the present location of the Salinas River.

[1] / As explained in our January 22, 2016 memorandum, updated return water estimates based on unbiased modeling calibrated with actual data—rather than unproven assumptions—from the MPWSP test slant well project (TSW) and monitoring well data from the aquifers within the Northern Marina Subarea affected by the project are required to provide any meaningful basis for evaluating the efficacy of Cal-Am's return water proposals. As updated modeling is not available, we have not updated our estimates of the amount of return water that will be required to mitigate the proposed project impacts.

[2] / For purposes of the memorandum, the North Marina Area is defined as that portion of the 180/400 Foot Aquifer Subbasin located south of the Salinas River and north of the Salinas Valley Marina Area as indicated in Figure 1.

Figure 1 – Groundwater Basin Boundary Map

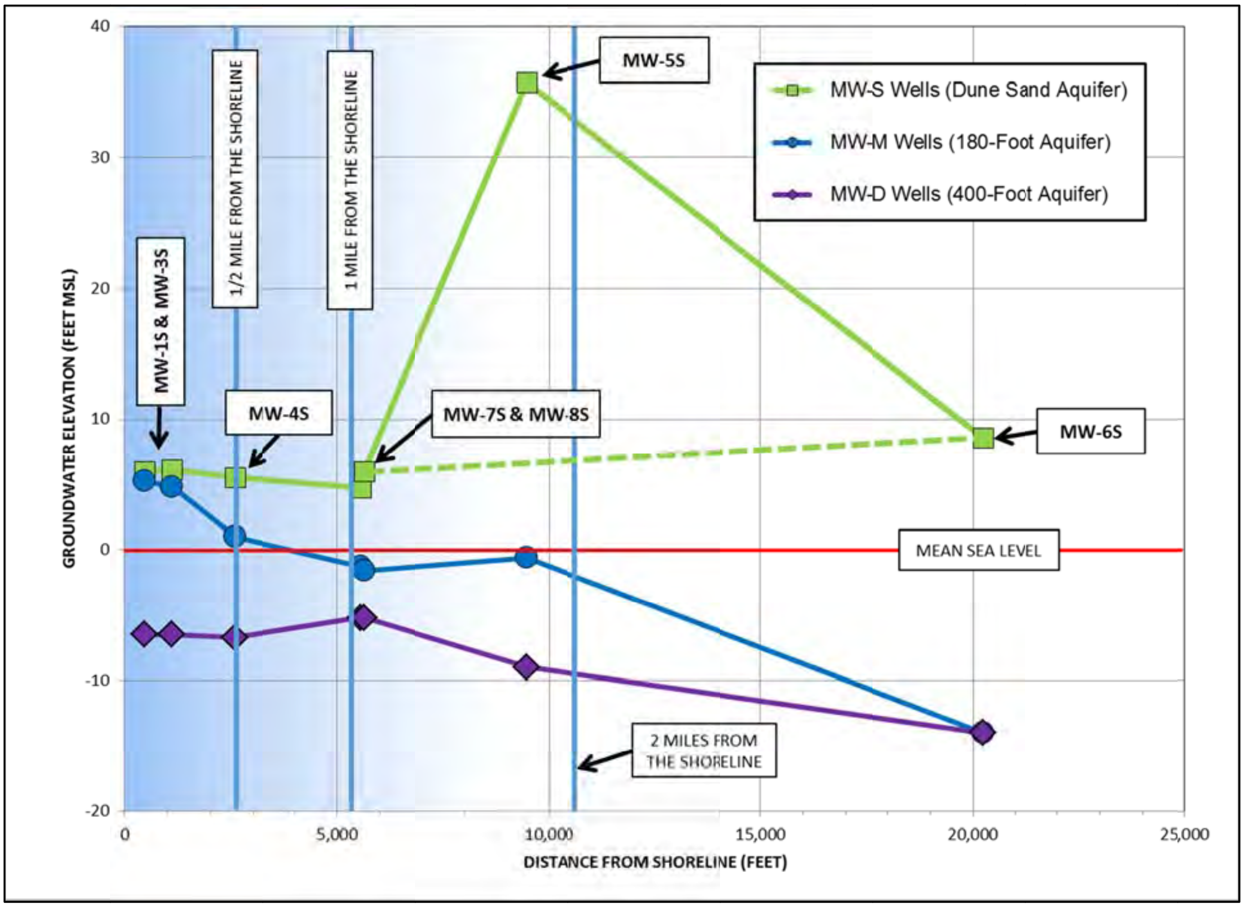


Recent investigation for the MPWSP includes the installation of a test slant well and multiple monitoring wells in and around the CEMEX property where the MPWSP intake wells are proposed to be located. The monitoring well network is being used to generate background water level and water quality data within the North Marina Area of the 180-400 Foot Aquifer Subbasin. The location of the monitoring facilities is shown on Plate 2 – Well Location Map.

Routine monitoring of the well network is presented in weekly summary reports that are posted on the Cal-Am website. Water level data are graphically presented as hydrographs which show daily changes and seasonal trends. A set of hydrographs provided by the MPWSP test slant well long term pumping test Monitoring Report No. 61 are included as Attachment A -

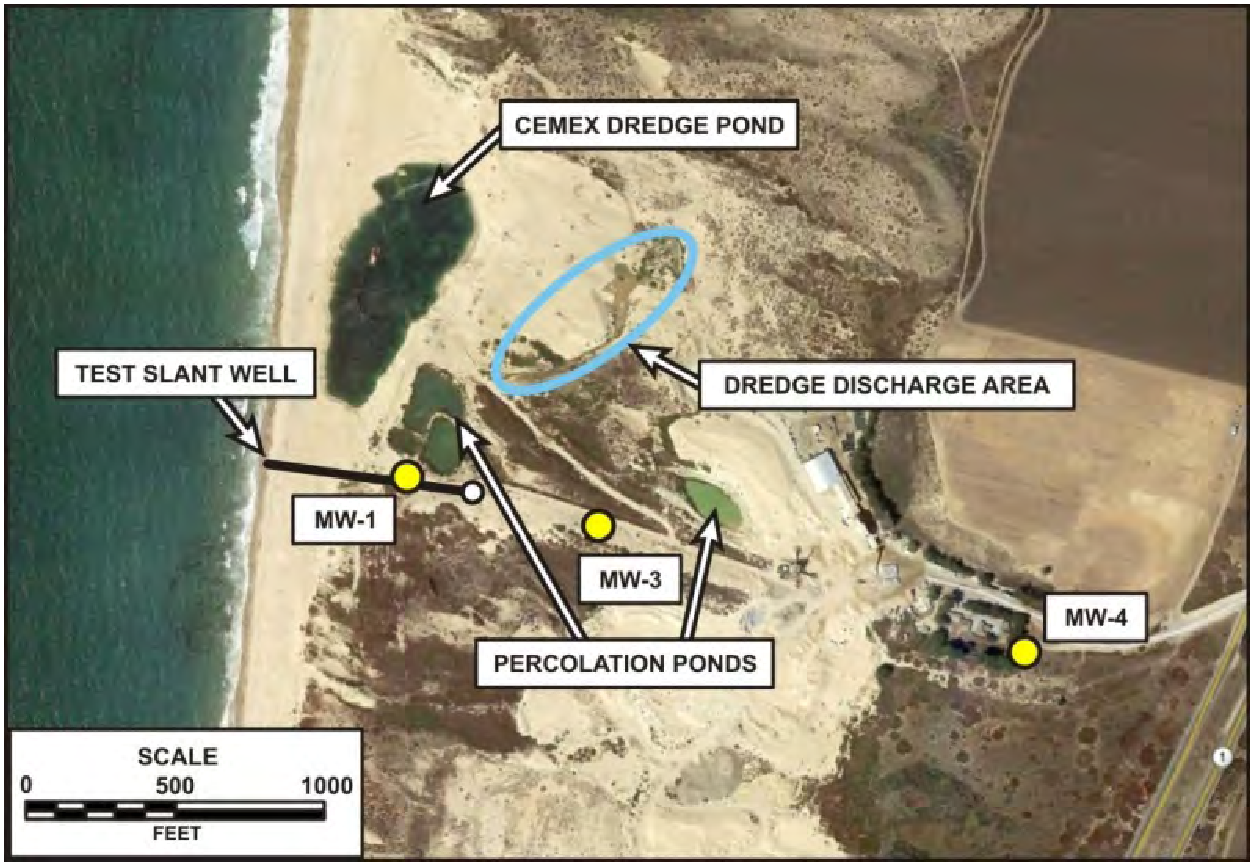
MPWSP Water Level Data. We must note that while we have over a year of data, the climatic conditions prior to initiation of testing have been extremely dry. For comparison of the groundwater conditions across the area prior to resumption of pumping, data from May 2, 2016 were used to construct Figure 2 - Groundwater Elevation From MPWSP Monitoring Wells. As shown, the water level elevations vary significantly between the shallow Dune Sand Aquifer (indicated by the MW-S Wells), the 180-FTE Aquifer (indicated by the MW-M Wells), and the 400-Foot Aquifer (indicated by the MW-D Wells).

Figure 2 – Groundwater Elevation From MPWSP Monitoring Wells



Notably, the monitoring performed to date shows the Dune Sand Aquifer has water levels above sea level that maintain a protective head against seawater intrusion (Geoscience, 2013). The coastal groundwater mounding at MW-1 and MW-3 is believed to be maintained by the CEMEX dredge pond operation that is discharged on the landward side of the coastal dunes as well as process water that is discharged to percolation ponds that are proximate to the 2 monitoring well locations. Figure 3 – CEMEX Salt Water Discharge Locations shows the surface water features that have influenced the groundwater levels and quality at this location along the coast for decades. The maintenance of these features undoubtedly increases the amount of ocean water present in shallow groundwater in the vicinity of the test slant well that likely does not exist at the location of the MPWSP source wells proposed south of the test slant well location.

Figure 3 – CEMEX Salt Water Discharge Locations



As explained in our January 22, 2016 memorandum, these data developed from the MPWSP investigation show there is a perched groundwater condition in the vicinity of MW-5 where the groundwater elevation is 36 feet above mean sea level (msl). The groundwater perched above the Salinas Valley Aquitard equivalent flows toward the coast and results in downward recharge where the aquitard layer thins (or ends) and provides fresh water recharge into the coastal unconfined Dune Sand Aquifer and the underlying 180-Foot Aquifer in the vicinity of MW-7 and MW-8. (See January 22, 2016 memorandum, pp. 10-12, Figures 4-7.) Again, this is a very significant development given that the groundwater found with a 36-foot elevation in the Dune Sand Aquifer at the location of MW-5S (and a 6-foot elevation at MW-7S), effectively provides a protective layer preventing seawater from intruding into the Basin at a shallow depth in the Project area and percolating downward into the underlying aquifers. Instead of allowing a shallow pathway for ocean water, the Dune Sand Aquifer having a potable fresh water quality based on its TDS concentration, appears to be slowly recharging the lower aquifers (i.e., the 180-Foot Aquifer and perhaps 400-Foot Aquifer), which has significantly reduced their TDS levels in this coastal area.

Monitoring data also indicate that the elevation of the water levels in Monitoring Wells MW- 7M and MW-8M under static groundwater conditions in May 2016 were lower than the levels in both MW-4M and MW-5M. While the groundwater elevation is near mean sea level, the gradient indicated by the higher level at MW-5M shows that groundwater flows toward the coast up to MW-7 and MW-8 under these conditions. The significance is that after several years of drought conditions, the groundwater gradient between MW-4M (roughly ½ mile from the coast) and MW-5M (almost 2 miles from the coast) is relatively flat in the 180-FTE Aquifer even though a significant decline in the groundwater level is observed to occur between MW-5M and MW-6M (see Figure 2). Further study would be required to understand if the mounding indicated in the 400-Foot Aquifer at MW-7 and MW-8 were from vertical recharge from the 180-FTE in this area along the coast.

III. Water Quality in North Marina Area Aquifers.

Water quality data developed as part of the test slant well project are summarized in the tables included in Attachment B – Laboratory Water Quality Test Results. The first table shown in Attachment B provides the only data published for wells other than the test slant well and MW-4 (Geoscience, 2015a). This table includes laboratory results for wells including MW-1, MW-3, MW-4, MW-5, and the test slant well. The second table in Attachment B is a compilation of laboratory data received by MCWD in October 2015 in response to a data request in the California Public Utilities Commission proceedings. This table includes data for monitoring wells MW-6, MW-7, MW-8, and MW-9 that to our knowledge, have not be published in any of the MPWSP documents.

The significance of these data is that they indicate beneficial conditions have developed (or have always existed) in the North Marina Area of the 180-400 Foot Aquifer Subbasin contrary to information published by the Monterey County Water Resources Agency (MCWRA). The recent investigation that is being conducted in and around the North Marina Area as part of the MPWSP has uncovered an occurrence of freshwater within the shallow Dune Sand Aquifer and the underlying 180-Foot Aquifer within the area delineated as seawater intruded by the MCWRA. As previously shown, water level data from wells in the shallow dune sand aquifer appear to show protective water levels that are sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the lack of pumping in the 180-Foot Aquifer in the North Marina Area, appears to have slowed seawater intrusion in this portion of the coastline. Water quality test results for total dissolved solids and chloride concentrations in these two uppermost aquifer zones are shown on Figures 4 and 5 – Average Total Dissolved Solids Concentrations in Groundwater and Average Chloride Concentrations in Groundwater, respectively.

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Figure 4 – Average Total Dissolved Solids Concentrations in Groundwater

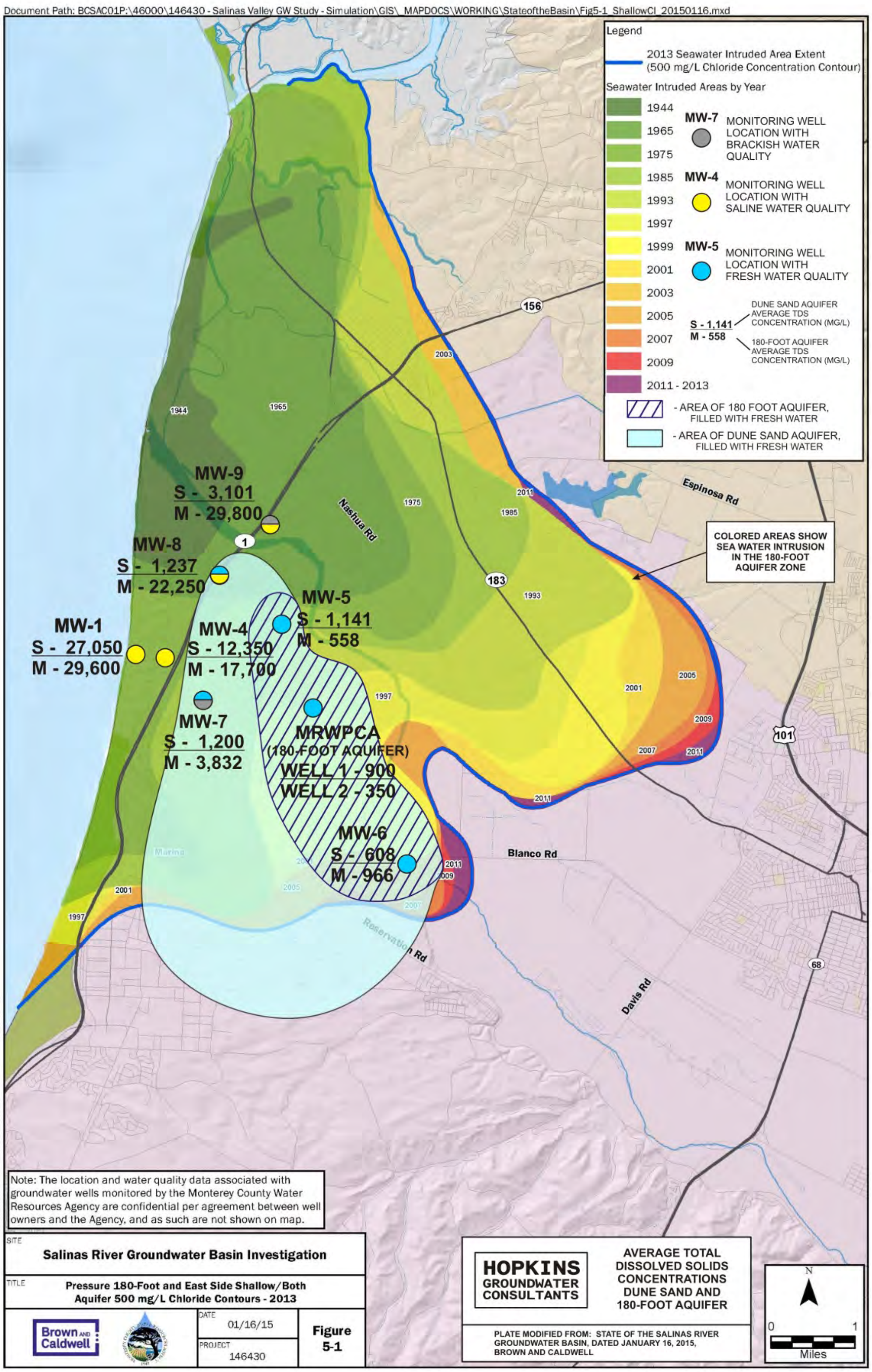

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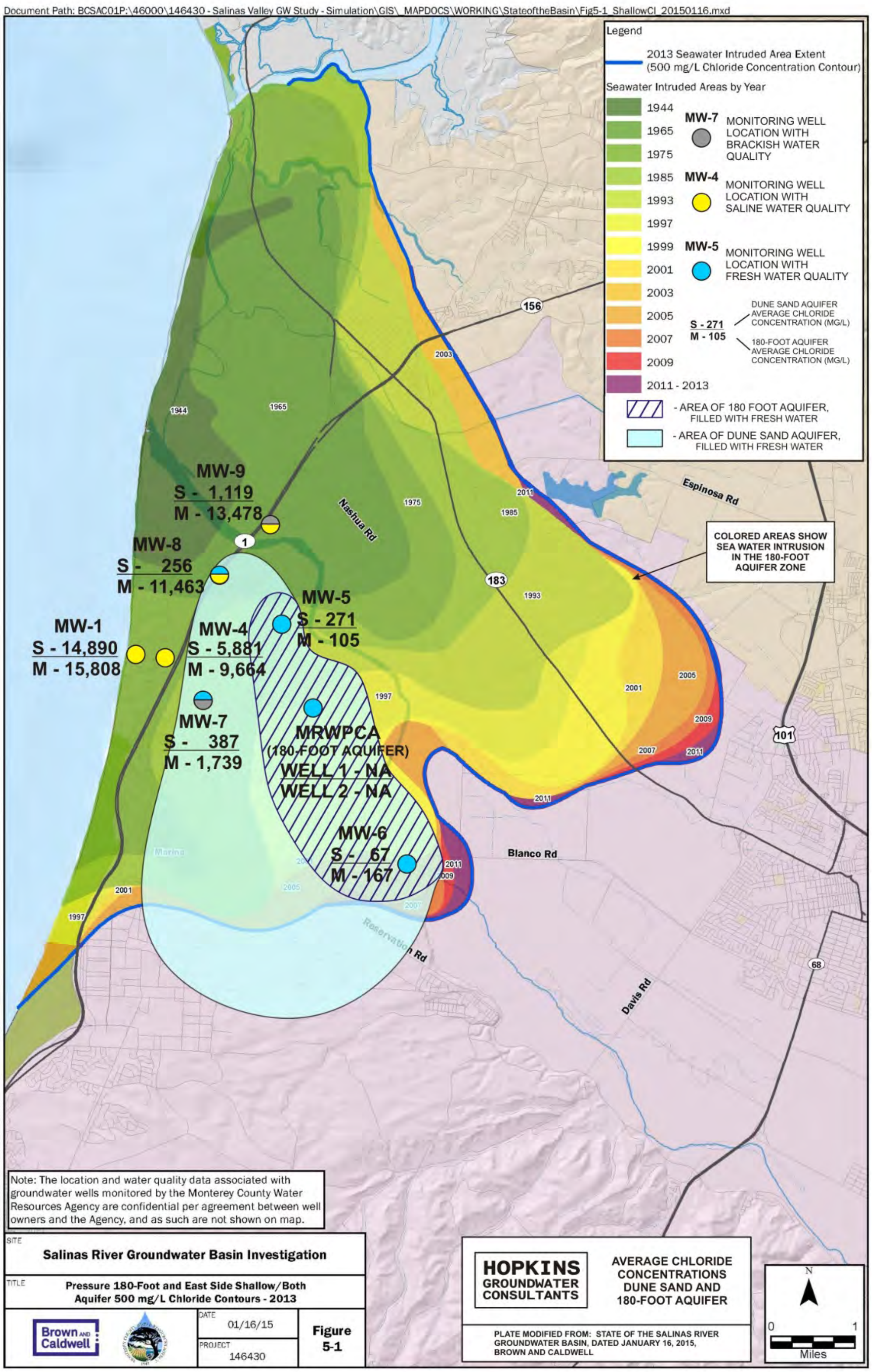
Figure 5 – Average Chloride Concentrations in Groundwater



These data suggest a change of groundwater conditions in this coastal section of the aquifer or alternatively, they may reveal the groundwater conditions that existed in an area largely lacking historical data. While the freshwater in this area contains salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater intrusion. Figure 6 and 7 – Stiff Diagrams of Dune Sand Aquifer Groundwater and 180-Foot Aquifer Groundwater, respectively show that the chemical character of groundwater in these new wells is predominantly calcium chloride and calcium bicarbonate.

Additionally, elevated concentrations of nitrate are present in monitoring wells MW-5S, MW-7S and MW-8S and range from 115 mg/l to 237 mg/l. The concentration of nitrate decreases with depth at all of these sites, and is the highest at MW-5, which is closest to the landfill and the wastewater treatment facilities. While future use of this area for a direct potable groundwater supply is unknown, existing conditions show abatement of seawater intrusion in the shallower aquifer zones in this coastal portion of the Salinas Valley Groundwater Basin. This condition could support the future beneficial uses of the 180-Foot Aquifer zone potentially including aquifer storage and recovery of highly purified recycled water for indirect potable reuse.

These data indicate a unique condition exists in the North Marina Subarea south of the Salinas River that provides a significant degree of protection against seawater intrusion in the shallower aquifers under the present and recent past hydrologic conditions.

Figure 6 – Stiff Diagrams of Dune Sand Aquifer Groundwater

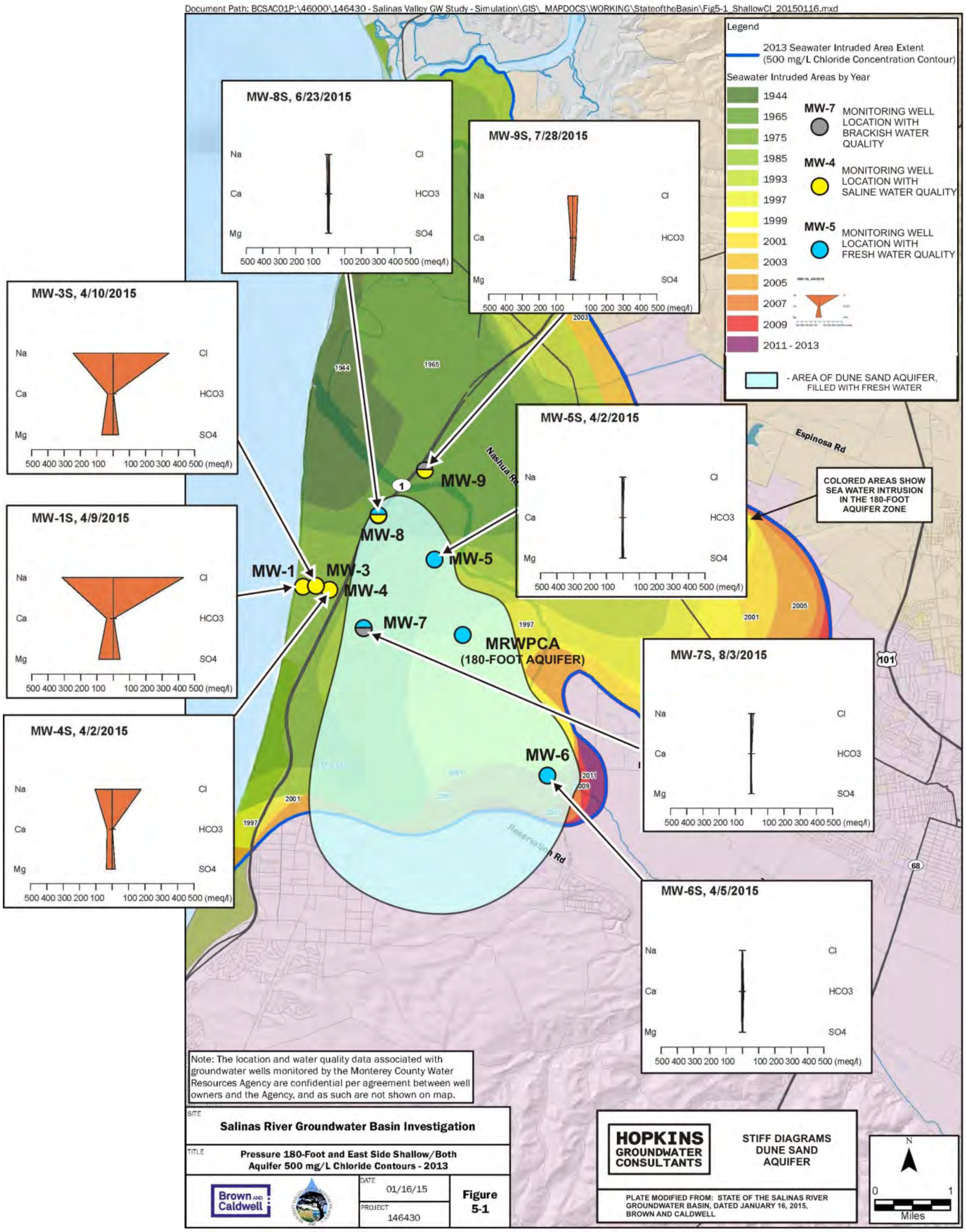


Figure 7 – Stiff Diagrams of 180-Foot Aquifer Groundwater

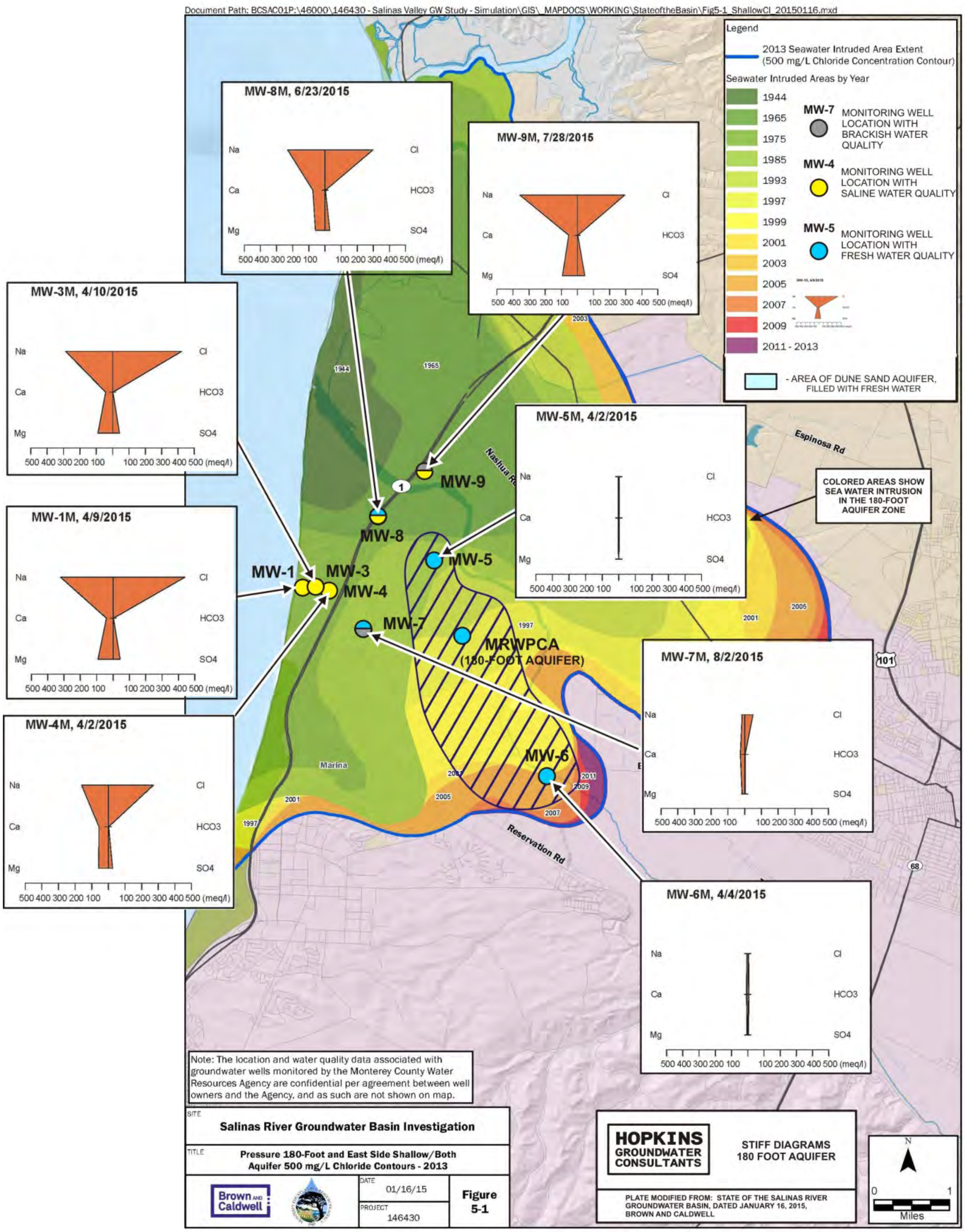
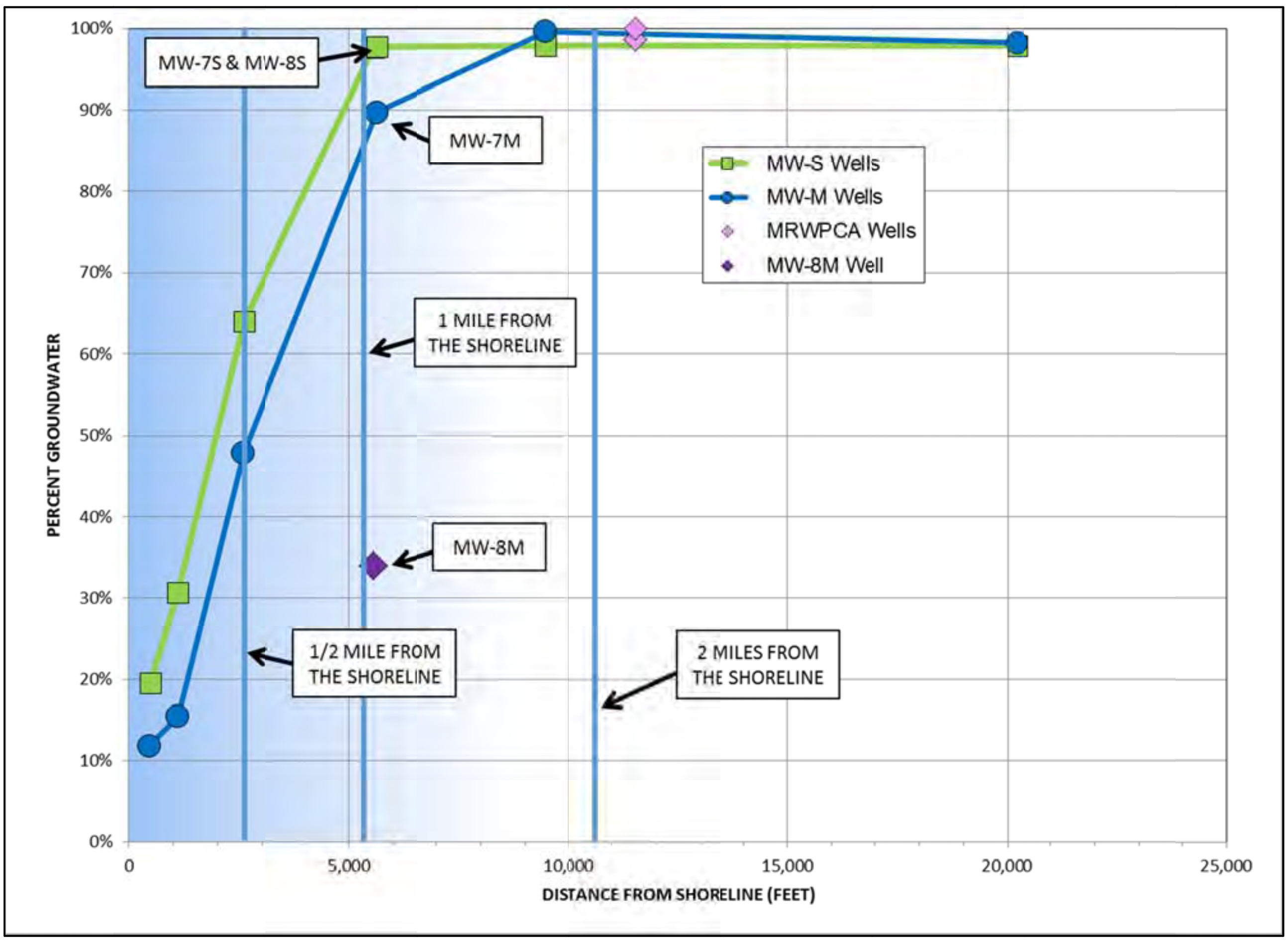


Figure 8 – Percent Groundwater with Distance From the Shoreline shows the rudimentary calculation of groundwater percentage versus ocean water percentage using the same equation applied to the test slant well discharge. The percentage of fresh groundwater in well water samples was calculated using the following equation:

GWP = [1 – (WSS – GWS/OWS – GWS)] X 100

Where:
GWP = Percent Groundwater
WSS = Well Sample Salinity (mg/l)
GWS = Groundwater Salinity (420 mg/l)
OWS = Ocean Water Salinity (33,500 mg/l)

Figure 8 – Percent Groundwater with Distance From the Shoreline



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Water quality data for this analysis were provided by the laboratory test results summarized in Attachment B. These available data show that the percentage of ocean water decreases significantly within a short distance from the coastline in the North Marina Area and the salinity of groundwater that is comparable to seawater is not up to 8 miles inland in the 180-Foot Aquifer as assumed by previous study. Calculation of percent ocean water using this method cannot differentiate between salts from overlying land uses and salt from ocean water.

This calculation assumes that all salt in groundwater with a TDS above a concentration of 420 mg/l is from ocean water. As shown in Figure 4, monitoring wells MW-5M and MW-6M along with the Monterey Regional Water Pollution Control Agency (MRWPCA) Wells are located in the 180-Foot Aquifer and the TDS concentration for samples from these wells ranges from approximately 558 to 966 milligrams per liter (mg/l) and is also considered fresh water (see water quality tables in Attachment B). However, the TDS concentration for MW-7M (3,832 mg/l) and MW-8M (22,250 mg/l) show that closer to the coast and closer to the main portion of the Basin north of the river, seawater has impacted the underlying 180-Foot Aquifer as shown in Figures 4 and 7.

IV. Proposed Return Water Settlement Agreement Does Not Mitigate MPWSP's Adverse Groundwater Impacts to North Marina Area Aquifers.

Under Cal-Am's proposed Return Water Settlement Agreement, all of the groundwater extracted by the MPWSP source wells from the North Marina Area aquifers would be returned to water users north of the Salinas River (i.e, CCSD and CSIP). Notably, the return water is reportedly provided to reduce groundwater pumping from those users water supply wells. The wells that allegedly would not be pumped (or where pumping would be reduced) to mitigate the impacts of the MPWSP source wells, however, are located north of the Salinas River outside of the area most impacted by the proposed MPSWP source wells. As shown by the drawdown contours provided in the CPUC's April 2015 CalAm MPWSP Draft Environmental Impact Report ("DEIR"), drawdown north of Salinas River is significantly less than the drawdown anticipated south of the Salinas River. See Figures 4.4-13, 4.4-14 and 4.4-15 from the MPWSP DEIR provided below. [3]

[3] / While the modeling used in the CPUC's April 2015 CalAm MPWSP DEIR should not be relied upon to predict the likely amount of drawdown at any particular location for the reasons outlined in our January 22, 2016 memorandum, it is illustrative of how groundwater impacts from the MPWSP sources wells will lessen with distance.

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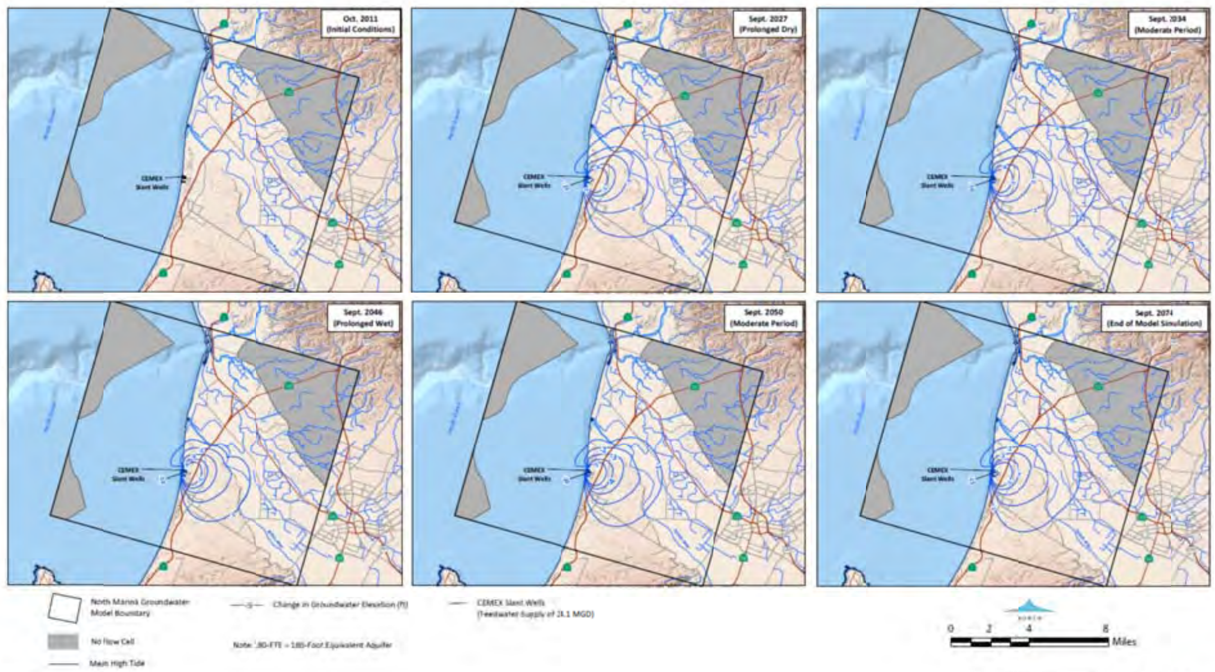
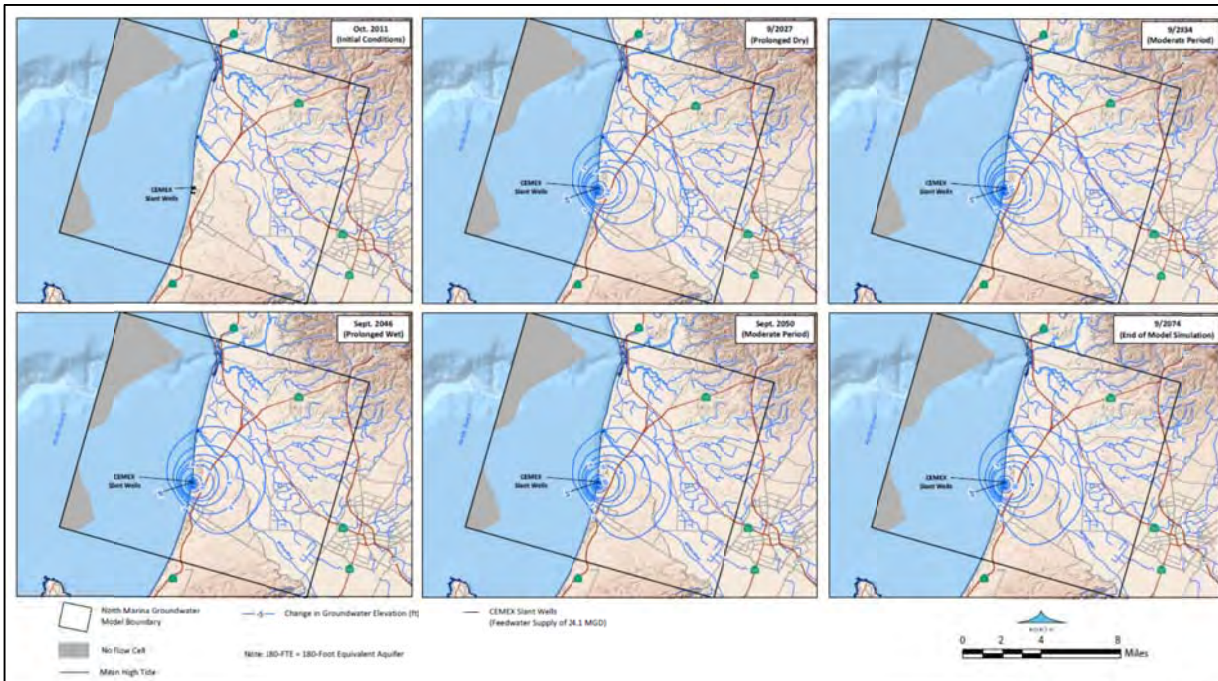


SOURCE: Geoscience, 2015.

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-13

Changes in Groundwater Elevations for Dune Sand Aquifer between Project and No Project (Scenarios 3n vs. 1n)

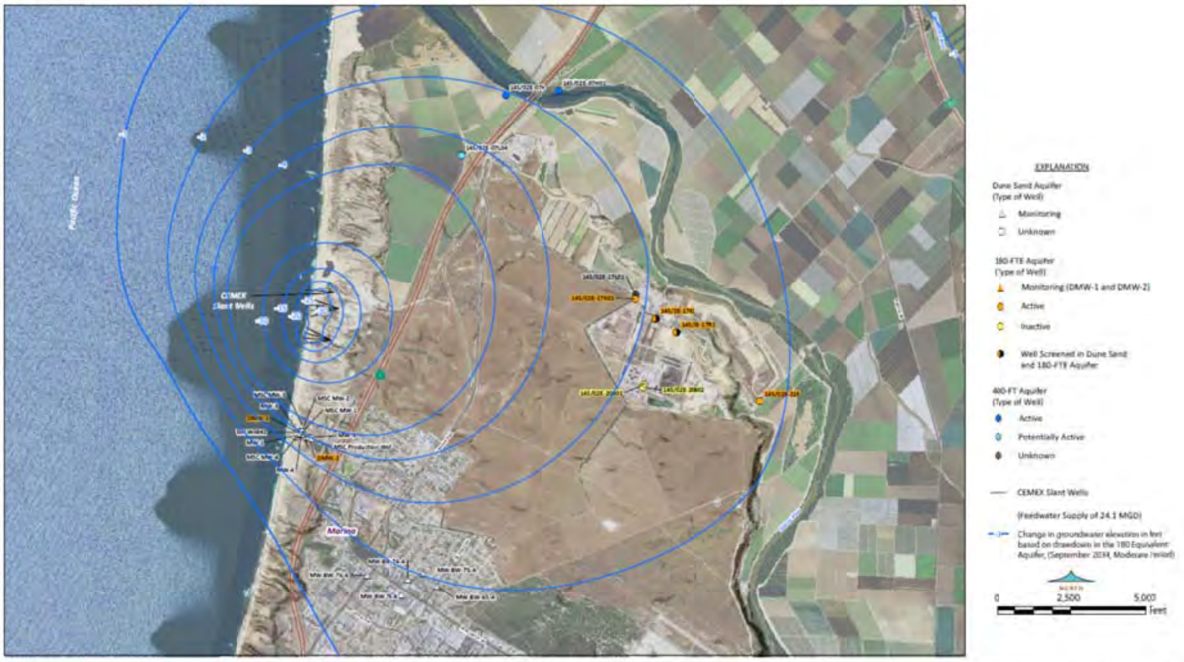


SOURCE: Geoscience, 2015.

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-14

Changes in Groundwater Elevations for 180-Foot Equivalent Aquifer between Project and No Project (Scenarios 3n vs. 1n)



SOURCE: Geoscience, 2015c

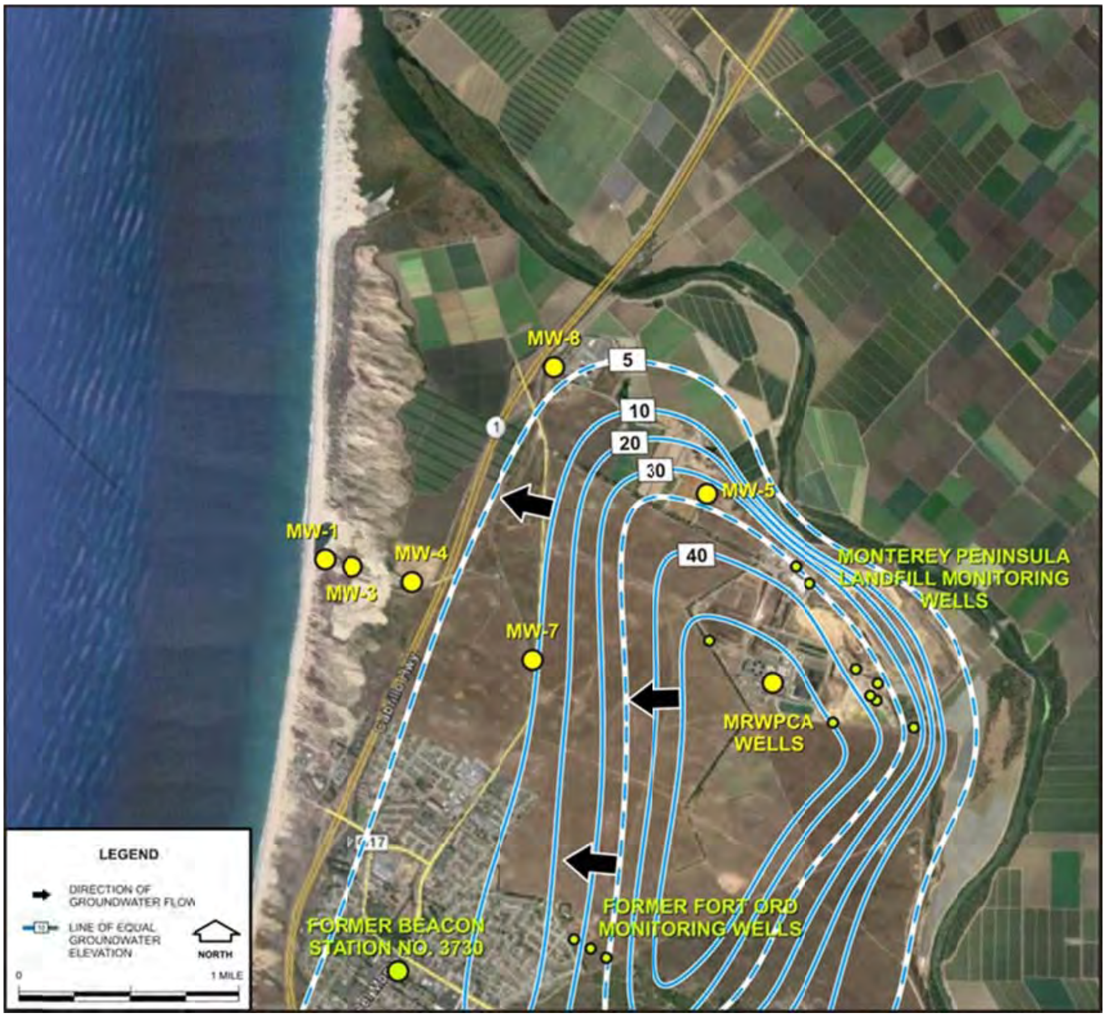
205335.01 Monterey Peninsula Water Supply Project
Figure 4.4-15
Known Active Wells in the Dune Sand Aquifer, 180-Foot Equivalent Aquifer, or 400-Foot Aquifer within Two Miles of the Proposed Project

Perhaps more importantly, the CCSD and CSIP wells where pumping will be reduced (or cease) do not pump water from the Dune Sand or 180-FT Aquifers that the MPWSP will extract water from. This is important for two reasons.

First, as discussed above, groundwater conditions in the Dune Sand or 180-FTE Aquifers inland of the proposed MPWSP intake system create protective heads in the shallow dune sand that is evident by the water levels in monitoring wells MW-4S, MW-7S, and MW-8S. Downward recharge into the underlying 180-FTE was observed to elevate the groundwater levels above sea level during 2015-2016 winter season (the single season of record), which occurred after a 4-year drought. The benefits from these unique groundwater recharge conditions that create shallow mounding in the North Marina Area will be removed by the project and delivery of return water north of the Salinas River to reduce pumping will not mitigate the potential impacts realized by these changed conditions.

Moreover, as indicated by water levels in MW-6M and MW-6D, there is direct vertical recharge between aquifers at certain locations with the North Marina Area where aquitard layers are discontinuous. Leakage through these layers can facilitate vertical flow of seawater that is induced into the North Marina Area by the project. Cal-Am's return water proposal does not address the increased seawater intrusion the project will cause within the North Marina Area by lowering existing protective heads and removing freshwater recharge. Given the groundwater gradients in the North Marina Area, water injected north of the Salinas River simply will not flow towards the North Marina Area, but rather away from it. For this same reason, reduced pumping north of the Salinas River simply will not mitigate the reduced water levels and induced seawater intrusion in the North Marin Area that will result from the MPWSP. Figure 9 – Dune Sand Aquifer Groundwater Elevation Contour Map was included in our prior memorandum and is reproduced below to show the general North Marina Area where the project will impact groundwater conditions while the CCSD and CSIP wells where pumping would potentially be reduced under Cal-Am's proposed Return Water Settlement Agreement are located a significant distance (miles) north of the area and the CEMEX site.

Figure 9 – Dune Sand Aquifer Groundwater Elevation Contour Map



Second, providing water north of the Salinas River as proposed in Cal-Am's Return Water Settlement Agreement will not remedy the harms to the water users in North Marina Area from reduced water levels and water quality caused by the MPWSP source wells. Again, none of the water provided to the CCSD or CSIP will flow towards the North Marina Area or lessen the

Project's impacts in this area. Thus, the Cal-Am's proposed Return Water Settlement Agreement will not mitigate impacts to the North Marina area or its water users.

As we noted in our January 22, 2016 memorandum, providing return water though injection wells or percolation basins within the Northern Marina Subarea may be a viable option. Additional information and analysis is needed to determine whether these possible options would offset the impacts of the project on the Northern Marina Subarea aquifers and the groundwater users within the subarea. To evaluate such an alternative, we would need know the location where the water is proposed to be injected or percolated, the zones and rates for an injection proposal, and what quality of water would be injected or percolated.

IV. Conclusion.

As indicated in our prior January 22, 2016 memorandum, updated modeling using information developed from the TSW field investigations and available from other studies in the North Marina Area must be used to refine the MPWSP modeling to accurately simulate aquifer conditions. Additional analysis regarding a method for returning groundwater pumped by the proposed MPWSP source wells that demonstrates the protective conditions that currently exist in the North Marina Area are not adversely impacted to the detriment of the groundwater users in the subarea. Without updated modeling and additional analysis, it is virtually impossible for the public and public agencies to provide meaningful testimony regarding Cal-Am's return water proposal. Nonetheless, it is clear that Cal-Am's Return Water Settlement Agreement will not mitigate the MPWSP's groundwater impacts to the groundwater aquifers within the North Marina Area.

In sum, Cal-Am's Return Water Settlement Agreement does not consider or address the adverse impacts that would result from the MPWSP's source wells. The return water method selected must ensure that the protective water level elevations within the North Marina Area aquifers are maintained to prevent further seawater intrusion within this portion of the SVGB. Unless a return water method ensures the protective conditions discussed above are not harmed, the MPWSP will induce seawater intrusion into the Dune Sand Aquifer and will exacerbate seawater intrusion in the 180-Foot Aquifer in the North Marina Area and likely result in cumulative impacts to aquifers and wells much further inland. It will also delay (or eliminate benefit from) efforts to reverse the trend of seawater intrusion in the North Marina Area and throughout the SVGB. The MPWSP will also undercut extensive efforts by the MCWD and others to eliminate the long-term overdraft condition and to respond to the serious existing drought conditions.

HOPKINS GROUNDWATER CONSULTANTS

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.

Curtis J. Hopkins
Principal Hydrogeologist
Certified Engineering Geologist, EG1800
Certified Hydrogeologist, HG114

References

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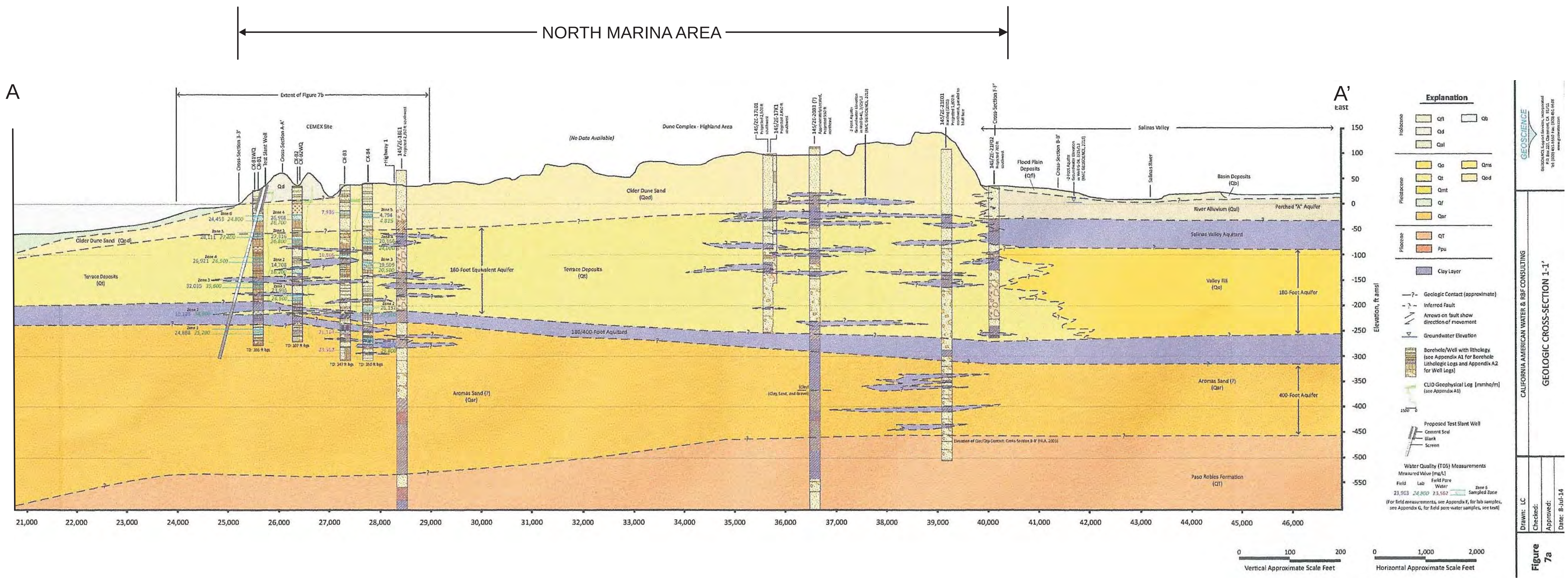
PLATES



CROSS-SECTION A-A'
Technical Memorandum
Marina Coast Water District
Marina, California

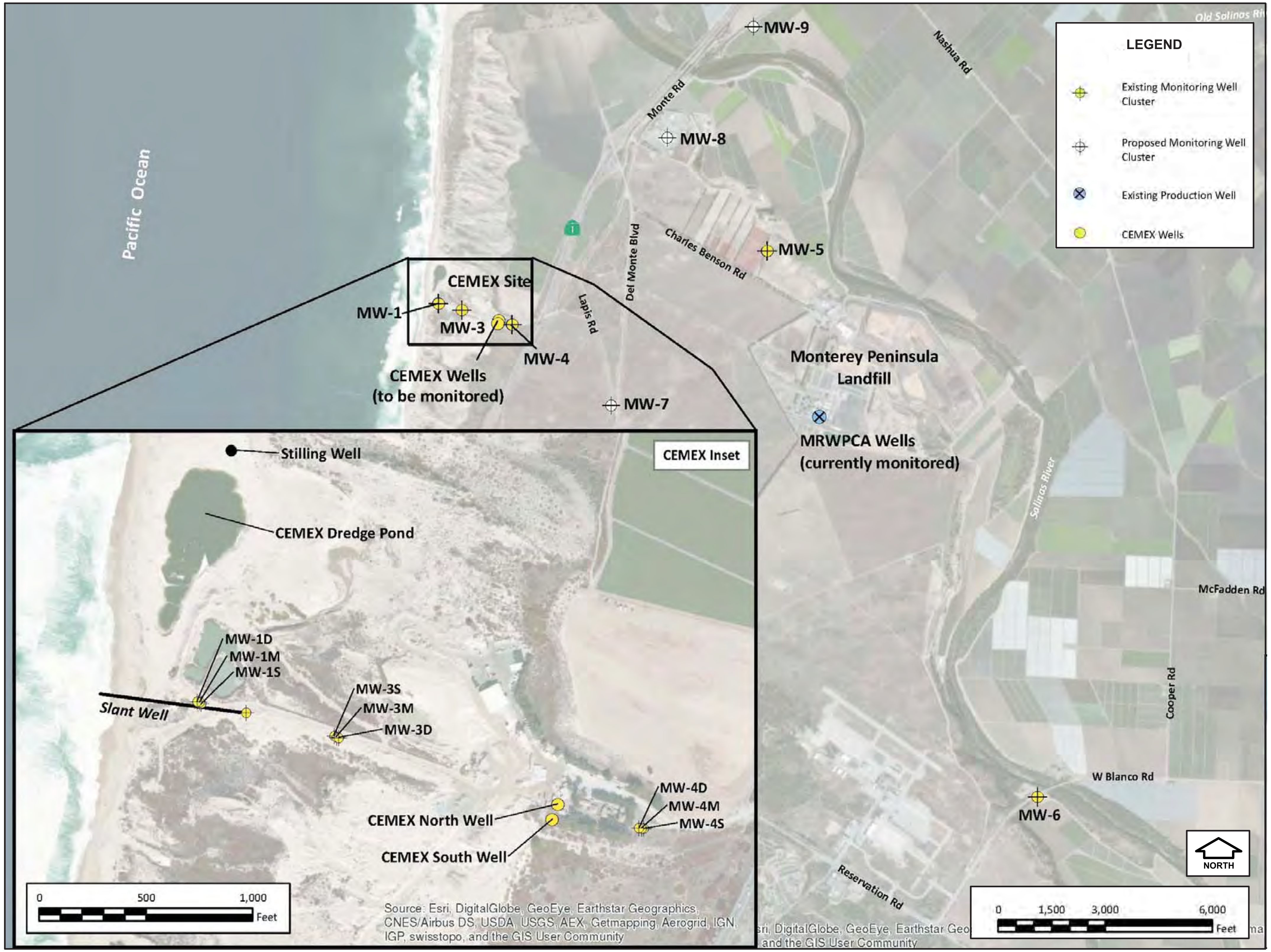


PLATE MODIFIED FROM: MONTEREY PENINSULA WATER SUPPLY PROJECT HYDROGEOLOGIC INVESTIGATION, TECHNICAL MEMORANDUM PART 1 SUMMARY OF RESULTS - EXPLORATORY BOREHOLES DATED JULY 8, 2014, GEOSCIENCE SUPPLY SERVICES, INC.

WELL LOCATION MAP
Technical Memorandum
Marina Coast Water District
Marina, California

PLATE 2

ATTACHMENT A
MPWSP WATER LEVEL DATA

Groundwater Elevation in MPWSP MW-1

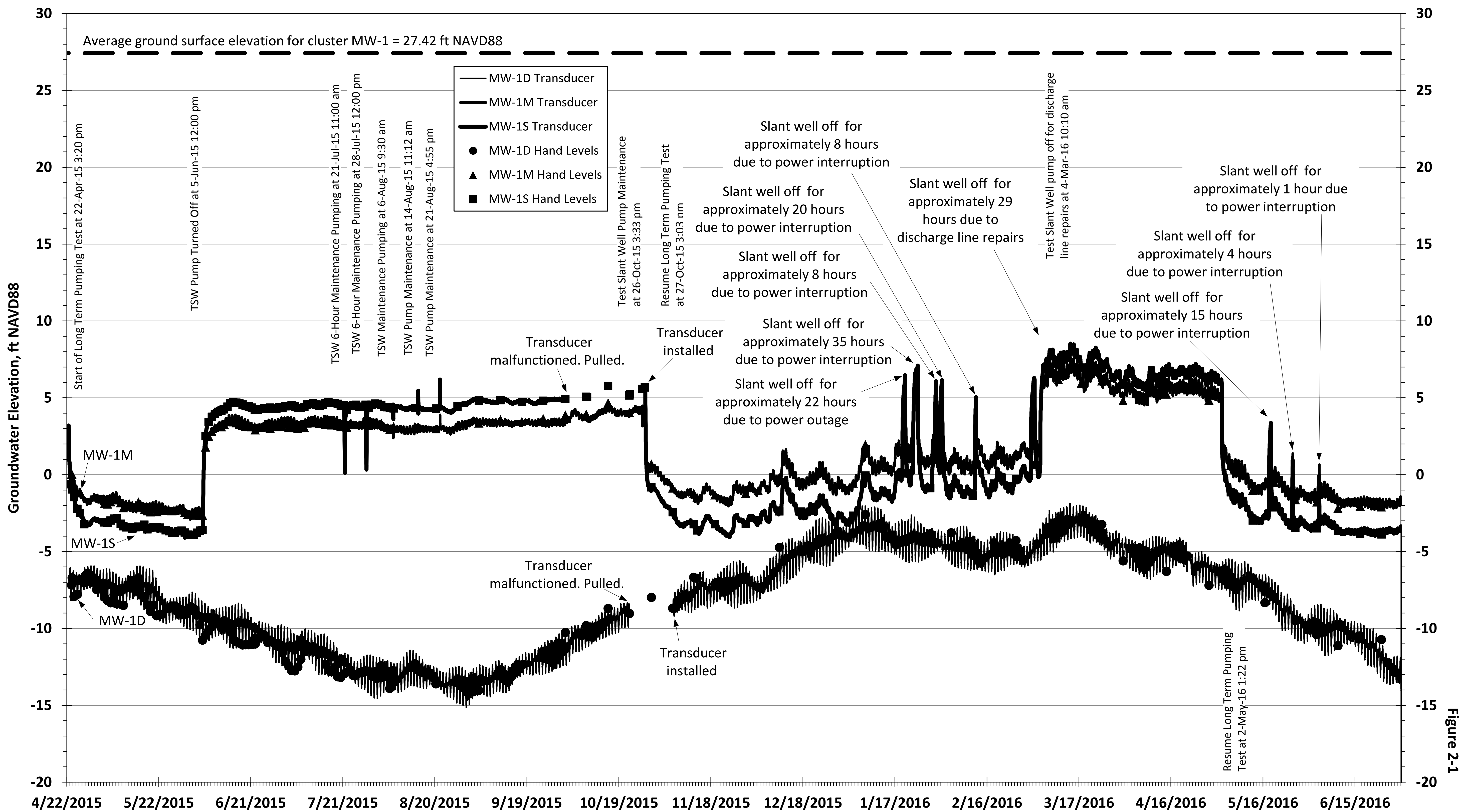


Figure 2-1

Groundwater Elevation in MPWSP MW-3

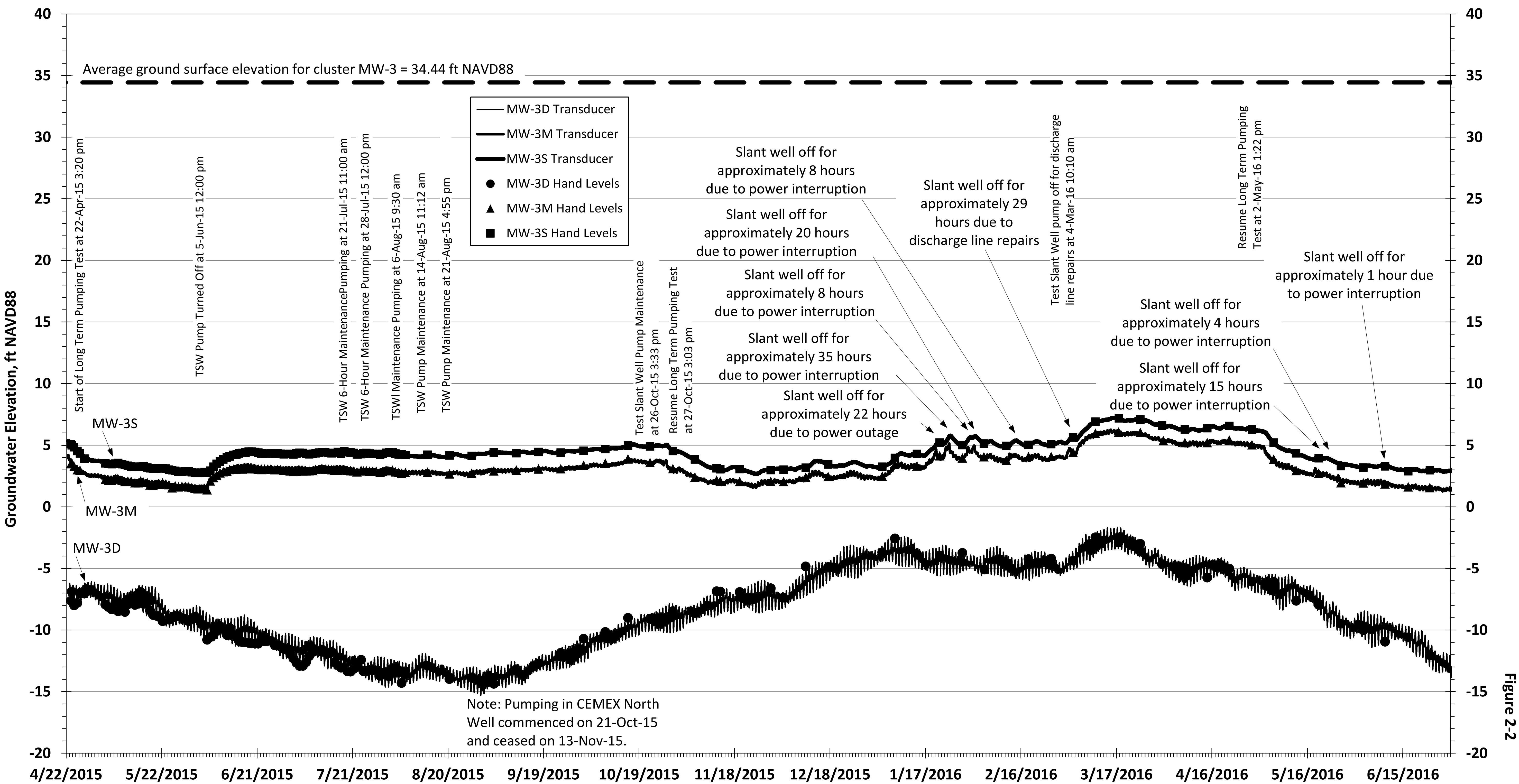


Figure 2-2

Groundwater Elevation in MPWSP MW-4

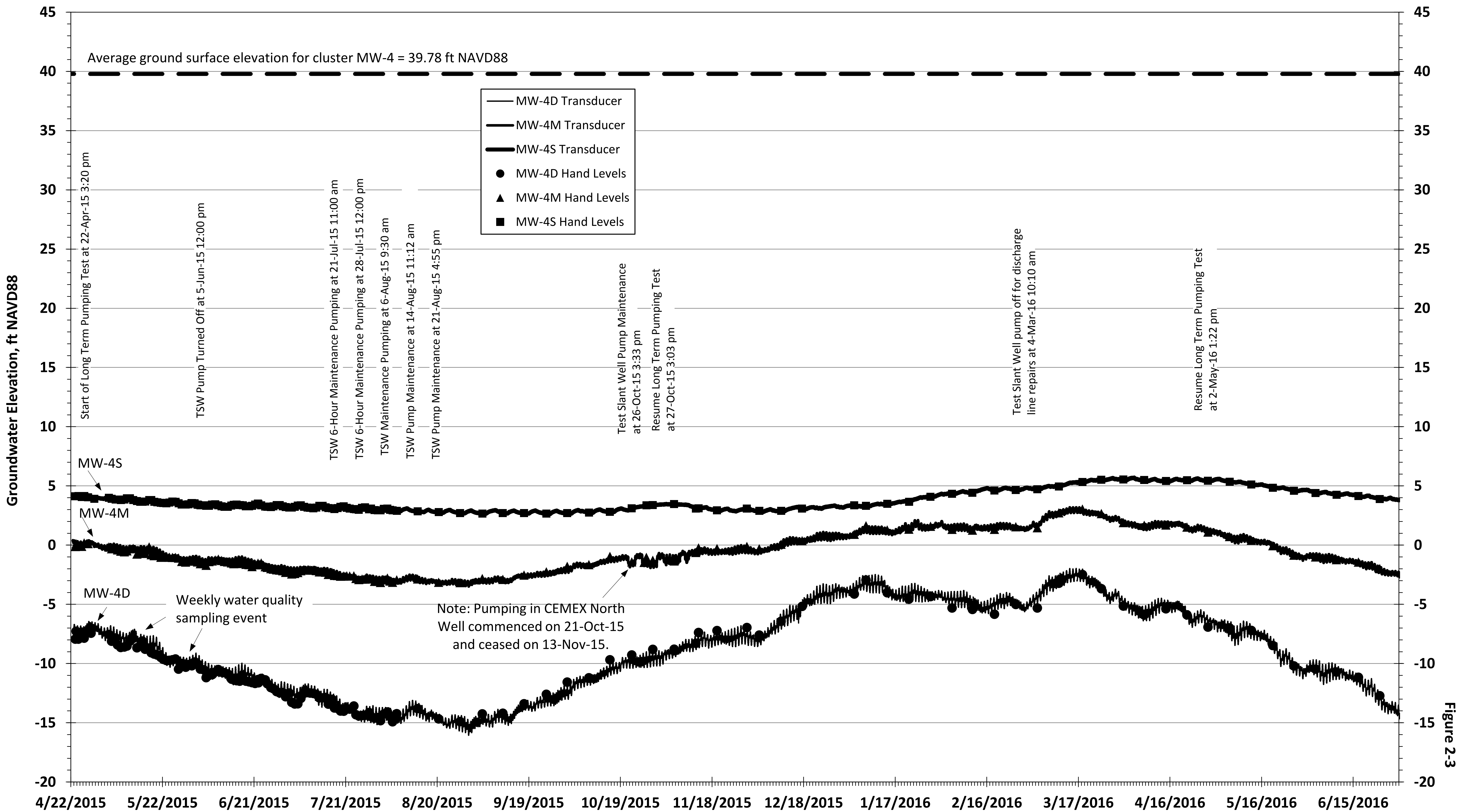


Figure 2-3

Groundwater Elevation in MPWSP MW-5

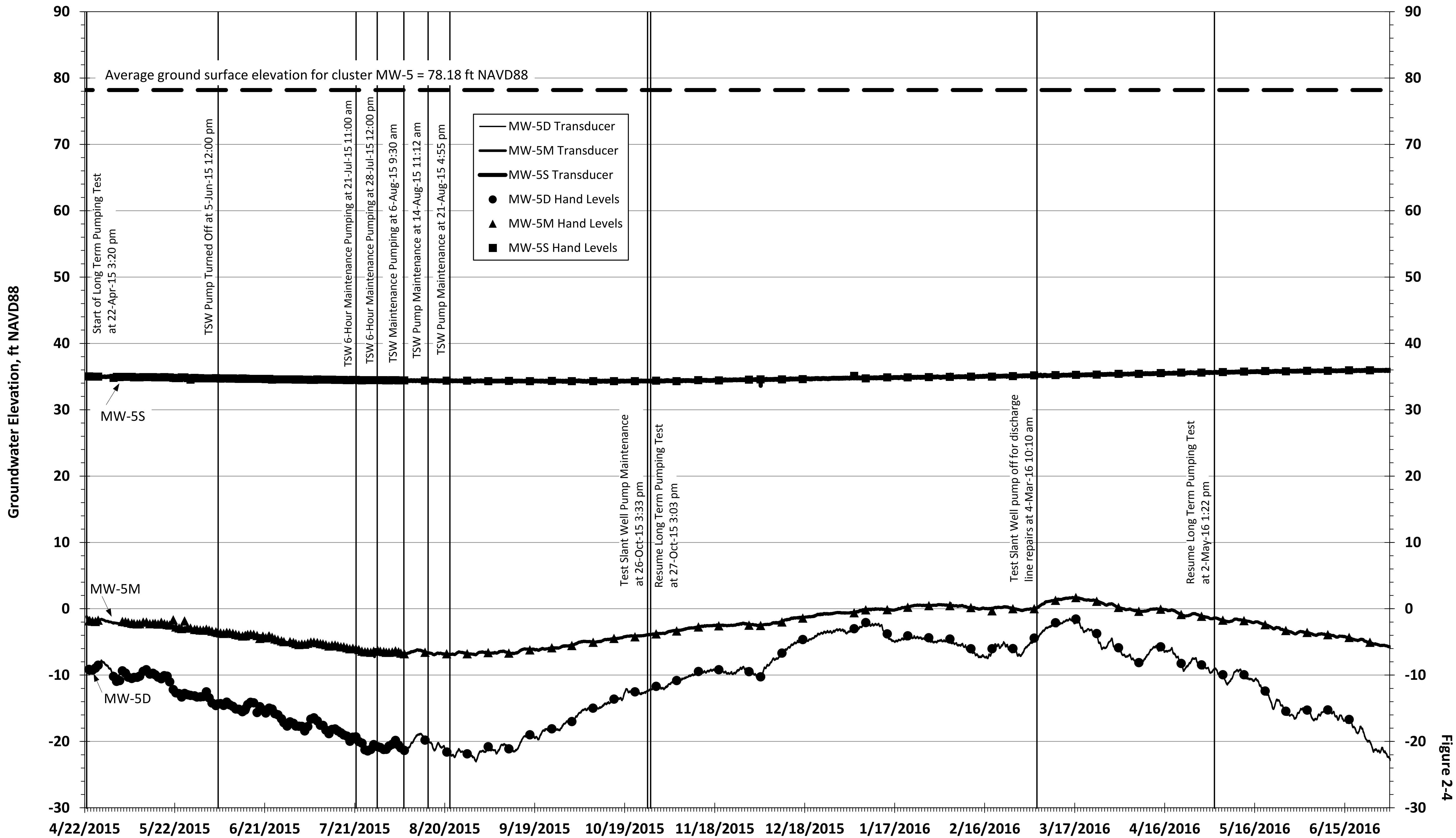


Figure 2-4

Groundwater Elevation in MPWSP MW-6

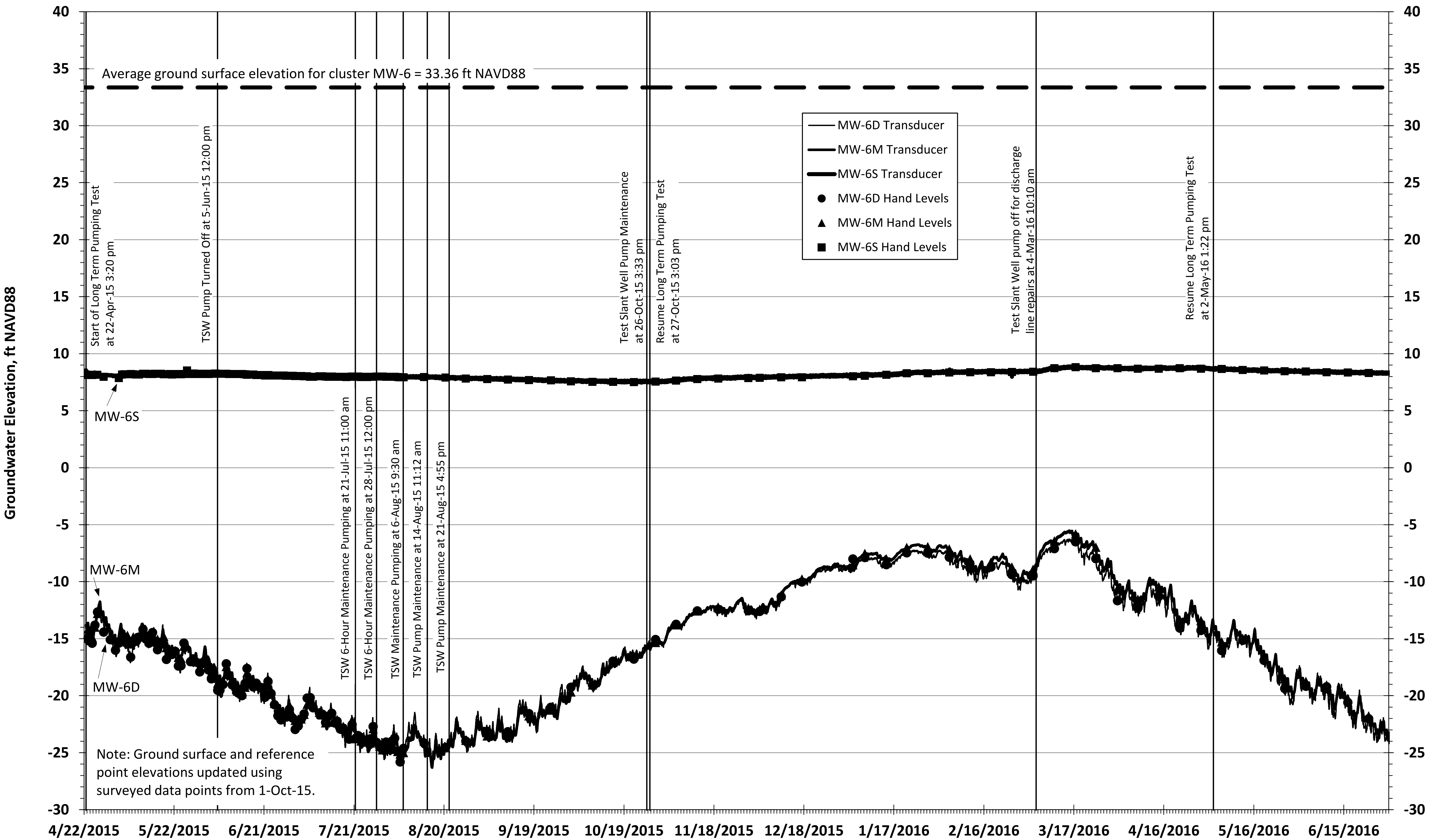


Figure 2-5

Groundwater Elevation in MPWSP MW-7

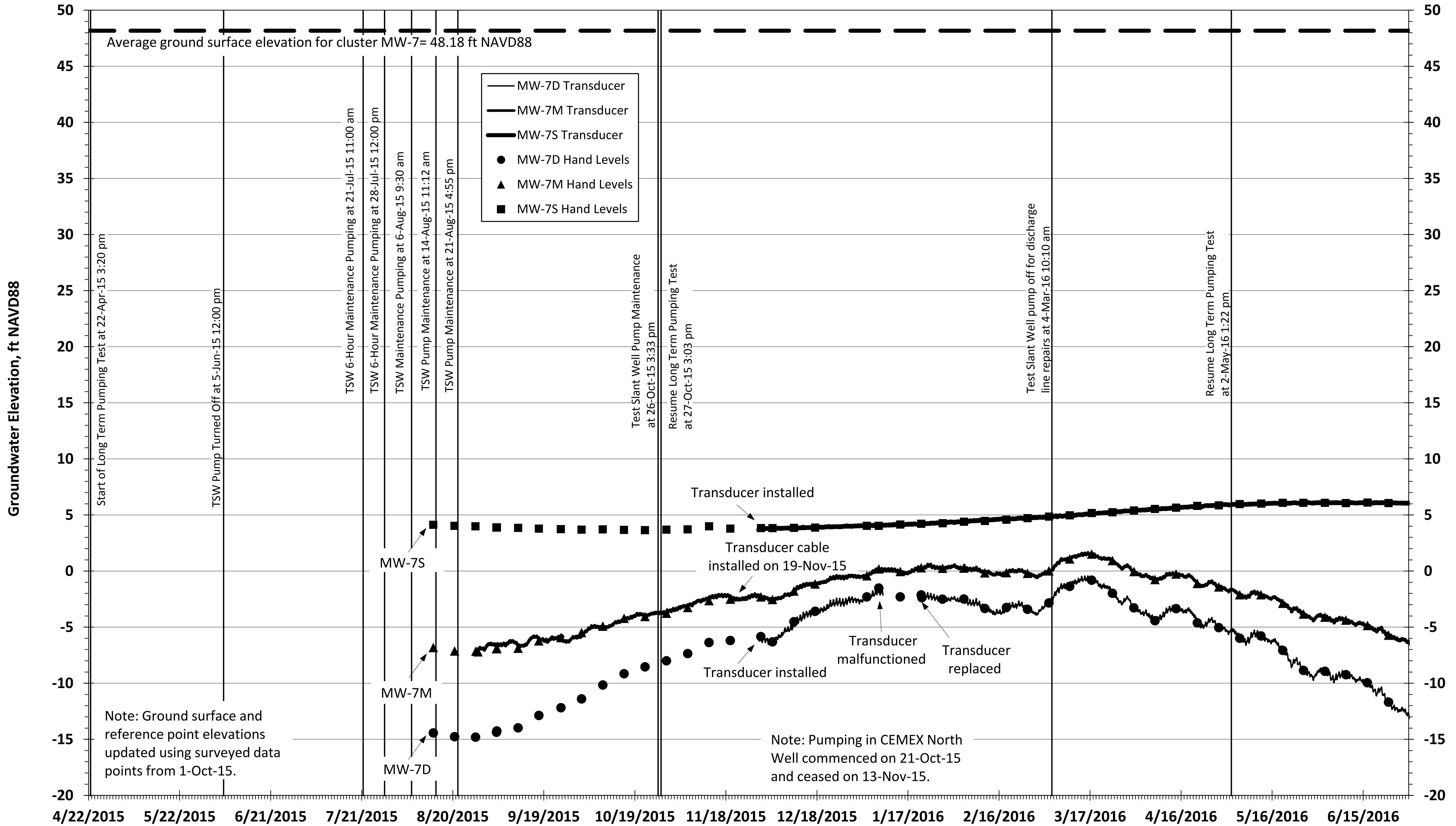


Figure 2-6

Groundwater Elevation in MPWSP MW-8

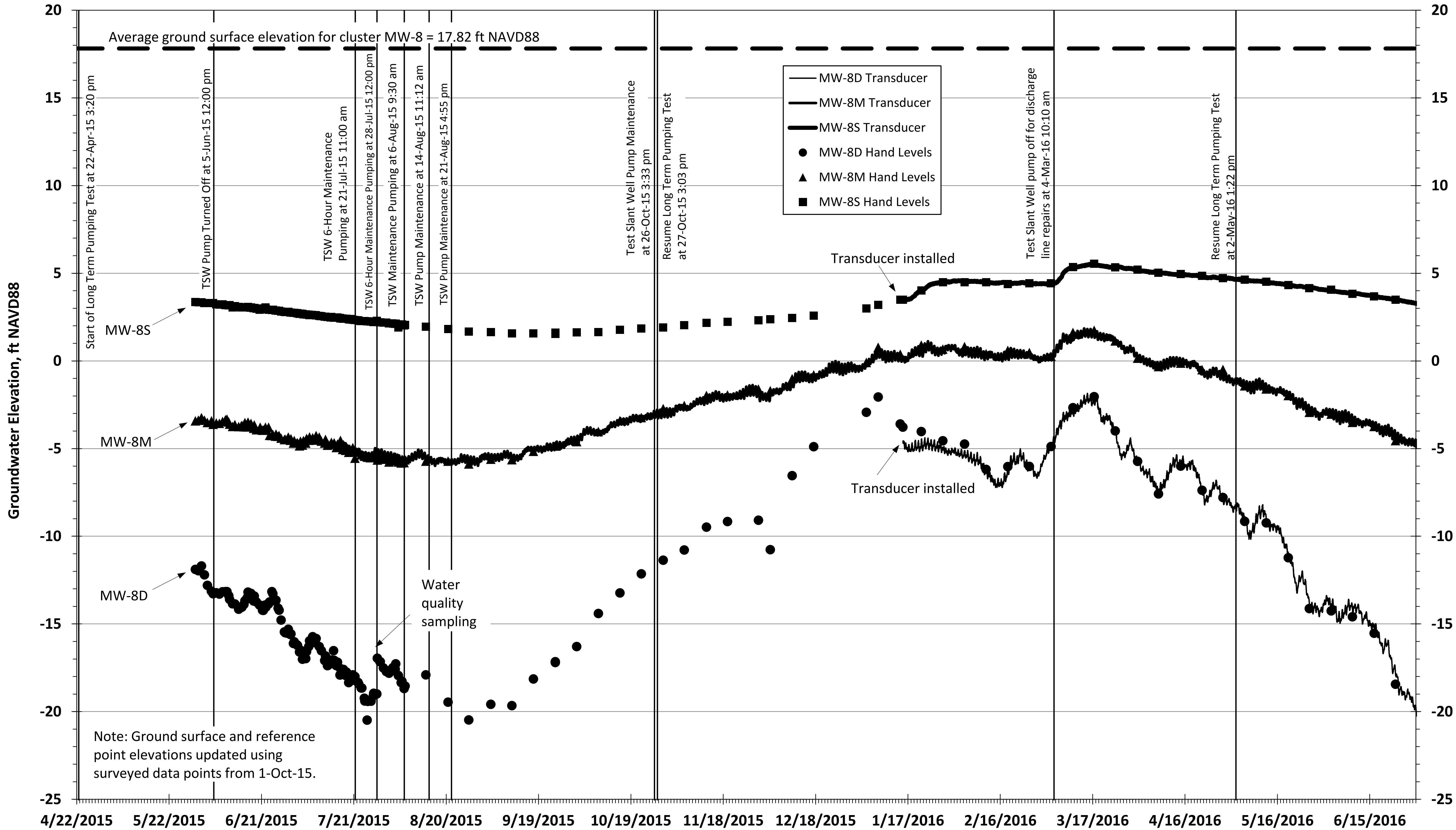


Figure 2-7

Groundwater Elevation in MPWSP MW-9

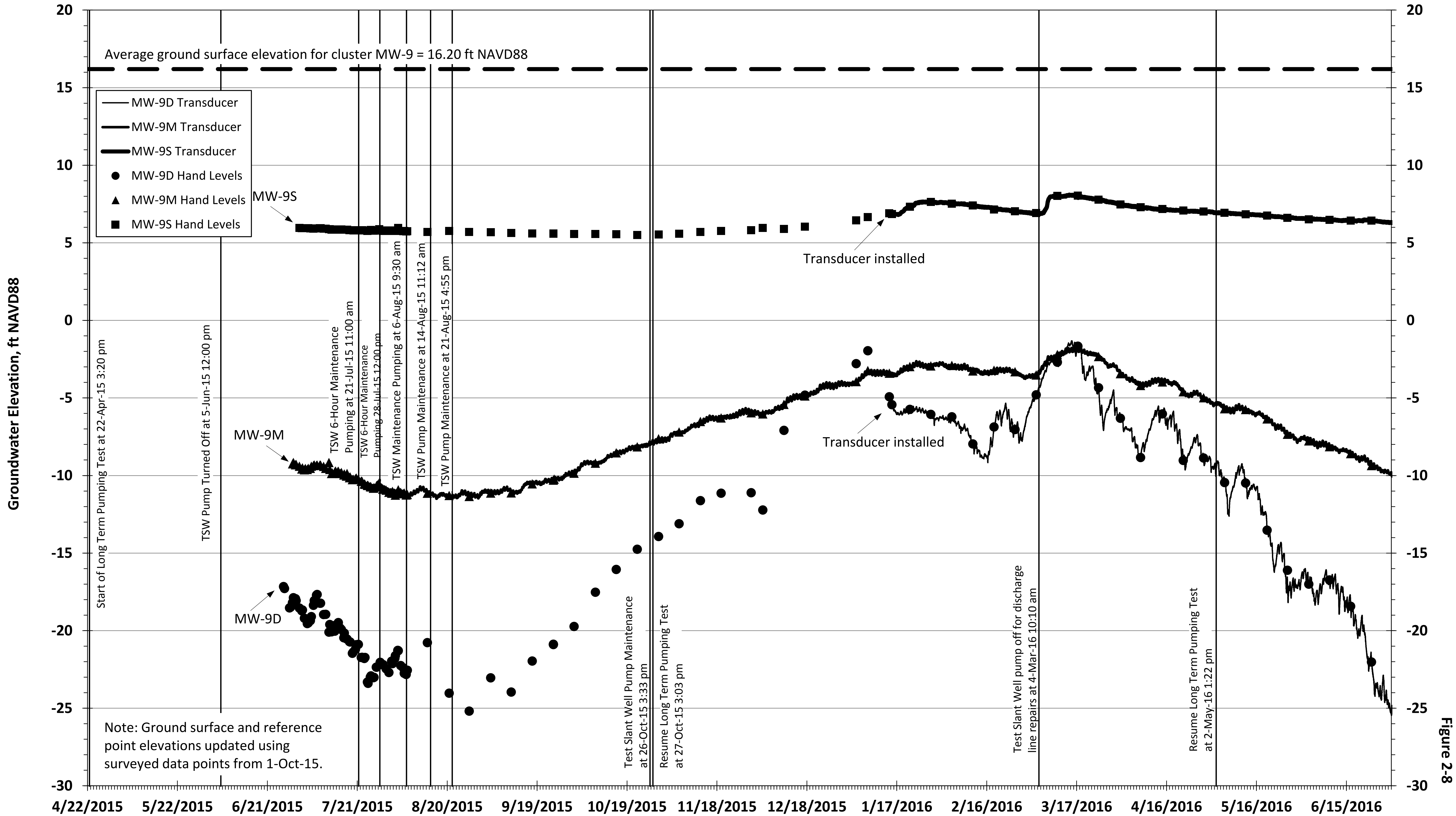


Figure 2-8

Groundwater Elevation in Monterey Regional Water Pollution Control Agency Wells

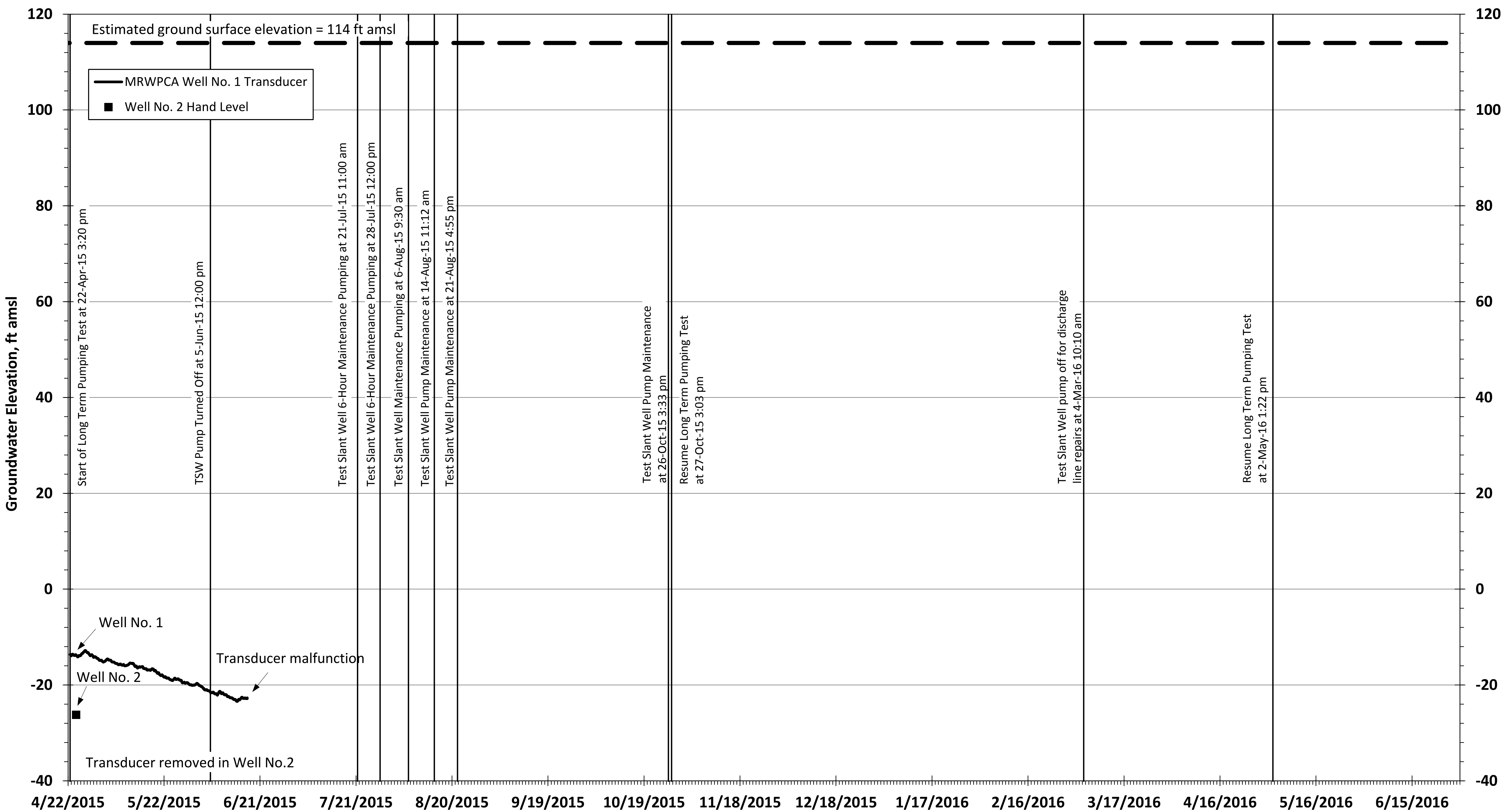


Figure 2-9

Surface Water Elevation in CEMEX Dredge Pond

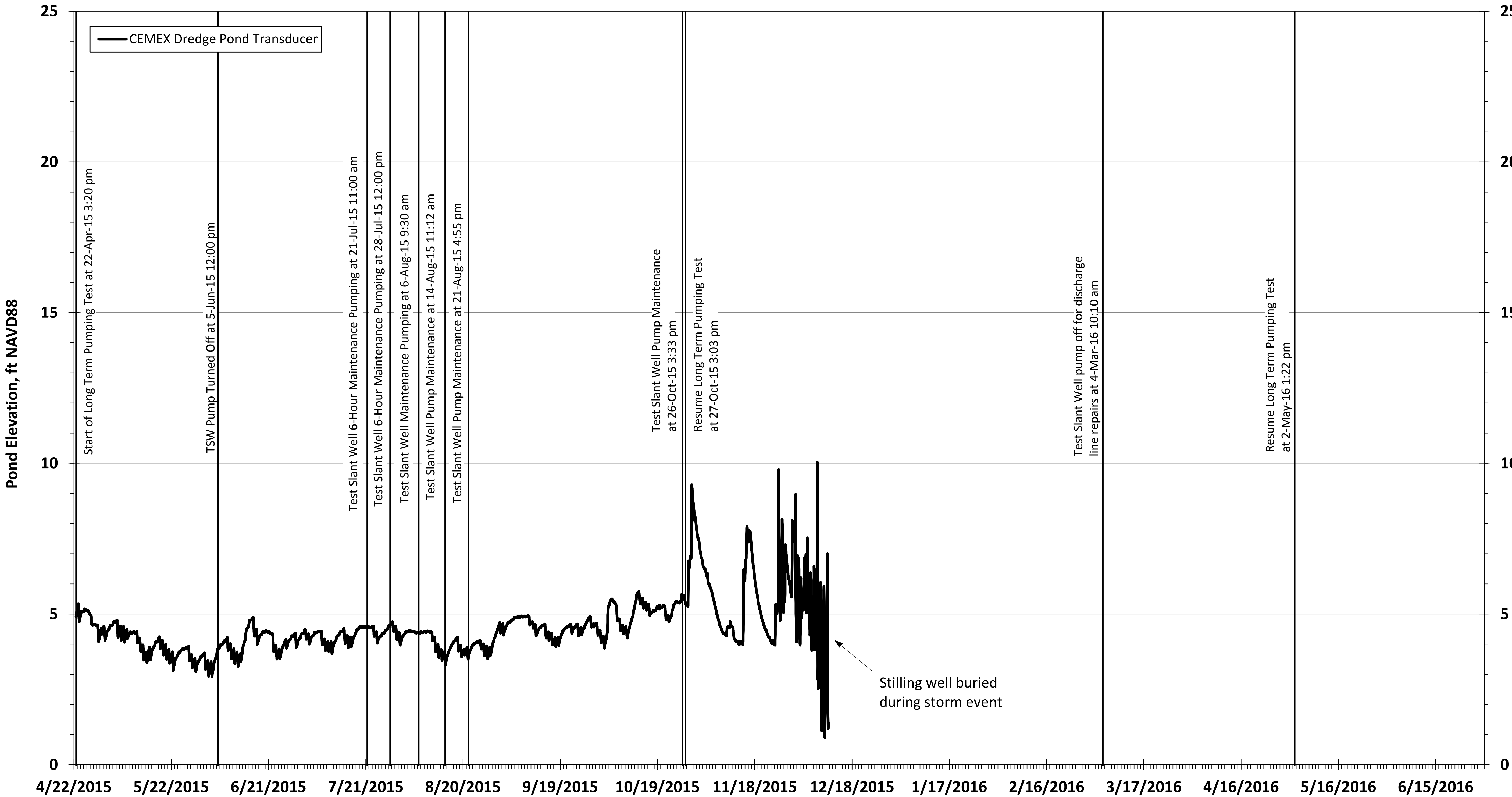
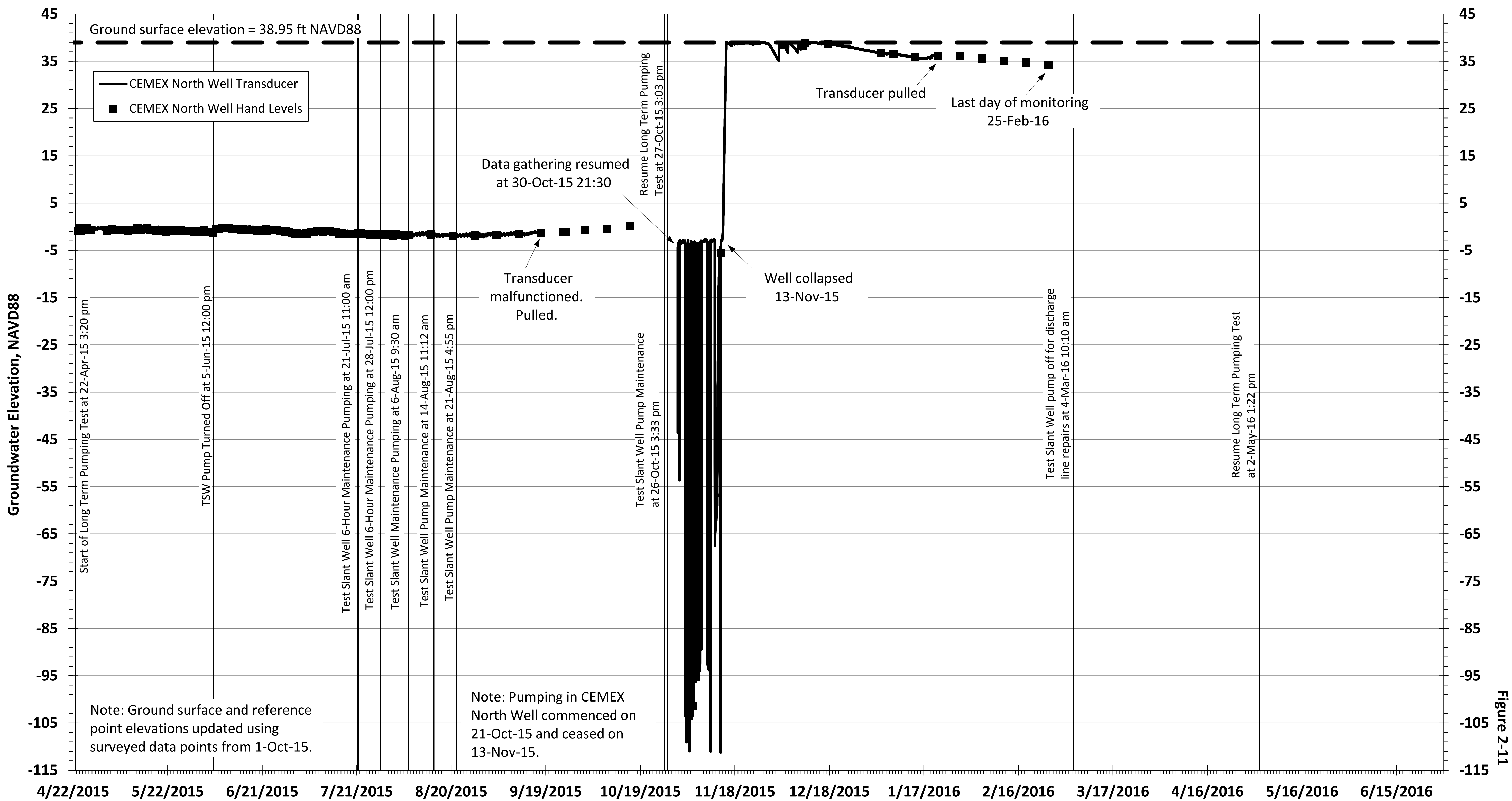


Figure 2-10

Groundwater Elevation in CEMEX North Well



Groundwater Elevation in MPWSP Test Slant Well

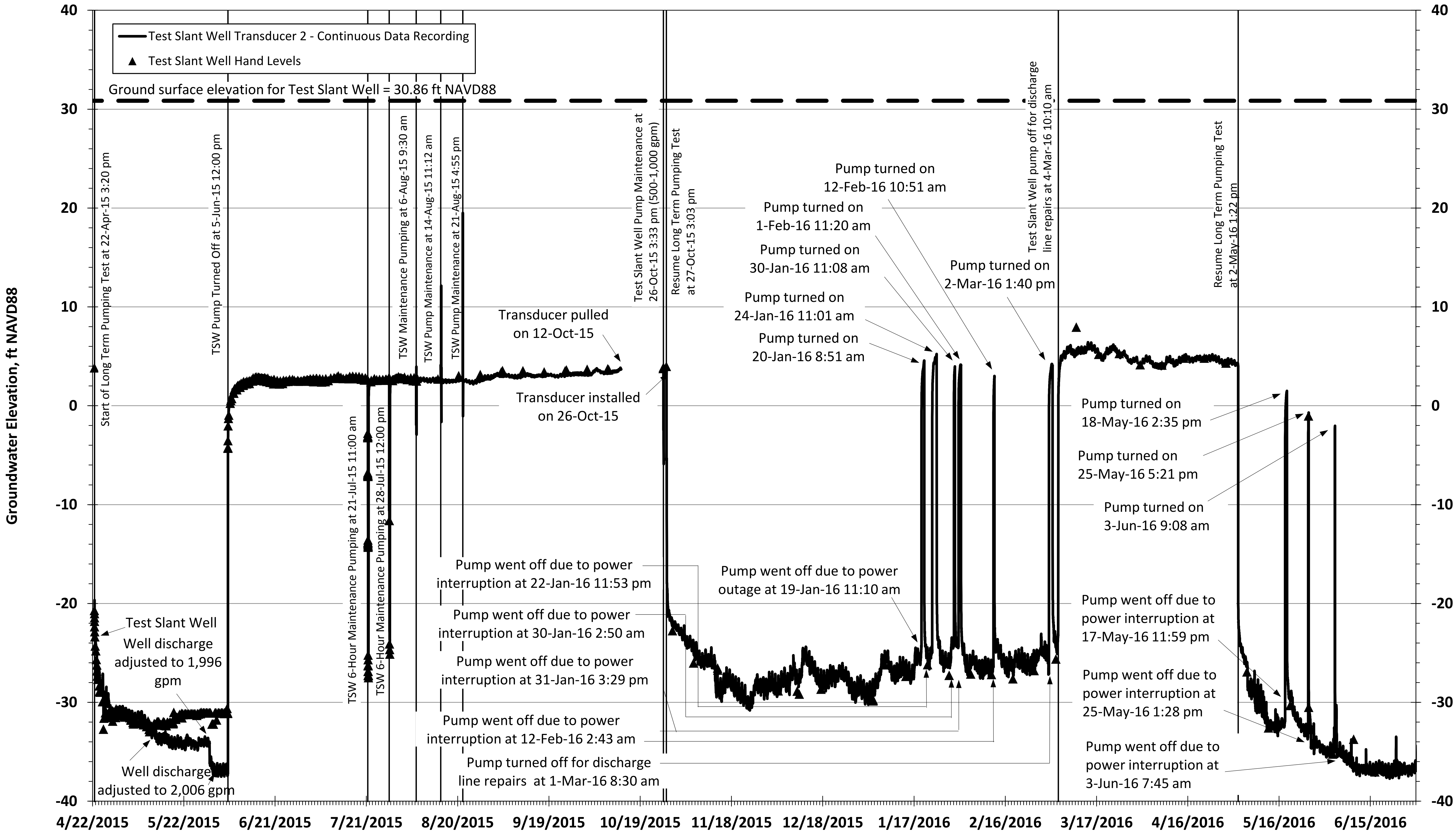


Figure 2-12

ATTACHMENT B
LABORATORY WATER QUALITY
TEST RESULTS

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S	
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90	
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15
Constituent[1]	**Units**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Alkalinity, Total (as $CaCO_3$)	mg/L	123	124	112	117	105	120	114	118	105	104	97	97
Aluminum, Total	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	166	18	166	36
Ammonia-N	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ammonia-N, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*
Ammonia-NH_3 (calc) Un-Ionized	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic, Total	µg/L	46	34	41	33	43	30	44	39	37	34	34	27
Barium, Dissolved	µg/L	141	143	61	63	68	63	162	157	79	66	97	91
Bicarbonate (as HCO3-)	mg/L	150	151	137	143	128	146	139	144	128	127	118	118
Boron, Dissolved	mg/L	0.89	1.16	2.36	2.78	2.27	2.73	1.06	1.03	1.01	2.68	2.2	2.3
Bromide, Dissolved	mg/L	44	44	46	50	39	49	44.1	44	53.8	49	44.8	38
Calcium	mg/L	2,440	2,510	746	805	661	791	2,470	2,350	826	835	628	664
Calcium, Dissolved	mg/L	2,410	2,480	732	781	646	771	2,370	2,360	844	879	666	664
Carbamates by HPLC (EPA 531)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Carbonate as $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride, Dissolved	mg/L	14,905	16,346	16,037	15,580	14,504	15,276	16,069	16,456	14,686	14,964	11,680	12,136
Chlorinated Pesticides and PCB (EPA 508)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Chlorine Residual,Total (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Coliform, E. Coli (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Coliform, E. Coli (Quantitray)-18 Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Coliform, Total (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Coliform, Total (Quantitray)-18Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Color, Apparent (Unfiltered)	CU	10	20	ND	ND	4	ND	6	ND	ND	ND	ND	7
Copper, Total	µg/L	40	52	61	80	62	52	56	76	62	90	42	78
DBCP & EDB	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Dioxin	pg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A
Diquat (EPA 549)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Dissolved Oxygen (Field)	mg/L (H)	N/A	0.08	N/A	3.34	N/A	2.64	N/A	0.225	N/A	3.85	4.7	3.56
Dissolved Oxygen (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endothall	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Fluoride, Dissolved	mg/L	ND	ND	ND	ND	0.3	ND	ND	ND	0.5	ND	0.4	ND
Glyphosate	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Hardness (as $CaCO_3$)	mg/L	10,765	11,338	6,327	6,606	5,678	6,439	12,063	11,140	6,378	6,520	5,044	5,109
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iodide	µg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*
Iron	µg/L	146	722	ND	ND	25	ND	169	671	ND	ND	ND	ND
Iron, Dissolved	µg/L	118	726	12	ND	15	ND	142	684	ND	ND	ND	ND
Kjehldahl Nitrogen, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*
Lithium	µg/L	254	200	201	155	172	157	250	184	159	115	144	106
Magnesium	mg/L	1,130	1,230	1,080	1,120	978	1,080	1,430	1,280	1,050	1,080	844	838
Magnesium, Dissolved	mg/L	1,180	1,230	1,100	1,110	979	1,080	1,290	1,310	1,020	1,160	797	859
Manganese, Dissolved	µg/L	440	1,060	18	ND	41	ND	259	1,080	ND	ND	ND	170
Manganese, Total	µg/L	484	1,100	19	ND	43	ND	289	1,060	14	ND	58	154
MBAS (Surfactants)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate as NO_3	mg/L	1	2	2	4	3	4	ND	2	5	3	29	6
Nitrate+Nitrite as N	mg/L	0.4	0.6	1.1	1	0.7	0.9	0.1	0.6	1.2	0.8	6.5	1.5
Nitrite as NO_2-N, Dissolved	mg/L	0.2	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Odor Threshold at 60 C	TON	1	2	1	2	1	1	3	3	3	1	5	2
Oil & Grease (HEM)	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
o-Phosphate-P	mg/L	0.03	0.06	0.07	0.09	0.07	0.05	0.06	0.04	0.05	0.06	0.18	0.14
pH (Field Test)	pH	6.72	7.24	7.02	7.74	7.15	7.87	6.55	6.84	6.89	7.05	7.25	7.27
pH (Laboratory)	pH (H)	7.1	7.1	7	7.4	7.2	7.5	6.9	7.2	7.2	7.4	7.2	7.5
Phenoxy Acid Herbicides (515.3)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Phosphorus, Dissolved Total	mg/L	0.04	0.03	0.09	0.08	0.05	0.04	0.04	ND	ND	0.06	0.12	0.13
Potassium	mg/L	60	61	201	209	228	247	64.4	58	197	214	168	157
Potassium, Dissolved	mg/L	59	60.9	197	207	224	244	55.7	59.6	197	232	157	161
QC Ratio TDS/SEC		0.73	0.66	0.7	0.67	0.68	0.67	0.74	0.66	0.69	0.69	0.68	0.68
Reg. Org. Compounds (EPA 525)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Settleable Solids	mL/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silica as SiO_2, Dissolved	mg/L	33	32	22	21	20	19	32	30	21	18	19	19
Sodium	mg/L	5,760	5,913	8,011	7,381	7,306	7,211	6,960	5,620	7,232	6,590	5,340	5,632
Sodium, Dissolved	mg/L	6,150	6,340	8,320	7,920	7,500	7,480	6,110	6,180	6,930	7,670	5,550	6,260
Specific Conductance (E.C)	µmhos/cm	40,120	43,440	43,960	42,510	39,090	40,840	44,020	43,570	41,090	41,040	34,180	34,300
Specific Conductance (E.C) (Field)	µmhos/cm	40,882	43,249	43,788	42,426	39,747	41,557	41,740	43,223	42,340	40,642	33,456	33,798
Strontium, Dissolved	µg/L	15,666	16,477	8,689	9,434	7,995	9,084	16,370	16,228	9,500	9,458	7,619	7,287

Well Name:		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	**Units**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Alkalinity, Total (as $CaCO_3$)	mg/L	111	124	97	97	80	86	112	117	195	121	50	50	N/A	N/A	117
Aluminum, Total	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	33	N/A	N/A	ND
Ammonia-N	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	ND	N/A
Ammonia-N, Dissolved	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Ammonia-NH_3 (calc) Un-Ionized	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Arsenic, Total	µg/L	40	30	21	22	15	14	4	3	2	3	4	3	N/A	N/A	33
Barium, Dissolved	µg/L	166	176	104	104	92	107	562	466	96	67	173	200	N/A	N/A	95
Bicarbonate (as HCO3-)	mg/L	135	151	118	118	98	105	137	143	238	148	61	61	N/A	N/A	143
Boron, Dissolved	mg/L	0.65	0.75	1.16	1.03	0.79	0.88	0.09	ND	ND	ND	ND	ND	N/A	N/A	2.6
Bromide, Dissolved	mg/L	43.8	47	31	31	16.7	18	3.3	2	0.4	ND	4.4	5.2	N/A	N/A	37
Calcium	mg/L	2,980	2,827	1,040	1,131	594	621	360	358	96	62	129	132	N/A	N/A	349
Calcium, Dissolved	mg/L	3,070	2,810	1,060	1,100	617	627	363	356	99	63	142	138	N/A	N/A	371
Carbamates by HPLC (EPA 531)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Carbonate as $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Chloride, Dissolved	mg/L	14,142	14,177	9,751	9,587	5,497	6,266	1,168	1,152	120	90	271	272	N/A	N/A	13,830
Chlorinated Pesticides and PCB (EPA 508)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Chlorine Residual,Total (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Coliform, E. Coli (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	N/A
Coliform, E. Coli (Quantitray)-18 Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
Coliform, Total (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	490	N/A
Coliform, Total (Quantitray)-18Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,755	N/A	N/A
Color, Apparent (Unfiltered)	CU	8	ND	4	ND	3	ND	ND	4	ND	ND	7	8	60	10	4
Copper, Total	µg/L	46	30	42	22	ND	16	13	4	ND	ND	5	ND	N/A	N/A	44
DBCP & EDB	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dioxin	pg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Diquat (EPA 549)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dissolved Oxygen (Field)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.28	N/A	N/A
Dissolved Oxygen (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.34	8.84	N/A
Endothall	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Fluoride, Dissolved	mg/L	ND	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	0.1	ND	ND	N/A	N/A	0.2
Glyphosate	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Hardness (as $CaCO_3$)	mg/L	11,617	11,021	5,601	5,740	3,176	3,321	1,484	1,429	367	229	561	540	N/A	N/A	4,751
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iodide	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iron	µg/L	77	223	ND	ND	ND	169	39	17	ND	ND	ND	26	N/A	N/A	69
Iron, Dissolved	µg/L	80	215	ND	ND	ND	175	ND	ND	ND	ND	ND	ND	N/A	N/A	65
Kjehldahl Nitrogen, Dissolved	mg/L	0.6	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Lithium	µg/L	222	193	34	25	16	18	75	53	7	3	6	8	N/A	N/A	152
Magnesium	mg/L	1,020	962	730	708	411	430	142	130	31	18	58	51	N/A	N/A	942
Magnesium, Dissolved	mg/L	979	969	752	681	421	437	135	128	31	18	62	54	N/A	N/A	989
Manganese, Dissolved	µg/L	268	1,220	113	ND	ND	248	340	645	ND	ND	ND	ND	N/A	N/A	26
Manganese, Total	µg/L	276	1,221	90	ND	ND	268	336	653	ND	ND	ND	ND	N/A	N/A	26
MBAS (Surfactants)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Nitrate as NO_3	mg/L	1	ND	4	3	20	10	3	1	70	64	237	233	N/A	N/A	5
Nitrate+Nitrite as N	mg/L	0.2	0.1	1	0.9	5.3	2.3	0.8	0.4	16.2	14.6	54	52.7	N/A	N/A	1
Nitrite as NO_2-N, Dissolved	mg/L	ND	0.1	ND	0.1	ND	0.1	ND	0.1	0.3	0.3	ND	0.1	N/A	N/A	ND
Odor Threshold at 60 C	TON	3	1	1	1	4	14	3	2	2	1	2	10	N/A	N/A	2
Oil & Grease (HEM)	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
o-Phosphate-P	mg/L	0.06	0.04	ND	0.06	0.06	0.09	0.04	0.05	0.06	0.12	0.05	0.12	N/A	N/A	0.1
pH (Field Test)	pH	6.65	6.56	6.78	6.78	6.77	6.91	7	7.18	7.23	7.44	6.46	6.63	7.53	7.07	7.03
pH (Laboratory)	pH (H)	7	7.1	7.1	7.2	7	7.2	7.5	7.4	7.3	7.5	6.7	7.1	7.7	7.2	7.2
Phenoxy Acid Herbicides (515.3)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Phosphorus, Dissolved Total	mg/L	0.11	0.14	ND	0.06	0.06	0.07	0.04	0.04	0.06	0.12	0.08	0.08	N/A	N/A	0.09
Potassium	mg/L	51.2	46.2	46	43.9	26	30.2	7.8	6.7	3.4	2.2	2	3.1	N/A	N/A	203
Potassium, Dissolved	mg/L	49.1	46.3	50	43.3	28	31.5	7.1	6.6	3.6	2.2	2.4	3	N/A	N/A	213
QC Ratio TDS/SEC		0.72	0.74	0.68	0.64	0.7	0.68	0.69	0.65	0.6	0.64	0.67	0.64	N/A	N/A	0.67
Reg. Org. Compounds (EPA 525)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Settleable Solids	mL/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Silica as SiO_2, Dissolved	mg/L	36	31	30	27	27	24	45	41	35	32	39	38	N/A	N/A	20
Sodium	mg/L	4,286	4,092	4,079	3,685	2,579	2,399	161	131	71	51	120	116	N/A	N/A	7,606
Sodium, Dissolved	mg/L	4,730	4,090	4,320	3,490	2,750	2,500	136	128	76	51	131	120	N/A	N/A	8,040
Specific Conductance (E.C)	µmhos/cm	38,000	37,390	26,250	27,200	17,050	18,800	3,775	3,729	1,106	714	1,752	1,735	36,890	36,280	37,860
Specific Conductance (E.C) (Field)	µmhos/cm	5,750	37,532	26,779	27,703	16,917	18,376	3,961	3,968	962	796	1,828	1,746	35,270	36,306	38,097
Strontium, Dissolved	µg/L	17,499	17,148	9,637	9,864	5,208	5,455	2,777	2,834	630	435	1,231	1,288	N/A	N/A	7,440

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	**Units**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Sulfate	mg/L	1,950	N/A	2,070	N/A	1,840	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,700	N/A	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate, Dissolved	mg/L	N/A	2,148	N/A	2,048	N/A	2,008	2,058	2,158	1,960	1,967	1,533	1,605	N/A	1,796	1,184	1,205	716	807	N/A	31	110	67	197	192	N/A	N/A	1,840
Temperature	° C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	N/A	N/A
Temperature (Field)	° C	19.2	20.02	17.2	17.89	18.8	17.64	19.6	20.22	16.3	18.74	17.5	19.17	19.9	19.8	18.4	18.3	17.7	18.1	21.3	21.4	16.97	18.2	16.7	18.1	20.9	19.1	17.2
Total Diss. Solids	mg/L	29,100	28,700	30,900	28,300	26,600	27,500	32,600	28,600	28,500	28,300	23,400	23,300	27,500	27,600	17,900	17,500	11,900	12,800	2,616	2,437	663	454	1,166	1,117	25,300	24,400	25,400
Total Susp. Solids	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36	ND	N/A
Turbidity	NTU	1.8	0.15	0.1	0.1	0.1	0.15	1	0.3	0.1	0.16	0.15	0.24	0.65	0.15	0.25	0.05	0.3	0.2	0.25	0.25	ND	ND	0.4	0.75	17	1.6	0.4
Turbidity (Field)	NTU	0.65	0.69	0.41	0.35	0.28	0.43	0.38	0.87	0.42	0.21	0.96	0.55	0.76	0.53	0.71	0.84	0.52	0.17	0.71	0.87	0.47	0.45	1.31	1.26	40.3	0.66	0.74
Volatile Org. Compounds (524)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	N/A	N/A	ND
Zinc, Total	µg/L	ND	ND	ND	ND	413	ND	ND	ND	297	ND	312	ND	ND	ND	211	107	ND	108	51	ND	40	ND	43	ND	N/A	N/A	ND

Notes:

°C	= Degrees Celsius
CU	= Color Units
mg/L	= Milligrams per Liter
NTU	= Nephelometric Turbidity Units
pg/L	= Picograms per Liter
TON	= Threshold Odor Number
µg/L	= Micorgrams per Liter
µmhos/cm	= Micromhos per Centimeter
H	= Analyzed outside of hold time
MPN/100mL	= The most probable number (MPN) of coliform or fecal coliform bacteria per 100 milliliter
ND	= NOT DETECTED at or above the Reporting Limit or Practical Quantitation Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
N/A	= No Lab Results available
RP	= Results to be provided

[1] Laboratory water quality reports will be provided in the Test Slant Well and mornitoring well completion report.

[*] Laboratory water quality results pending.

		MW-6D	MW-6M	MW-6S	MW-7D	MW-7M	MW-7S	MW-8D	MW-8D	MW-8M	MW-8M	MW-8S	MW-8S	MW-9D	MW-9D	MW-9M	MW-9M	MW-9S	MW-9S
CONSTITUENT	UNIT	4/2/2015	4/4/2015	4/5/2015	9-Aug-15	2-Aug-15	3-Aug-15	5/21/2015	6/23/2015	5/27/2015	6/23/2015	5/28/2015	6/23/2015	25-Jun-15	28-Jul-15	28-Jun-15	28-Jul-15	30-Jun-15	28-Jul-15
ALKALINITY, TOTAL (as $CaCO_3$)	mg/L	117	397	366	109	98	29	152	112	140	155	320	302	170	176	127	128	1,051	1,019
ALUMINUM, TOTAL	µg/L	ND	ND	ND	ND	18	ND	37	128	292	ND	ND	ND	ND	ND	ND	ND	11	ND
AMMONIA-N	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
AMMONIA-N, DISSOLVED	mg/L	ND	0.17	0.45	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	0.12	0.17	2.83	2.86
AMMONIA-NH_3 (CALC) UN-IONIZED	ug/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ARSENIC, TOTAL	µg/L	3	5	16	41	4	1	1	11	28	24	1	1	2	2	39	35	11	12
BARIUM, DISSOLVED	µg/L	255	155	105	110	282	199	88	178	154	119	57	75	59	48	163	141	315	273
BICARBONATE (AS HCO3-)	mg/L	143	484	447	133	120	35	185	137	171	189	390	368	207	215	155	156	1,282	1,243
BORON, DISSOLVED	mg/L	ND	ND	ND	1.71	ND	ND	0.05	0.66	1.83	1.37	0.22	0.29	0.08	0.07	2.93	2.77	0.69	0.64
BROMIDE, DISSOLVED	mg/L	2	0.5	0.2	44.3	6.6	1.3	0.6	11.5	42.1	33.6	0.9	1	0.2	0.2	49.6	47.6	4.2	3.5
CALCIUM	mg/L	341	139	93	1,900	507	120	64	413	1110	1500	149	142	32	34	878	1,060	209	234
CALCIUM, DISSOLVED	mg/L	347	140	92	1,890	520	114	59	416	1140	1500	151	139	35	33	869	1,100	242	235
CARBAMATES BY HPLC (EPA 531)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND		ND		ND	
CARBONATE AS $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLORIDE, DISSOLVED	mg/L	814	167	57	13,589	1,739	387	220	3995	12380	10546	261	251	74	75	16,519	10,436	1,199	1,038
CHLORINATED PESTICIDES AND PCB (EPA 508)	µg/L	ND	A	A	A	ND	ND	ND	ND	ND	ND	A	A	ND		ND		ND	
CHLORINE RESIDUAL, TOTAL (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY)	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY) - 18 HOUR	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY)	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY) - 18 HOUR	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLOR, APPARENT (UNFILTERED)	CU	5	16	20	ND	ND	ND	11	16	ND	7	3	ND	ND	3	6	14	175	60
COPPER, TOTAL	µg/L	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND
DBCP & EDB	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIOXIN	pg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIQUAT (EPA 549)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DISSOLVED OXYGEN (FIELD)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
DISSOLVED OXYGEN (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ENDOTHALL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
FLUORIDE, DISSOLVED	mg/L	0.1	ND	0.2	ND	ND	0.1	0.3	ND	0.4	ND	0.1	ND	0.3	0.3	ND	ND	ND	0.4
GLYPHOSATE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
HARDNESS (AS $CaCO_3$)	mg/L	1222	565	393	9,030	2,044	547	263	2057	6080	6698	578	556	133	138	6,718	7,296	1,218	1,206
HYDROXIDE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IODIDE	µg/L	ND	35	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	500	330
IRON	µg/L	ND	184	315	ND	ND	33	81	274	ND	ND	104	ND	10	ND	670	1,540	6,964	6,878
IRON, DISSOLVED	µg/L	ND	182	315	ND	ND	26	15	ND	ND	ND	99	ND	ND	ND	667	1,520	6,300	1,400
KJEHLDAHL NITROGEN, DISSOLVED	mg/L	ND	0.7	1	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	0.11	0.2	0.19	6.12	2.9
LITHIUM	µg/L	25	17	6	271	29	5	49	157	132	132	ND	6	38	39	289	296	23	20
MAGNESIUM	mg/L	90	53	39	1,040	189	60	25	249	801	717	50	49	13	13	1,100	1,130	169	151
MAGNESIUM, DISSOLVED	mg/L	83	49	37	1,010	192	58	23	250	828	692	51	47	13	13	1,090	1,140	161	152
MANGANESE, DISSOLVED	µg/L	714	821	2090	230	372	476	283	759	353	642	ND	76	247	186	1,120	1,410	4,920	4,830
MANGANESE, TOTAL	µg/L	750	810	1880	232	372	500	310	847	354	668	ND	86	254	188	1,160	1,380	5,140	4,840
MBAS (SURFACTANTS)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NITRATE AS NO_3	mg/L	2	ND	ND	6	15	198	2	6	5	6	123	115	2	2	5	6	ND	ND
NITRATE+NITRITE AS N	mg/L	0.7	0.5	0.5	1.4	3.4	44.8	0.7	1.3	1.5	1.4	28.2	26.8	0.9	0.8	1.2	1.3	2.5	1.2
NITRITE AS NO_2-N, DISSOLVED	mg/L	0.2	0.1	0.5	ND	ND	0.1	0.3	ND	0.4	ND	0.4	0.8	0.3	0.3	ND	ND	2.5	1.2
ODOR THRESHOLD AT 60 C	TON	1	1	2	1	2	2	1	2	1	1	2	1	1	2	1	2	2	5
OIL & GREASE (HEM)	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
o-PHOSPHATE-P	mg/L	0.05	0.32	1.55	0.05	0.016	0.035	0.06	0.04	0.06	0.04	0.1	0.13	0.06	0.13	0.06	0.04	1.34	0.28
pH (FIELD TEST)	pH	7.24	7.43	7.07	6.77	7.17	7.05	7.33	8.17	6.67	6.92	7.13	6.99	7.44	8.03	6.84	7.03	7.06	7.04
pH (LABORATORY)	pH (H)	7.4		7.1	6.9	7.2	7.3	7.6	8.2	7.2	7.2	7.4	7.2	7.5	7.8	6.9	6.9	7.1	7.1
PHENOXY ACID HERBICIDES (515.3)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
PHOSPHORUS, DISSOLVED TOTAL	mg/L	0.06	0.31	1.38	0.02	0.017	0.04	0.06	ND	0.07	ND	0.11	0.07	0.12	0.029	0.06	ND	1.4	0.16
POTASSIUM	mg/L	7.1	6.4	7.6	57	10	5.9	5.1	41	108	55	4.1	5	3.5	6.1	197	168	14	13
POTASSIUM, DISSOLVED	mg/L	8	7	7.2	55	10	5.5	4.6	42	111	50	4.3	4.8	3.6	6	196	167	12.8	13
QC RATIO TDS/SEC		0.67	0.63	0.61	0.69	0.68	0.68	0.56	0.58	0.69	0.7	0.62	0.63	0.59	0.61	0.66	0.69	0.6	0.58
REG. ORG. COMPOUNDS (EPA 525)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
SETTLEABLE SOLIDS	mL/L	NA	NA	NA				NA	NA	NA	NA	NA							
SILICA AS SiO_2, DISSOLVED	mg/L	44	44	34	35	30	37	45	33	30	33	37	40	45	44	35	30	43	40
SODIUM	mg/L	77	140	79	6,834	338	124	148	2192	6106	5310	262	245	68	75	8,407	8,224	732	691
SODIUM, DISSOLVED	mg/L	78	141	79	6,540	342	119	135	2290	6270	4950	265	239	68	74	8,430	8,240	698	692
SPECIFIC CONDUCTANCE (E.C)	µmhos/cm	2758	1545	989	38,800	5,650	1,768	1045	12190	35020	29320	2036	1935	624	617	44,090	44,660	5,330	5,190
SPECIFIC CONDUCTANCE (E.C) (FIELD)	µmhos/cm	2859	1531	869	39,065	5,507	1,762	1113	15312	35040	29888	2004	1932	574	658	44,462	45,724	5,384	5,255
STRONTIUM, DISSOLVED	µg/L	1826	761	561	12,676	3,689	1,327	470	3536	8504	8507	868	855	273	260	8,148	8,301	3,064	1,861
SULFATE	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
SULFATE, DISSOLVED	mg/L	85	175	87	1,882	176	61	32	541	1743	1430	258	239	25	23	2,286	2,207	210	220
TEMPERATURE	°C	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TEMPERATURE, (FIELD)	°C	10.6	16.8	NA	19.7	18.4	18.2	21.2	19.2	17.17	17.2	16.83	17	21.2	20.2	17.2	17.3	17.3	17.1
TOTAL DISS. SOLIDS	mg/L	1840	966	608	26,700	3,832	1,200	583	7100	24000	20500	1260	1214	366	377	29,000	30,600	3,204	2,997
TOTAL SUSP. SOLIDS	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TURBIDITY	NTU	0.2	0.7	2.6	0.2	0.2	0.3	0.55	1.9	0.1	0.2	0.1	0.15	0.1	0.5	1.3	3	55	50
TURBIDITY (FIELD)	NTU	0.59	0.7	0.62	0.85	0.88	0.7	2.48	1	0.56	1	0.92	1	0.86	0.7	0.29	0.3	0.82	0.2
VOLATILE ORG. COMPOUNDS (524)	µg/L	ND	ND	ND	ND	A	ND	ND	ND	ND	ND	A	A	ND		ND		A	
ZINC, TOTAL	µg/L	24	ND	ND	ND	ND	ND	ND	ND	340	ND	636	ND	22	ND	ND	ND	ND	ND