

Electronic Report Transmittal Form

Attention: Brendan Kenny (916) 464-4635

Discharger: Wild Wings County Service Area
Name of Facility: Wild Wings Water Recycling Facility
WDRs Order Number: R5-2002-0077
CIWQS Place 1D: 272537
County: Yolo

I am hereby submitting to the Central Valley Water Board the following information:

Check all that apply: Wild Wings Water Recycling Facility – First Quarter 2020
Groundwater Monitoring Report
WDR Order No. R5-2002-0077
May 2020

Technical Report Title and Date _____

Monthly Monitoring Report for the month of N/A

(1st) 2nd / 3rd / 4th (circle one) Quarterly Monitoring Report for the year of 2020

1st/ 2nd (circle one) Semi-annual Monitoring Report for the year N/A

Annual Monitoring Report for the year N/A

Violation Notification:

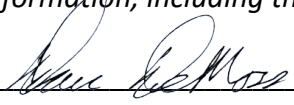
During the monitoring period, there were/ were not (circle one) any violations of the WDRs

1. The violations were:
TDS, Sodium, Chloride, Boron, Total Nitrogen, TTHM

2. Have the violations been corrected? Yes / No. If no, what will be done to correct the violations:
Boron normally exceeds WDR levels; other constituents in exceedance have historically fluctuated slightly above WDR levels.

Certification Statement:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Signature:  Phone: (916) 553-4900

Printed Name: Dan DeMoss Date: 07/09/2020

**Wild Wings Water Recycling Facility – First Quarter 2020
Groundwater Monitoring Report
WDR Order No. R5-2002-0077**

Prepared for:

Yolo County, California



May 28, 2020

Prepared by:

California Rural Water Association



California
Rural Water Association



California

Rural Water Association

May 28, 2020

Ms. Beth Gabor
Yolo County
625 Court Street,
Room 202
Woodland, CA 95695

VIA Email.

**Re: Groundwater Monitoring Report First Quarter 2020
Wild Wings Water Recycling Facility, Yolo County, CA WDR No. R5-2002-0077**

Dear Ms. Gabor:

California Rural Water Association is pleased to present this report as a summary of the Groundwater Monitoring Data from the First Quarter of 2020.

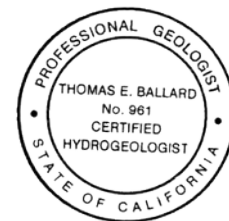
If you have any questions regarding this report, please call our Senior Hydrogeologist, Thomas Ballard, CHG, at (916) 761-3700 or Dan DeMoss at (916) 553-4900.

Sincerely,
California Rural Water Association

Dan DeMoss
Executive Director

A handwritten signature in blue ink that reads "Thomas E. Ballard".

Thomas Ballard
Senior Hydrogeologist



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1.0 INTRODUCTION

California Rural Water Association (CRWA) prepared this groundwater monitoring report on behalf of Yolo County for the Wild Wings Water Recycling Facility (WWRF) at the Wild Wings residential development, in Yolo County, California. This report represents and summarizes data collected and analyzed by CRWA, in conjunction with contract laboratory work, in February and March 2020; and also includes historical data and information from previous reports, consultants and laboratories.

Yolo County requested that CRWA provide groundwater monitoring and reporting for the WWRF to comply with Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements (WDR) Order R5-2002-0077. The WDR requires quarterly monitoring and reporting of the groundwater levels and quality at the monitoring wells. National, under contract with Yolo County, began operating the WWRF on April 1, 2016. CRWA performed the field sampling and monitoring at the site on February 13 and March 6, 2020.

1.1 LOCATION

The Wild Wings development is located north of Highway 16 and west of County Road 94B at 18530 Wildwings Drive, Woodland, CA 95695, and is surrounded by agricultural land to the west, Cache Creek and the Yolo Fliers Golf Club to the north, the Watts-Woodland Airport to the east, and several rural residences to the south. In early 2015, almond orchards were planted in the agricultural land to the west of the site and water wells were installed to provide water for the orchards. The WWRF encompasses 3.67 acres (400 by 400 feet) along the southwestern side of the Wild Wings development. Figure 1 shows the location of the WWRF along with general site information and locations of seven (7) monitoring wells.

1.2 SITE INFORMATION

The Wild Wings development consists of over 300 homes, a nine-hole golf course (including several ponds/lakes), and the WWRF, all built on 238 acres of previously undeveloped land. The WWRF has been operating since February 2005. Domestic wastewater from the Wild Wings development is treated to a tertiary level at the WWRF. The treated water is then blended with groundwater obtained from two deep on-site water supply wells and is used for irrigation of the golf course. The mixture of applied irrigation water typically consists of approximately one-fourth recycled water, but this ratio will vary by month. When irrigation demands are reduced, a lined storage pond on the WWRF site stores the recycled water. National does not operate or maintain the golf course irrigation system or ponds on the golf course.

1.3 MONITORING WELLS

Seven monitoring wells, MW-1 through MW-7, were constructed in May through June 2004. The monitoring wells were installed on the Wild Wings development in the vicinity of the WWRF. The locations of the monitoring wells are shown on Figure 1.

The WDR required that the monitoring wells be constructed to monitor the uppermost aquifer. While drilling, soil samples were collected to assess the subsurface lithology and to locate the uppermost aquifer. Review of the well logs shows that clays with various amounts of silt, sand, and gravel are predominant at the site. However, beds of coarse-grained materials, sands and gravels, with trace amounts of silt and clay were also logged at all monitoring well sites.

The monitoring wells were completed to depths ranging from 31 to 74 feet below ground surface (bgs). Each well is constructed with 2-inch schedule 40 PVC well casing and screen. The screen intervals are 10 feet in length at most wells, with the exception of MW-4 and MW-5R, which have 15-foot and 20-foot screen intervals, respectively. The top of each well casing is fitted with an expandable plug to prevent surface water from entering the wells. The top of each well is secured in a subsurface vault. Table 1 summarizes the well construction details. The well screens are not at the same depth in all of the monitoring wells. The depths varied based on when groundwater was first encountered. Thick clay beds were encountered at MW-4 and MW-5R and continued to relatively deep depths. MW-4 and MW-5R have deeper screen intervals than the other monitoring wells, ranging from an elevation of 51 to 71 feet mean sea level (msl). In contrast, MW-1, MW-2, MW-6, and MW-7 are screened at shallower depths, between 73 to 95 feet msl. MW-3 has the shallowest screen interval ranging from an elevation of 90 to 100 feet msl.

The lithologic sequences of strata encountered during well drilling show a heterogeneous appearance across the site making lateral geologic correlation difficult on a site scale (Luhdorff and Scalmanini, 2006). Furthermore, the uppermost water-bearing zone in which all monitoring wells are screened has weak to no lateral continuity across the site based on the lithologic logs. Based on evaluation of the lithology and well construction details, the consistent anomalously high groundwater elevations, and analytical results from previous monitoring reports, MW-3 appears to be screened in a perched water zone and not within the unconfined to semi-confined aquifers in which the other monitoring wells are screened. Therefore, groundwater in MW-3 does not appear to be in direct hydraulic communication with the other network wells.

1.4. SAMPLING PUMP DETAILS

Sampling and purging of the monitoring wells is accomplished with the use of a low flow electric submersible pump powered by portable battery system. Plastic tubing, which is disinfected prior to purging, between purging and sampling and after sampling, is used to conduct both the purging of the well and collection of groundwater samples. The pump is portable and is transported between wells.

1.5 HISTORIC MONITORING RESULTS

The WWRF has been active since February 2005. The WDR required that three monitoring events take place prior to the startup of the WWRF; however, only one monitoring event was performed. Quarterly monitoring commenced in March 2005. Historic monitoring results are summarized below:

- Groundwater levels have ranged from 19.7 to 56.7 feet below top of casing (btoc) or 64.0 to 101.7 feet mean sea level (msl). Groundwater has consistently been the shallowest at MW-3 and the deepest at MW-4. Since the fourth quarter 2008 MW-7 has been dry about 75 percent of the sampling events and has been dry from the third quarter 2013 until the first quarter of 2017 – corresponding to the California regional drought conditions. Table 2 summarizes the historic groundwater levels and Figure 2 displays a line graph of these historical groundwater levels.
- Groundwater flow direction has been consistently towards the northeast to east-northeast. Using MW-1, MW-4, and MW-5R to determine flow direction and gradient, the flow direction has varied from 53.3 to 75.0 degrees and the groundwater gradient has ranged from 0.005 to 0.009 ft./ft. The gradient has gradually steepened and the flow direction has changed to a more easterly direction since monitoring started in 2005. The most recent monitoring event in February 2018 indicates a 3-point gradient of 0.006 ft./ft. and a direction of 72 degrees. Table 3 summarizes historic groundwater flow directions and gradients.
- MW-1 has been consistently up-gradient of the recycled water effluent pond, whereas MW-4, MW-6, and MW-7 have consistently been down-gradient of the recycled water effluent pond. MW-2 is located adjacent to the recycled water effluent pond. MW-5R appears to be an up-gradient well that is recharged from Cache Creek, but is slightly down-gradient to the recycled water effluent pond.
- MW-3 has consistently had higher groundwater surface elevations than the other monitoring wells. Because of this, supplemented by the shallow screen interval, poor recharge, persistent presence of total coliform organisms as well as an overall different water quality than the other wells, and often gray to tan color of the water, MW-3 appears to be screened in a perched water zone. This perched or mounded water table appears prominently in the August 2017 data – but the November 2017 data did not look as pronounced.
- The WDR requires that monitoring wells be sampled and analyzed for the following constituents: pH, total dissolved solids (TDS), sodium, chloride, boron, iron, manganese, nitrate (as nitrogen), nitrite (as nitrogen), ammonia (as nitrogen), total nitrogen, total coliform organisms, and total trihalomethanes (TTHMs). In addition to the WDR requirements, samples collected up to February 2008 were analyzed for fecal coliform. Historical monitoring results are summarized in Table 4. Figures 3 through 9 show concentration trend graphs for the monitoring parameters.

- Metals analyses are required from the monitoring wells. Sampling protocol requires that the turbidity be below 5 Nephelometric Units (NTU) when collecting water samples for metal analyses, otherwise the sample must be filtered prior to being collected and reported as dissolved metals. Due to historical issues with turbidity and purging, the sampling protocol for Q4 2017 was adopted to field filter and continued for Q1 of 2018.
- Total coliform organisms have been sporadically detected at all wells since monitoring commenced. They have been most consistently detected at MW-3, which also has had positive results for fecal bacteria; however, since the second quarter 2013, total coliform organisms at MW-3 have only been detected four times. MW-3 has had past worm-like organisms and has been treated with disinfection products. Recently, no organisms have been visible and the Q3 sampling event had no detections for disinfection by-products, as analyzed for TTHM's.
- Groundwater quality samples were not obtained from MW-7 between November 2006 and November 2016, except for May and August 2011, due to either the well being dry or an insufficient amount of water in the well to collect samples. Since the wet weather in winter 2016 -2017, sufficient amounts of sample water from MW-7 have been retrieved for laboratory analyses – Until November 2017. In November 2017, there was not sufficient water to purge in MW-7 to collect samples and perform laboratory analyses. Again, in February 2018, there was insufficient water in MW-7 for sample collection.
- Groundwater quality analytical results were not available for the fourth quarter 2006 (except for total coliform results), first quarter 2007, and first quarter 2008.
- MW-2 has had historical security issues related to soils and foreign water entering the well vault. Previous reports contain details of this issue.

1.6 GROUNDWATER QUALITY LIMITATIONS

Interim Groundwater Limitations

Borings HB-2, HB-3, HB-7, and B-27 were drilled prior to the startup of the WWRF and within the vicinity of the WWRF. Water samples collected from these borings were used as the background water quality, using the average value for each constituent. Interim groundwater limitations for the WWRF were developed by comparing the basin plan Water Quality Objectives (WQOs) and background water quality data and using the highest value as the interim groundwater limitation. The interim groundwater limitations are listed at the top of Table 4.

The following summarizes how the WWRF monitoring wells have historically compared to the interim groundwater limitations:

- Boron has exceeded the interim groundwater limitations at all wells since quarterly monitoring commenced. Down-gradient monitoring wells MW-2 and MW-6 have had higher concentrations than up-gradient well MW-1.
- Up-gradient MW-1 is typically at or exceeding the interim groundwater limitations for TDS, chloride, nitrate (as nitrogen), and total nitrogen. Historically the TDS is higher at MW-1 than at any other well in the monitoring well network.
- MW-2, the closest well to the WWRF, regularly exceeded the interim groundwater limitations for total nitrogen prior to 2008, from 2008 through 2016 total nitrogen had been less than the interim limitations. But since 2017, is again above the interim limit. Since Q1 2018, MW-2 depicts higher nitrate and total nitrogen than the recent past, although nitrate detections are subject to wide swings. Prior to the fourth quarter 2013 the interim groundwater limitations were occasionally exceeded for sodium at MW-2, but since this time they have been below the interim groundwater limitations, until June 2017 when they again were slightly above the interim limit. Sodium in MW-2 has declined in recent sampling events but remains barely above the interim standard. Chloride levels at MW-2 exceeded the interim groundwater limitations from the fourth quarter 2010 through the first quarter 2012, but since this time the levels have been less than the interim limitations.
- Quarterly monitoring results at cross-gradient MW-5R and down-gradient MW-4, MW-6, and MW-7 have rarely exceeded the interim groundwater limitations for any constituent (except boron), with the exception of chloride and total nitrogen at MW-4 and sodium at MW-6 (with some exceptions).

Final Groundwater Limitations

On January 8, 2008, the RWQCB requested Yolo County prepare a Background Groundwater Quality Study/Groundwater Degradation Assessment Report to establish statistically derived water quality limitations. Central Valley Environmental, Incorporated (CVEI) prepared a Background Groundwater Quality Study/Groundwater Degradation Assessment Report dated April 1, 2009. Yolo County submitted the report to the RWQCB. CVEI used statistical methods to derive tolerance intervals representing the 95th quantile of all water quality sampling results from 2004 through February 2009. CVEI used these values in conjunction with the WQOs, using the greater of the two, to recommend Final Groundwater Limitations. Approval of the Final Groundwater Limitations by the RWQCB is still pending. However, since 2009 the sample population has more than doubled and therefore the analyses may be outdated.

2.0 GROUNDWATER MONITORING

Groundwater monitoring was performed on February 13 and March 6, 2020 by CRWA personnel experienced with groundwater sampling. The following sections describe the

monitoring protocol used to measure the depth to water, purge the wells, and collect water quality samples from the monitoring wells.

2.1 GROUNDWATER LEVELS

CRWA personnel measured the depth to groundwater at the monitoring wells using an electric water level sounder accurate to 0.01 foot. The sounder was cleaned and decontaminated prior to the first monitoring well measurement and between each well site by thoroughly washing and scrubbing the sounding probe and line with a laboratory-grade detergent (Alconox) and distilled water, followed by a triple rinse with distilled water. The sounding probe and line was then sprayed with a 10 percent bleach solution to kill any bacteria. The sounding probe was allowed to air dry between wells.

2.2 PRE-SAMPLING ACTIVITIES

After the depth to groundwater was measured at a monitoring well, the well was purged. Each monitoring well was purged through the use of a portable low flow submersible pump. Prior to purging, the top 6 inches of the polyethylene tubing was decontaminated. The polyethylene tube was then connected to a vinyl tube via a double-barbed nipple and the vinyl tubing was routed to an empty 5-gallon bucket. The double-barbed nipple and vinyl tubing were cleaned and decontaminated prior to initial use and between each well (primary disinfection). The procedures for cleaning and decontaminating are the same as listed above (Groundwater Levels) except the vinyl tubing received six rinses with distilled water after cleaning.

Prior to collecting the groundwater samples, each monitoring well was micro purged (verbal approval, RWQCB 2008). Micro purging consisted of pumping each well until field parameters such as pH, temperature, and EC stabilized. Field parameters were measured by collecting purge water from the discharge line at select intervals and using a calibrated multi-parameter meter to record the readings. The volume purged and field parameters are documented on field data sheets, which are presented in Appendix A. The purge water was collected in 5-gallon buckets and then transported back to the WWRF and discharged to the wastewater holding tanks.

2.3 GROUNDWATER SAMPLING

Once each monitoring well was purged, CRWA personnel collected water samples in laboratory-prepared bottles. Prior to collecting the first sample, the vinyl tube connected to the 5-gallon bucket was disconnected from the bucket and the tip was sprayed with a 10 percent bleach solution to kill any bacteria that may have been present in the bucket and inadvertently transferred to the sampling tube (secondary disinfection). To eliminate any residual chlorine, pumping was then resumed for about 30 to 60 seconds (approximately 0.25 to 0.5 gallons) and the end of the vinyl tube was elevated and pinched so that the entire tubing surface was in contact with the purge water prior to sampling. The bacteriological (total coliform) sample was the first sample collected and was collected directly from the end of the vinyl tube, followed by

collection of samples for THMs. The samples for all other constituents analyzed were collected next. Water samples for metals were filtered in the field using a disposable 0.45 micron filter before being placed into acidified laboratory prepared sample bottles. Trip blanks are included by CLS for TTHM's analysis, when requested.

Nitrile gloves were worn while collecting samples. A new set of gloves was used at every monitoring well. The samples were placed in an ice chest and cooled to 4 degrees Celsius and delivered to California Laboratory Services (CLS) of Rancho Cordova, California, a California-certified laboratory, under standard chain-of-custody procedures. Samples collected from the monitoring wells were analyzed for TDS, sodium, boron, iron, manganese, nitrate (as N), nitrite (as N), ammonia (as N), total N, total coliform organisms, and total trihalomethanes per the WDR requirements. Table 4 presents the results for the monitoring wells and Table 5 presents the results for any trip blank and equipment blank samples. Appendix B contains the laboratory data sheets and chain-of-custody forms.

2.4 GROUNDWATER LEVELS AND FLOW DIRECTION

The measured groundwater levels in each well were subtracted from the surveyed ground surface elevation at each well. Table 2 lists the elevation of the top of the well casing (TOC) (reference point) at each well and presents the current and historic depths-to-water and groundwater surface elevations. The groundwater surface elevations were used to generate groundwater contours from which the groundwater gradient was calculated. Figure 10 shows the groundwater contours and flow direction for December 2019. Groundwater gradients and flow directions were estimated using wells MW-1, MW-4, and MW-5R. Table 3 summarizes these estimates.

3.0 FINDINGS

3.1 GROUNDWATER LEVELS

Groundwater elevations in February and March 2020 (First Quarter 2020) ranged from 74.13 feet msl in MW-4 to 97.70 feet msl in MW-1, and were within historic ranges. Monitoring well MW-3 showed the greatest change in groundwater levels this quarter, with a decrease of 1.7 feet from the prior quarter. Water levels have been impacted by an drier than normal winter season. Table 2 lists the water level measurements. Chart 1 shows the current and historic groundwater levels.

Due to MW-3 being screened within a perched water zone it was left out of groundwater contouring, flow direction, and gradient calculations.

Between the Fourth Quarter of 2019 and First Quarter of 2020, groundwater levels dropped slightly an average of 0.08 feet – an unusual trend for the winter season which reflects a dryer than normal weather pattern for this time of year. Looking at the generalized pattern of rainfall and groundwater levels in the area since fall 2016 the trends in those two parameters tend to

correlate. There is generally a strong correlation between precipitation/recharge with water levels in the shallow groundwater zone.

3.2 GROUNDWATER FLOW DIRECTION AND GRADIENT

The groundwater flow direction and gradient for February and March 2020 were calculated using wells MW-1, MW-4, and MW-5R, which is consistent with past practice and historically reported data. Using these wells, the groundwater flow direction was to the east-northeast (67.67 degrees) with a gradient of 0.005 feet/feet. The groundwater gradient is generally consistent with historic results. Figure 2 displays the groundwater surface elevations at each well, the groundwater contours, and flow direction. In the northern portion of the site the groundwater flow direction appears to be influenced by Cache Creek. Table 3 lists the historic and current groundwater flow directions and gradients.

3.3 GROUNDWATER QUALITY

Tables 4 and 5 summarize the analytical results in table format and Charts 2 through 8 show the historical water quality parameter concentrations in graphical format.

Current (First Quarter 2020) water quality results were compared to historic water quality results to assess potential increasing trends. Overall, the water quality analytical testing results for the First Quarter of 2020 were within historical ranges and trends. While nitrates and total nitrogen showed a slight increase in concentrations MW-2 after the first quarter 2017, those concentrations have generally stabilized and declined back towards historic levels, but are mostly down this quarter. Concentrations for boron and TDS have remained relatively consistent during the past 8 quarters, with TDS being generally consistent with prior quarter results in most of the wells this quarter. pH levels this quarter are consistent with historical ranges. Boron and sodium are generally consistent with past analytical data, although boron concentrations in MW-1 continue to be subject to relatively wide swings. Nitrogen and nitrate levels showed an overall slight decrease. Overall TDS levels appear very close to historical levels and ranges at each well, with the exception of MW-3 which continues to show wide fluctuations, but is generally in the range of prior data. The spatial variation of TDS, nitrate and boron concentrations over the recent past are best explained by the recent rainfall/dryness patterns, recharge and pumping changes in the area groundwater. No Total Coliform was this quarter. Chloride samples are generally consistent with previous quarter results with MW-4 dropping back down to the high normal range. No other significant trends in groundwater quality trends were observed from these monitoring results.

MW-3 has been an outlier in water quality with results that are significantly different from the remaining monitoring wells, and this quarter showed decreases in all constituents with the exception of nitrate, nitrite and total nitrogen.

Historically, up-gradient MW-1 has had the highest concentrations of TDS and that holds true this quarter a TDS concentration of 1200 mg/L, up slightly from the prior quarter.

Sodium trends are generally down in all wells sampled with the exception of MW-3, which showed a slight increase in sodium concentrations from the prior quarter.

Chloride trends are down in samples from all wells except MW-3, which showed an increase in chloride concentrations. Chloride results remain within historical ranges.

The highest nitrate (as N) (13 mg/L and 14 mg/L) and the highest total N (13 mg/L and 14 mg/L) were detected in the samples from MW-6 and MW-4, respectively.

The sample from MW-2 again had the highest boron (5.7 mg/L) concentration detected, also consistent with historic results and mirroring the recent trend of all boron levels being elevated.

For First Quarter 2020 sampling, Total Coliform was not detected in samples from any of the wells. Stricter handling requirements were implemented the last several quarter to reduce the likelihood of cross contamination and these measures will be maintained.

Ammonia (as N) was not detected at measurable concentrations in any of the wells sampled this quarter. Ammonia (as N) is not typically detected at any of the wells in the monitoring network, aside from MW-3.

Iron and manganese were not reported in samples from any of the wells sampled this quarter.

TTHMs were detected in six wells sampled this quarter, with the sample from MW-5R the highest at 130 ug/L. TTHMs included chloroform, bromoform, dibromochloromethane and bromodichloromethane. A trip blank were submitted this quarter with no TTHMs detected.

3.4 COMPARISON TO INTERIM GROUNDWATER LIMITATIONS

The water quality results from the First Quarter 2020 monitoring event show that every monitoring well sampled exceeded the interim groundwater limitation for boron, which is generally consistent with historic results.

Based on the understanding that the interim groundwater quality limits remain the higher of the background level for the site and the basin wide WQO (water quality objective), the following is a summary of each wells exceedances for the current quarter (First Quarter 2020). Comparing to the previous quarter, the number of parameters in exceedance is less, although the constituents in exceedance varies somewhat from the prior quarter.

MW-1: TDS, Sodium, Chloride, Boron

MW-2: Sodium, Boron

MW-3: Sodium, Chloride, Boron

MW-4: Chloride, Boron, Total Nitrogen

MW-5R: Boron, Trihalomethane
MW-6: Boron, Total Nitrogen
MW-7: Boron

4.0 CONCLUSIONS

The groundwater contours and flow directions show there are two potential sources of groundwater to the area. MW-5R monitors water entering the area that is recharged by Cache Creek, north of the WWRF area. Water also enters the area from the south near MW-1 and MW-2 from regions used for agriculture. MW-4, MW-6, and MW-7 are in a mixing zone between these water sources and as such minor shifts in groundwater gradients may result in a change in water quality that reflects these two different water sources. In 2015, almond orchards were planted in the fields just west of the monitoring area and water wells were installed to provide water for the orchards. Deep percolation from irrigation or pumping for water supply could affect groundwater levels and flow directions, but to date they do not appear to be affecting groundwater beneath the WWRF area. In past monitoring events, it appeared groundwater pumping east of the monitoring well network was affecting MW-4 and could be affecting MW-7.

In general, the annual rainfall amounts, irrigation practices at farm lands and golf courses, and variations in groundwater pumping to meet local domestic water needs can impact the local groundwater contours, flow direction and gradients. However, for the First Quarter 2020 monitoring event, these parameters remained within historical ranges for groundwater levels. The most recent groundwater contours reflect an overall slight decrease from the Fourth Quarter 2019 data corresponding to a dry winter. Generally, groundwater levels changes track each other across the various monitoring wells, although water levels increased slightly in three wells and decreased slightly in four wells this quarter. GW flow gradients remain in the range of historical observations at 0.005 ft/ft for the quarter and the direction of flow is east-northeast.

The analytical results from the First Quarter 2020 sampling event show a number of results slightly above the interim groundwater limitations. All wells sampled exceeded the interim groundwater limitations for boron, which is consistent with historic monitoring results. Additionally, three wells had sodium levels above interim limits, three wells had chloride levels above interim limits, two wells had Total Nitrogen concentrations which exceeded the interim limits and one well exceeded TTHM limits. All exceedances of the interim limits were small and in line with historical ranges.

TDS concentrations were up in three wells, down in three wells this quarter and the same in one wells this quarter, with all the changes within historical ranges.

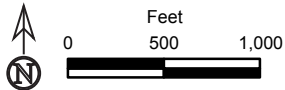
Overall chloride trends are consistent within ranges with four of six wells sampled showing at least a modest increase in chloride, but only MW-4 showing a notable increase.

The First Quarter 2020 analyses for TTHMs shows that samples from six wells detected TTHMs, with one well (MW-5R) exceeding interim limits. TTHMs included chloroform, bromoform, dibromochloromethane and bromodichloromethane. This is a decrease from the Fourth Quarter 2019 where all wells had TTHM detections. The two trip blanks did not detect TTHMs.

First Quarter 2020 analyses for Total Coliform showed no detections above the detection for the second quarter in a row. Implementation of more strict sample handling protocols has reduced the likelihood of cross contamination of samples, however measures will continue to be taken to reduce potential contamination of samples.

Review of the current quarter and historical data trends indicate the local groundwater quality appears to remain in historical ranges since before and after the operations of the WWRF.

FIGURES

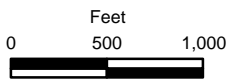


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Figure 1
Site and Vicinity

Third Quarter 2018 Monitoring Report
Wild Wings Water Recycling Facility
18530 Wildwings Drive
Woodland, Yolo County, California

Notes:
All locations are approximate.
Aerial Source: USDA, National Agriculture Imagery Program, 8 July 2016



Notes:
 All locations are approximate
 ft msl = feet above mean sea level
 *Groundwater monitoring well is screened at a shallower depth, therefore it is not included in groundwater elevation contouring
 Aerial Source: USDA, National Agriculture Imagery Program, 8 July 2016



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Figure 2
Groundwater Elevation Contours

First Quarter 2020 Monitoring Report
 Wild Wings Water Recycling Facility
 18530 Wildwings Drive
 Woodland, Yolo County, California

TABLES

Table 1
Monitoring Well Construction Details
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date Installed	Depth of Borehole (feet bgs)	Depth of Well Casing (feet bgs)	Screened Interval (feet bgs)	Slot Size (inches)	Grout (feet bgs)	Bentonite Seal (feet bgs)	Sand Pack (feet bgs)	Casing Material	TOC Elevation (feet msl)	Screen Elevations (feet msl)
MW-1	6/3/2004	46	41	31-41	0.010	0.5-25.5	25.5-28.5	28.5-45	2-inch Sch. 40 PVC, flush thread	126.22	95.22 - 85.22
MW-2	6/2/2004	51.5	47	37-47	0.010	0.5-31	31-34.5	34.5-47	2-inch Sch. 40 PVC, flush thread	124.93	87.93 - 77.93
MW-3	6/3/2004	31.5	31	21-31	0.010	0.5-14.5	14.5-19	19-32	2-inch Sch. 40 PVC, flush thread	121.37	100.37 - 90.37
MW-4	6/1/2004	71.5	70	55-70	0.010	0.5-48	48-52	52-70	2-inch Sch. 40 PVC, flush thread	120.71	65.71 - 50.71
MW-5R	6/10/2004	75	74	54-74	0.010	0.5-47	47-52	52-75	2-inch Sch. 40 PVC, flush thread	125.42	71.42 - 51.42
MW-6	5/27/2004	50	49	39-49	0.010	0.5-33	33-37	37-50	2-inch Sch. 40 PVC, flush thread	121.59	82.59 - 72.59
MW-7	5/28/2004	45	39	29-39	0.010	0.5-22	22-26.5	26.5-45	2-inch Sch. 40 PVC, flush thread	114.55	85.55 - 75.55

Notes:

Information for monitoring wells was extracted from Monitoring Well Installation Report (Geologic and Hydrogeologic Study) for the Wild Wings Residential Development , Jacobson Helgoth Consultants, Inc., August 2004.

All monitoring wells were drilled and constructed by PC Exploration of Rocklin, CA. An Ingersol Rand A-400 drill rig with an 8-inch diameter hollow stem auger was used. Oversight was provided by Jacobson Helgoth Consultants. Wellheads were constructed in subsurface vaults with flush mount covers and locking well caps. The top of the PVC casing is approximately 1.3 feet below ground surface (bgs).

TOC = top of casing; surveyed in reference to mean sea level by Morrow Surveying of West Sacramento, CA, on June 26, 2004

Table 2 (MW-1)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-1	6/15/04	126.22	32.81	93.41
	3/29/05		30.62	95.6
	6/16/05		29.62	96.6
	9/29/05		31.75	94.47
	12/6/05		31.4	94.82
	2/16/06		29.99	96.23
	5/16/06		27.25	98.97
	8/21/06		29.73	96.49
	11/20/06		30.27	95.95
	2/8/07		31.37	94.85
	5/7/07		30.79	95.43
	8/29/07		32.38	93.84
	2/21/08		29.96	96.26
	5/27/08		29.7	96.52
	8/27/08		30.49	95.73
	11/24/08		32.43	93.79
	2/18/09		30.72	95.5
	5/21/09		31.28	94.94
	8/7/09		32.96	93.26
	11/5/09		34.34	91.88
	2/8/10		32.05	94.17
	5/7/10		31.85	94.37
	8/18/10		31.22	95.0
	11/2/10		32	94.22
	12/28/10		30.76	95.46
	2/23/11		31.33	94.89
	5/5/11		29.44	96.78
	8/16/11		30.23	95.99
	11/8/11		31.95	94.27
	2/27/12		32.84	93.38
	5/21/12		32.8	93.42
	8/9/12		33.84	92.38
	11/19/12		34.39	91.83
	2/21/13		32.1	94.12
	5/15/13		31.73	94.49
	8/15/13		32.84	93.38
11/7/13		33.69	92.53	
2/25/14		34.38	91.84	
5/22/14		35.22	91.0	
8/27/14		36.65	89.57	
11/12/14		36.93	89.29	
2/26/15		34.88	91.34	
5/13/15		35.6	90.62	
8/4/15		36.03	90.19	
11/5/15		36.9	89.32	
2/4/16		35.33	90.89	
6/30/16		34.37	91.85	
8/25/16		34.59	91.63	
11/17/16		34.9	91.32	
3/7/17		26.18	100.04	
6/27/17		28.14	98.08	
8/23/17		30.09	96.13	
11/14/17		31.07	95.15	
2/21/18		32.94	93.28	
5/24/18		33.03	93.19	
9/27/18		34.07	92.15	
12/28/18		31.34	94.88	
2/28/19		28.39	97.83	
6/18/19		27.91	98.31	
9/3/19		29.69	96.53	
12/3/19		30.98	95.24	
3/6/20		31.50	94.72	

Table 2 (MW-2)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC		
		Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-2	6/15/04	124.93	34.75	90.18
	3/29/05		33.2	91.73
	6/16/05		31.71	93.22
	9/29/05		36.67	88.26
	12/6/05		36.29	88.64
	2/16/06		31.85	93.08
	5/16/06		28.12	96.81
	8/21/06		33.17	91.76
	11/20/06		34.75	90.18
	2/8/07		34.81	90.12
	5/7/07		35.53	89.4
	8/29/07		39.92	85.01
	2/21/08		33.15	91.78
	5/27/08		34.25	90.68
	8/27/08		37.59	87.34
	11/25/08		37.3	87.63
	2/19/09		36.01	88.92
	5/21/09		36.47	88.46
	8/7/09		40.14	84.79
	11/5/09		41.38	83.55
	2/8/10		38.48	86.45
	5/7/10		35.8	89.13
	8/18/10		36.66	88.27
	11/2/10		38.25	86.68
	12/28/10		37.08	87.85
	2/23/11		35.68	89.25
	5/5/11		30.87	94.06
	8/16/11		33.73	91.2
	11/8/11		35.93	89
	2/27/12		36.04	88.89
	5/21/12		35.89	89.04
	8/9/12		37.54	87.39
	11/19/12		37.9	87.03
	2/21/13		34.6	90.33
	5/15/13		36.4	88.53
	8/15/13		38.8	86.13
	11/7/13		38.74	86.19
	2/25/14		38.78	86.15
	5/22/14		41.17	83.76
	8/27/14		dry	
11/12/14		45.07	79.86	
2/26/15		39.83	85.1	
5/13/15		39.72	85.21	
8/4/15		39.35	85.58	
11/5/15		41.79	83.14	
2/4/16		40.41	84.52	
6/30/16		37.44	87.49	
8/25/16		38.39	86.54	
11/17/16		37.67	87.26	
3/7/17		27.4	97.53	
6/27/17		30.42	94.51	
8/23/17		33.31	91.62	
11/14/17		35.97	88.96	
2/21/18		35.87	89.06	
5/24/18		35.5	89.43	
9/27/18		37.08	87.85	
12/28/18		34.06	90.87	
2/28/19		31.39	93.54	
6/18/19		29.1	95.83	
9/3/19		31.7	93.23	
12/3/19		34.05	90.88	
3/6/20		34.26	90.67	

Table 2 (MW-3)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-3	6/15/04	121.37	20.42	100.95
	3/29/05		21.33	100.04
	6/16/05		20.14	101.23
	9/29/05		22.45	98.92
	12/6/05		21.54	99.83
	2/16/06		21.65	99.72
	5/16/06		26.51	94.86
	8/21/06		21.49	99.88
	11/20/06		21.14	100.23
	2/8/07		23.02	98.35
	5/7/07		20.63	100.74
	8/29/07		22.99	98.38
	2/21/08		21.24	100.13
	5/27/08		22.19	99.18
	8/28/08		23	98.37
	11/25/08		24.39	96.98
	2/19/09		19.67	101.7
	5/21/09		21.31	100.06
	8/7/09		22.49	98.88
	11/5/09		24.29	97.08
	2/8/10		20.2	101.17
	5/7/10		23.21	98.16
	8/18/10		23.55	97.82
	11/2/10		25.13	96.24
	12/28/10		19.95	101.42
	2/23/11		20.66	100.71
	5/5/11		21.64	99.73
	8/16/11		23.3	98.07
	11/8/11		25.03	96.34
	2/27/12		24.69	96.68
	5/21/12		24.44	96.93
	8/9/12		25.58	95.79
	11/19/12		25.96	95.41
	2/21/13		24.15	97.22
	5/15/13		25.45	95.92
	8/16/13		26.67	94.7
	11/7/13		25.97	95.4
	2/25/14		25.44	95.93
	5/22/14		26.5	94.87
	8/27/14		28.75	92.62
	11/12/14		29.53	91.84
	2/26/15		21.33	100.04
	5/13/15		23.53	97.84
	8/4/15		25.7	95.67
	11/5/15		28.7	92.67
	2/4/16		24.81	96.56
	6/30/16		25.89	95.48
	8/25/16		27.74	93.63
	11/17/16		29.6	91.77
	3/7/17		19.13	102.24
	6/27/17		22.75	98.62
	8/23/17		23.33	98.04
	11/14/17		25.87	95.5
	2/21/18		26.98	94.39
	5/24/18		25.54	95.83
	9/27/18		27.37	94.0
	12/28/18		24.25	97.1
	2/28/19		16.75	104.6
	6/18/19		21.52	99.9
	9/3/19		23.35	98.0
	12/3/19		21.99	99.4
	3/6/20		23.67	97.7

Table 2 (MW-4)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC		
		Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-4	6/15/04	120.71	44.59	76.12
	3/29/05		42.83	77.88
	6/16/05		41.93	78.78
	9/29/05		na	
	12/6/05		46.6	74.11
	2/16/06		42.31	78.4
	5/16/06		37.61	83.1
	8/21/06		42.25	78.46
	11/20/06		41.8	78.91
	2/8/07		40.85	79.86
	5/7/07		40.92	79.79
	8/29/07		46.13	74.58
	2/21/08		41.2	79.51
	5/27/08		42.34	78.37
	8/28/08		45.65	75.06
	11/25/08		46.07	74.64
	2/19/09		45.29	75.42
	5/21/09		44.44	76.27
	8/7/09		49.54	71.17
	11/5/09		51	69.71
	2/8/10		49.31	71.4
	5/7/10		45.94	74.77
	8/18/10		48.05	72.66
	11/2/10		49.05	71.66
	12/28/10		48.01	72.7
	2/23/11		46.31	74.4
	5/5/11		42.04	78.67
	8/16/11		45.02	75.69
	11/8/11		46.64	74.07
	2/27/12		44.72	75.99
	5/21/12		44.56	76.15
	8/9/12		48.08	72.63
	11/19/12		49.78	70.93
	2/21/13		45.9	74.81
	5/15/13		46.69	74.02
	8/16/13		50.67	70.04
	11/7/13		51.99	68.72
	2/25/14		50.88	69.83
	5/22/14		51.08	69.63
	8/27/14		55.49	65.22
	11/12/14		56.36	64.35
	2/26/15		53.85	66.86
	5/13/15		53.9	66.81
	8/4/15		55.42	65.29
	11/5/15		56.74	63.97
	2/4/16		56.4	64.31
	6/30/16		54.22	66.49
	8/25/16		55.21	65.5
	11/17/16		55.54	65.17
	3/7/17		48.46	72.25
	6/27/17		47.06	73.65
	8/23/17		48.59	72.12
	11/14/17		49.98	70.73
	2/21/18		49.98	70.73
	5/24/18		49.69	71.02
	9/27/18		53.11	67.6
	12/28/18		53.42	67.29
	2/28/19		49.4	71.31
	6/18/19		44.4	76.31
	9/17/19		46.57	74.14
	12/3/19		48.05	72.66
	2/13/20		46.58	74.13

Table 2 (MW-5R)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-5R	6/15/04	125.42	39.37	86.05
	3/29/05		37.65	87.77
	6/16/05		35.62	89.8
	9/29/05		40.73	84.69
	12/6/05		40.78	84.64
	2/16/06		36.02	89.4
	5/16/06		37.05	88.37
	8/21/06		36.12	89.3
	11/20/06		38.95	86.47
	2/8/07		38.97	86.45
	5/7/07		38.42	87
	8/29/07		42.97	82.45
	2/21/08		37.5	87.92
	5/27/08		38.06	87.36
	8/27/08		41.41	84.01
	11/24/08		41.84	83.58
	2/18/09		40.73	84.69
	5/21/09		40.54	84.88
	8/7/09		43.1	82.32
	11/5/09		45.2	80.22
	2/8/10		42.4	83.02
	5/7/10		39.77	85.65
	8/18/10		40.15	85.27
	11/2/10		42.53	82.89
	12/28/10		41.53	83.89
	2/23/11		40.1	85.32
	5/5/11		34.65	90.77
	8/16/11		36.78	88.64
	11/8/11		40.14	85.28
	2/27/12		40.31	85.11
	5/21/12		38.6	86.82
	8/9/12		40.68	84.74
	11/19/12		42.11	83.31
	2/21/13		39.03	86.39
	5/15/13		39.69	85.73
	8/15/13		41.55	83.87
	11/7/13		42.43	82.99
	2/25/14		42.28	83.14
	5/22/14		44.12	81.3
	8/27/14		49.26	76.16
	11/12/14		48.34	77.08
	2/26/15		43.39	82.03
	5/13/15		43.03	82.39
	8/4/15		42.8	82.62
	11/5/15		45.3	80.12
	2/4/16		43.76	81.66
	6/30/16		41.06	84.36
	8/25/16		42.23	83.19
	11/17/16		41.53	83.89
	3/7/17		32.08	93.34
	6/27/17		34.96	90.46
	8/23/17		38.11	87.31
	11/14/17		39.69	85.73
	2/21/18		40.39	85.03
	5/24/18		38.03	87.39
	9/27/18		41.65	83.77
	12/28/18		40.7	84.72
	2/28/19		35.59	89.83
	6/18/19		31.69	93.73
	9/4/19		31.72	93.7
	12/3/19		38.74	86.68
	3/6/20		38.90	86.52

Table 2 (MW-6)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC		Water Surface Elevation (feet msl)
		Elevation (feet msl)	DTW (feet btoc)	
MW-6	6/15/04	121.59	37.96	83.63
	3/29/05		37.26	84.33
	6/16/05		34.92	86.67
	9/29/05		40.59	81
	12/6/05		40.77	80.82
	2/16/06		35.32	86.27
	5/16/06		30.28	91.31
	8/21/06		35.59	86
	11/20/06		38.57	83.02
	2/8/07		38.46	83.13
	5/7/07		37.97	83.62
	8/29/07		42.96	78.63
	2/21/08		37.02	84.57
	5/27/08		37.56	84.03
	8/27/08		41.26	80.33
	11/24/08		41.98	79.61
	2/18/09		40.67	80.92
	5/21/09		39.94	81.65
	8/7/09		42.98	78.61
	11/5/09		45.37	76.22
	2/8/10		42.51	79.08
	5/7/10		39.51	82.08
	8/18/10		40.14	81.45
	11/2/10		42	75.57
	12/28/10		41.67	79.92
	2/23/11		40.1	81.49
	5/5/11		34.03	87.56
	8/16/11		36.23	85.36
	11/8/11		40.27	81.32
	2/27/12		40.2	81.39
	5/21/12		38.67	82.92
	8/9/12		41.03	80.56
	11/19/12		42.47	79.12
	2/21/13		38.91	82.68
	5/15/13		39.64	81.95
	8/15/13		41.84	79.75
	11/7/13		42.65	78.94
	2/25/14		42.34	79.25
	5/22/14		44.14	77.45
	8/27/14		dry	
11/12/14		dry		
2/26/15		43.62	77.97	
5/13/15		43.65	77.94	
8/4/15		43.2	78.39	
11/5/15		45.58	76.01	
2/4/16		43.92	77.67	
6/30/16		41.31	80.28	
8/25/16		42.62	78.97	
11/17/16		41.8	79.79	
3/7/17		31.88	89.71	
6/27/17		34.37	87.22	
8/23/17		37.96	83.63	
11/14/17		39.71	81.88	
2/21/18		40.15	81.44	
5/24/18		39.25	82.34	
9/27/18		41.78	79.81	
12/28/18		40.71	80.88	
2/28/19		35.6	85.99	
6/18/19		32.69	88.9	
9/17/19		35.57	86.02	
12/3/19		38.4	83.19	
2/13/20		38.37	83.22	

Table 2 (MW-7)
Static Water Level Measurement in Monitoring Wells
Wild Wings Water Recycling Facility, Yolo County, CA

Well	Date	TOC Elevation (feet msl)	DTW (feet btoc)	Water Surface Elevation (feet msl)
MW-7	6/15/2004	114.55	36.22	78.33
	3/29/2005		35.8	78.75
	6/16/2005		33.77	80.78
	9/29/2005		38.09	76.46
	12/6/2005		dry	
	2/16/2006		34.08	80.47
	5/16/2006		28.69	85.86
	8/21/2006		34.29	80.26
	11/20/2006		36.96	77.59
	2/8/2007		36.85	77.7
	5/7/2007		36.22	78.33
	8/29/2007		dry	
	2/21/2008		35.55	79
	5/27/2008		35.92	78.63
	8/27/2008		38.16	76.39
	11/24/2008		dry	
	2/18/2009		dry	
	5/21/2009		dry	
	8/7/2009		dry	
	11/5/2009		dry	
	2/8/2010		dry	
	5/7/2010		37.4	77.15
	8/18/2010		dry	
	11/2/2010		dry	
	12/28/2010		dry	
	2/23/2011		37.95	76.6
	5/5/2011		33.15	81.4
	8/16/2011		34.92	79.63
	11/8/2011		dry	
	2/27/2012		38.04	76.51
	5/21/2012		36.95	77.6
	8/9/2012		dry	
	11/19/2012		dry	
	2/21/2013		37.21	77.34
	5/15/2013		37.55	77
	8/15/2013		dry	
	11/7/2013		dry	
	2/25/2014		dry	
	5/22/2014		dry	
	8/27/2014		dry	
	11/12/2014		dry	
	2/26/2015		dry	
5/13/2015		dry		
8/4/2015		dry		
11/5/2015		dry		
2/4/2016		dry		
6/30/2016		dry		
8/25/2016		dry		
11/17/2016		dry		
3/7/2017		32.01	82.54	
6/27/2017		33.57	80.98	
8/23/2017		36.69	77.86	
11/14/2017		38.26	76.29	
2/21/18		38.42	76.13	
5/24/18		39.35	75.20	
9/27/18		dry		
12/28/18		dry		
2/28/19		34.9	79.65	
6/18/19		31.85	82.70	
9/3/19		dry		
12/3/19		37.39	77.16	
2/13/20		36.87	77.68	

Table 5
Quality Assurance/Quality Control Samples
Wild Wings Water Recycling Facility, Yolo County, CA

Sampling Point	Sample Date	Lab	TTHM ¹ (ug/L)	Lab Notes
EB-1	11/17/2017	CLS	1.1	-
	3/7/2017	CLS	2.0	-
Trip Blanks	11/17/2017	CLS	<0.50	-
	3/7/2017	CLS	<0.50	-
	6/28/2017	CLS	<0.50	-
	8/23/2017	CLS	<0.50	-
	2/21/2018	CLS	<0.50	-
	5/24/2018	CLS	<0.50	Mislabeled 3
	9/27/2018	CLS	<0.50	-
	2/28/2019	CLS	<0.50	-
	6/19/2019	CLS	<0.50	-
	9/4/2019	CLS	0.94	-
	9/18/2019	CLS	1.1	-
	12/4/2019	CLS	<0.50	-
	2/14/2020	CLS	<0.50	-
	3/6/2020	CLS	<0.50	-

TTHM = total trihalomethanes; nd = nondetect

1 = Total trihalomethanes consists of the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane

Sampling Point	Sample Date	Lab	pH Std Unit	TDS mg/L	Na (d) mg/L	Cl mg/L	B (d) mg/L	Fe (d) mg/L	Mn (d) mg/L	NO3-N mg/L	NO2-N mg/L	NH3-N mg/L	Total Nitrogen mg/L	Coliform Bacteria (MPN/100 mL)			TTHM (1) (EPA 601) ug/L	Lab Notes
														(total)	(fecal)	(E. coli)		
Recommended Interim Limitation ²	WO Objective		6.5-8.5	450	69	106	0.6	0.3	0.05	10	1	0.5	10	ND	ND	ND	100	
	Background		7.6	1100	155	138	-	<0.1	0.64	18	-	0.5	-	<2.0	<2.0	-	-	-
MW-6	11/7/2013	CLS	7.0	850	180	110	3.6	<0.10	<0.02	8.8	<0.10	0.18	9.0	<1.8	-	-	<0.50	
MW-6	2/25/2014	CLS	7.2	910	140	100	5.4	<0.10	<0.02	8.4	<0.10	<0.10	8.6	<1.8	-	-	<0.50	
MW-6	5/22/2014	CLS	7.1	880	150	93	5.3	<0.10	<0.02	8.5	<0.10	<0.10	8.8	<1.8	-	-	<0.50	
MW-6	8/27/2014	CLS							No sample retrieved									
MW-6	11/12/2014	CLS							No sample retrieved									
MW-6	2/26/2015	CLS	7.1	850	140	94	5.2	1.0	0.04	8.3	<0.10	<0.10	8.4	<1.8	-	-	<0.50	
MW-6	5/13/2015	CLS	7.2	860	130	87	4.8	<0.10	<0.02	8.5	<0.10	<0.10	8.6	<1.8	-	-	<0.50	
MW-6	8/4/2015	CLS	7.3	810	140	90	4.6	<0.10	<0.02	7.7	<0.10	<0.10	7.9	<1.8	-	-	<0.50	
MW-6	11/5/2015	CLS	7.2	830	160	81	5.0	<0.10	<0.02	8.5	<0.10	<0.10	8.6	<1.8	-	-	<0.50	
MW-6	2/4/2016	CLS	7.2	810	140	82	4.7	<0.10	<0.02	8.9	<0.40	<0.10	9.0	<1.8	-	-	<0.50	
MW-6	6/30/2016	CLS	7.1	780	120	87	4.3	<0.10	<0.02	8.5	<0.40	<0.10	8.5	<1.8	-	-	0.80	
MW-6	8/25/2016	CLS	7.1	730	150	86	4.3	<0.10	<0.02	8.5	<0.40	<0.10	8.5	<1.8	-	-	3.3	
MW-6	11/17/2016	CLS	7.3	760	140	86	4.2	<0.10	<0.02	9	<0.40	0.11	9.2	<1.8	-	-	<0.50	
MW-6	3/7/2017	CLS	7.1	1000	150	260	3.8	<0.10	<0.02	11	<0.40	0.11	11.0	<1.8	-	-	<0.50	
MW-6	6/27/2017	CLS	6.9	910	150	190	3.8	<0.10	<0.02	9.9	<0.40	0.18	10.0	14	-	-	<0.50	
MW-6	8/23/2017	CLS	7.2	920	150	160	4.2	<0.10	<0.02	11	<0.40	0.16	11.0	<1.8	-	-	<0.50	
MW-6	11/14/2017	CLS	7.0	880	150	130	4.3	<0.10	<0.02	12	<0.40	<0.10	12	<1.8	-	-	<0.50	
MW-6	2/21/2018	CLS	7.1	920	150	120	4.6	<0.10	<0.02	14	<0.40	<0.10	14	4.5	-	-	<0.50	
MW-6	5/24/2018	CLS	7.1	950	140	120	4.8	<0.10	<0.02	14	<0.40	<0.10	14	<1.8	-	-	0.8	
MW-6	9/27/18	CLS	7.09	930	160	-	5.0	<0.10	<0.02	14	<0.40	<0.10	14	2.0	-	-	1.4	
MW-6	9/27/18	CLS	7.11	860	150	120	4.7	<0.10	<0.02	12	<0.40	<0.10	12	<1.8	-	-	3	
MW-6	2/28/19	CLS	7.1	920	150	-	4.8	<0.10	<0.02	12	<0.40	<0.10	12	12	-	-	1.8	
MW-6	6/26/19	CLS	7.27	1000	130	180	4.4	<0.10	<0.10	10	<0.40	<0.10	10	<1.8	-	-	9.8	
MW-6	9/18/19	CLS	7.11	960	140	140	4.5	<0.10	<0.02	12	<0.40	<0.10	12	<1.8	-	-	23	
MW-6	12/4/19	CLS	7.23	1000	190	170	4.7	<0.10	<0.02	13	0.9	<0.10	16	<1.8	-	-	8.7	
MW-6	2/14/20	CLS	7.00	920	150	110	5.5	<0.10	<0.02	13	<0.40	<0.10	13	<1.8	-	-	37	
MW-7	6/15/2004	STL	7.6	615	61.7	113	1.8	0.12	-	11.7	<0.05	<0.10	12.4				<0.5	
MW-7	3/29/2005	BSK	7.9	540	79	88	2.2	<0.05	<0.01	7.2	<0.10	<1	7.2				<0.5	
MW-7	6/16/2005	BSK	8.1	540	69	85	1.8	<0.05	<0.01	7.2	<0.10	<1	7.9				0.74	3
MW-7	9/29/2005								No sample retrieved									
MW-7	12/6/2005								No sample retrieved									
MW-7	2/16/2006	BSK	8.0	590	69	100	1.9	<0.05	<0.01	8.8	0.27	<1	9.1				1.7	3
MW-7	5/16/2006	BSK	8.0	610	74	92	2.0	<0.05	<0.01	8.6	<0.10	<1	8.6				<0.5	
MW-7	8/21/2006	BSK	8.0	530	60	81	1.6	<0.05	<0.01	6.8	<0.05	<0.10					<0.5	
MW-7	11/20/2006								No sample retrieved									
MW-7	2/16/2007								No sample retrieved									
MW-7	5/7/2007								No sample retrieved									
MW-7	8/29/2007								No sample retrieved									
MW-7	11/28/2007								No sample retrieved									
MW-7	2/21/2008		-	-	-	-	-	-	-									
MW-7	5/27/2008								No sample retrieved									
MW-7	8/27/2008								No sample retrieved									
MW-7	11/24/2008								No sample retrieved									
MW-7	2/18/2009								No sample retrieved									
MW-7	5/21/2009								No sample retrieved									
MW-7	8/4/2009								No sample retrieved									
MW-7	11/5/2009								No sample retrieved									
MW-7	2/8/2010								No sample retrieved									
MW-7	5/7/2010								No sample retrieved									
MW-7	8/18/2010								No sample retrieved									
MW-7	11/2/2010								No sample retrieved									
MW-7	2/23/2011								No sample retrieved									
MW-7	5/5/2011	CLS	7.1	660	87	100	1.8	<0.10	<0.02	7.2	<0.10	<0.10	7.4				<0.50	
MW-7	8/16/2011	CLS	7.4	680	95	100	1.9	<0.10	<0.02	6.6	<0.10	<0.10	6.9				<0.50	
MW-7	11/8/2011	CLS							No sample retrieved									
MW-7	2/27/2012								No sample retrieved									
MW-7	5/21/2012								No sample retrieved									
MW-7	8/9/2012								No sample retrieved									

Sampling Point	Sample Date	Lab	pH	TDS	Na (d)	Cl	B (d)	Fe (d)	Mn (d)	NO3-N	NO2-N	NH3-N	Total Nitrogen	Coliform Bacteria (total)	Coliform Bacteria (fecal) (E. coli)	TTHM (1) (EPA 601)	Lab Notes
Recommended	WO Objective		6.5-8.5	450	69	106	0.6	0.3	0.05	10	1	0.5	10	ND	ND	ND	100
Interim Limitation ²	Background		7.6	1100	155	138	-	<0.1	0.64	18	-	0.5	-	<2.0	<2.0	-	-
MW-7	11/19/2012									No sample retrieved							
MW-7	2/21/2013									No sample retrieved							
MW-7	5/15/2013									No sample retrieved							
MW-7	8/15/2013									No sample retrieved							
MW-7	11/7/2013									No sample retrieved							
MW-7	2/25/2014									No sample retrieved							
MW-7	5/22/2014									No sample retrieved							
MW-7	8/27/2014									No sample retrieved							
MW-7	11/12/2014									No sample retrieved							
MW-7	2/26/2015									No sample retrieved							
MW-7	5/13/2015									No sample retrieved							
MW-7	8/4/2015									No sample retrieved							
MW-7	11/5/2015									No sample retrieved							
MW-7	2/4/2016									No sample retrieved							
MW-7	6/30/2016									No sample retrieved							
MW-7	8/25/2016									No sample retrieved							
MW-7	11/17/2016									No sample retrieved							
MW-7	3/7/2017	CLS	7.3	670	100	120	2	<0.10		7.5		0.16	7.8				1.2
MW-7	6/27/2017	CLS	7.0	590	93	89	1.7	<0.10		4.6		0.19	4.9				<0.50
MW-7	8/23/2017	CLS	7.3	620	99	56	2	<0.10		4.3		<0.10	4.4				<0.50
MW-7	11/14/2017									No sample retrieved							
MW-7	2/21/2018									No sample retrieved							
MW-7	5/24/2018									No sample retrieved							
MW-7	9/27/18									No sample retrieved							
MW-7	12/28/18									No sample retrieved							
MW-7	12/28/18	CLS	7.22	660	63	-	1.5	<0.10	<0.02	4.8	<0.40	<0.10	4.8	2			<0.50
MW-7	6/26/19	CLS	7.36	560	86	70	1.5	0.91	0.16	3.2	<0.40	<0.10	3.3	<1.8	-	-	1.3
MW-7	9/3/19									No sample retrieved							
MW-7	12/4/19									No sample retrieved							
MW-7	2/14/20	CLS	7.11	570	93	93	2.0	<0.10	<0.02	5.0	<0.40	<0.10	5.6	<1.8	-	-	13

Laboratory Notes:

STL = Severn Trent Laboratory of West Sacramento, CA; BSK = BSK Laboratories of Fresno, CA; TDS = total dissolved solids; NO3-N = nitrate as nitrogen; NO2-N = nitrite as nitrogen;

NH3-N = ammonia as nitrogen; (d) = dissolved fraction; TTHM = total trihalomethanes; nd = nondetect

italic font style = Analysis for magnesium, total Kjeldahl nitrogen, fecal coliform and E. coli organisms is not required by RWQCB Order R5-2002-0077.

1 = Total trihalomethanes consist of the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane.

2 = See WDRs Item E. 1. Ground Water Limitations; WQ Objective = a variety of applicable regional water quality goals compiled by RWQCB staff; Background = Tolerance Limit (calculated from August 2001 borings and monitoring wells MW-1 and MW-5R)

3 (in Lab Notes column) = Chloroform detection; this compound was also detected in the laboratory method blank; this compound is a common laboratory contaminant.

4 = Nitrate (as nitrogen) laboratory result for 5/7/2007 at MW-4 is reported as shown on the laboratory report although the concentration is about four times higher than historic results. It is probable that the concentration was reported for nitrate (as nitrate). Due to the age of the sample, laboratory validation of the result could not be performed.

5 = Sample was extracted/analyzed outside the EPA recommended holding time

6 = Measured in the field

7 = Calculated using field Electrical Conductivity measurement

* = Nitrate as nitrogen and Nitrite as Nitrogen results were combined as one

- = Sample not collected or not measured for this constituent

Notes on Laboratory Data depicted on Figures.

- MW-7 – Data for NO3, and TN for 5/7/2007 is not graphed due to concerns with data.
- MW-5R – Data for Chloride for 6/27/2017 is suspect (dilution factor?) but is shown on g
- Data reported as less than the laboratory reporting limit is shown on figures as "zero"

Table 3
Groundwater Flow Direction and Gradient
Wild Wings Water Recycling Facility, Yolo County, CA

Sample Date	Water Surface Elevation ¹			Gradient (ft/ft)	Flow Direction (degrees) ²
	MW-1	MW-5R	MW-4		
6/15/2004	93.41	86.05	76.12	0.006	65
3/29/2005	95.6	87.77	77.88	0.006	64.2
6/16/2005	96.6	89.8	78.78	0.006	67.3
9/29/2005	94.47	84.69	n/a	n/a	n/a
12/6/2005	94.82	84.64	74.11	0.007	61.7
2/16/2006	96.23	89.4	78.4	0.006	67.2
5/16/2006	98.97	88.37	83.1	0.006	53.3
8/21/2006	96.49	89.3	78.46	0.006	66.4
11/20/2006	95.95	86.47	78.91	0.006	58.5
2/8/2007	94.85	86.45	79.86	0.005	58.3
5/7/2007	95.43	87	79.79	0.005	59.4
8/29/2007	93.84	82.45	74.58	0.007	56.9
2/21/2008	96.26	87.92	79.51	0.006	61.4
5/27/2008	96.52	87.36	78.37	0.006	61.1
8/27/2008	95.73	84.01	75.06	0.007	58
11/24/2008	93.79	83.58	74.64	0.007	59.7
2/18/2009	95.5	84.69	75.42	0.007	59.4
5/21/2009	94.9	84.88	76.27	0.006	59.4
8/4/2009	93.26	82.32	71.17	0.008	61.5
11/5/2009	91.88	80.22	69.71	0.008	60
2/8/2010	94.17	83.02	71.4	0.008	61.8
5/7/2010	94.37	85.65	74.77	0.007	64
8/18/2010	95	85.27	72.66	0.008	64.5
11/2/2010	94.22	82.89	71.66	0.008	61.2
12/28/2010	95.46	83.89	72.7	0.008	60.9
2/23/2011	94.89	85.32	74.4	0.007	62.9
5/5/2011	96.78	90.77	78.67	0.006	69.9
8/16/2011	95.99	88.64	75.69	0.007	68.3
11/8/2011	94.27	85.28	74.07	0.007	64
2/27/2012	93.38	85.11	75.99	0.006	62.5
5/21/2012	93.42	86.82	76.15	0.006	67.3
8/9/2012	92.38	84.74	72.63	0.007	67
11/19/2012	91.83	83.31	70.93	0.007	65.9
2/21/2013	94.12	86.39	74.81	0.007	66.3
5/15/2013	94.49	85.73	74.02	0.007	64.9
8/15/2013	93.38	83.87	70.04	0.008	66
11/7/2013	92.53	82.99	68.72	0.008	66.3
2/25/2014	91.84	83.14	69.83	0.007	66.6
5/22/2014	91	81.3	69.63	0.007	63.6
8/27/2014	89.57	76.16	65.22	0.009	58.8
11/12/2014	89.29	77.08	64.35	0.009	61.8
2/26/2015	91.34	82.03	66.86	0.008	67.4
5/13/2015	90.62	82.39	66.81	0.008	69.2
8/4/2015	90.19	82.62	65.29	0.008	71.3
11/5/2015	89.32	80.12	63.97	0.009	68.3
2/4/2016	90.89	81.66	64.31	0.009	69.1
6/30/2016	91.85	84.36	66.49	0.009	71.8
8/25/2016	91.63	83.19	65.5	0.009	70.3
11/17/2016	91.32	83.89	65.17	0.009	72.4
3/7/2017	100.04	93.34	72.25	0.009	74.7
6/27/2017	98.08	90.46	73.66	0.008	71.0
8/23/17	96.13	87.31	72.12	0.006	74.0
11/14/2017	95.15	85.73	70.73	0.006	75.0
2/21/2018	93.28	85.03	70.73	0.006	72.0
5/24/2018	93.19	87.39	71.02	0.006	79.0
9/27/2018	92.15	83.77	67.60	0.005	71.1
12/28/2018	94.88	84.72	67.29	0.007	69.0
2/28/2019	97.83	89.83	71.31	0.005	71.3
6/18/2019	98.31	93.73	76.31	0.006	90.3
9/3/2019	96.53	93.70	74.14	0.007	90.3
12/3/2019	95.24	86.68	72.66	0.006	67.4
3/6/2020	94.72	86.52	74.13	0.005	67.7

¹ Groundwater elevations from 6/15/04 to 2/21/08 were provided by DelTech; groundwater elevations from 5/27/08 to 3/7/2017 were provided by GEI; groundwater elevations from 6/27/2017 to 6/30/18 by SSAL; groundwater elevations from 9/27/2018 through present provided by CRWA.

² Measured clockwise with North as 0.0 degrees, Using graphical methods perpendicular to groundwater contours.

TOC = Top of Casing
msl = mean sea level
DTW = depth to water
btoc = below top of casing

CHARTS

Chart 1
Water Levels 2004-20

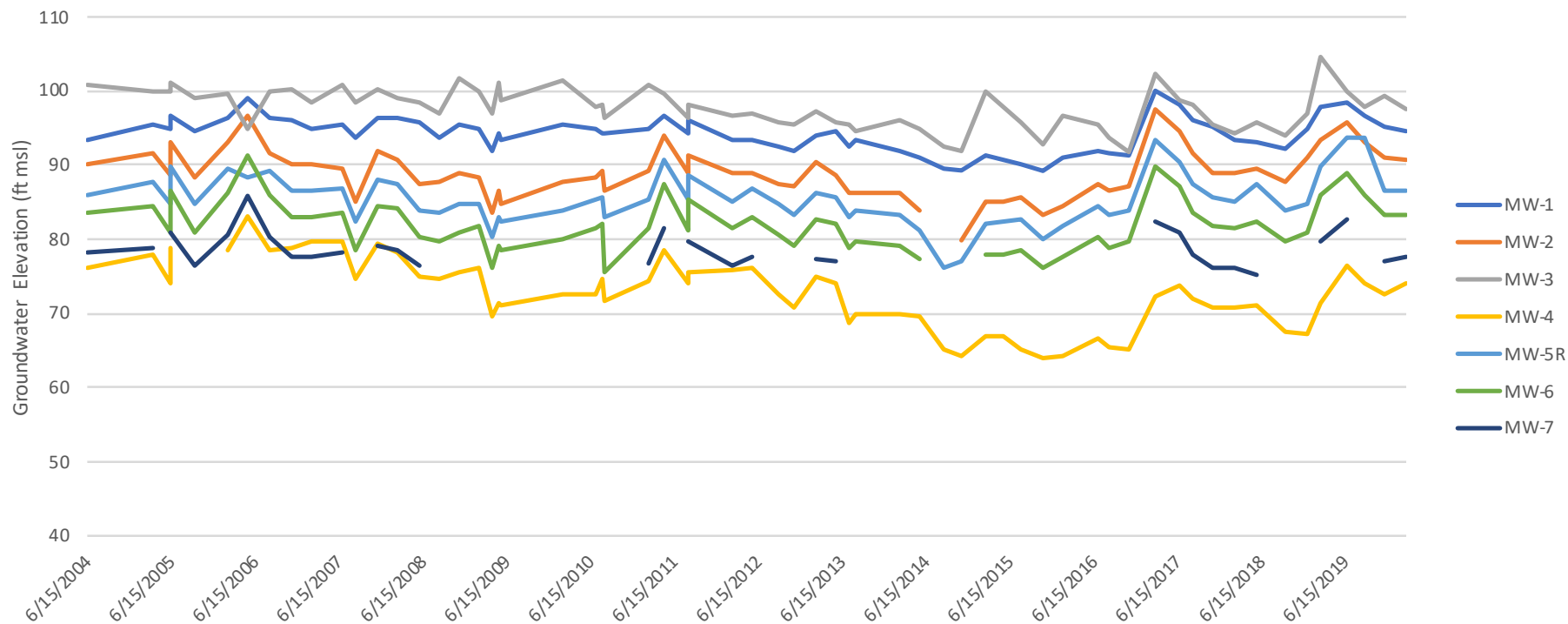


Chart 2
pH Trends 2004-20

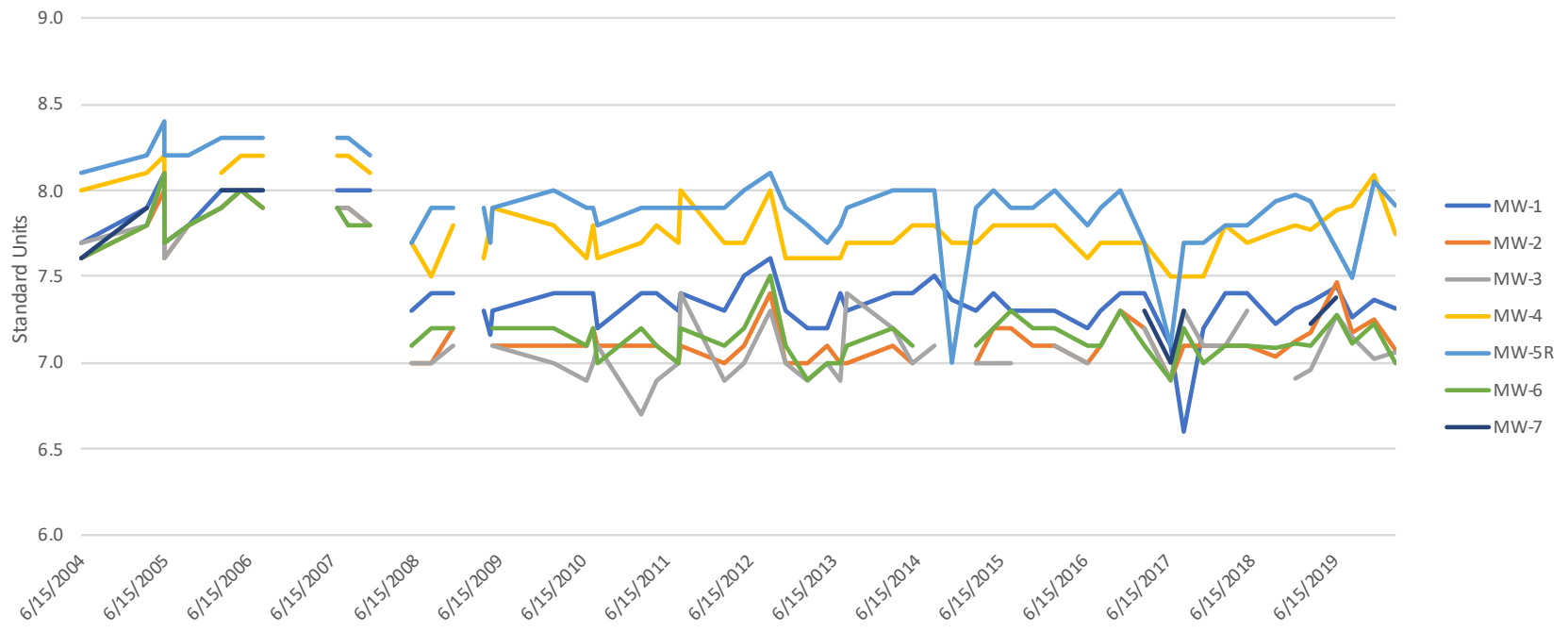


Chart 3
TDS Trends 2004-20

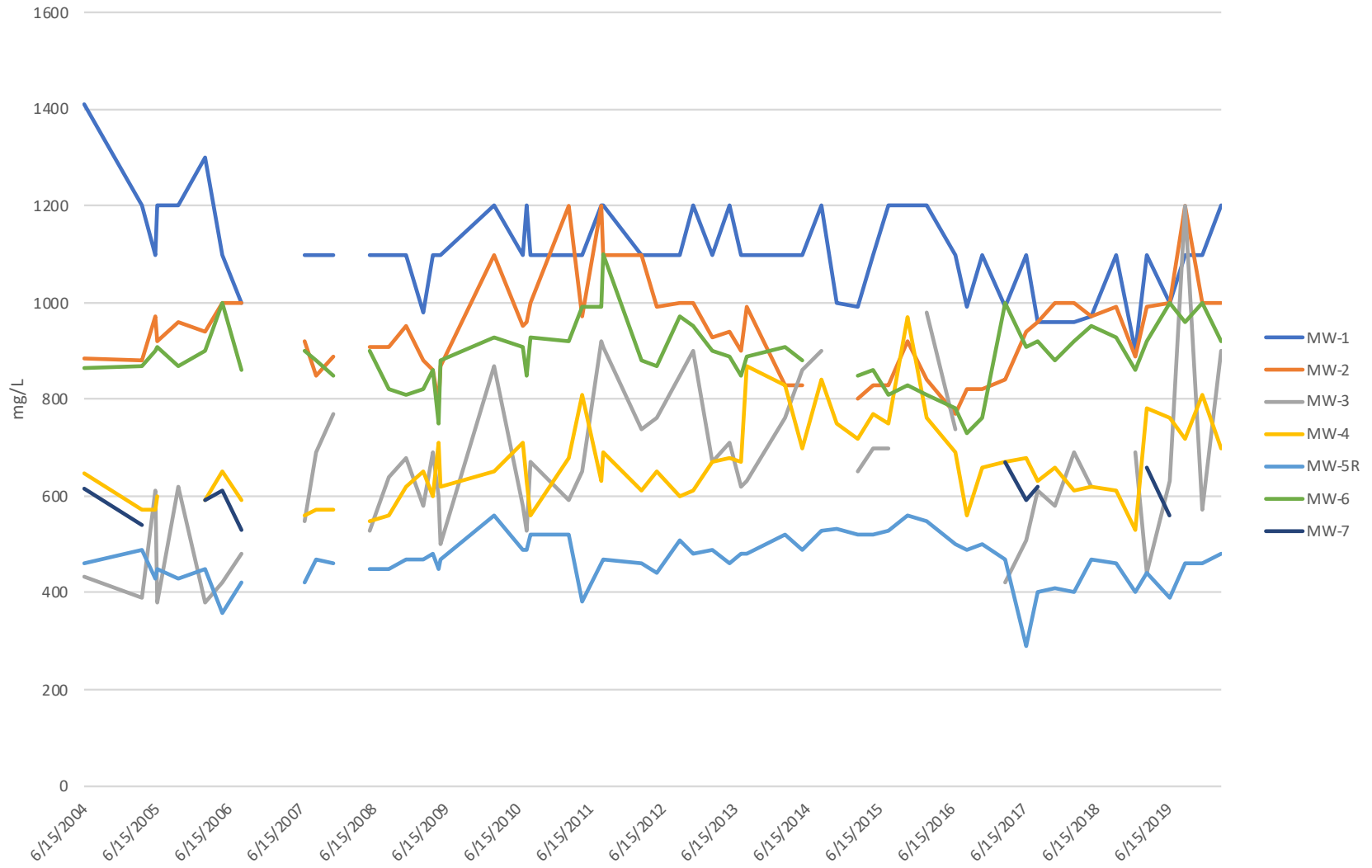


Chart 4
Na Trends 2004-20

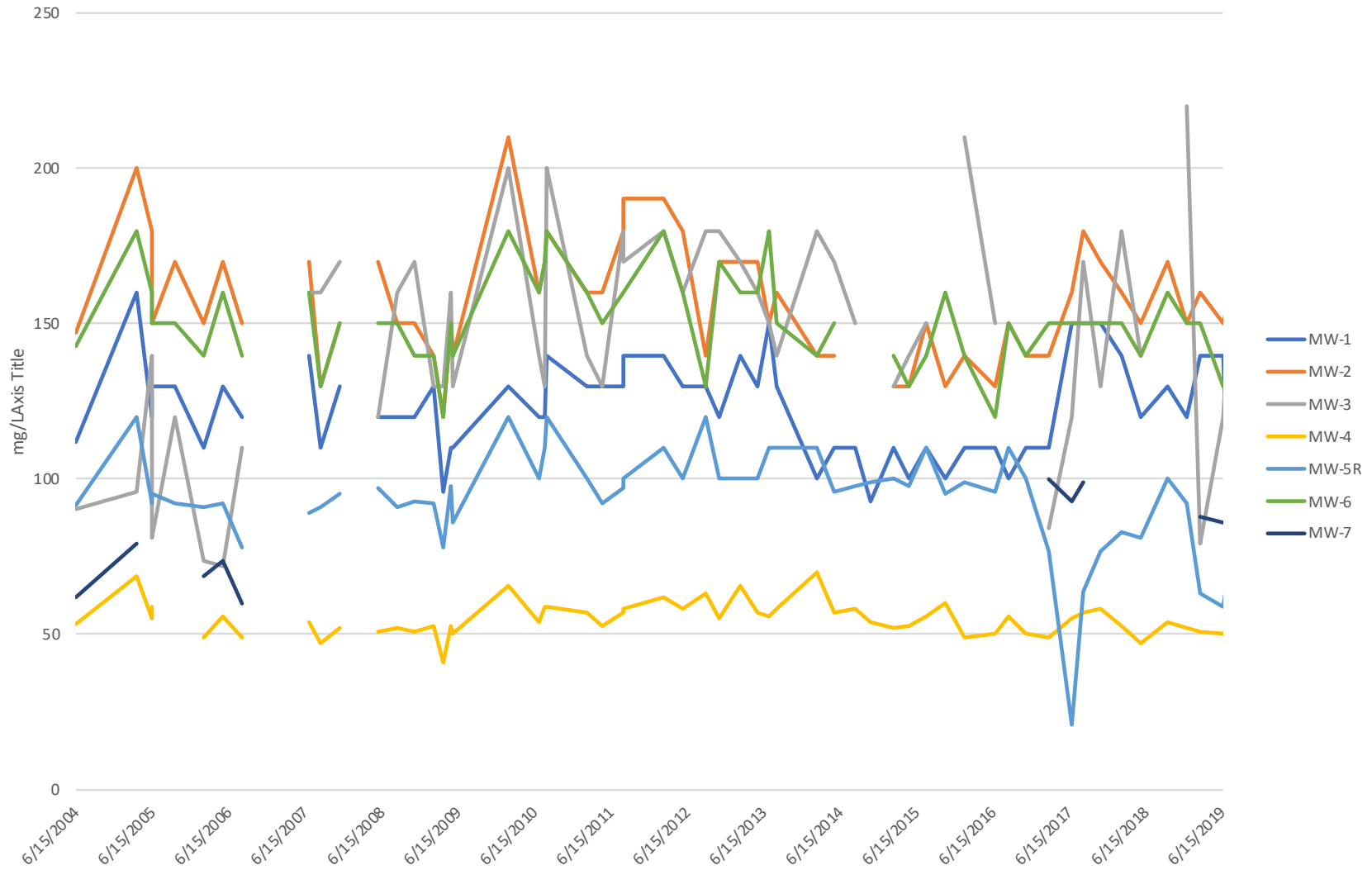


Chart 5
CI Trends 2004-20

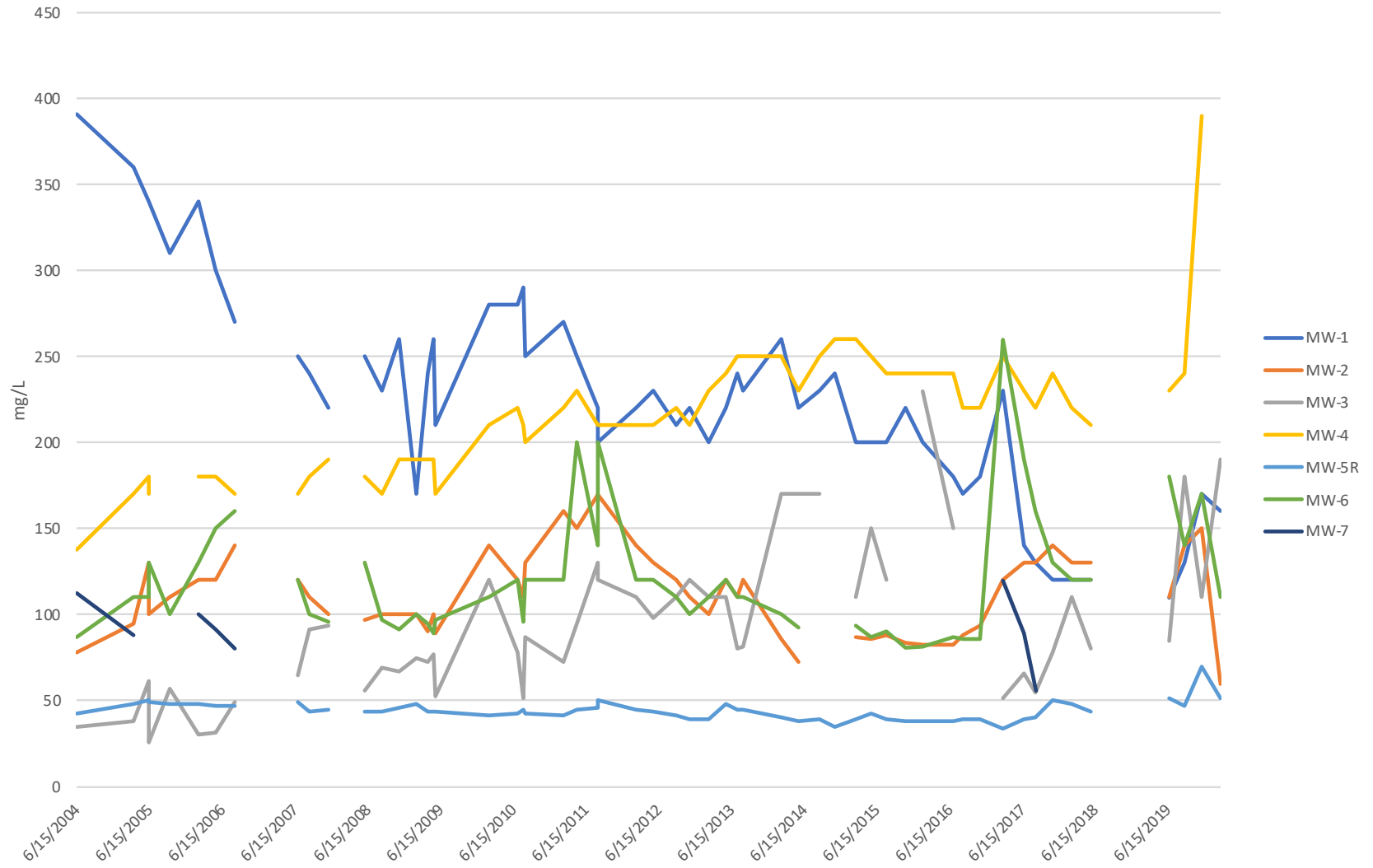


Chart 6
B Trends 2004-20

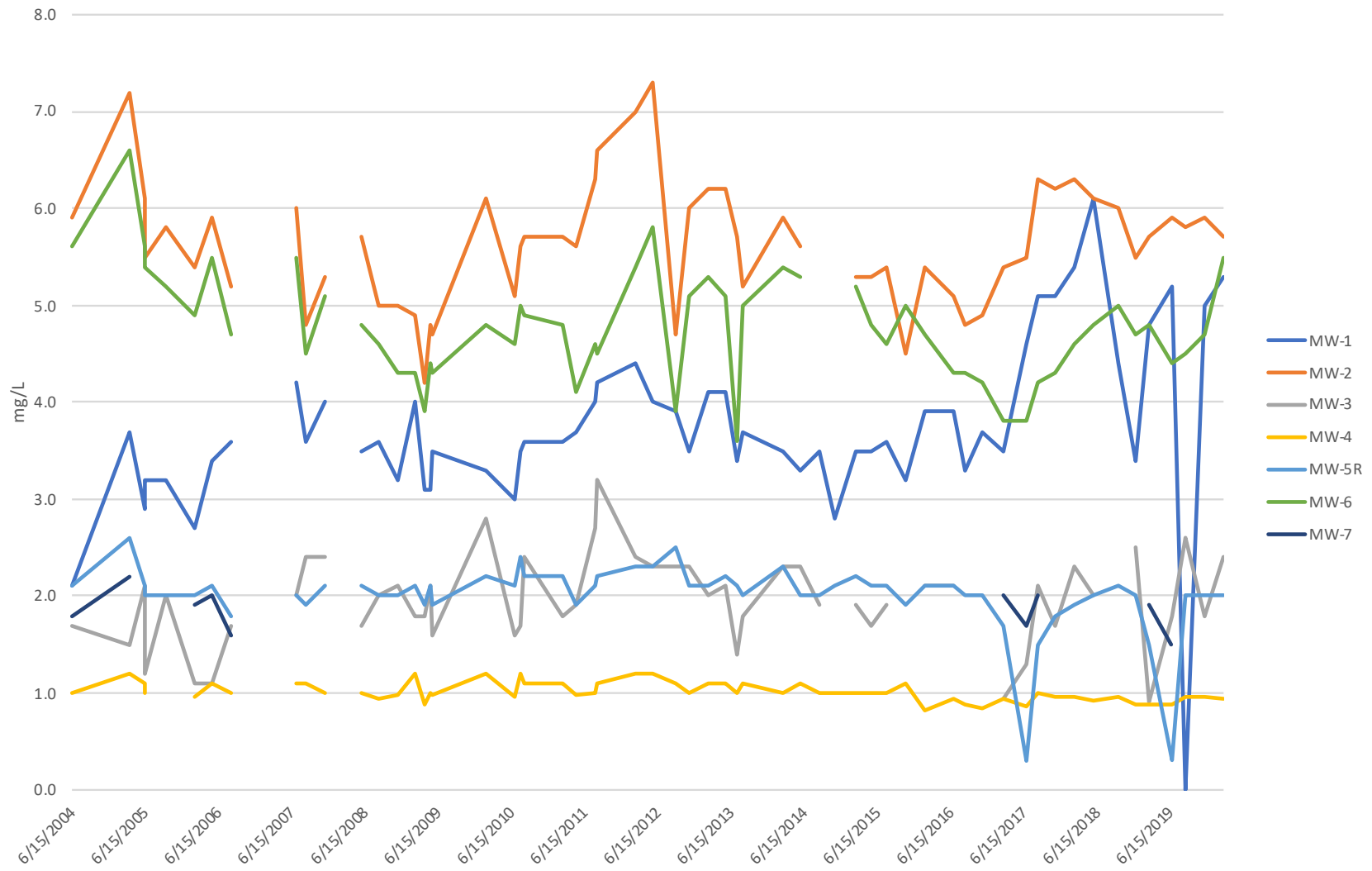


Chart 7
Nitrate, as N Trends 2004-20

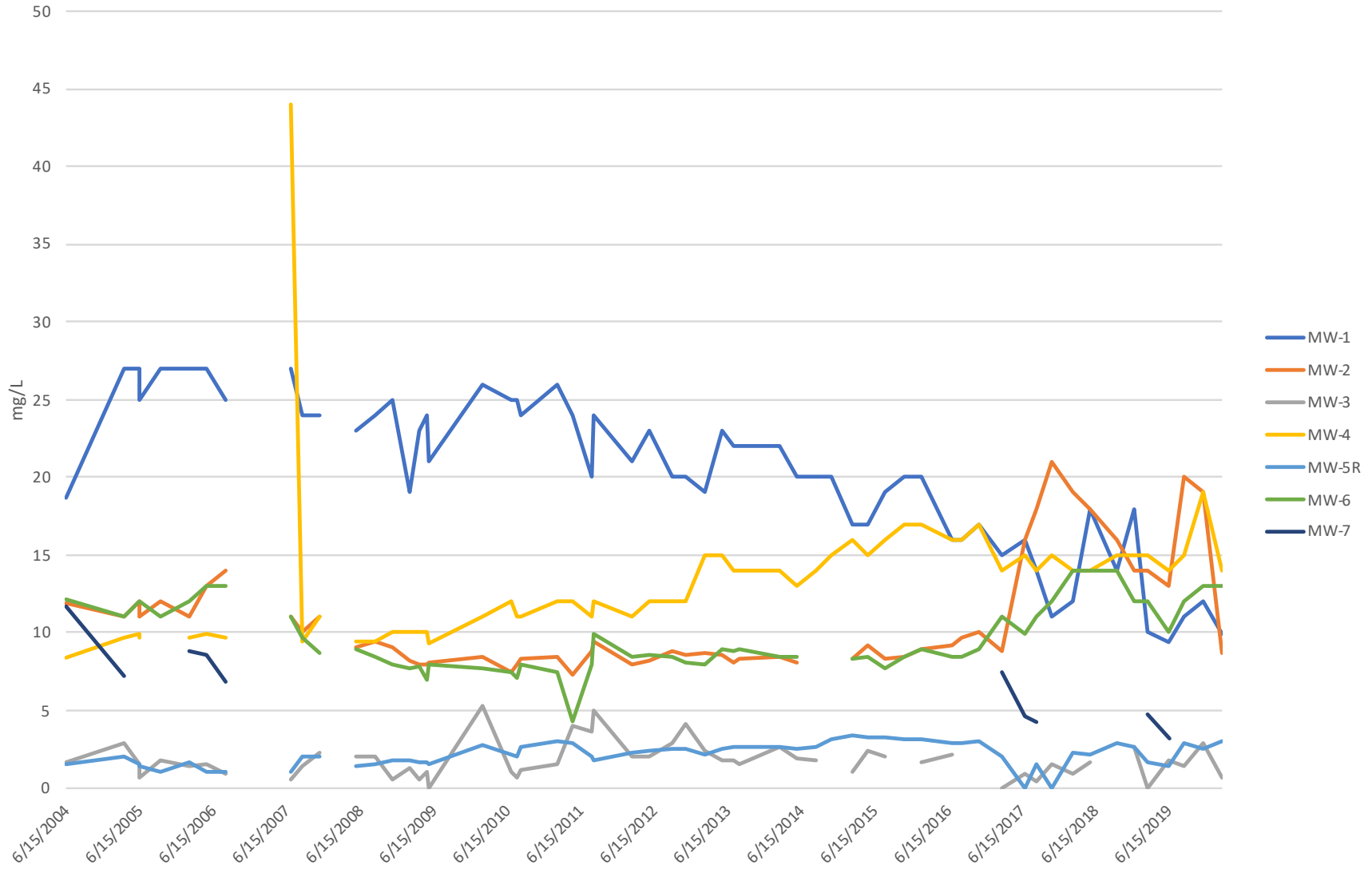
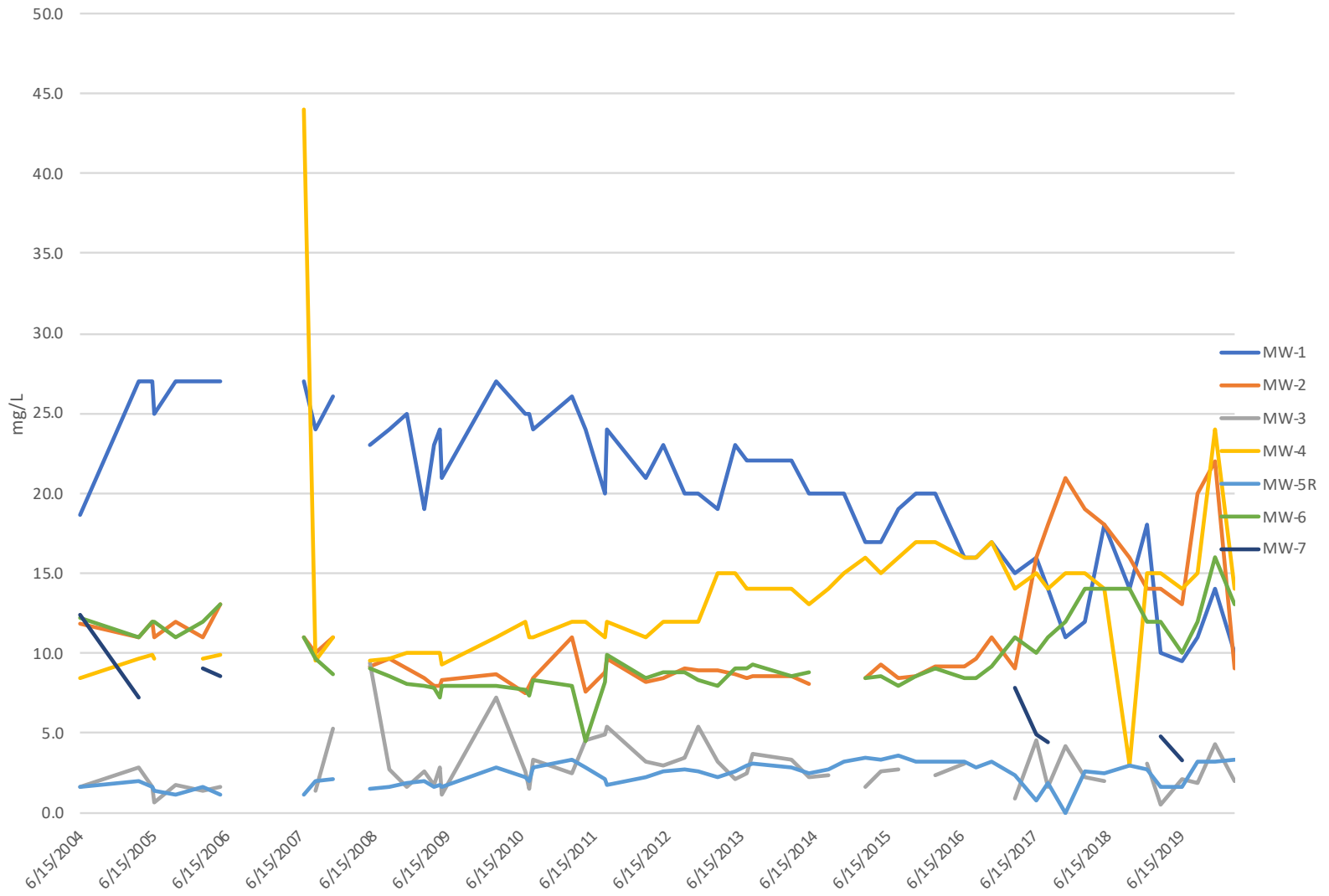


Chart 8
Total Nitrogen Trends 2004-20



APPENDIX A
FIELD DATA FORMS

GROUNDWATER SAMPLING LOG

Well Number: MW-1 Samplers Name: D. Duoch
 Date: 3/6/20 Site: Wib. D. Wings
 Project Number: 1st QTR G.W 2020

Gauging Date: 3/6/20 Static water level (ft): 31.50'
 Bailer ID: Chip Previous static water level (ft): 30.98'
 Sample Date: 3/6/20 Standing water column (ft): 9.9'

* All measurements taken from: Top of casing, Protective casing, Ground level

NAME	AMOUNT PURGED (gal)	TIC (µS/cm)	pH	TEMP (C)	COMMENTS	WATER LEVEL (ft)
1035	1	2324	7.60	19.9	TURBID, LT. Brown	
1040	3	2221	7.59	19.7	Sh. TURBID, LT. Brown	
1045	5	2219	7.58	19.5	Sh. TURBID, LT. Brown	

9.9' X .1632 = 1.61 Gal/Vol
 X 3 = 4.84 Gal. TOTAL AVERAGE

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)

GROUNDWATER SAMPLING LOG

Well Number: MW-2 Samplers Name: D. Busch Total well depth (ft): 46.71
 Date: 3/6/20 Site: W.H.O. Works Well Diameter (in): 3"
 Project Number: 1st QTR 2020 Borehole Diameter (in):

Gauging Date: 3/6/20 Static water level (ft): 34.26' Development method:
 Bafler ID: Disp. Previous static water level (ft): 34.05' Purging method: Disp.
 Sample Date: 3/6/20 Standing water column (ft): 12.45' Sampling method: Drill

* All measurements taken from: Top of casing, Protective casing, Ground level

TIME	AMOUNT PURGED (gal)	EC (u S/cm)	PH	TEMP (C)	COMMENTS	WATER LEVEL (ft)
1010	2	2251	7.60	19.4	Clear, no odor	
1015	4	1727	7.41	19.2	Clear, no odor	
1020	6	1720	7.46	19.1	Clear, no odor	
1022	7	1721	7.39	19.1	Clear, no color, no odor	
					12.45 X .1632 = 2.03 GAL VOL	
					X 3 = 6.09 GAL TOTAL PURGE	

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)

GROUNDWATER SAMPLING LOG

Well Number: MW-3 Samplers Name: D. Dorsch Total well depth (ft): 30.80'
 Date: 3/6/20 Site: W.H.O. Winds Well Diameter (in): 2"
 Project Number: 137 QTA C.W. 2020 Borehole Diameter (in):

Development method:
 Purgng method: Pump
 Sampling method: Ball
 Static water level (ft): 23.67'
 Previous static water level (ft): 21.99'
 Standing water column (ft): 7.13'

* All measurements taken from: Top of casing Protective casing Ground level

TIME	AMOUNT PURGED (gal)	TC (K/cm)	TH	TEMP (C)	COMMENTS	WATER LEVEL (ft) (99)
900	1	2127	7.18	17.8	Fouled, Lt. Brown, noodor	
905	2	2120	7.17	17.9	''	
910	3	2094	7.10	18.1	Cloudy, Darker Brown, noodor	
915	4	2099	7.11	18.2	Silty, noodor	
7.13' X 1.1632 = 1.16 GAL (VOL.)						
X 3 = 3.49 GAL TOTAL PURGE						

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)

GROUNDWATER SAMPLING LOG

Well Number: MW-4 Samplers Name: D. Burch
 Date: 2/13/20 Site: Wild Wings
Project Number: 1st DTL G.W.
 Total well depth (ft): 70.30
 Well Diameter (in): 2"
 Borehole Diameter (in): —

Gauging Date: 2/13/20 Static water level (ft): 46.58'
 Bailor ID: D. Burch Previous static water level (ft): 48.05'
 Sample Date: 2/14/20 Standing water column (ft): 23.72
 Development method: —
 Purgine method: Pump
 Sampling method: Rail

* All measurements taken from: Top of casing, Protective casing, Ground level

TIME	AMOUNT PURGED (gal)	PC (1/2 Stem)	PH	TEMP (C)	COMMENTS	WATER LEVEL (ft) (95)
1240	4	1415	7.99	19.3	Clear, Cool, no color, no odor	
1245	6	1390	7.99	19.2	Clear, no odor, no color	
1250	8	1294	7.98	19.2	Clear, Cool, no color, no odor	
1255	10	1270	7.98	19.2	Clear, no odor	
1300	12	1292	7.97	19.1	Clear, no odor	
					23.72' X 1632 = 3,876 gal / Vol	
					X 3 = 11.61 Gal TOTAL PURGE	
					— Well Box CLEANED & SEAL GOOD	
					VACUATION CLEANED	

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)

GROUNDWATER SAMPLING LOG

Well Number: MW-5R Samplers Name: A. Buech Total well depth (ft): 73.20'
 Date: 3/6/20 Site: _____ Well Diameter (in): 2"
 Project Number: _____ Borehole Diameter (in): _____

Gauging Date: 3/6/20 Static water level (ft): 38.90' Development method: _____
 Bailor ID: D12P Previous static water level (ft): 38.74' Purging method: PLUMP
 Sample Date: 3/6/20 Standing water column (ft): 34.30' Sampling method: DIRT

* All measurements taken from: Top of casing, _____ Protective casing, _____ Ground level

TIME	AMOUNT PURGED (gal)	PC (L/cfm)	DT	TEMP (C)	COMMENTS	WATER LEVEL (GT. GRS)
0920	initial	944.2	7.72	19.2	Clear, no color no odor	
928	4	995.7	8.30	18.9	Clear, no odor	
936	8	997.4	8.31	18.5	Clear, no odor	
944	12	990.1	8.29	18.7	sl. TURBID, no odor	
955	16	988.7	8.28	18.8	TURBID, no odor	

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)
 34.30' X 0.1632 = 5.59 Gal/Vol
 5.59 X 3 = 16.77 Gal Total per Vol

GROUNDWATER SAMPLING LOG

Well Number: MW-7 Samplers Name: D. Buech Total well depth (ft): 38.68'
 Date: 2/13/20 Site: WHD Wings Well Diameter (in): 2"
 Project Number: 1st DTR G.W. Borehole Diameter (in):
 Gauging Date: 2/13/20 Static water level (ft): 36.87' Development method:
 Bailor ID: D. Buech Previous static water level (ft): 37.39' Purgng method: pcap
 Sample Date: 2/14/20 Standing water column (ft): 1.81' Sampling method: BAIL

* All measurements taken from: Top of casing Protective casing Ground level

TIME	AMOUNT PURGED (gal)	EC (S/cm)	PH	TEMP (C)	COMMENTS	WATER LEVEL (ft. +/-)
11:30	2.5	1929	7.86	20.0	Bailed Dry. Checked. Brownish NO ODOOR	

$1.81' \times 1.632 = 0.296 \text{ Gal/foot}$
 $1.81 \times 3 = 5.43 = 5.43 \text{ Gal TOTAL PURGE}$
 - well box cleaned, seal good
 VEGETATION CHANGED

Volume per Foot for 2" Well = 0.1632 gal/foot
 Casing Volume = Standing Water Column * 0.1632 gal/foot (multiply by 3 to get purge volume)

APPENDIX B
LABORATORY ANALYTICAL RESULTS
&
CHAIN OF CUSTODY



CALIFORNIA LABORATORY SERVICES

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February 21, 2020

CLS Work Order #: 20B0705

COC #: 204698

Dan Demoss
California Rural Water Association
1234 N. Market Blvd.
Sacramento, CA 95834

Project Name: Wild Wings

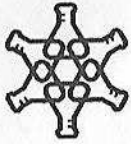
Enclosed are the results of analyses for samples received by the laboratory on 02/14/20 15:11. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



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1st QTR GW

CHAIN OF CUSTODY

CLS ID No.; 2030705

LOG No 204698

HIGHLIGHTED AREAS MUST BE FILLED OUT PRIOR TO ACCEPTANCE

REPORT TO:			CLIENT JOB NUMBER			ANALYSIS REQUESTED					GEOTRACKER: EDF REPORT <input type="checkbox"/> YES <input type="checkbox"/> NO GLOBAL ID: _____			
NAME AND ADDRESS CRWA 1234 N. MARKET BLVD SACRAMENTO, CA			DESTINATION LABORATORY <input checked="" type="checkbox"/> CLS (916) 638-7301 3249 FITZGERALD RD. RANCHO CORDOVA, CA. 95742			PRESERVATIVES S.P.R. ATTACHED TABLE P. 2					CDPH WRITE ON EDT TRANSMISSION? <input type="checkbox"/> YES <input type="checkbox"/> NO STATE SYSTEM NUMBER _____ IF "YES" PLEASE ENTER THE SOURCE NUMBER(S).			
PROJECT MANAGER Dana Demoss 916-616-7761			<input type="checkbox"/> OTHER								COMPOSITE: Wind, Cool, Foggy			
PROJECT NAME Wild Wings											TURN AROUND TIME		SPECIAL INSTRUCTIONS	
SAMPLED BY DAYTON BUSCH											OR		ALT. ID:	
JOB DESCRIPTION W.Wind-M. Well						1 DAY		2 DAY		3 DAY		5 DAY		
SITE LOCATION 1st QTR G.WATER														
DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER		1	2	3	4	5	6	7		
				NO.	TYPE									
2/14/20	0800	TRIP BLANK	W	2	VOA	1								
2/14/20	1105	MW-7	GW	6	Pol. VOA	1	X	X	X	X	X	1 VOA W/DOUBLE		
2/14/20	1120	MW-6	GW	6	VOA	1	X	X	X	X	X			
2/14/20	1140	MW-4	GW	6	VOA	1	X	X	X	X	X			
INVOICE TO:														
P.O. #														
QUOTE #														
Email/Address						PRESERVATIVES: (1) HCL (2) HNO ₃		(3) - COLD (4) - NaOH		(5) - H ₂ SO ₄ (6) - Na ₂ S ₂ O ₈		(7) -		
RELINQUISHED BY (SIGN)			PRINT NAME / COMPANY			DATE / TIME			RECEIVED BY (SIGN)			PRINT NAME / COMPANY		
			DAYTON BUSCH			2/14/20						SEAN DUNN		
			Sean Dunn			2-14-20 1511								
RECD AT LAB BY:				DATE / TIME: 2-14-20 1511				CONDITIONS / COMMENTS: 2.3/2.3						
SHIPPED BY:		<input type="checkbox"/> FED X		<input type="checkbox"/> UPS		<input type="checkbox"/> OTHER		AIR BILL #						

Gold-Project Mgr./Field Sampler/Terms and Conditions
Pink-Original Terms and Conditions
Yellow-Lab file copy/Terms and Conditions
White-Lab/Terms and Conditions

20B 0705

List of Analytes and Methods

Analyte	Method	MRL
Ammonia, as N	SM4500-NH3F-1997	0.10 mg/L
Nitrate, as N	EPA Method 300.0	0.40 mg/L
Nitrite, as N	EPA Method 300.0	0.40 mg/L
Total Kjeldahl Nitrogen	SM4500-NH3F-1997	0.20 mg/L
Total Nitrogen	EPA Methods 351.3/300.0	0.40 mg/L
Chloride	EPA Method 300.0	2.5 mg/L
pH	SM4500-H B	0.01 pH Units
Total Dissolved Solids	SM2540C	10 mg/L
Boron	EPA Method 200.7	50 µg/L
Total Iron	EPA Method 200.7	100 µg/L
Total Manganese	EPA Method 200.7	20 µg/L
Sodium	EPA Method 200.7	1000 µg/L
Total Coliform	SM 9221	1.8 MPN/100 mL
Trihalomethanes*	EPA Method 524.2	0.5 µg/L

Dissolved
METALS

*Trihalomethanes to include Bromodichloromethane, Bromoform, Chloroform, Dibromochloromethane and Total Trihalomethanes (THM).

Attachments:

1. Wild Wings site map showing groundwater monitoring wells
2. Example laboratory chain of custody

* LAB TO FILTER METALS FOR DISSOLVED ANALYSIS

CLS LABS
SAMPLE RECEIVING EXCEPTION REPORTS

CLS Labs Job # 2030705

Problem discovered by: Grace

Date: 2, 14, 20

Nature of problem

Sulfite Chlorine, Total Chlorine, Residual **Ph** Dissolved O2

(Circle analysis above) Received out of HOLD time.

Client contacted? Yes _____ No _____ Spoke With: _____

By whom: _____ Date: ___ / ___ / ___ Time: _____ HRS

Client instructions:

Resolution of problem:
Logged in regardless and will be ran for analysis requested.



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (20B0705-02) Water Sampled: 02/14/20 11:05 Received: 02/14/20 15:11									
Ammonia as N	ND	0.10	mg/L	1	2001342	02/18/20	02/18/20	SM4500-NH3F-1997	
Chloride	93	5.0	"	10	2001254	02/14/20	02/14/20	EPA 300.0	
Nitrate as N	5.0	0.40	"	1	"	02/14/20	02/14/20	"	
Nitrate/Nitrite as N	5.1	0.40	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	"	"	"	"	"	
pH	7.11	0.01	pH Units	"	2001258	02/14/20	02/17/20	SM4500-H B	HT-F
Total Dissolved Solids	570	10	mg/L	"	2001326	02/17/20	02/19/20	SM2540C	
Total Kjeldahl Nitrogen	0.45	0.20	"	"	2001425	02/20/20	02/20/20	SM4500-NH3F-1997	
Total Nitrogen	5.6	0.40	"	"	2001426	02/20/20	02/20/20	EPA 351.3/300	
MW-6 (20B0705-03) Water Sampled: 02/14/20 11:20 Received: 02/14/20 15:11									
Ammonia as N	ND	0.10	mg/L	1	2001342	02/18/20	02/18/20	SM4500-NH3F-1997	
Chloride	110	5.0	"	10	2001254	02/14/20	02/14/20	EPA 300.0	
Nitrate as N	13	4.0	"	"	"	"	02/14/20	"	
Nitrate/Nitrite as N	13	4.0	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	1	"	"	"	"	
pH	7.00	0.01	pH Units	"	2001258	02/14/20	02/17/20	SM4500-H B	HT-F
Total Dissolved Solids	920	10	mg/L	"	2001326	02/17/20	02/19/20	SM2540C	
Total Kjeldahl Nitrogen	ND	0.20	"	"	2001425	02/20/20	02/20/20	SM4500-NH3F-1997	
Total Nitrogen	13	0.40	"	"	2001426	02/20/20	02/20/20	EPA 351.3/300	
MW-4 (20B0705-04) Water Sampled: 02/14/20 11:40 Received: 02/14/20 15:11									
Ammonia as N	ND	0.10	mg/L	1	2001342	02/18/20	02/18/20	SM4500-NH3F-1997	
Chloride	230	5.0	"	10	2001254	02/14/20	02/14/20	EPA 300.0	
Nitrate as N	14	4.0	"	"	"	"	"	"	
Nitrate/Nitrite as N	14	4.0	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	1	"	"	"	"	
pH	7.74	0.01	pH Units	"	2001258	02/14/20	02/17/20	SM4500-H B	HT-F
Total Dissolved Solids	700	10	mg/L	"	2001326	02/17/20	02/19/20	SM2540C	



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Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (20B0705-04) Water Sampled: 02/14/20 11:40 Received: 02/14/20 15:11									
Total Kjeldahl Nitrogen	ND	0.20	mg/L	1	2001425	02/20/20	02/20/20	SM4500-NH3F-1997	
Total Nitrogen	14	0.40	"	"	2001426	02/20/20	02/20/20	EPA 351.3/300	



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (20B0705-02) Water Sampled: 02/14/20 11:05 Received: 02/14/20 15:11									
Boron	2000	50	µg/L	1	2001319	02/17/20	02/19/20	EPA 200.7	
Iron	ND	100	"	"	"	"	02/17/20	"	
Manganese	ND	20	"	"	"	"	"	"	
Sodium	93000	1000	"	"	"	"	02/19/20	"	
MW-6 (20B0705-03) Water Sampled: 02/14/20 11:20 Received: 02/14/20 15:11									
Boron	5500	50	µg/L	1	2001319	02/17/20	02/19/20	EPA 200.7	
Iron	ND	100	"	"	"	"	02/17/20	"	
Manganese	ND	20	"	"	"	"	"	"	
Sodium	150000	1000	"	"	"	"	02/19/20	"	
MW-4 (20B0705-04) Water Sampled: 02/14/20 11:40 Received: 02/14/20 15:11									
Boron	950	50	µg/L	1	2001319	02/17/20	02/18/20	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Manganese	ND	20	"	"	"	"	"	"	
Sodium	58000	1000	"	"	"	"	"	"	



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7 (20B0705-02) Water Sampled: 02/14/20 11:05 Received: 02/14/20 15:11									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001285	02/14/20	02/16/20	SM 9221	
MW-6 (20B0705-03) Water Sampled: 02/14/20 11:20 Received: 02/14/20 15:11									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001285	02/14/20	02/16/20	SM 9221	
MW-4 (20B0705-04) Water Sampled: 02/14/20 11:40 Received: 02/14/20 15:11									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001285	02/14/20	02/16/20	SM 9221	



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Trihalomethanes by EPA Method 524.2

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Trip Blank (20B0705-01) Water Sampled: 02/14/20 08:00 Received: 02/14/20 15:11

Bromodichloromethane	ND	0.50	µg/L	1	2001413	02/19/20	02/19/20	EPA 524.2	
Bromoform	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	ND	0.50	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	128 %	70-130	"	"	"	"	"	"	
Surrogate: Toluene-d8	103 %	70-130	"	"	"	"	"	"	

MW-7 (20B0705-02) Water Sampled: 02/14/20 11:05 Received: 02/14/20 15:11

Bromodichloromethane	3.6	0.50	µg/L	1	2001413	02/19/20	02/19/20	EPA 524.2	
Bromoform	1.2	0.50	"	"	"	"	"	"	
Chloroform	5.0	0.50	"	"	"	"	"	"	
Dibromochloromethane	3.3	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	13	0.50	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	119 %	70-130	"	"	"	"	"	"	
Surrogate: Toluene-d8	105 %	70-130	"	"	"	"	"	"	

MW-6 (20B0705-03) Water Sampled: 02/14/20 11:20 Received: 02/14/20 15:11

Bromodichloromethane	2.6	0.50	µg/L	1	2001413	02/19/20	02/19/20	EPA 524.2	
Bromoform	20	0.50	"	"	"	"	"	"	
Chloroform	1.7	0.50	"	"	"	"	"	"	
Dibromochloromethane	13	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	37	0.50	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"	"	"	"	
Surrogate: Toluene-d8	106 %	70-130	"	"	"	"	"	"	



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Trihalomethanes by EPA Method 524.2

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (20B0705-04) Water Sampled: 02/14/20 11:40 Received: 02/14/20 15:11									
Bromodichloromethane	ND	0.50	µg/L	1	2001413	02/19/20	02/19/20	EPA 524.2	
Bromoform	2.9	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	1.2	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	4.4	0.50	"	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	112 %	70-130	"	"	"	"	"
<i>Surrogate: Toluene-d8</i>	106 %	70-130	"	"	"	"	"



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 2001254 - General Preparation

Blank (2001254-BLK1)

Prepared & Analyzed: 02/14/20

Chloride	ND	0.50	mg/L							
Nitrite as N	ND	0.40	"							
Nitrate/Nitrite as N	ND	0.40	"							
Nitrate as N	ND	0.40	"							

LCS (2001254-BS1)

Prepared & Analyzed: 02/14/20

Chloride	4.88	0.50	mg/L	5.00		98	80-120			
Nitrite as N	1.87	0.40	"	2.00		94	80-120			
Nitrate as N	1.97	0.40	"	2.00		98	80-120			
Nitrate/Nitrite as N	3.84	0.40	"	4.00		96	80-120			

LCS Dup (2001254-BSD1)

Prepared & Analyzed: 02/14/20

Chloride	4.85	0.50	mg/L	5.00		97	80-120	0.5	20	
Nitrate as N	1.97	0.40	"	2.00		98	80-120	0.005	20	
Nitrite as N	1.91	0.40	"	2.00		95	80-120	2	20	
Nitrate/Nitrite as N	3.87	0.40	"	4.00		97	80-120	0.9	20	

Matrix Spike (2001254-MS1)

Source: 20B0656-01

Prepared & Analyzed: 02/14/20

Chloride	21.3	0.50	mg/L	5.00	16.7	93	80-120			
Nitrite as N	1.59	0.40	"	2.00	0.0141	79	80-120			QM-7
Nitrate as N	7.60	0.40	"	2.00	5.69	96	80-120			
Nitrate/Nitrite as N	9.20	0.40	"	4.00	5.70	87	80-120			

Matrix Spike Dup (2001254-MSD1)

Source: 20B0656-01

Prepared & Analyzed: 02/14/20

Chloride	21.4	0.50	mg/L	5.00	16.7	94	80-120	0.2	20	
Nitrite as N	1.63	0.40	"	2.00	0.0141	81	80-120	2	20	
Nitrate as N	7.60	0.40	"	2.00	5.69	96	80-120	0.02	20	
Nitrate/Nitrite as N	9.23	0.40	"	4.00	5.70	88	80-120	0.3	20	



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001258 - General Prep

Duplicate (2001258-DUP1)		Source: 20B0657-01		Prepared & Analyzed: 02/14/20						
pH	6.95	0.01	pH Units		6.98			0.431	20	

Batch 2001326 - General Preparation

Blank (2001326-BLK1)		Prepared: 02/17/20 Analyzed: 02/19/20								
Total Dissolved Solids	ND	10	mg/L							

Duplicate (2001326-DUP1)		Source: 20B0639-03		Prepared: 02/17/20 Analyzed: 02/19/20						
Total Dissolved Solids	371	10	mg/L		370			0.3	20	

Batch 2001342 - General Preparation

Blank (2001342-BLK1)		Prepared & Analyzed: 02/18/20								
Ammonia as N	ND	0.10	mg/L							

LCS (2001342-BS1)		Prepared & Analyzed: 02/18/20								
Ammonia as N	0.363	0.10	mg/L	0.500		73	80-120			QM-1

LCS Dup (2001342-BSD1)		Prepared & Analyzed: 02/18/20								
Ammonia as N	0.358	0.10	mg/L	0.500		72	80-120	1	25	QM-1

Matrix Spike (2001342-MS1)		Source: 20B0696-02		Prepared & Analyzed: 02/18/20						
Ammonia as N	0.520	0.10	mg/L	0.500	0.0830	87	75-125			

Matrix Spike Dup (2001342-MSD1)		Source: 20B0696-02		Prepared & Analyzed: 02/18/20						
Ammonia as N	0.535	0.10	mg/L	0.500	0.0830	90	75-125	3	25	



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2001425 - General Preparation										
Blank (2001425-BLK1) Prepared & Analyzed: 02/20/20										
Total Kjeldahl Nitrogen	ND	0.20	mg/L							
LCS (2001425-BS1) Prepared & Analyzed: 02/20/20										
Total Kjeldahl Nitrogen	0.425	0.20	mg/L	0.500		85	80-120			
LCS Dup (2001425-BSD1) Prepared & Analyzed: 02/20/20										
Total Kjeldahl Nitrogen	0.438	0.20	mg/L	0.500		88	80-120	3	20	
Matrix Spike (2001425-MS1) Source: 20B0806-01 Prepared & Analyzed: 02/20/20										
Total Kjeldahl Nitrogen	18.7	5.0	mg/L	12.5	10.1	69	75-125			QM-7
Matrix Spike Dup (2001425-MSD1) Source: 20B0806-01 Prepared & Analyzed: 02/20/20										
Total Kjeldahl Nitrogen	19.0	5.0	mg/L	12.5	10.1	71	75-125	1	25	QM-7



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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001319 - EPA 200 Series

Blank (2001319-BLK1)

Prepared & Analyzed: 02/17/20

Boron	ND	50	µg/L							
Copper	ND	10	"							
Iron	ND	100	"							
Lead	ND	50	"							
Manganese	ND	20	"							
Nickel	ND	20	"							
Sodium	ND	1000	"							
Zinc	ND	20	"							

LCS (2001319-BS1)

Prepared & Analyzed: 02/17/20

Boron	962	50	µg/L	1000		96	85-115			
Copper	964	10	"	1000		96	85-115			
Iron	973	100	"	1000		97	85-115			
Lead	972	50	"	1000		97	85-115			
Manganese	976	20	"	1000		98	85-115			
Nickel	985	20	"	1000		99	85-115			
Sodium	4670	1000	"	5000		93	85-115			
Zinc	945	20	"	1000		94	85-115			

Matrix Spike (2001319-MS1)

Source: 20B0543-01

Prepared & Analyzed: 02/17/20

Boron	1800	50	µg/L	1000	792	101	70-130			
Copper	983	10	"	1000	3.76	98	70-130			
Iron	1070	100	"	1000	16.3	105	70-130			
Lead	955	50	"	1000	ND	95	70-130			
Manganese	978	20	"	1000	3.62	97	70-130			
Nickel	1040	20	"	1000	71.9	97	70-130			
Sodium	113000	1000	"	5000	118000	NR	70-130			
Zinc	1100	20	"	1000	51.5	105	70-130			

QM-7



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001319 - EPA 200 Series

Matrix Spike (2001319-MS2)	Source: 20B0639-01			Prepared & Analyzed: 02/17/20						
Boron	1250	50	µg/L	1000	246	101	70-130			
Copper	948	10	"	1000	ND	95	70-130			
Iron	986	100	"	1000	ND	99	70-130			
Lead	923	50	"	1000	ND	92	70-130			
Manganese	929	20	"	1000	ND	93	70-130			
Nickel	1100	20	"	1000	161	94	70-130			
Sodium	36000	1000	"	5000	33600	47	70-130			QM-7
Zinc	1020	20	"	1000	ND	102	70-130			



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Trihalomethanes by EPA Method 524.2 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001413 - EPA 5030 Water MS

Blank (2001413-BLK1)

Prepared & Analyzed: 02/19/20

Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	0.50	"							
Chloroform	ND	0.50	"							
Dibromochloromethane	ND	0.50	"							
Total Trihalomethanes (THM)	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	11.9		"	10.0		119	70-130			
Surrogate: Toluene-d8	10.4		"	10.0		104	70-130			

LCS (2001413-BS1)

Prepared & Analyzed: 02/19/20

Bromodichloromethane	21.4	0.50	µg/L	20.0		107	70-130			
Bromoform	18.3	0.50	"	20.0		92	70-130			
Chloroform	21.6	0.50	"	20.0		108	70-130			
Dibromochloromethane	21.7	0.50	"	20.0		109	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.8		"	10.0		108	70-130			
Surrogate: Toluene-d8	10.6		"	10.0		106	70-130			

LCS Dup (2001413-BSD1)

Prepared & Analyzed: 02/19/20

Bromodichloromethane	21.1	0.50	µg/L	20.0		106	70-130	1	30	
Bromoform	18.5	0.50	"	20.0		93	70-130	1	30	
Chloroform	21.4	0.50	"	20.0		107	70-130	1	30	
Dibromochloromethane	21.8	0.50	"	20.0		109	70-130	0.5	30	
Surrogate: 1,2-Dichloroethane-d4	10.7		"	10.0		107	70-130			
Surrogate: Toluene-d8	10.5		"	10.0		105	70-130			



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20B0705 COC #: 204698
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Notes and Definitions

- QM-7 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
- QM-1 The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
- HT-F This is a field test method and it is performed in the lab outside holding time.
- BT-4 <1.8
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



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March 13, 2020

CLS Work Order #: 20C0430

COC #: 203262

Dan Demoss
California Rural Water Association
1234 N. Market Blvd.
Sacramento, CA 95834

Project Name: Wild Wings

Enclosed are the results of analyses for samples received by the laboratory on 03/06/20 14:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



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GW WATER

CHAIN OF CUSTODY

CLS ID No.: 200430

LOG No 203262

HIGHLIGHTED AREAS MUST BE FILLED OUT PRIOR TO ACCEPTANCE

REPORT TO:			CLIENT JOB NUMBER			ANALYSIS REQUESTED					GEOTRACKER: EDF REPORT <input type="checkbox"/> YES <input type="checkbox"/> NO GLOBAL ID: _____									
NAME AND ADDRESS CWA 1234 N. MARKET BLVD SACRAMENTO, CA			DESTINATION LABORATORY <input checked="" type="checkbox"/> CLS (916) 638-7301 3249 FITZGERALD RD. RANCHO CORDOVA, CA 95742			PRESERVATIVES ATTACHED LIST OF ANALYTES TO TEST					CDPH WRITE ON EDT TRANSMISSION? <input type="checkbox"/> YES <input type="checkbox"/> NO STATE SYSTEM NUMBER _____ IF "YES" PLEASE ENTER THE SOURCE NUMBER(S).									
PROJECT MANAGER SANDROSS 916 676-7761			<input type="checkbox"/> OTHER								COMPOSITE: WINDY. S/E 10mph, CLOUDY									
PROJECT NAME WILD WINGS											TURN AROUND TIME					SPECIAL INSTRUCTIONS				
SAMPLED BY DARTON BUSCH											1 DAY					OR				
JOB DESCRIPTION 1ST QTR GW MONITOR WELLS											2 DAY					ALT. ID:				
SITE LOCATION						3 DAY					5 DAY									
DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	TYPE															
3/6/20	1200	Trip Blank	GW	3	Voa	X														
	1210	MW-2	GW	6	Poly	X						LAB TO FILTER								
	1200	MW-1	GW	6	Poly	X						SAMPLES								
	1230	MW-5R	GW	6	Poly	X						FOR DISSOLVED								
	1300	MW-3	GW	6	Poly	X						METALS								
											INVOICE TO:									
											RD. #									
											QUOTE #									
Email/Address						PRESERVATIVES: (1) HCL (2) HNO ₃ (3) = COLD (4) = NaOH (5) = H ₂ SO ₄ (6) = Na ₂ S ₂ O ₈ (7) =														
RELINQUISHED BY (SIGN)		PRINT NAME / COMPANY		DATE / TIME		RECEIVED BY (SIGN)		PRINT NAME / COMPANY												
<i>[Signature]</i>		DARTON BUSCH		3/6/20		<i>[Signature]</i>		MIKE LANE			3/6/20 1425									
REC'D AT LAB BY:		DATE / TIME:		CONDITIONS / COMMENTS:							21/21									
SHIPPED BY:		<input type="checkbox"/> FED X		<input type="checkbox"/> UPS		<input type="checkbox"/> OTHER		AIR BILL #												

White-Lab Terms and conditions Yellow-Lab Terms and Conditions Pink- Origin/Terms and Conditions Gold-Project Mgt./Field Sampler/Terms and conditions

200430

P.2

List of Analytes and Methods

Analyte	Method	MRL
Ammonia, as N	SM4500-NH3F-1997	0.10 mg/L
Nitrate, as N	EPA Method 300.0	0.40 mg/L
Nitrite, as N	EPA Method 300.0	0.40 mg/L
Total Kjeldahl Nitrogen	SM4500-NH3F-1997	0.20 mg/L
Total Nitrogen	EPA Methods 351.3/300.0	0.40 mg/L
Chloride	EPA Method 300.0	2.5 mg/L
pH	SM4500-H B	0.01 pH Units
Total Dissolved Solids	SM2540C	10 mg/L
Boron	EPA Method 200.7	50 µg/L
Total Iron	EPA Method 200.7	100 µg/L
Total Manganese	EPA Method 200.7	20 µg/L
Sodium	EPA Method 200.7	1000 µg/L
Total Coliform	SM 9221	1.8 MPN/100 mL
Trihalomethanes*	EPA Method 524.2	0.5 µg/L

Dissolved

*Trihalomethanes to include Bromodichloromethane, Bromoform, Chloroform, Dibromochloromethane and Total Trihalomethanes (THM).

Attachments:

1. Wild Wings site map showing groundwater monitoring wells
2. Example laboratory chain of custody

*HAD TO FILTER METALS FOR DISSOLVED ANALYSIS



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (20C0430-02) Water Sampled: 03/06/20 12:10 Received: 03/06/20 14:25									
Ammonia as N	ND	0.10	mg/L	1	2001958	03/10/20	03/10/20	SM4500-NH3F-1997	
Chloride	60	5.0	"	10	2001884	03/06/20	03/06/20	EPA 300.0	
Nitrate as N	8.7	4.0	"	"	"	"	"	"	
Nitrate/Nitrite as N	8.9	4.0	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	1	"	"	"	"	
pH	7.07	0.01	pH Units	"	2001848	03/06/20	03/06/20	SM4500-H B	HT-F
Total Dissolved Solids	1000	10	mg/L	"	2001928	03/09/20	03/10/20	SM2540C	
Total Kjeldahl Nitrogen	ND	0.20	"	"	2002002	03/11/20	03/11/20	SM4500-NH3F-1997	
Total Nitrogen	9.1	0.40	"	"	2002007	03/11/20	03/11/20	EPA 351.3/300	
MW-1 (20C0430-03) Water Sampled: 03/06/20 12:00 Received: 03/06/20 14:25									
Ammonia as N	ND	0.10	mg/L	1	2001958	03/10/20	03/10/20	SM4500-NH3F-1997	
Chloride	160	10	"	20	2001884	03/06/20	03/07/20	EPA 300.0	
Nitrate as N	9.9	0.40	"	1	"	"	"	"	
Nitrate/Nitrite as N	10	0.40	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	"	"	"	"	"	
pH	7.32	0.01	pH Units	"	2001848	03/06/20	03/06/20	SM4500-H B	HT-F
Total Dissolved Solids	1200	10	mg/L	"	2001928	03/09/20	03/10/20	SM2540C	
Total Kjeldahl Nitrogen	0.42	0.20	"	"	2002002	03/11/20	03/11/20	SM4500-NH3F-1997	
Total Nitrogen	10	0.40	"	"	2002007	03/11/20	03/11/20	EPA 351.3/300	
MW-5R (20C0430-04) Water Sampled: 03/06/20 12:30 Received: 03/06/20 14:25									
Ammonia as N	ND	0.10	mg/L	1	2001958	03/10/20	03/10/20	SM4500-NH3F-1997	
Chloride	52	10	"	20	2001884	03/06/20	03/07/20	EPA 300.0	
Nitrate as N	3.0	0.40	"	1	"	"	"	"	
Nitrate/Nitrite as N	3.0	0.40	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	"	"	"	"	"	
pH	7.91	0.01	pH Units	"	2001848	03/06/20	03/06/20	SM4500-H B	HT-F
Total Dissolved Solids	480	10	mg/L	"	2001928	03/09/20	03/10/20	SM2540C	



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California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5R (20C0430-04) Water Sampled: 03/06/20 12:30 Received: 03/06/20 14:25									
Total Kjeldahl Nitrogen	0.29	0.20	mg/L	1	2002002	03/11/20	03/11/20	SM4500-NH3F-1997	
Total Nitrogen	3.3	0.40	"	"	2002007	03/11/20	03/11/20	EPA 351.3/300	
MW-3 (20C0430-05) Water Sampled: 03/06/20 13:00 Received: 03/06/20 14:25									
Ammonia as N	0.11	0.10	mg/L	1	2001958	03/10/20	03/10/20	SM4500-NH3F-1997	
Chloride	190	10	"	20	2001884	03/06/20	03/07/20	EPA 300.0	
Nitrate as N	0.64	0.40	"	1	"	"	"	"	
Nitrate/Nitrite as N	0.89	0.40	"	"	"	"	"	"	
Nitrite as N	ND	0.40	"	"	"	"	"	"	
pH	7.06	0.01	pH Units	"	2001848	03/06/20	03/06/20	SM4500-H B	HT-F
Total Dissolved Solids	900	10	mg/L	"	2001928	03/09/20	03/10/20	SM2540C	
Total Kjeldahl Nitrogen	1.1	1.0	"	5	2002002	03/11/20	03/11/20	SM4500-NH3F-1997	
Total Nitrogen	2.0	0.40	"	1	2002007	03/11/20	03/11/20	EPA 351.3/300	



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Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (20C0430-02) Water Sampled: 03/06/20 12:10 Received: 03/06/20 14:25									
Boron	5700	50	µg/L	1	2001965	03/10/20	03/11/20	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Manganese	ND	20	"	"	"	"	03/10/20	"	
Sodium	160000	1000	"	"	"	"	03/11/20	"	
MW-1 (20C0430-03) Water Sampled: 03/06/20 12:00 Received: 03/06/20 14:25									
Boron	5300	50	µg/L	1	2001965	03/10/20	03/11/20	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Manganese	ND	20	"	"	"	"	03/10/20	"	
Sodium	170000	1000	"	"	"	"	03/11/20	"	
MW-5R (20C0430-04) Water Sampled: 03/06/20 12:30 Received: 03/06/20 14:25									
Boron	2000	50	µg/L	1	2001965	03/10/20	03/11/20	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Manganese	ND	20	"	"	"	"	03/10/20	"	
Sodium	93000	1000	"	"	"	"	03/11/20	"	
MW-3 (20C0430-05) Water Sampled: 03/06/20 13:00 Received: 03/06/20 14:25									
Boron	2400	50	µg/L	1	2001965	03/10/20	03/11/20	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Manganese	ND	20	"	"	"	"	03/10/20	"	
Sodium	210000	1000	"	"	"	"	03/11/20	"	



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (20C0430-02) Water Sampled: 03/06/20 12:10 Received: 03/06/20 14:25									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001887	03/06/20	03/10/20	SM 9221	
MW-1 (20C0430-03) Water Sampled: 03/06/20 12:00 Received: 03/06/20 14:25									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001887	03/06/20	03/08/20	SM 9221	
MW-5R (20C0430-04) Water Sampled: 03/06/20 12:30 Received: 03/06/20 14:25									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001887	03/06/20	03/08/20	SM 9221	
MW-3 (20C0430-05) Water Sampled: 03/06/20 13:00 Received: 03/06/20 14:25									
Total Coliforms	<1.8	1.8	MPN/100 mL	1	2001887	03/06/20	03/08/20	SM 9221	



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Trihalomethanes by EPA Method 524.2

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Trip Blank (20C0430-01) Water Sampled: 03/06/20 12:00 Received: 03/06/20 14:25									
Bromodichloromethane	ND	0.50	µg/L	1	2001955	03/09/20	03/09/20	EPA 524.2	
Bromoform	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	ND	0.50	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>									
		118 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>									
		99 %		70-130	"	"	"	"	
MW-2 (20C0430-02) Water Sampled: 03/06/20 12:10 Received: 03/06/20 14:25									
Bromodichloromethane	ND	0.50	µg/L	1	2001955	03/09/20	03/09/20	EPA 524.2	
Bromoform	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	ND	0.50	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>									
		125 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>									
		98 %		70-130	"	"	"	"	
MW-1 (20C0430-03) Water Sampled: 03/06/20 12:00 Received: 03/06/20 14:25									
Bromodichloromethane	1.0	0.50	µg/L	1	2001955	03/09/20	03/09/20	EPA 524.2	
Bromoform	3.9	0.50	"	"	"	"	"	"	
Chloroform	3.4	0.50	"	"	"	"	"	"	
Dibromochloromethane	3.1	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	12	0.50	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>									
		119 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>									
		96 %		70-130	"	"	"	"	



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Trihalomethanes by EPA Method 524.2

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5R (20C0430-04) Water Sampled: 03/06/20 12:30 Received: 03/06/20 14:25									
Bromodichloromethane	33	0.50	µg/L	1	2001955	03/09/20	03/09/20	EPA 524.2	
Bromoform	2.3	0.50	"	"	"	"	"	"	
Chloroform	69	0.50	"	"	"	"	"	"	
Dibromochloromethane	23	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	130	0.50	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	118 %	70-130	"	"	"	"	"
Surrogate: Toluene-d8	99 %	70-130	"	"	"	"	"

MW-3 (20C0430-05) Water Sampled: 03/06/20 13:00 Received: 03/06/20 14:25									
Bromodichloromethane	ND	0.50	µg/L	1	2001955	03/09/20	03/09/20	EPA 524.2	
Bromoform	3.4	0.50	"	"	"	"	"	"	
Chloroform	1.4	0.50	"	"	"	"	"	"	
Dibromochloromethane	1.5	0.50	"	"	"	"	"	"	
Total Trihalomethanes (THM)	6.4	0.50	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	124 %	70-130	"	"	"	"	"
Surrogate: Toluene-d8	99 %	70-130	"	"	"	"	"



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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001848 - General Preparation

Duplicate (2001848-DUP1)	Source: 20C0325-01			Prepared & Analyzed: 03/06/20						
pH	7.55	0.01	pH Units		7.53			0.265	20	

Batch 2001884 - General Prep

Blank (2001884-BLK1)	Prepared & Analyzed: 03/06/20									
Chloride	ND	0.50	mg/L							
Nitrate as N	ND	0.40	"							
Nitrite as N	ND	0.40	"							
Nitrate/Nitrite as N	ND	0.40	"							

LCS (2001884-BS1)	Prepared & Analyzed: 03/06/20									
Chloride	4.93	0.50	mg/L	5.00		99	80-120			
Nitrate as N	2.04	0.40	"	2.00		102	80-120			
Nitrite as N	1.95	0.40	"	2.00		98	80-120			
Nitrate/Nitrite as N	3.99	0.40	"	4.00		100	80-120			

LCS Dup (2001884-BSD1)	Prepared & Analyzed: 03/06/20									
Chloride	5.04	0.50	mg/L	5.00		101	80-120	2	20	
Nitrate as N	2.04	0.40	"	2.00		102	80-120	0.2	20	
Nitrite as N	2.00	0.40	"	2.00		100	80-120	2	20	
Nitrate/Nitrite as N	4.03	0.40	"	4.00		101	80-120	1	20	

Matrix Spike (2001884-MS1)	Source: 20C0425-04			Prepared & Analyzed: 03/06/20						
Chloride	11.4	0.50	mg/L	5.00	6.28	103	80-120			
Nitrate as N	4.47	0.40	"	2.00	2.59	94	80-120			
Nitrite as N	1.98	0.40	"	2.00	ND	99	80-120			
Nitrate/Nitrite as N	6.44	0.40	"	4.00	2.59	96	80-120			



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001884 - General Prep

Matrix Spike Dup (2001884-MSD1)	Source: 20C0425-04			Prepared & Analyzed: 03/06/20						
Chloride	11.4	0.50	mg/L	5.00	6.28	102	80-120	0.5	20	
Nitrite as N	1.98	0.40	"	2.00	ND	99	80-120	0.4	20	
Nitrate/Nitrite as N	6.42	0.40	"	4.00	2.59	96	80-120	0.3	20	
Nitrate as N	4.44	0.40	"	2.00	2.59	93	80-120	0.7	20	

Batch 2001928 - General Preparation

Blank (2001928-BLK1)	Prepared: 03/09/20 Analyzed: 03/10/20									
Total Dissolved Solids	ND	10	mg/L							
Duplicate (2001928-DUP1)	Source: 20C0350-02			Prepared: 03/09/20 Analyzed: 03/10/20						
Total Dissolved Solids	172	10	mg/L		170			1	20	

Batch 2001958 - General Preparation

Blank (2001958-BLK1)	Prepared & Analyzed: 03/10/20									
Ammonia as N	ND	0.10	mg/L							
LCS (2001958-BS1)	Prepared & Analyzed: 03/10/20									
Ammonia as N	0.414	0.10	mg/L	0.500		83	80-120			
LCS Dup (2001958-BSD1)	Prepared & Analyzed: 03/10/20									
Ammonia as N	0.411	0.10	mg/L	0.500		82	80-120	0.7	25	
Matrix Spike (2001958-MS1)	Source: 20C0413-01			Prepared & Analyzed: 03/10/20						
Ammonia as N	0.522	0.10	mg/L	0.500	0.0717	90	75-125			



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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2001958 - General Preparation										
Matrix Spike Dup (2001958-MSD1)		Source: 20C0413-01			Prepared & Analyzed: 03/10/20					
Ammonia as N	0.490	0.10	mg/L	0.500	0.0717	84	75-125	6	25	
Batch 2002002 - General Preparation										
Blank (2002002-BLK1)					Prepared & Analyzed: 03/11/20					
Total Kjeldahl Nitrogen	ND	0.20	mg/L							
LCS (2002002-BS1)					Prepared & Analyzed: 03/11/20					
Total Kjeldahl Nitrogen	0.419	0.20	mg/L	0.500		84	80-120			
LCS Dup (2002002-BSD1)					Prepared & Analyzed: 03/11/20					
Total Kjeldahl Nitrogen	0.416	0.20	mg/L	0.500		83	80-120	0.7	20	
Matrix Spike (2002002-MS1)		Source: 20C0399-04			Prepared & Analyzed: 03/11/20					
Total Kjeldahl Nitrogen	0.584	0.20	mg/L	0.500	0.229	71	75-125			QM-7
Matrix Spike Dup (2002002-MSD1)		Source: 20C0399-04			Prepared & Analyzed: 03/11/20					
Total Kjeldahl Nitrogen	0.575	0.20	mg/L	0.500	0.229	69	75-125	2	25	QM-7



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001965 - 6010A/No Digestion

Blank (2001965-BLK1)

Prepared & Analyzed: 03/10/20

Boron	ND	50	µg/L							
Iron	ND	100	"							
Manganese	ND	20	"							
Sodium	ND	1000	"							

LCS (2001965-BS1)

Prepared & Analyzed: 03/10/20

Boron	1110	50	µg/L	1000		111	85-115			
Iron	983	100	"	1000		98	85-115			
Manganese	1070	20	"	1000		107	85-115			
Sodium	5470	1000	"	5000		109	85-115			

Matrix Spike (2001965-MS1)

Source: 20C0234-01

Prepared & Analyzed: 03/10/20

Boron	2490	50	µg/L	1000	1560	93	70-130			
Iron	1330	100	"	1000	ND	133	70-130			QM-7
Manganese	1040	20	"	1000	1.53	104	70-130			
Sodium	202000	1000	"	5000	204000	NR	70-130			QM-7

Matrix Spike (2001965-MS2)

Source: 20C0430-02

Prepared & Analyzed: 03/10/20

Boron	6870	50	µg/L	1000	5710	116	70-130			
Iron	988	100	"	1000	ND	99	70-130			
Manganese	959	20	"	1000	ND	96	70-130			
Sodium	185000	1000	"	5000	158000	537	70-130			QM-7



California Rural Water Association 1234 N. Market Blvd. Sacramento, CA 95834	Project: Wild Wings Project Number: [none] Project Manager: Dan Demoss	CLS Work Order #: 20C0430 COC #: 203262
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Trihalomethanes by EPA Method 524.2 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2001955 - EPA 5030 Water MS

Blank (2001955-BLK1)

Prepared & Analyzed: 03/09/20

Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	0.50	"							
Chloroform	ND	0.50	"							
Dibromochloromethane	ND	0.50	"							
Total Trihalomethanes (THM)	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	11.2		"	10.0		112	70-130			
Surrogate: Toluene-d8	9.68		"	10.0		97	70-130			

LCS (2001955-BS1)

Prepared & Analyzed: 03/09/20

Bromodichloromethane	22.8	0.50	µg/L	20.0		114	70-130			
Bromoform	21.1	0.50	"	20.0		106	70-130			
Chloroform	19.8	0.50	"	20.0		99	70-130			
Dibromochloromethane	23.0	0.50	"	20.0		115	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.37		"	10.0		94	70-130			
Surrogate: Toluene-d8	10.2		"	10.0		102	70-130			

LCS Dup (2001955-BS1)

Prepared & Analyzed: 03/09/20

Bromodichloromethane	22.8	0.50	µg/L	20.0		114	70-130	0.4	30	
Bromoform	21.2	0.50	"	20.0		106	70-130	0.2	30	
Chloroform	20.3	0.50	"	20.0		102	70-130	3	30	
Dibromochloromethane	23.2	0.50	"	20.0		116	70-130	0.7	30	
Surrogate: 1,2-Dichloroethane-d4	9.28		"	10.0		93	70-130			
Surrogate: Toluene-d8	9.88		"	10.0		99	70-130			



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Notes and Definitions

- QM-7 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
- HT-F This is a field test method and it is performed in the lab outside holding time.
- BT-4 <1.8
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference