Cambria Community
Services District

Cambria Emergency Water Supply

Tracer Test Summary Report

Cambria, California

October 2014

CDM Smith

The information contained in the document titled "Cambria Emergency Water Supply Tracer Test Summary Report" dated October 2014 has received appropriate technical review and approval. The conclusions and recommendations presented represent professional judgments and are based upon findings from the investigations and sampling identified in the report and the interpretation of such data based on our experience and background. This acknowledgement is made in lieu of all warranties, either expressed or implied. The activities outlined in this report were performed under the supervision of a California Registered Professional Engineer.

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Introduction

1.1 Background Information

This investigation was conducted for the Cambria Community Services District (CCSD), which provides water, and collects and treats wastewater for the town of Cambria and adjacent service areas. The area of specific interest in this investigation is the lower portion of the San Simeon Creek valley, extending about 3.5 miles upstream from the Pacific Ocean. The study area and major features are shown on Figure 1-1.

An emergency water supply project is proposed to maintain water supplies from the San Simeon well field operated by the CCSD. This project will extract groundwater from beneath the treated wastewater percolation ponds, treat it using multiple processes, and recharge the water back in the basin for indirect potable reuse. This water will be recharged at an injection well located between the percolation ponds and the existing well field, with approximately 60 percent of the recharge water recovered at the well field. This report documents a tracer study that was conducted in order to quantify transport characteristics affecting movement of the recharged water and to determine residence time in the aquifer.

The study includes areas underlain by a significant alluvial aquifer along San Simeon Van Gordon Creeks. Near the headwaters, the San Simeon Creek valley forms a steep, narrow canyon. Along the final three to five miles before reaching the ocean, the valley widens to a floodplain that is up to one thousand feet wide. The floodplain is underlain by the groundwater basin and is flanked by steep hillsides that rise 200 to 800 feet above the valley floor. A fresh water lagoon is present in the lower portion of the San Simeon Creek bed that serves as an important ecological resource. This lagoon forms behind an ocean beach berm and is supported by groundwater discharge and surface water inflows.

CCSD and agricultural water users along San Simeon Creek use wells in a thin, narrow groundwater basin within the alluvium. Groundwater occurs in the alluvial deposits beneath the creek, which drains the western flanks of the Santa Lucia Range in San Luis Obispo County and discharges into the Pacific Ocean. The alluvial deposits form flat valley floors, which are used for irrigated agriculture. The alluvial aquifer is recharged primarily by seepage from San Simeon Creek, which typically flows during the winter and spring wet weather season. Recharge to the basin since Spring 2013 has been limited due to extreme drought conditions.

The CCSD has a well field consisting of three potable water supply wells located approximately one mile inland from the ocean. They also utilize a series of percolation ponds between the well field and the ocean where the secondary effluent form the Cambria waste water treatment plant is recharged back to the aquifer. The percolated secondary effluent forms a fresh water mound, with a portion of this groundwater draining to the lower lagoon area and and flowing in the subsurface into the ocean. The mounded groundwater serves to slow the creek underflow towards the ocean while also protecting the up-gradient potable water well field from seawater intrusion.

During the dry season, seasonal declines in the up-gradient groundwater levels at the potable well field occur as the creek flow ceases following seasonal rains and as the creek underflow slows. During such time, production is supported by removal of water from storage in the aquifer. During the late summer to early fall season, and subject to the seasonal rainfall amounts and timing, the level of the fresh water mound below percolation pond may also be lowered by a gradient control well, which is used to prevent percolated secondary effluent from entering the up-gradient potable water well field.

Numerous private wells are present that irrigate agricultural areas along to the creeks. Native vegetation consists of trees, grass, and shrubs that grow along the creeks and field borders. Grassy hillsides along the sides of the valleys are used for grazing. San Simeon State Park occupies the western extent of the basin and includes a large campground, which is a contracted customer of the CCSD for its water supply.

1.2 Regulatory Summary

Operation of the recharge well and subsequent indirect potable reuse is subject to the requirements of Title 22 of the California Code of Regulations, and approval by the California State Water Resources Control Board (SWRCB), Water Board's Division of Drinking Water (DDW, formerly referenced as the California Department of Public Health), and the Central Coast Regional Water Quality Control Board (RWQCB). Other aspects of the project, such as the project's evaporation pond, are subject to meeting California Code of Regulations Title 27 requirements; or, review and approval by other agencies. This report addresses Title 22 requirements associated with quantifying residence time for the recharged water before it is recovered for potable use before being pumped by the CCSD production wells through a field tracer study. The specific requirement is defined in final Regulations Related to Recycled Water, dated June 18, 2014 issued by the California Department of Public Health. These regulations define a requirement for residence time of the treated water in the aquifer prior to its recovery for indirect potable reuse. The residence time specific to this project is two months.

1.3 Objective

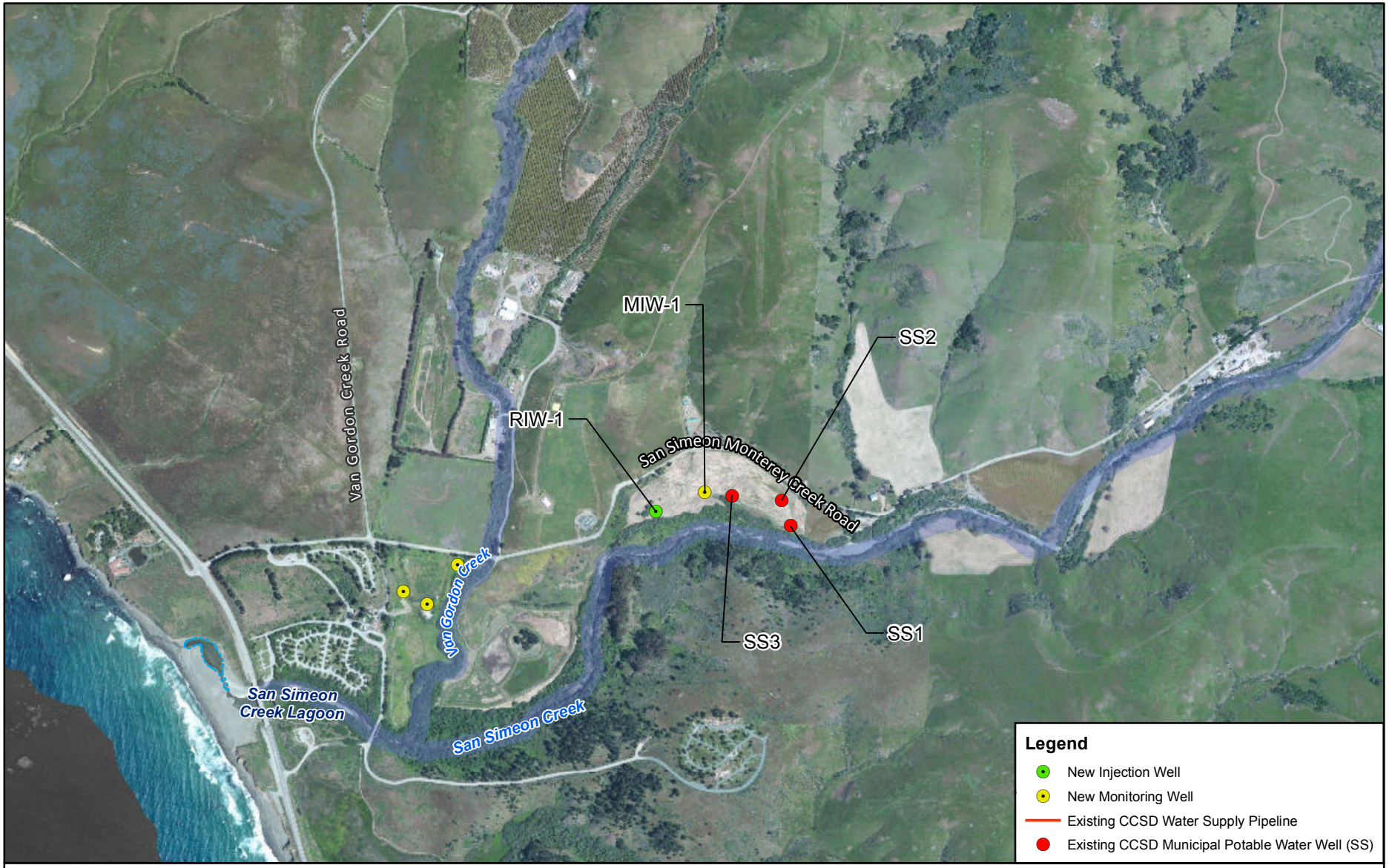
The principal objective of the tracer testing is to evaluate residence time of injected water in the San Simeon Basin to quantify the retention time in the shallow aquifer under maximum well production conditions permitted by water rights at the CCSD well field.

Extended multi-year drought conditions in the central coastal area of California have peaked since spring 2013, which resulted in substantial reduction of the water volume in the San Simeon Basin that serves as a key source of water supply for the Cambria community. Long term studies have been ongoing to identify additional water sources for the CCSD, including indirect potable reuse of the percolated secondary effluent, which currently discharges to the fresh water lagoon and the ocean. However, the persistent drought conditions have elevated concern on availability of a reliable water supply since water levels continue to decline as aquifer storage is depleted.

A groundwater modeling study (Cambria Emergency Water Supply Project – San Simeon Creek Basin Groundwater Modeling Report, CDM Smith, May 2014) was developed to support evaluation and definition of the CCSD's emergency water supply project to address the exceptional drought condition and water shortage. The evaluations concluded that it is feasible to extract and treat brackish water on CCSD property located off of San Simeon Creek Road to enhance the CCSD water supply during dry weather conditions. To provide an emergency water source, the CCSD is planning on extracting and treating groundwater from well 27S-8E-9P7 (aka well 9P7), located adjacent to the secondary treated

wastewater percolation ponds, and injecting the highly treated product water back into the shallow alluvial aquifer, down gradient of the CCSD well field. The 9P7 extracted water will be a blend of percolated secondary effluent, fresh basin water (creek underflow) and possibly deeper aquifer brackish water.

To conduct the tracer test, a new injection well and a monitoring well were installed in the San Simeon Creek groundwater basin. The new injection well was installed between the CCSD well field and percolation ponds. The monitoring well was installed between the new injection well and the CCSD well field (Figure 1-1).



Cambria Emergency Water Supply Project
Tracer Testing

Figure 1-1
Vicinity Map

CDM Smith

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Section 2
Tracer Test Methods

2.1 Tracer Test Design

In order to meet the objective of assessing residence time using a field test, a tracer test was conducted from July 24 to September 29, 2014 under conditions similar to the proposed operating conditions for the emergency supply alternative. However, it is important to notice that, although the same flow was injected and extracted in the basin during tracer testing, only about 60 percent of the injected water is estimated to be extracted during full scale system operations, with the remainder flowing downgradient, where it will be recovered in well 9P7.

This work was conducted under a work plan titled "Cambria Emergency Water Supply – Tracer Test Sampling and Analysis Plan" (Appendix C), dated May 2014, that was approved by the RWQCB. Since then, several modifications were made to this plan, with approval of the RWQCB, including modification of the production well pumping pattern. Initial use of well SS2 as the source of water during tracer injection is followed by alternate use of SS1 and SS2 on a two day cycle. This was necessitated by pump limitation at well SS1, , which was not capable of delivering the target 454 gpm (The CCSD's 370 acre-foot maximum allowable pumping during the dry season, which was assumed to occur over a 184 day long, six-month dry season.) The second modification was to change the form of the bromide tracer from a potassium bromide to sodium bromide due to availability.

The extracted water was amended with a tracer consisting of a low concentration of bromide ion in the form of sodium bromide. This tracer does not have a notification level, public health goal or MCL for drinking water systems in California. The bromide ion is conservative and does not sorb to the aquifer matrix, so its rate of movement is the same as groundwater. This compound is commonly used to assess groundwater velocities and residence times.

The tracer amended injection water was recharged into a new injection well, RIW-1. A tracer concentration varying between 6 mg/L and 16 mg/L of bromide after initial stabilization was used to provide adequate concentrations for assessing breakthrough. The sodium bromide was mixed in a staging (stock solution) tank to a concentration of about ten percent of the solubility (88,000 mg/L) and the stock solution was added in the RIW-1 injection water using a chemical feed pump. The tracer solution was introduced into the injection water just downstream of well SS2 (where power is available). A recording digital totalizer was installed to measure and record the injection rate. A low volume flow meter was installed on the tracer injection line; however, this failed to operate properly. Tracer concentrations were adjusted empirically by monitoring stock tank levels and by analyzing the injected water bromide concentrations.

2.2 Injection Well Installation and Development

An exploration boring was initially cored via the sonic rotary method to assess the geology and to finalize well design for the injection well. The new injection well, RIW-1, was installed for the tracer testing and future use during full scale system operations. A permanent, 18-inch diameter conductor casing and sanitary seal was installed to a depth of 50 feet below ground surface (bgs) prior to well installation. Well RIW-1 is constructed from ten-inch diameter mild steel blank casing from the surface to 48 feet bgs; Type 304L stainless steel wire wrap screen with 0.080-inch slots from 50 feet bgs to the bedrock contact, at 95 feet bgs; and a five-foot stainless steel sediment trap from 95 to 100

feet bgs. The annulus of RIW-1 was back filled with a 4 x12 gradation filter pack from the bottom of the borehole to a depth of 40 feet bgs; and Portland cement with five percent bentonite grout from 40 feet bgs to ground surface. The mild steel casing and stainless steel screen are connected by a mechanical coupler for dissimilar metals. A lithologic/well log is included in Appendix A.

Well RIW-1 was developed using a double swab tool while simultaneously airlifting. The well was swabbed and airlifted for approximately 60 hours until the discharge became clear and the sand content minimized. The average discharge rate during airlifting was approximately 150 gpm. After airlifting was completed, a submersible pump was installed at a depth of approximately 40 feet bgs and the well was further developed by pumping and surging. The static water level was 13.85 feet below ground surface (bgs) prior to pumping. The well was pumped and surged for approximately ten hours at a maximum pumping rate of approximately 440 gpm. The maximum drawdown was 6.27 feet, yielding a specific capacity of 70 gpm/ft.

2.3 Monitoring Well Installation

One new monitoring well, MIW-1, was installed for the tracer testing approximately 500 feet up gradient from RIW-1, between RIW-1 and the CCSD production wells (Figure 2-1). Well MIW-1 was drilled via the sonic rotary drilling method and constructed from four-inch diameter schedule 40 PVC casing and schedule 40 PVC mill slot screen. Well MIW-1 is screened from 45 to 95 feet bgs. A lithologic/well log is included in Appendix A. MIW-1 was developed by surging and bailing, followed by pumping. MIW-1 was developed for approximately eight hours.

2.4 Injection Test Procedures

An inflatable packer with a four-inch flow-through pipe was installed in RIW-1 for the water injection. A temporary four-inch, aluminum injection line was connected to the existing CCSD supply wells SS1 and SS2 at the well pump-to-waste lines. Backflow preventers were installed at each of these wells, along with a pressure gage and recording flow meter on the line to RIW-1. The injection line was fitted with a sample port, pressure gauge and valves allowing injection of the desired flow rate. Figures 2-2 and 2-3 illustrates the tracer injection system, injection well packer and related equipment.
Well RIW-1 was installed approximately 1,200 feet down gradient from CCSD production wells SS1 and SS2 (Figure 2-1).

After the completion of construction and development, and prior to the tracer test, a two-hour, step injection test was performed at RIW-1 on July 21, 2014, in order to define well efficiency and to verify the final test rate. The test consisted of two, one-hour steps at injection rates of 300 and 425 gpm. The static water level at the beginning of the test was 14.64 feet below the top of the transducer pass through pipe or reference point (RP). Table 2-1 summarizes the step injection test. A graph of displacement versus time is shown in Figure 2-4.

Table 2-1 Step Injection Test Results

Average Injection Rate (gpm)	Final Water Level Depth (feet TORP)	Maximum Displacement (feet)	Specific Injection (gpm/ft)	Well Efficiency (Percent)
300	9.64	5.09	58.9	88.0
425	8.03	6.71	63.3	83.8

The 67-day injection tracer test started at 6:20 pm on Thursday, July 24, 2014, after allowing the aquifer to recover from the step injection test and completion of the injection system. The average injection rate was 455 gpm for the first 33 days while the tracer solution was injected using well SS2 to supply the water. During the tracer injection period, a single 12.5 hour power loss occurred. After Day 33, tracer injection ceased, but the injection test continued for an additional 34 days by alternately pumping wells SS1 and SS2 for approximately 48 hours each. The average pumping rate of SS1 was approximately 430 gpm, the maximum rate the well would produce. The overall injection rate during the course of the test was approximately 435 gpm. Figure 2-5 displays the average injection rate versus time. This approximates a condition where a single well is pumped for up to two days to supply the entire rate permitted from the San Simeon basin. Based on an average daily flow for the year , the CCSD pumps at less than its diversion permit's maximum permitted rate of 2.5 cfs (1120 gpm), with wells SS1 and SS2, each producing approximately 325 to 385 gpm when connected to the distribution system (CCSD 2010 Urban Water Management Plan, Table 5-16, as adopted on February 23, 2012). The operation during the tracer test represents the worst case conditions that will not be exceeded during the full scale system operation by pumping either SS1 or SS2. When in operation during peak summertime periods, the demands in excess of pump SS1 or SS2 would be supplied by the CCSD's Santa Rosa aquifer pumps.

Well water levels were monitored with pressure transducers above and below the packer in the injection well RIW-1, and in monitoring well MIW-1. The packer seal was maintained over the duration of the test by keeping sufficient pressure on the packer bladder. The depth to water was measured daily by CCSD in SS1, SS2 and MIW-1. Figure 2-6 shows the depth to the water level during the test at the injection well RIW-1.

The injection well water level stabilized rapidly, gradually rising for the first three weeks of injection, after which the water level declined slightly. Spikes on the data log show where maintenance activities or the 12.5 hour power loss occurred. Figure 2-7 presents the water level response at MIW-1 during the injection period. This well showed a rapid rise at the beginning of the test that continued for several days, followed by a decline in water levels of about 2.5 feet as the drawdown at the production well propagated to this location. Spikes on the hydrograph represent period when sampling was done.

The rapid response at well MIW-1 to injection indicates that a highly permeable zone was present in the area between these wells, which is consistent with the lithology that was encountered in the wells. Both RIW-1 and MIW-1 encountered clean sand and gravel in the lower alluvium. Water levels in production wells SS1 and SS2 declined by about nine feet over the duration of the test with most of the decline occurring at the start of pumping. Water level measurements from the pumping wells are shown on Figures 2-8 and 2-9.

As noted previously, the tracer was bromide ion, supplied by injection of sodium bromide at an average rate of about 10 mg/L as bromide over the test duration. The bromide concentration in the injected water varied through the test from 6 mg/L to 16 mg/L as adjustments were made during the test. Figure 2-10 shows the tracer concentration versus time, based on laboratory analyses.

2.5 Sampling and Monitoring Schedule

Collection of samples in the field was done on a variable schedule, depending on laboratory analytical results and on screening results for bromide ion that were done by using a bromide ion specific probe. Samples were collected from the water injection line, monitoring wells MIW-1 and SS3, and the production wells SS1 and SS2. Baseline samples were collected from each of the wells (RIW-1, MIW-1,

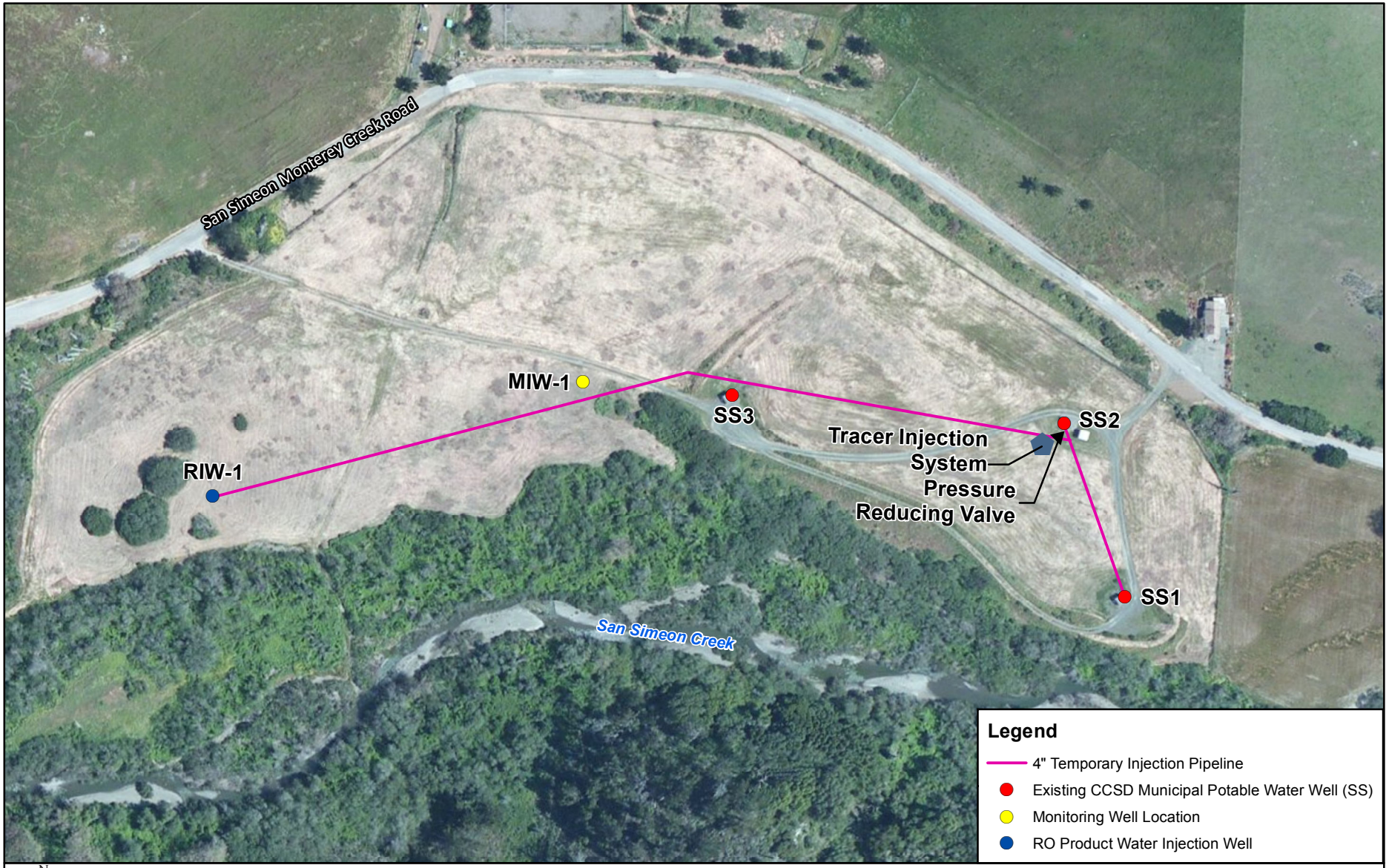
SS1, SS2 and SS3) on July 2, 2014 for bromide analyses prior to starting the tracer test. Samples were collected from the water injection line upstream of RIW-1 once every two days to confirm injected water bromide concentrations.

Initially, monitoring wells MIW-1 and SS3 were field sampled once every two days for bromide concentration with the specific bromide ion probe. One field duplicate was collected each week from each of the sampling locations for quality assurance. Sampling at MIW-1 was conducted with a small diameter submersible pump with its intake at the center of the screen interval. The production pump at SS3 was used to collect those samples. The monitoring wells were purged by pumping three casing volumes prior to sample collection. Daily sampling of MIW-1 commenced on August 15, 2014 (Day 22). Bromide was detected in MIW-1 with the ion specific probe on August 18, 2014 (Day 25), and triggered daily sampling of SS3.

SS2 was sampled every other day starting on July 30, 2014 (Day 6) until the entirety of the tracer solution was injected on August 26, 2014 (Day 33). At this point pumping alternated between SS1 and SS2. Samples were collected from both wells on a daily basis after approximately 24 hours and 48 hours of pumping until the end of the test on September 30 (Day 68).

All samples were analyzed in the field using an Orion Model 9635 combination bromide ion specific electrode in order to obtain rapid turn-around results and to guide submission of samples for laboratory analysis. This probe was calibrated for low concentrations using a five point calibration over the range from the detection limit of 0.2 mg/L to 15 mg/L bromide. Samples were selected for analysis in a California certified laboratory [Fruit Growers Laboratory (FGL), California] based on the screening results to define breakthrough curves at each of the wells.

Laboratory analyses was done using ion chromatography, EPA method 300.0 (low level bromide) with a reporting limit of 0.05 mg/L. All results presented in this report are from the laboratory analysis.



Cambria Emergency Water Supply

Figure 2-1
Tracer Testing

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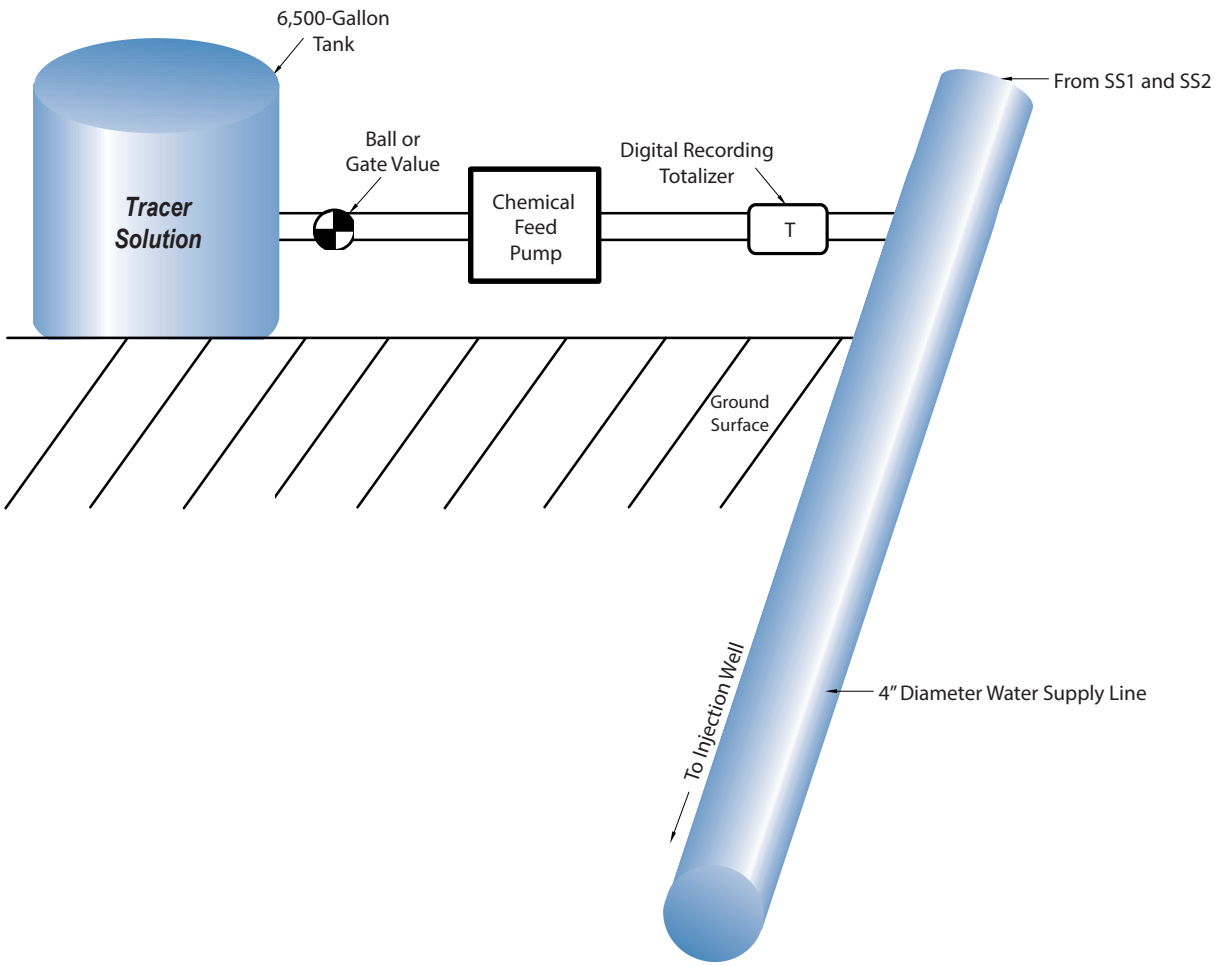

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Figure 2-2
Tracer Injection System Diagram

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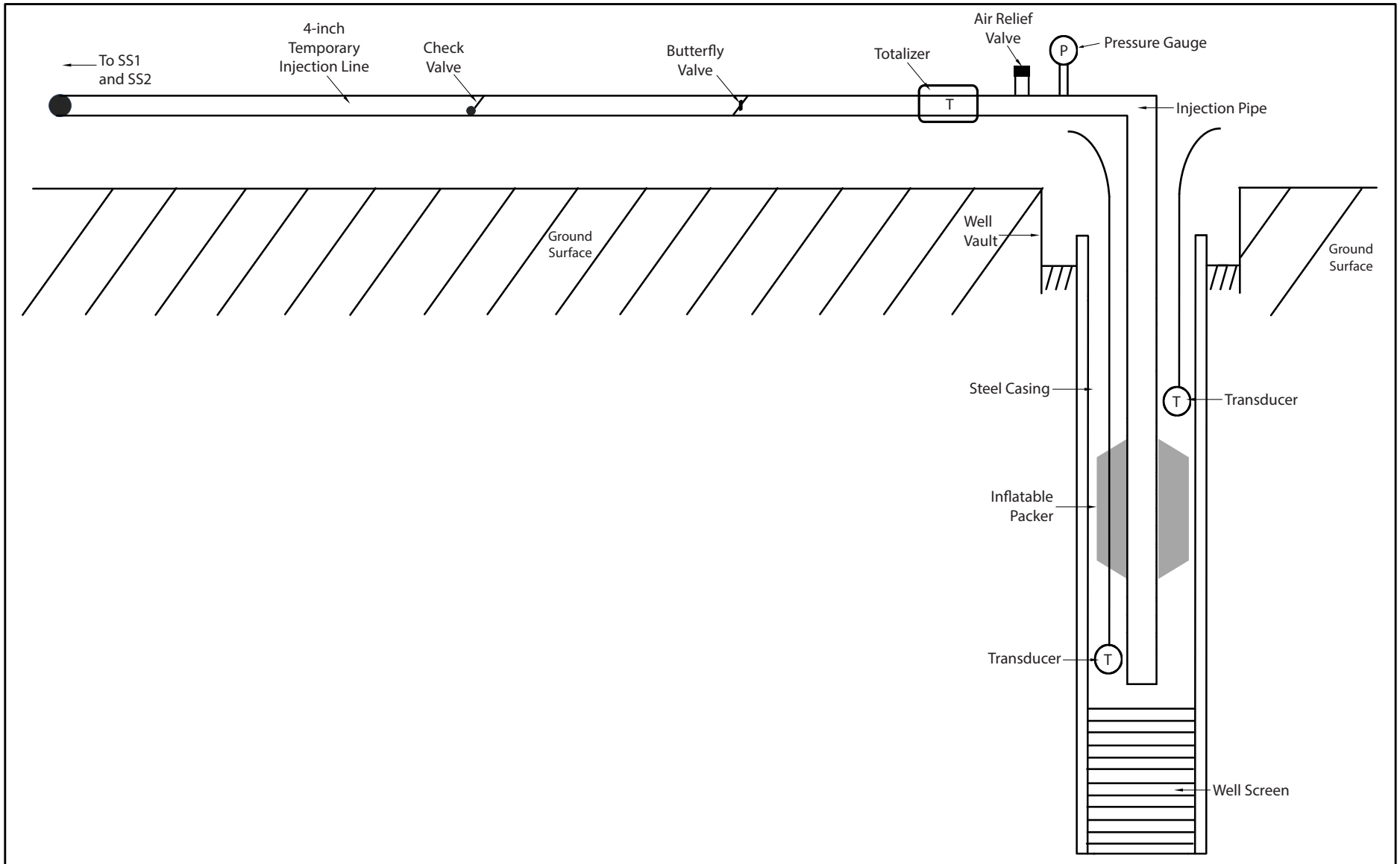


Cambria Emergency Water Supply

Figure 2-3
Injection System Diagram

Figure 2-4
CCSD Tracer Test
RIW-Step Injection Test
September 21, 2014

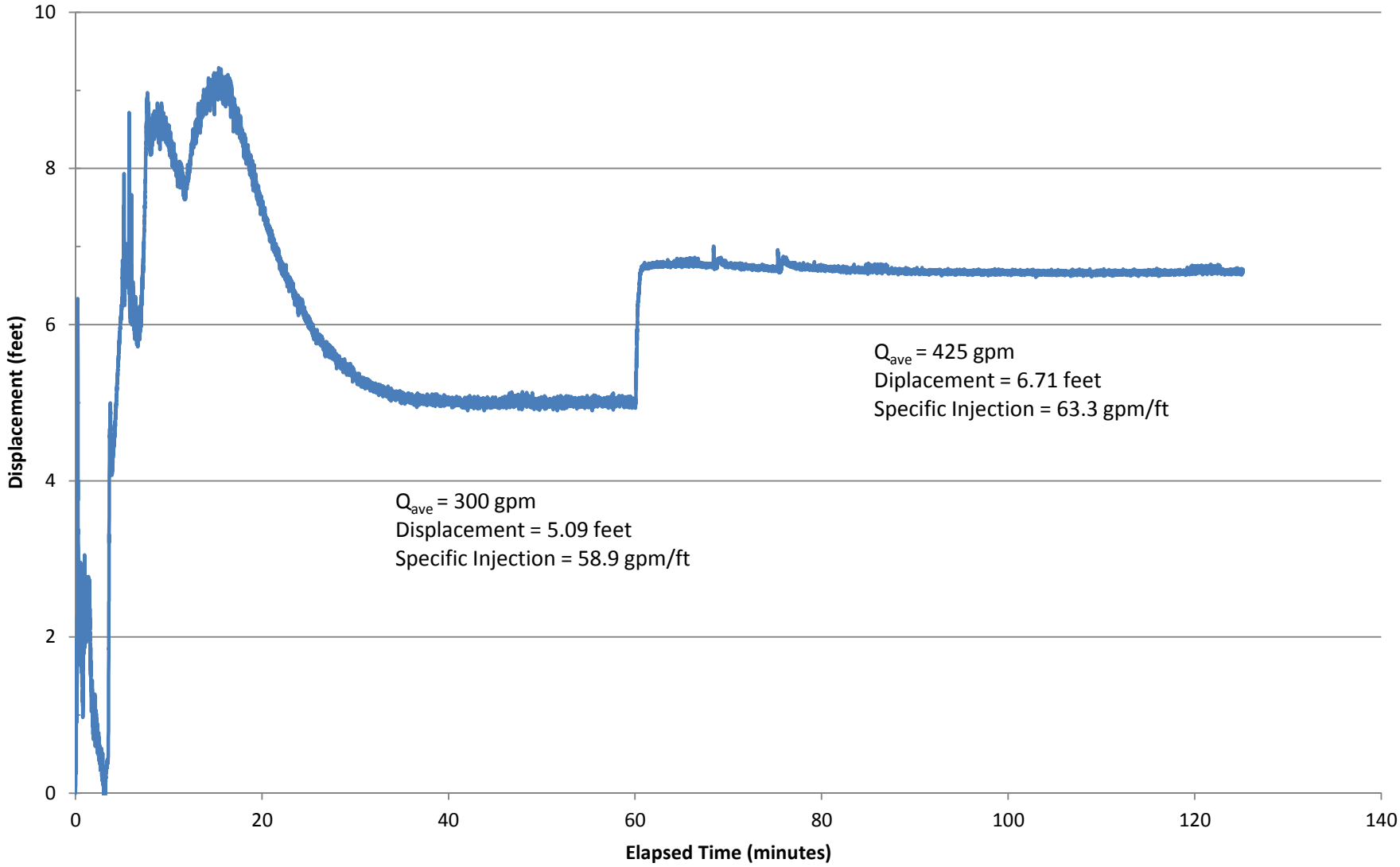


Figure 2-5
CCSD Tracer Test
Average Injection Rates
Mechanical Totalizer at RIW-1
July to September 2014

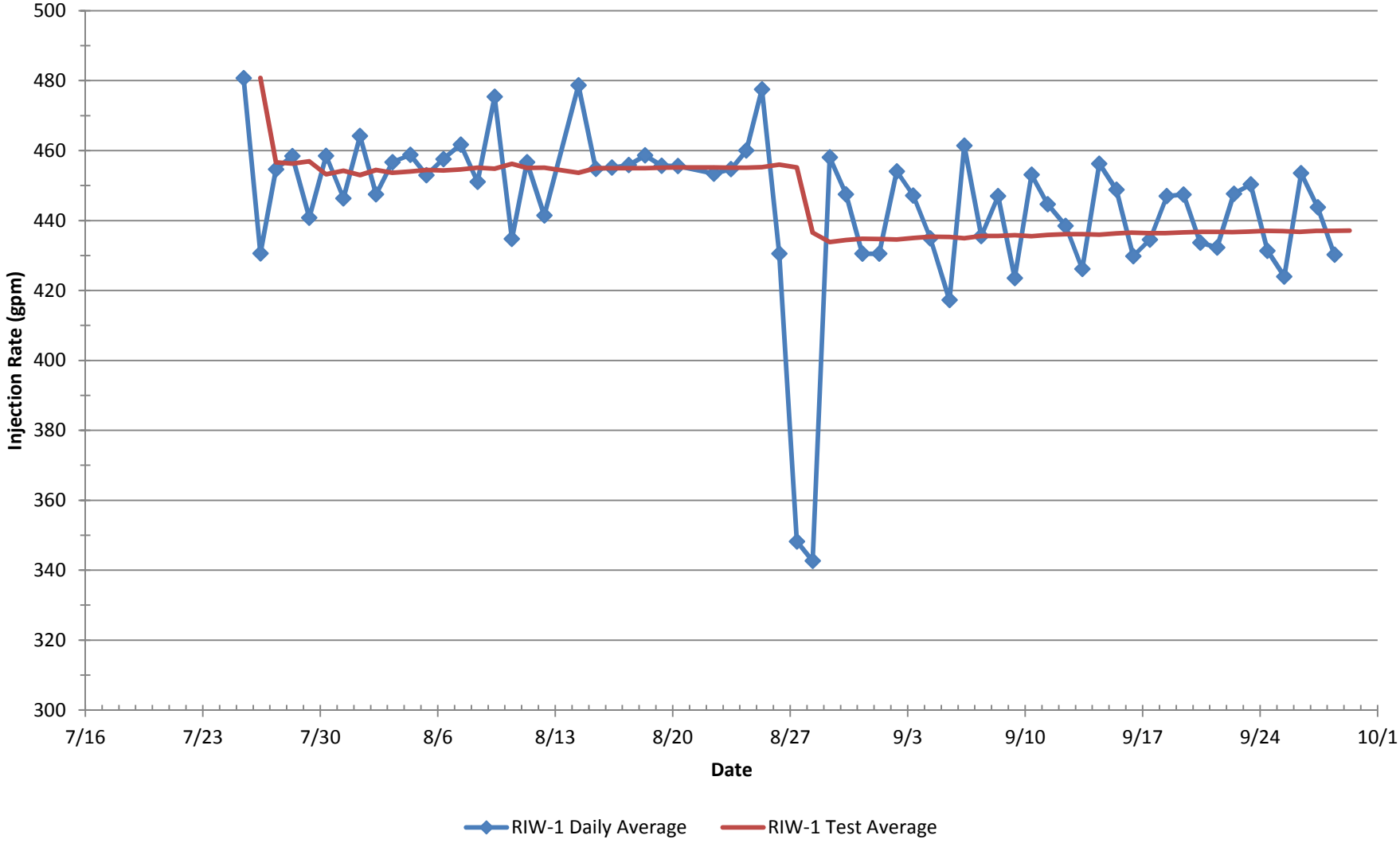


Figure 2-6
CCSD Tracer Test
RIW-1 Hydrograph
July to September 2014

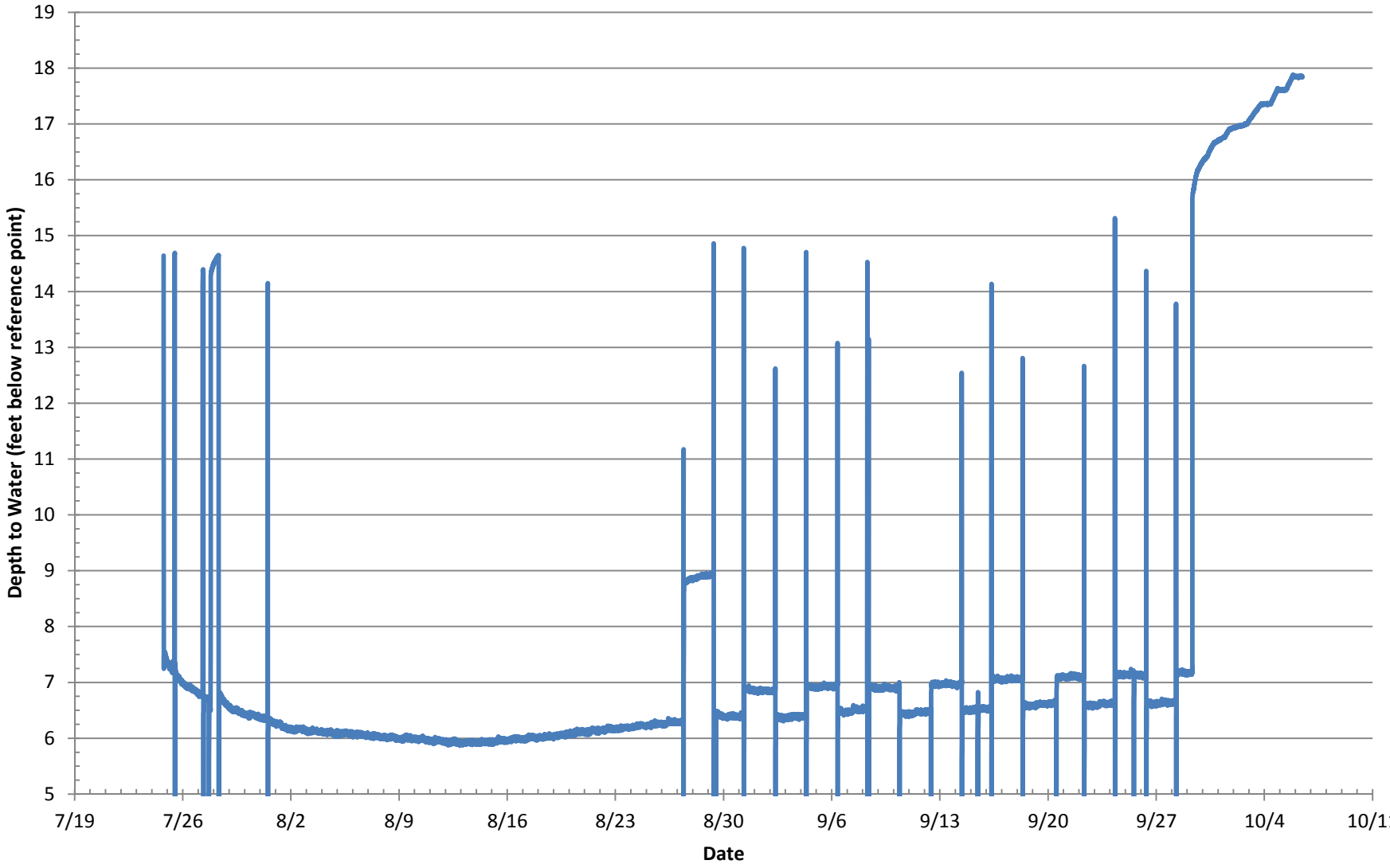


Figure 2-7
CCSD Tracer Test
MIW-1 Hydrograph
July to September 2014

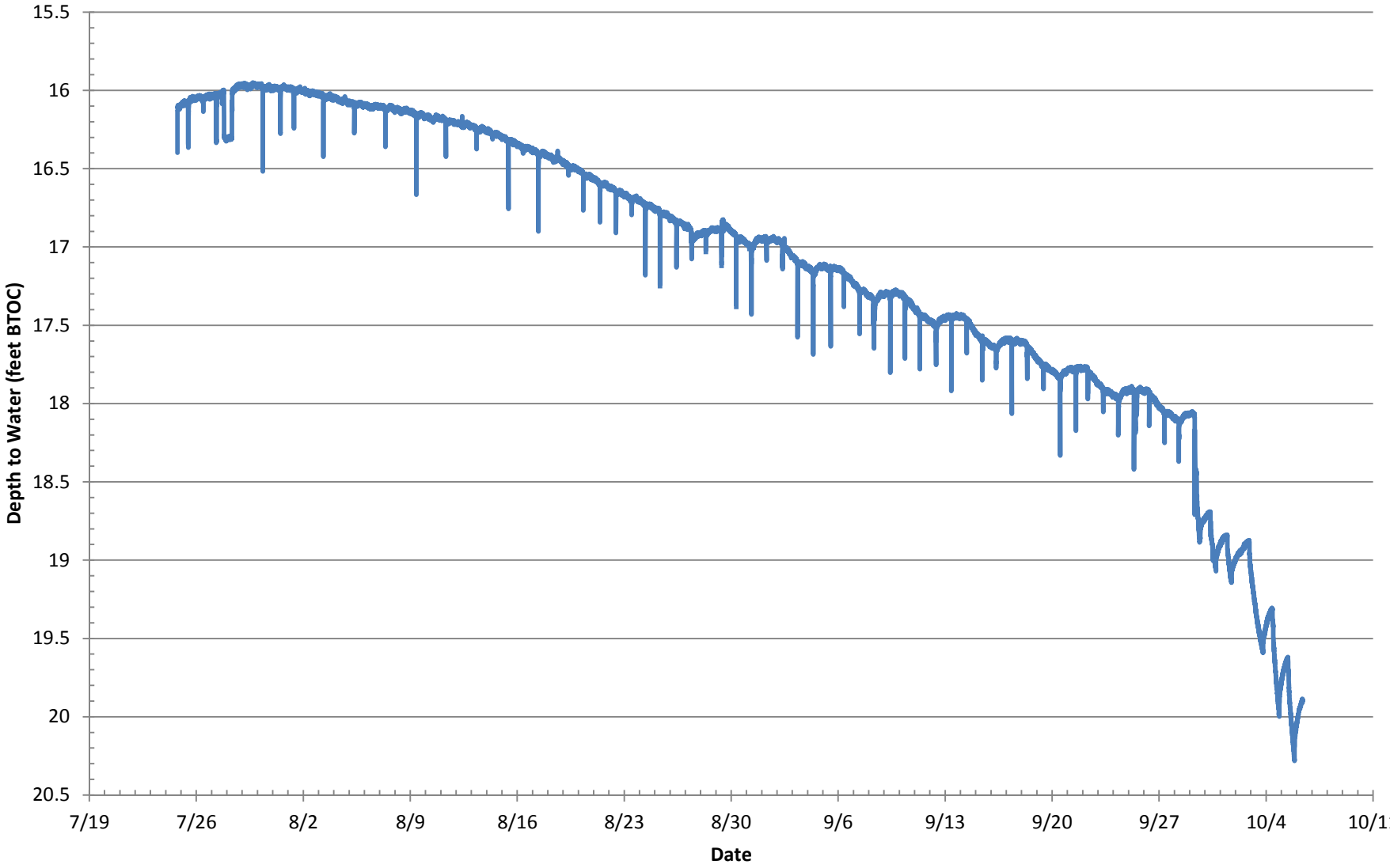


Figure 2-8
CCSD Tracer Test
SS1 Depth to Water
July 25, 2014 to October 1, 2014

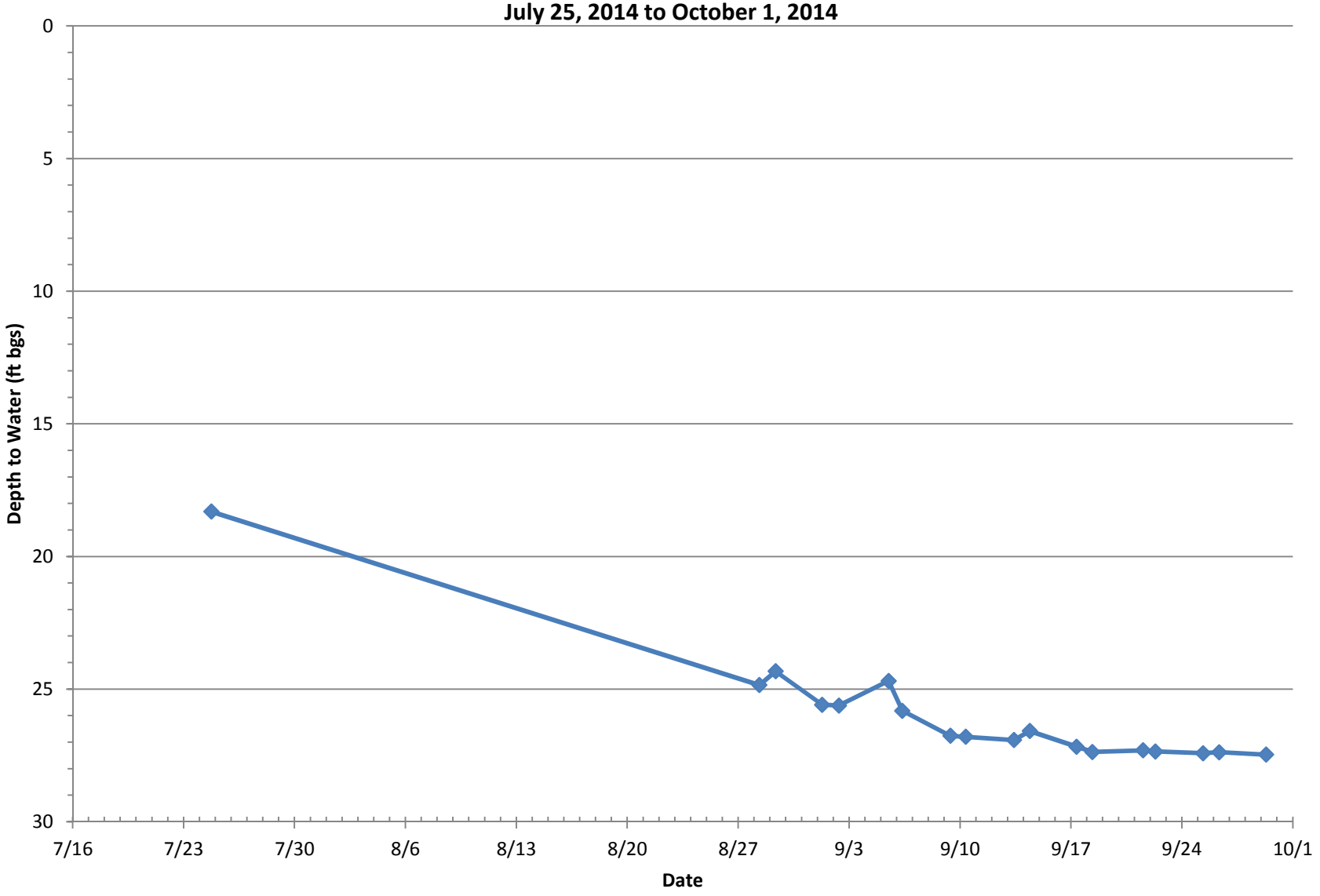


Figure 2-9
CCSD Tracer Test
SS2 Depth to Water
July 25, 2014 to October 1, 2014

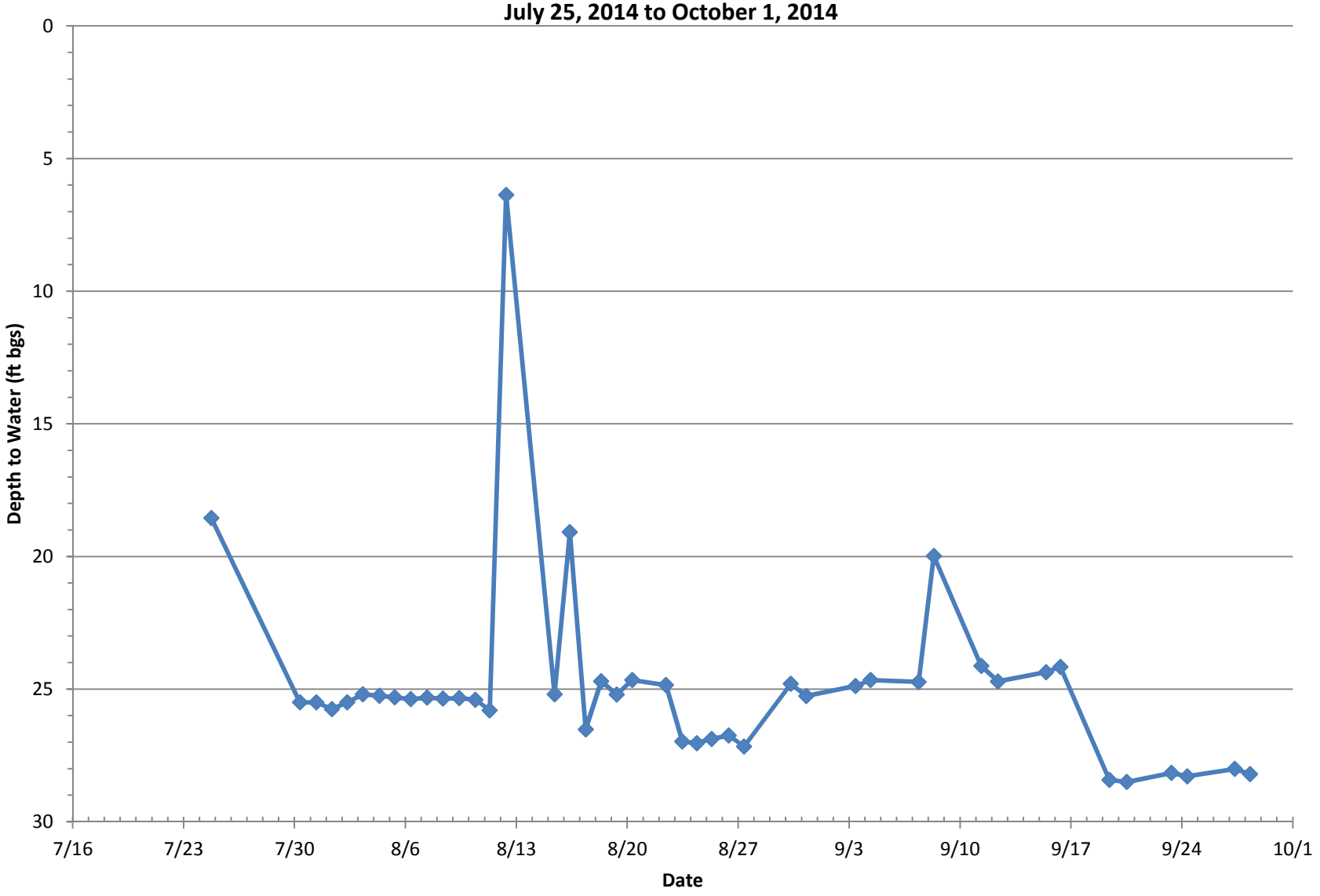
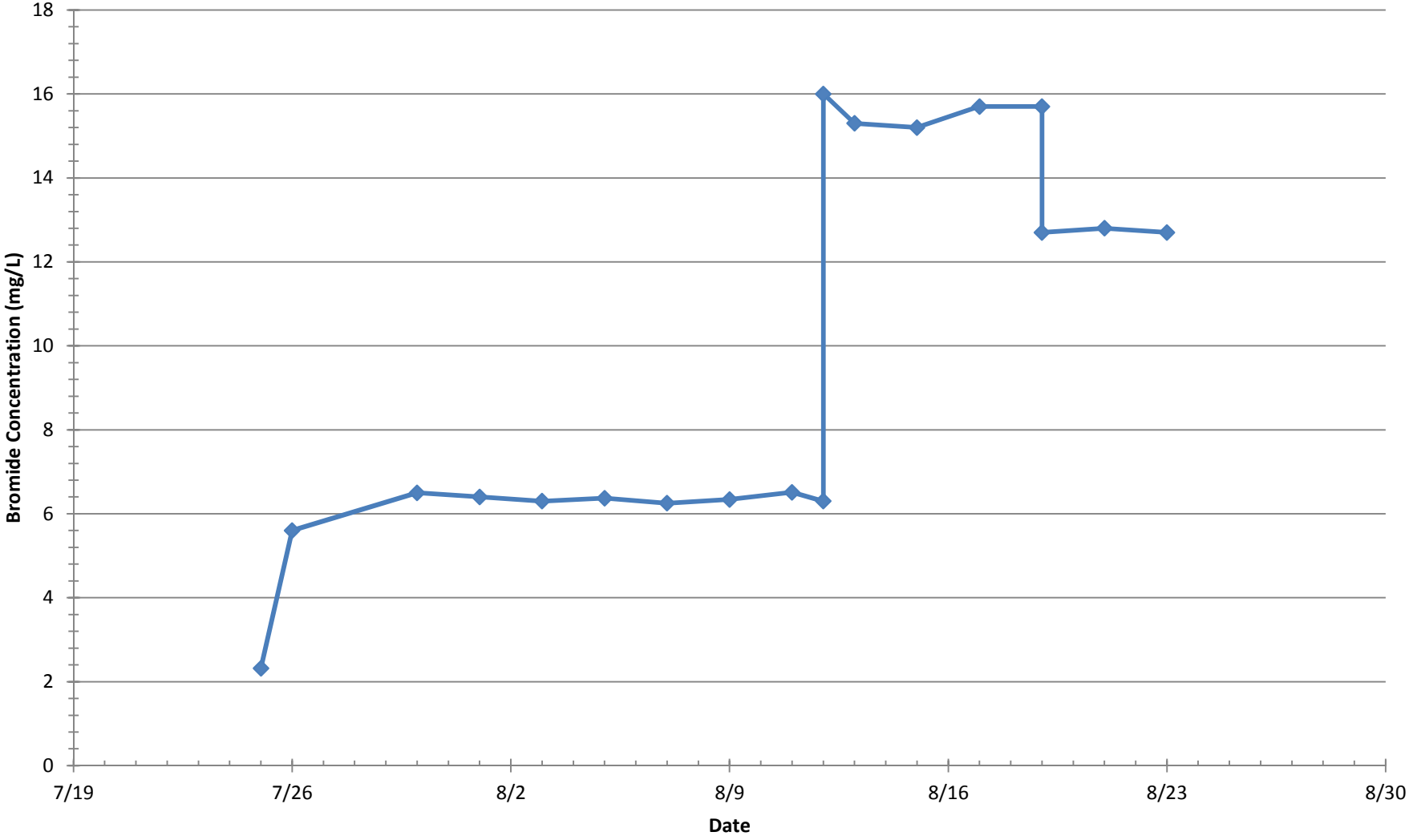


Figure 2-10
CCSD Tracer Test
Injected Bromide Concentration
RIW-1
July 24 to August 23, 2014



Section 3
Tracer Test Results

3.1 Tracer Summary

Table 3-1 provides a summary of laboratory analytical results for all samples collected at wells MIW-1, SS1, SS2, SS3 and the injection well RIW-1. Copies of all laboratory reports are provided in Appendix B. Laboratory quality assurance documentation was reviewed and all data was accepted as useable. Bromide background concentrations at the site are low, ranging from 0.03 (J qualified, indicating estimated concentration below the reporting limit) to 0.05 mg/L, and were defined by samples collected prior to or in the early phases of the test.

The residence time based on a field tracer test with a conservative tracer is defined in the California Department of Public Health – Regulations Related to Recycled Water, dated June 18, 2014. This regulation defines the residence time at a monitoring well as either the duration to reach two percent of the injected tracer concentration, or ten percent of the peak observed concentration. Since the duration of the test was limited and the tracer was injected for the first 33 days of the test, equilibrium concentrations were not reached at the production wells SS1 and SS2, so the two percent criterion based in the initial tracer period where a concentration of six mg/L is used for this analysis of retention times.

The target retention time for the system is two months. Initial estimates of retention time were developed using the calibrated groundwater flow model, with preliminary estimates of transport parameters (dispersivity, effective porosity). This initial evaluation estimated travel times exceeding four months to the production wells. The tracer test results provide additional information on transport properties that are used to calibrate transport parameters in the model that are reported in Section 4.

Figure 2-10 presented the tracer concentrations at the injection well. Initial startup tracer concentrations stabilized about 12 hours into the test at an average of about 6 mg/L. The breakthrough concentration at each of the monitoring points is considered 0.12 mg/L (two percent of six mg/L) above the background concentration.

Bromide results for monitoring well MIW-1, located about 530 feet from the injection well RIW-1, are provided on Figure 3-1. The background concentration of bromide at this well was 0.03 mg/L, which results in a breakthrough concentration of 0.15 mg/L, which occurred between August 3, 2014 and August 5, 2014 samples, interpolated to ten days after the start of injection. This rapid arrival of the initial bromide at the well is consistent with the interpretation of the presence of a higher permeability pathway between RIW-1 and MIW-1 that was suggested by the hydraulic response and the lithologies encountered at these wells.

Figure 3-2 shows the bromide monitoring results at well SS3, which is located at a distance of about 720 feet from the injection well. The background concentration at this well was also 0.03 mg/L. A concentration of 0.15 mg/L was observed on August 22, 2014, 29 days into the test.

Figure 3-3 shows the bromide monitoring results as well SS2, which was pumped at an average rate of 455 gpm for the first 33 days of the test. Background concentrations of bromide at this well were 0.05 mg/L, resulting in a defined initial arrival concentration for bromide of 0.17 mg/L. A concentration of 0.16 mg/L was observed on September 20, 2014, 58 days into the test.

Figure 3-4 presents the bromide monitoring results at well SS1, which commenced pumping, alternating with SS2 after day 33 of the test. The background concentration at this well was also 0.05 mg/L. A concentration of 0.09 mg/L was observed at well SS1 on September 25, 2014 (day 63 of the test). An anomalous value of .26 mg/L was observed on September 26, 2014 followed by a value of 0.10 mg/L on September 27, 2014.

Based on the tracer test, a pumping and injection rate averaging 437 gpm results in a retention time of 58 days, so operating pumping rates will need to be slightly reduced in the emergency water supply system. The initial 33 day operating period had an average injection and pumping rate of 455 gpm, with pumping occurring only from SS2 due to pump limitations. When the San Simeon production wells are supplying the CCSD system, they are not capable of individually pumping the full 455 gpm, and a Santa Rosa well field pump would need to be run along with either well SS1 or SS2.

Table 3-1
CCSD Tracer Test
Laboratory Bromide Analytical Results

Date	Test Day	MIW-1				SS-1				SS-2					SS-3			RIW-1			
		Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments
7/2/2014	0	19:15	0.031	0.05	J-Flagged	16:15	0	0.05		16:02	0	0.05		16:10	0	0.05					
7/25/2014	1																	8:30	2.32	0.03	
7/26/2014	2																	13:00	5.6	0.03	Increased injection rate
7/27/2014	3																				
7/28/2014	4																				
7/29/2014	5																				
7/30/2014	6									8:00	0.05	0.03						8:21	6.5	0.03	
7/31/2014	7																				
8/1/2014	8	9:31	0.07	0.03														9:18	6.4	0.03	
8/2/2014	9																				
8/3/2014	10	7:57	0.09	0.03														8:07	6.3	0.03	
8/4/2014	11																				
8/5/2014	12	8:23	0.20	0.03														8:03	6.37	0.03	
8/6/2014	13																				
8/7/2014	14	9:31	0.31	0.03						9:17	0.05	0.03		9:17	0.04	0.03		8:59	6.25	0.03	
8/8/2014	15																				
8/9/2014	16	9:55	0.47	0.03										9:48	0.00	0.03		9:40	6.34	0.03	
8/10/2014	17																				
8/11/2014	18	8:10	0.66	0.03										8:00	0.04	0.03		7:50	6.51	0.03	
8/12/2014	19																	8:30	6.3	0.03	
																		10:45	16.0	0.03	
8/13/2014	20									8:23	0.05	0.03		8:12	0.03	0.03					
8/14/2014	21																	8:00	15.3	0.03	
8/15/2014	22	10:22	1.07	0.03										10:15	0.04	0.03		10:06	15.2	0.03	
8/16/2014	23	9:24	1.20	0.03																	
8/17/2014	24	9:41	1.30	0.03										9:26	0.07	0.03					
8/18/2014	25	8:58	1.46	0.03														9:18	15.7	0.03	
8/19/2014	26	8:46	1.57	0.03										8:27	0.09	0.03		8:16	15.9	0.03	
																		11:51	12.7	0.03	
8/20/2014	27	8:11	1.79	0.03										7:52	0.10	0.03					
8/21/2014	28	10:15	1.93	0.03						10:04	0.05	0.03		9:55	0.12	0.03		9:48	12.8	0.03	
8/22/2014	29	11:16	2.15	0.03										11:10	0.15	0.03					
8/23/2014	30	12:14	2.38	0.03						12:09	0.04	0.03		11:38	0.14	0.03		11:31	12.7	0.03	
8/24/2014	31	9:44	2.65	0.03										9:19	0.19	0.03					
8/25/2014	32	8:28	2.86	0.03						8:17	0.05	0.03		8:05	0.21	0.03					
8/26/2014	33	10:20	3.05	0.03										10:10	0.24	0.03					
8/27/2014	34	9:41	3.39	0.03										9:30	0.25	0.03					
8/28/2014	35	8:35	3.58	0.03										8:19	0.35	0.03					
8/29/2014	36	9:30	3.64	0.03										9:08	0.39	0.03					
8/30/2014	37	8:22	3.93	0.03										8:10	0.36	0.03					
8/31/2014	38	8:04	4.15	0.03										7:53	0.38	0.03					
9/1/2014	39	7:41	4.43	0.03		7:10	0.05	0.03						7:29	0.42	0.03					
9/2/2014	40	8:58	4.49	0.03										8:47	0.45	0.03					
9/3/2014	41	8:26	4.62	0.03										8:13	0.69	0.03					

Table 3-1
CCSD Tracer Test
Laboratory Bromide Analytical Results

Date	Test Day	MIW-1				SS-1				SS-2					SS-3			RIW-1			
		Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments	Time	Results (mg/L)	Reporting Limit (mg/L)	Comments
9/4/2014	42	9:00	5.19	0.03										8:50	0.71	0.03					
9/5/2014	43	12:35	4.73	0.03										12:20	0.85	0.03					
9/6/2014	44	9:10	5.01	0.03										8:55	0.9	0.03					
9/7/2014	45	9:50	4.85	0.03										9:45	0.9	0.03					
9/8/2014	46	9:10	4.77	0.03						8:20	0.08	0.03		8:30	0.92	0.03					
9/9/2014	47	10:05	4.49	0.03										9:50	0.99	0.03					
9/10/2014	48	9:15	4.43	0.03										8:50	1.16	0.03					
9/11/2014	49	8:46	4.29	0.03										8:33	1.07	0.03					
9/12/2014	50	10:11	4.3	0.03										9:45	1.12	0.03					
9/13/2014	51	10:15	4.14	0.03										9:52	1.13	0.03					
9/14/2014	52	10:12	4.12	0.03										9:48	1.31	0.03					
9/15/2014	53	10:35	4.44	0.03						10:10	0.13	0.03		10:04	1.07	0.03					
										10:20	0.14	0.03									
9/16/2014	54	8:40	4.37	0.03						8:01				8:24	1.06	0.03					
9/17/2014	55	9:02	4.25	0.03		8:48	0.07	0.03						8:40	1.26	0.03					
9/18/2014	56	8:57	4.05	0.03		8:21	0.07	0.03						8:40	1.05	0.03					
9/19/2014	57	10:56	3.82	0.03						10:30	0.16	0.03		10:26	1.15	0.03					
9/20/2014	58	12:58	3.7	0.03						12:46	0.16	0.03		12:37	1.33	0.03					
9/21/2014	59	13:55	3.58	0.03		13:41	0.07	0.03						13:32	1.34	0.03					
9/22/2014	60	8:30	3.48	0.03		7:46	0.08	0.03						8:13	1.42	0.03					
9/23/2014	61	8:40	3.28	0.03						7:56	0.2	0.03		8:18	1.48	0.03					
9/24/2014	62	8:32	3.19	0.03						7:48	0.22	0.03		8:20	1.45	0.03					
9/25/2014	63	8:46	3.05	0.03		13:00	0.09	0.03		13:07	0.24	0.03		8:35	1.63	0.03					
9/26/2014	64	8:41	2.86	0.03		8:07	0.26	0.03						8:07	1.74	0.03					
9/27/2014	65	7:45	2.82	0.03						6:58	0.27	0.03		7:26	1.74	0.03					
9/28/2014	66	9:06	3.01	0.03						8:28	0.1	0.03		8:48	1.68	0.03					
9/29/2014	67	8:11	2.65	0.03		7:35	0.1	0.03		8:17	0.29	0.03		8:09	1.63	0.03					
9/30/2014	68	12:40	2.77	0.03		10:49	ND	0.03		12:15	0.22	0.03		10:39	1.69	0.03					

Figure 3-1
CCSD Tracer Test
Bromide Concentration
Monitoring Well MIW-1
July 24 to September 30 2014

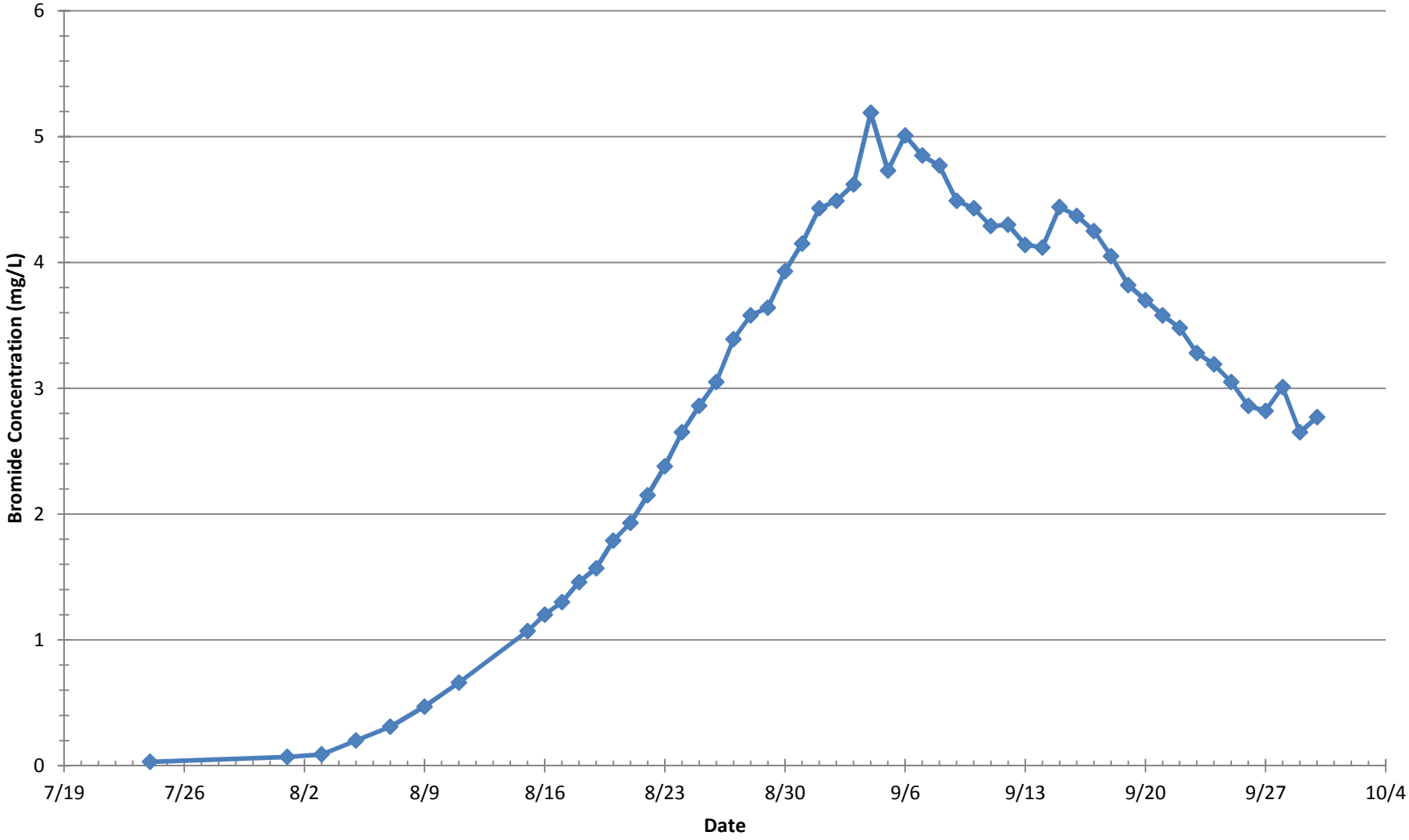


Figure 3-2
CCSD Tracer Test
Bromide Concentration
Well SS3
July to September 2014

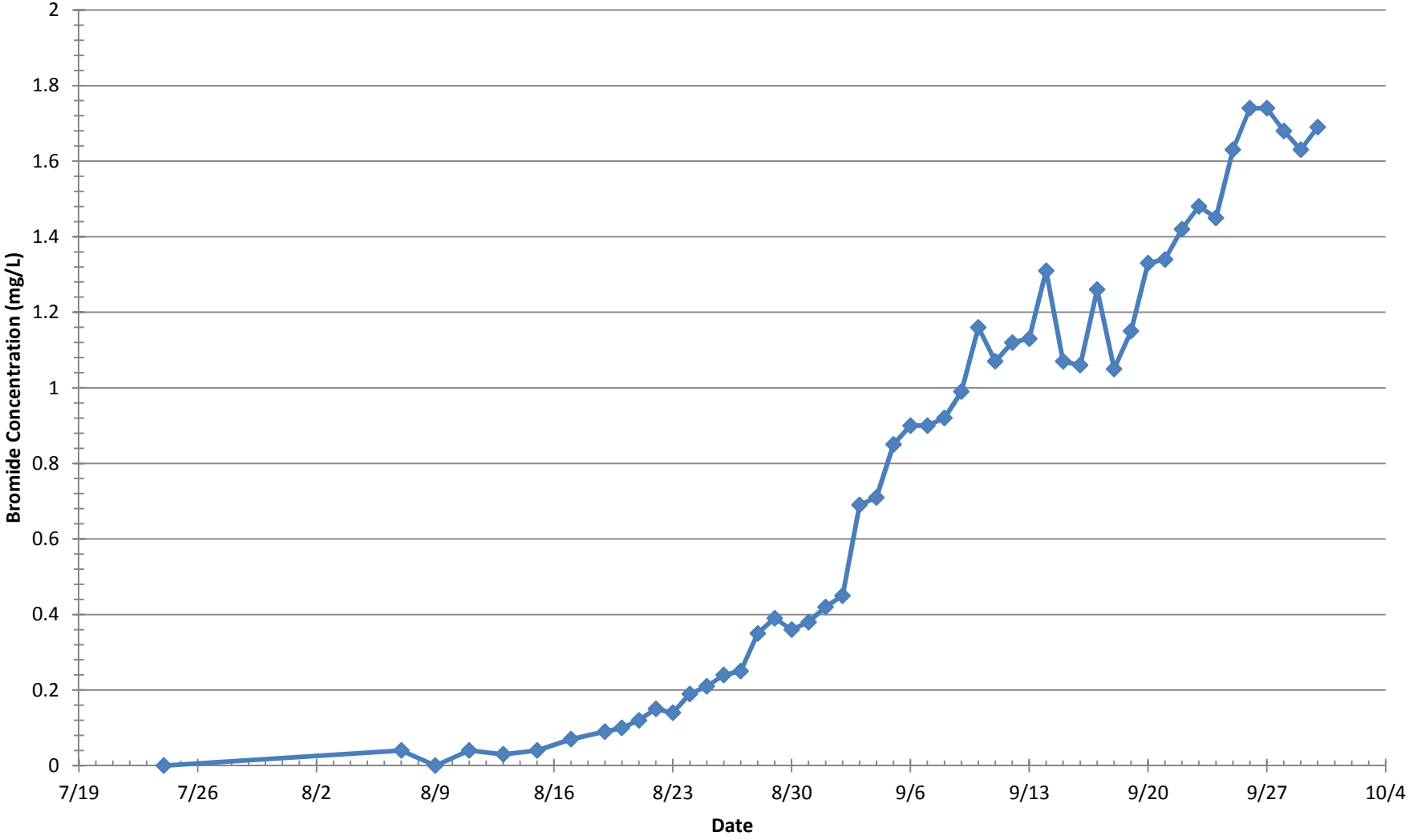


Figure 3-3
CCSD Tracer Test
Bromide Concentration
Well SS2
July to September 2014

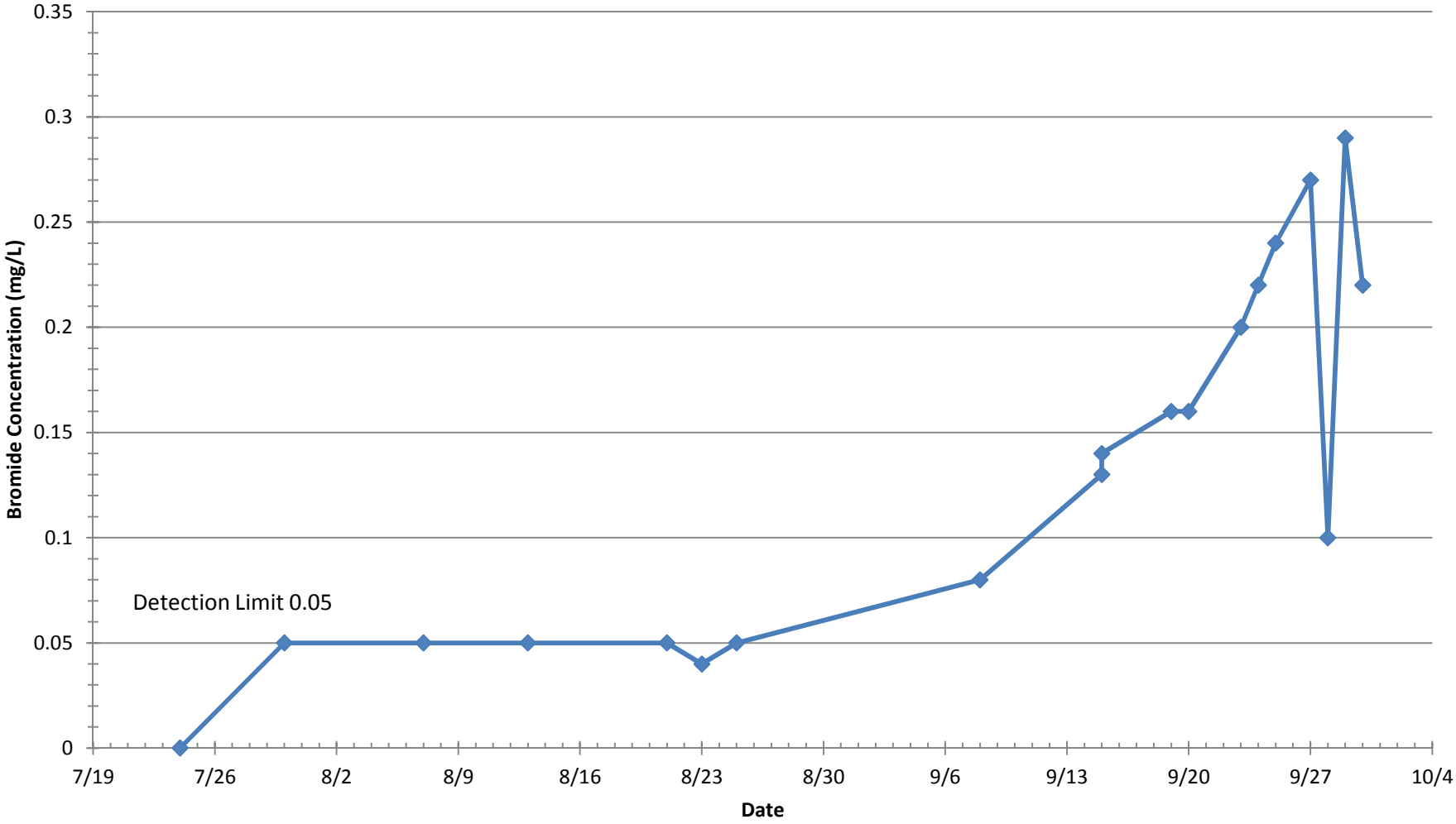
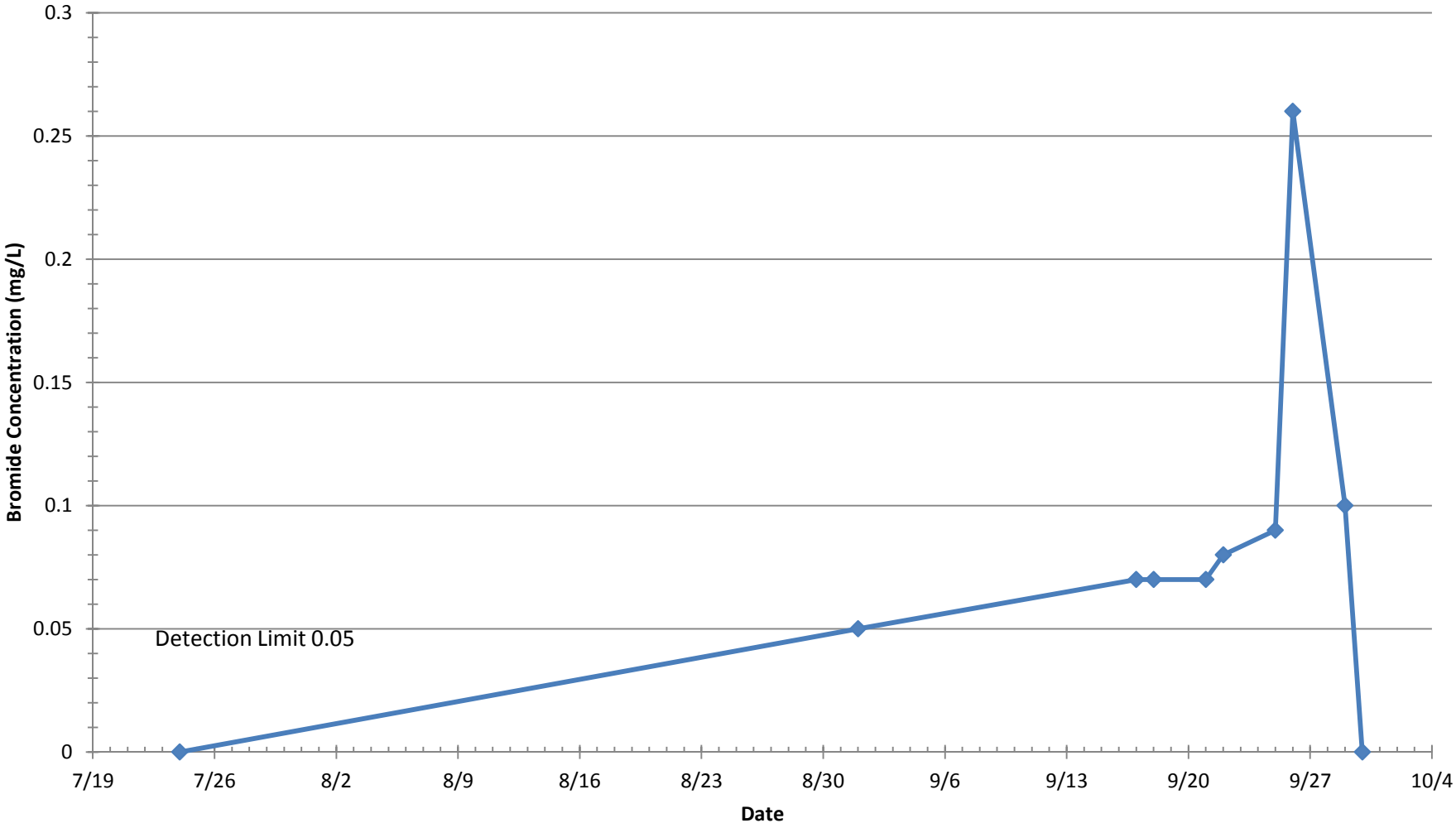


Figure 3-4
CCSD Tracer Test
Bromide Concentration
Well SS1
July to September 2014



Section 4
Model Calibration Update

The groundwater flow model that was configured and calibrated was used to assess emergency water supply alternatives. This model included preliminary estimates of solute transport parameters in order to assess residence times for injected water. The initial estimates of residence time were significantly longer than it was observed in the field during the tracer test, so modifications to update the model have been done, using the tracer test data. In addition, geologic information developed from drilling of RIW-1 and MIW-1, along with both hydraulic and water quality observations during the test, indicates that a zone of higher permeability is present in the area between RIW-1 and MIW-1. The calibration update and evaluation of emergency water supply alternatives that will meet the required residence times are presented in following sections.

4.1 Model Calibration Update

Observations during the testing of the injection well and the start of the tracer test indicate that a shorter than initially expected response time to pumping or injection at RIW-1 is seen at well MIW-1, at a distance of 530 feet. This indicates that the permeability along this pathway is very high, so a local modification of hydraulic characteristics in the model was implemented in this area prior to undertaking calibration of solute transport parameters. The original model included a basal alluvial material that was lower in hydraulic conductivity than the upper portion of the alluvium. This was not encountered in the field, so the hydraulic conductivity in the model was increased in this lower portion of the model in the area of RIW-1 and MIW-1. This modification affects only this localized area and does not significantly change the basin model calibration. The model was configured for actual conditions during the tracer test, including the location and timing of pumping and injection. Other pumping from irrigation wells was assumed to be continuing. Tracer concentrations for the injection well were specified based on the laboratory analyses.

The shape of the breakthrough curves indicates spreading of the solute front that is associated with variations in groundwater velocity accounted for in the model as dispersion. Sensitivity analyses presented in the modeling report demonstrated this spreading of the front as the solute front advances in the aquifer. Dispersion was incorporated into the model using methods reported in the literature that relate dispersivity to the transport distance. This value was selected at 64 feet for all aquifer layers.

Effective porosity is a major control in the velocity and represents the percentage of open pore space in the aquifer. In the original model, the calibrated specific yield was used to approximate the effective porosity of the aquifer; however, based on tracer test results, the effective porosities in the aquifer are lower, as indicated by the more rapid breakthrough of tracer that was observed. After incorporation of the higher permeability zone near RIW-1 and including dispersion, the model was calibrated by varying the effective porosity, comparing modeled tracer concentrations with the observed concentrations at MIW-1, SS3, SS2 and SS1 to obtain a reasonable agreement between field and modeled data for bromide concentrations. Figure 4-1 through 4-4 shows the simulated and observed bromide concentrations at wells MIW-1, SS3, SS2 and SS1, respectively.

The agreement between the recalibrated transport model and field data is good with respect to the initial breakthrough at wells MIW-1, SS3 and SS2, however, the peak concentrations and the time for the peak to pass a given point have significant deviations between the modeled and observed values, with peak modeled concentrations higher than the observed. The modeled response at well SS1 does not agree well with the observed data at SS1. The model predicts a much earlier arrival time than would be projected based on the field data. Well SS1 did not exceed the two percent regulatory definition of residence time during the 67 day monitoring period. A value of background corrected bromide concentration of 0.21 mg/L was reported by the lab for the September 26, 2014 sample, however, this is anomalous based on samples before and after this date and it is being re-analyzed. This difficulty in obtaining a close calibration is likely due to greater complexity in the distribution of hydraulic and transport characteristics than is represented in the model. No additional boring logs are available to help refine these distributions. The agreement with initial arrival times allows this recalibrated model to assess alternate operating scenarios at the site that will allow at least a two month retention period for injected groundwater.

Two scenarios were simulated with the revised model calibration to assess retention times when both SS1 and SS2 are pumped. Scenario 1 incorporated the minimum pumping and injection rate for the emergency water supply system, which will inject 300 gpm of highly treated water at RIW-1 and recover 150 gpm each from wells SS1 and SS2 for a total pumping rate of 300 gpm. Scenario 2 simulates a case where a total of 400 gpm of highly treated water is injected at RIW-1, with recovery of 200 gpm each from wells SS1 and SS2. Figure 4-5 shows the modeled breakthrough curves at wells SS1 and SS2 for Scenario 1. The two percent regulatory breakthrough for this scenario is modeled at 102 days for SS2 and 171 days at SS1. Figure 4-6 shows monthly snapshots of the extent of the two percent tracer concentration for scenario 1. Figure 4-7 shows the modeled breakthrough curves at wells SS1 and SS2 for scenario 2. Figure 4-8 shows the monthly snapshots of the extent of the two percent tracer concentration for Scenario 2. The two percent regulatory breakthrough for this scenario is modeled at 70 days for SS2 and 110 days at SS1. Both of these scenarios meet the required two month residence period for injected highly treated water. These scenarios could be implemented by either pumping the wells full time at the rates lower than the well capacity, or by pumping at capacity and cycling the location of pumping in a manner that resulted in an average discharge over a two day period equal to the simulated rates. The continuous pumping at a lowered rate would not be efficient, since the wells would have to be adjusted using the gate valve to increase head on the pump to decrease the flow, resulting in energy inefficiency.

A third scenario was evaluated that assumes that all pumping for the operating period is done as SS2, which would represent a worst case condition, since this well is the closest to the recharge well and experiences a more rapid tracer breakthrough than SS1. Scenario 3 assumes that SS3 is pumped at 400 gpm on a continuous basis and that SS1 is off-line. This would represent the case where one of the wells is down due to pump maintenance or other problems. Figure 4-9 presents the modeled breakthrough curve at well SS2 for Scenario 3. Figure 4-10 shows the monthly extent of the two percent tracer concentration. This scenario meets the regulatory criteria for residence time of the recharged water at 62 days.

Figure 4-1
CCSD Tracer Test
Modeled and Observed Bromide Concentration at Well MIW-1
July to September 2014

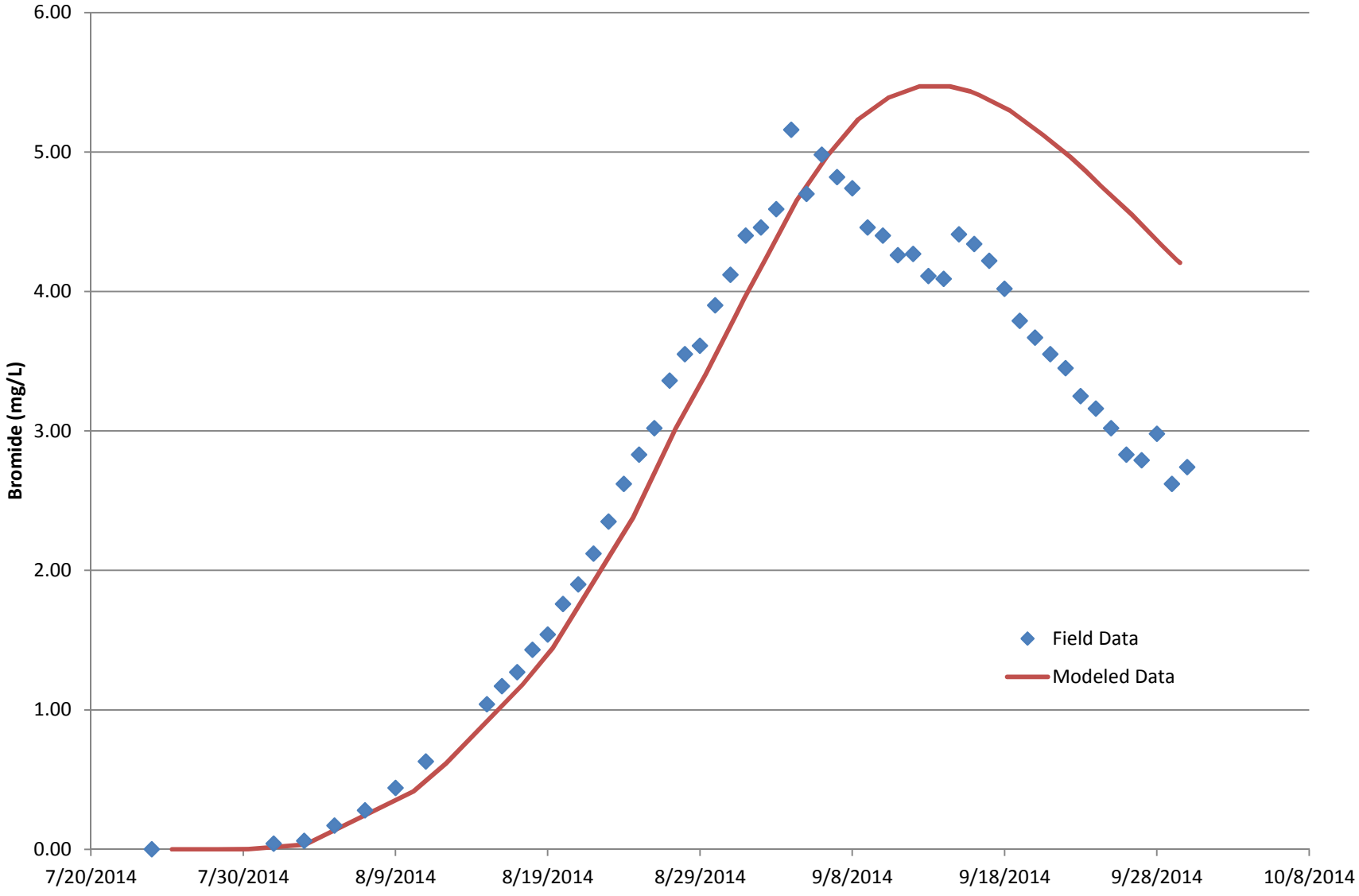


Figure 4-2
CCSD Tracer Test
Modeled and Observed Bromide Concentration at Well SS3
July to September 2014

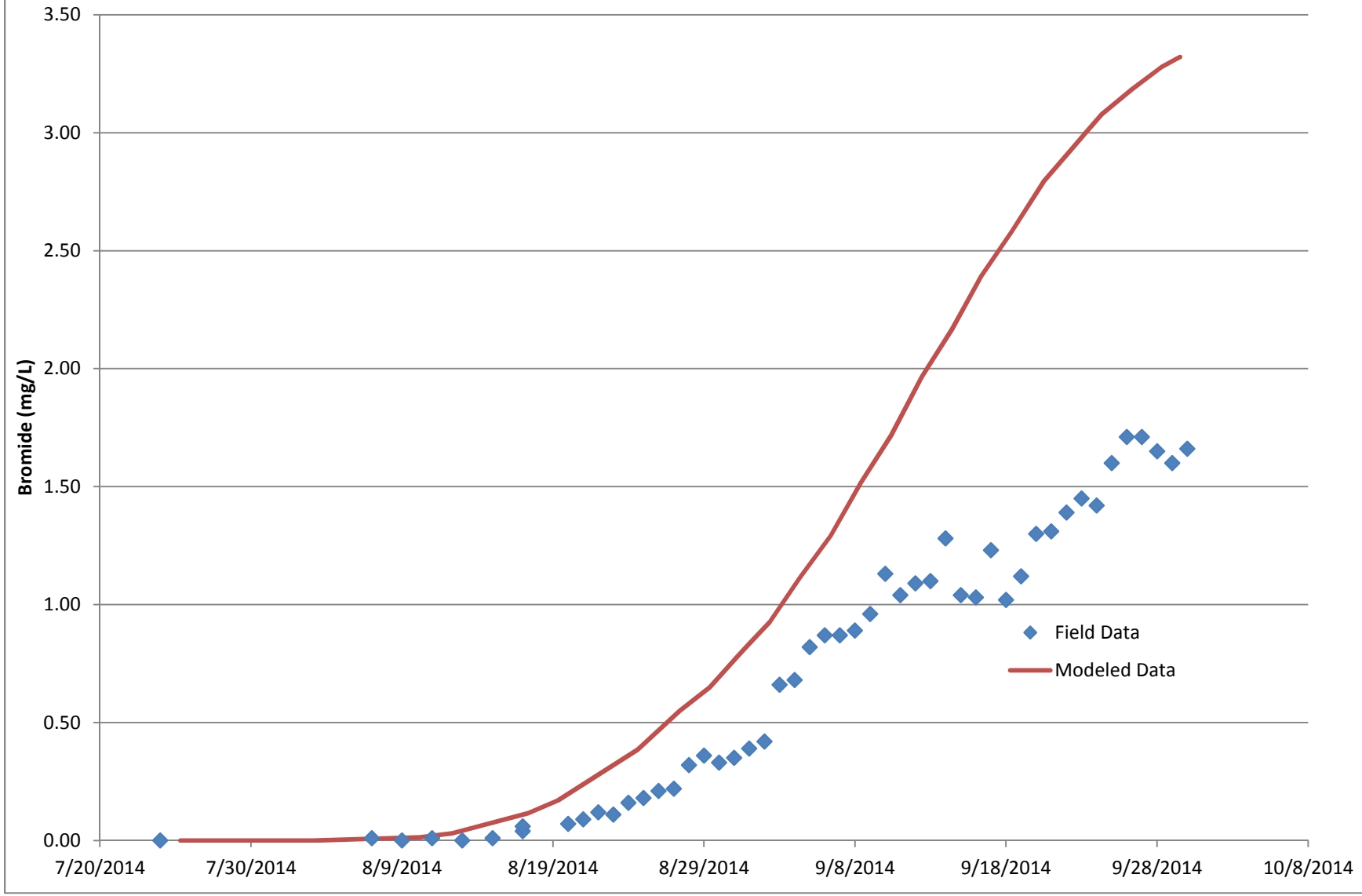


Figure 4-3
CCSD Tracer Test
Modeled and Observed Bromide Concentration at Well SS2
July to September 2014

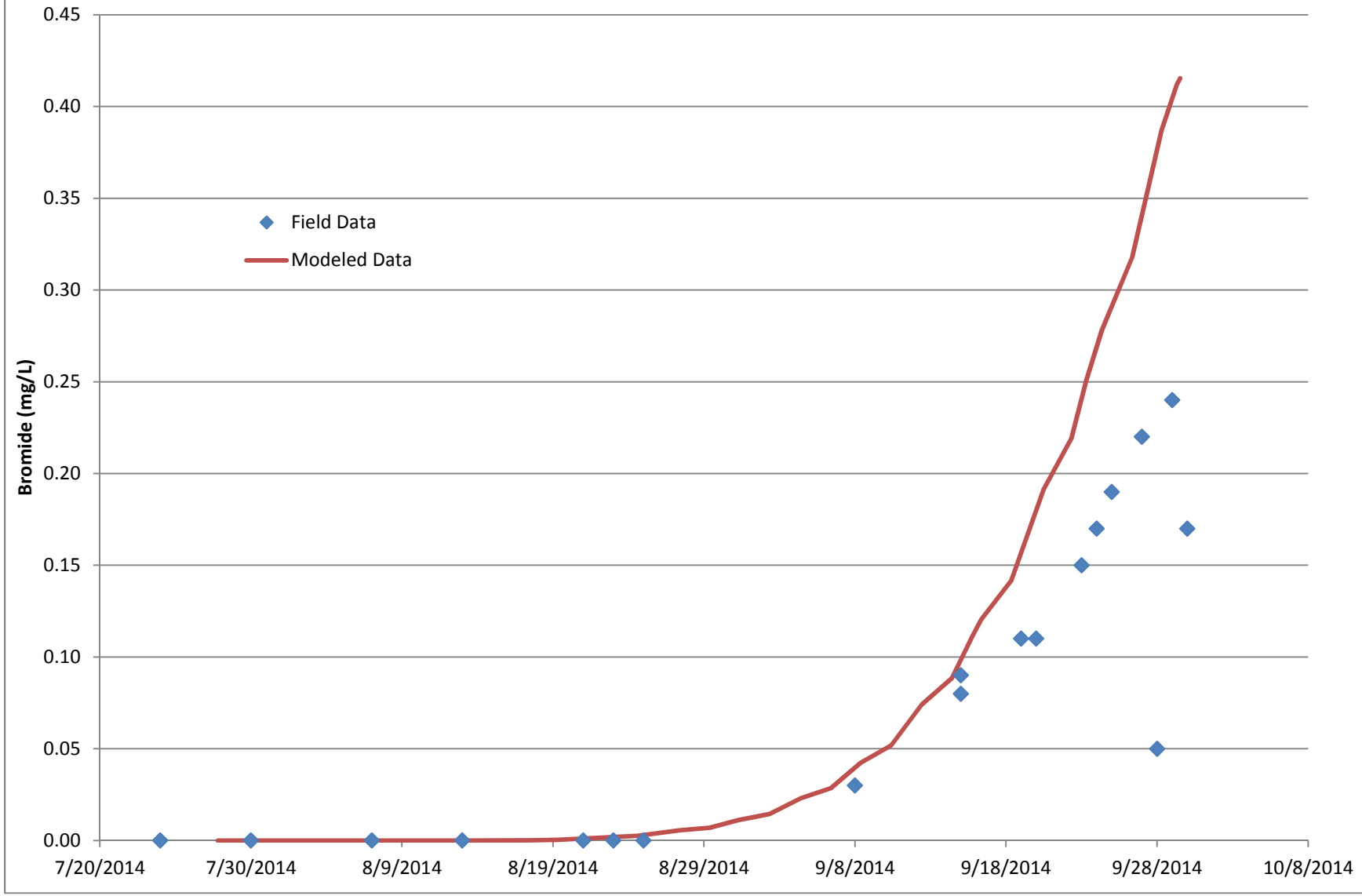


Figure 4-4
CCSD Tracer Test
Modeled and Observed Bromide Concentration at Well SS1
July to September 2014

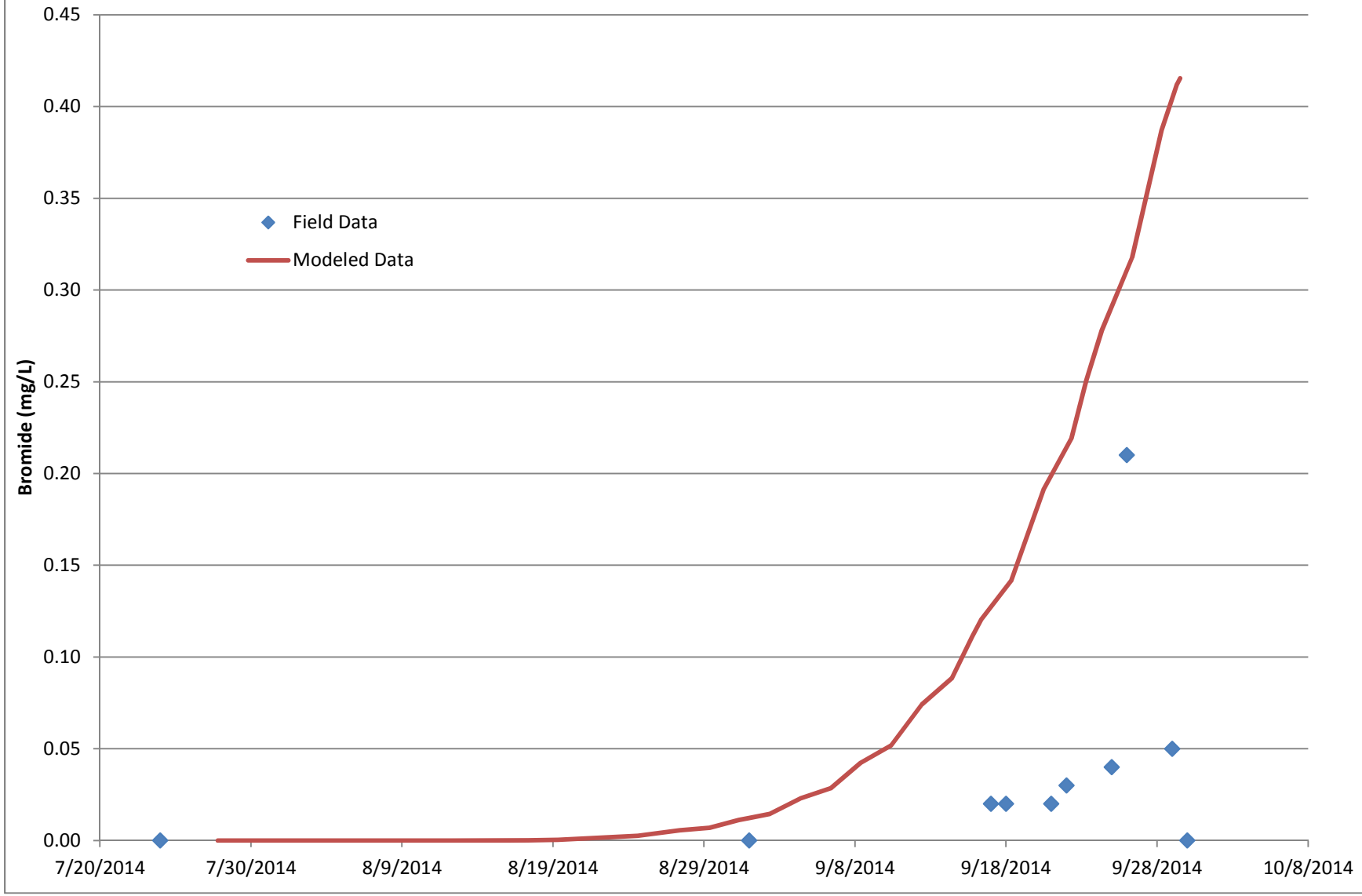
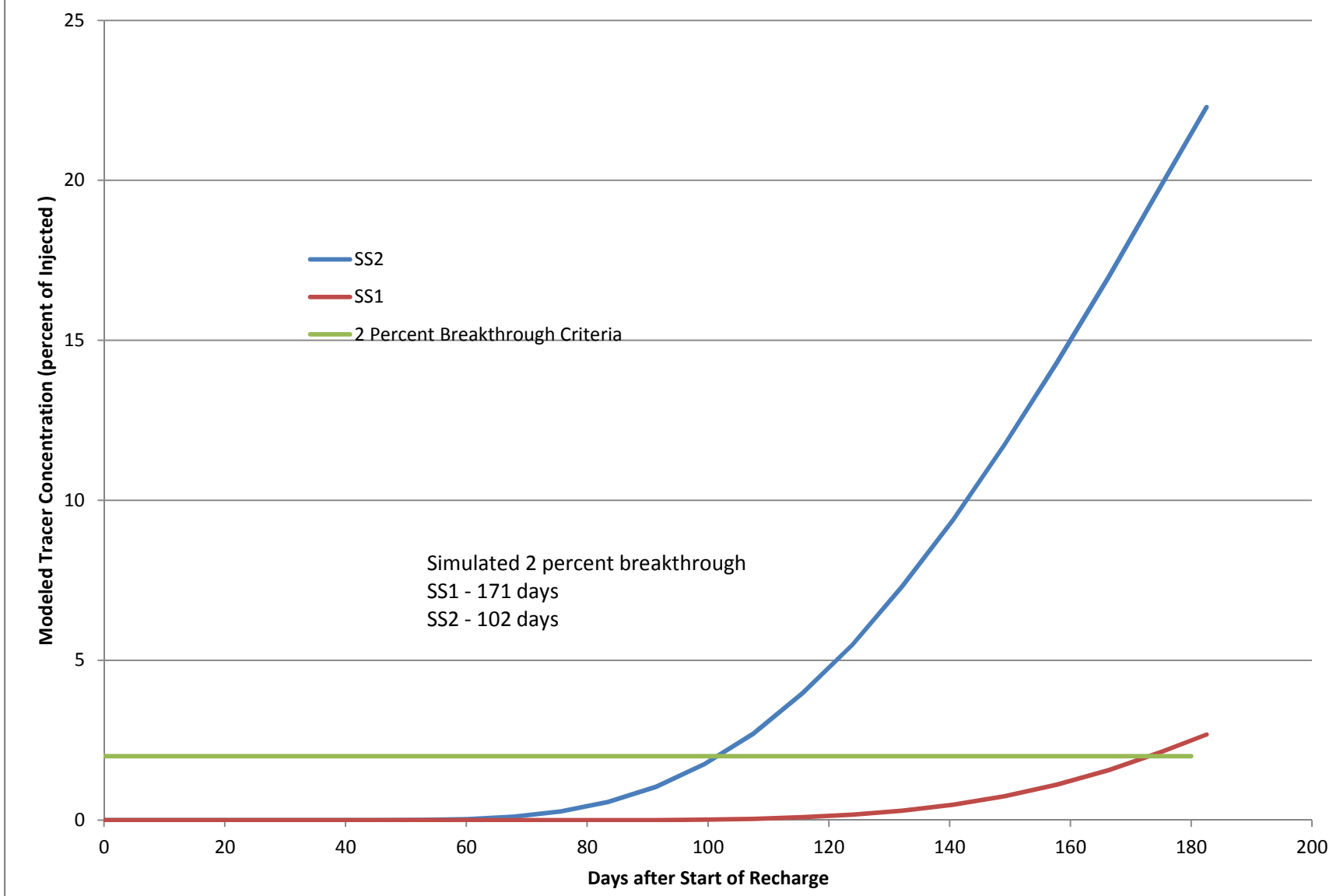
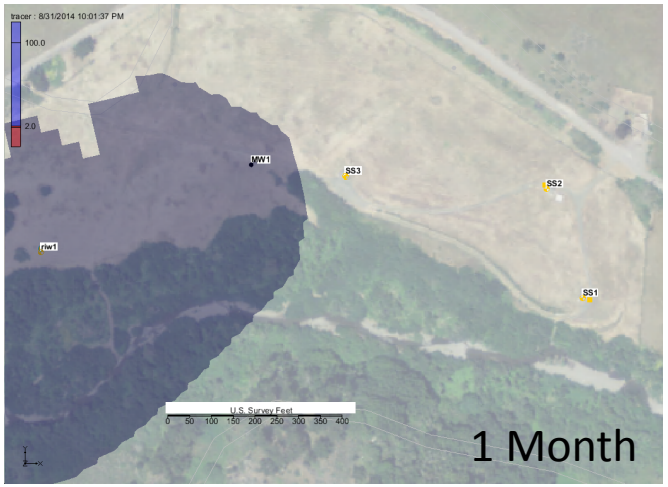
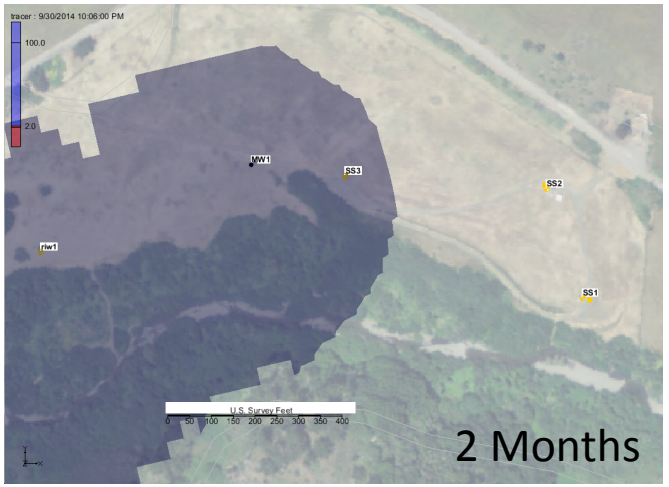
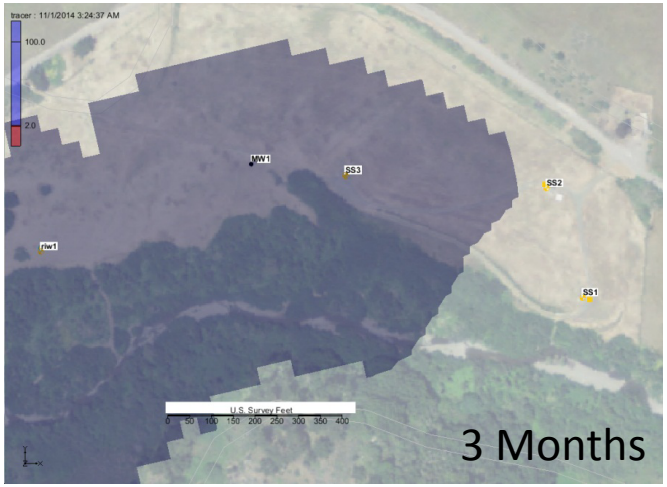


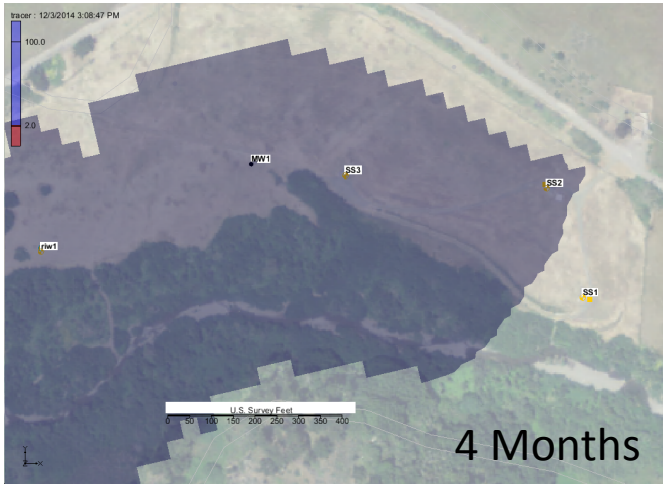
Figure 4-5
Scenario 1 Residence Time Simulation







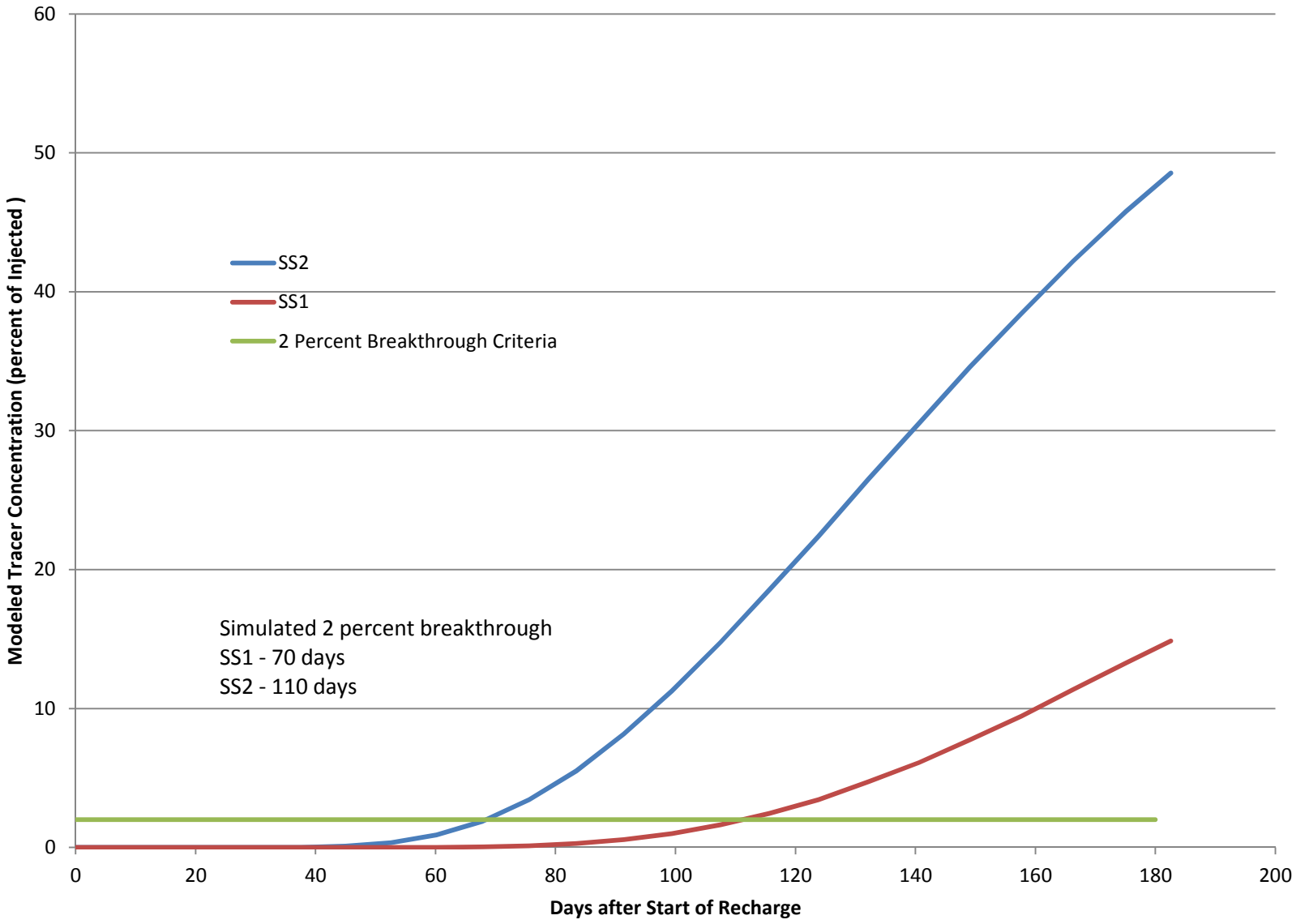


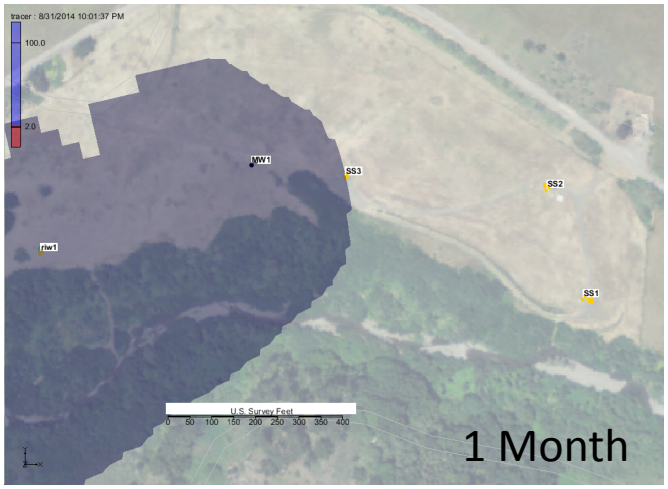


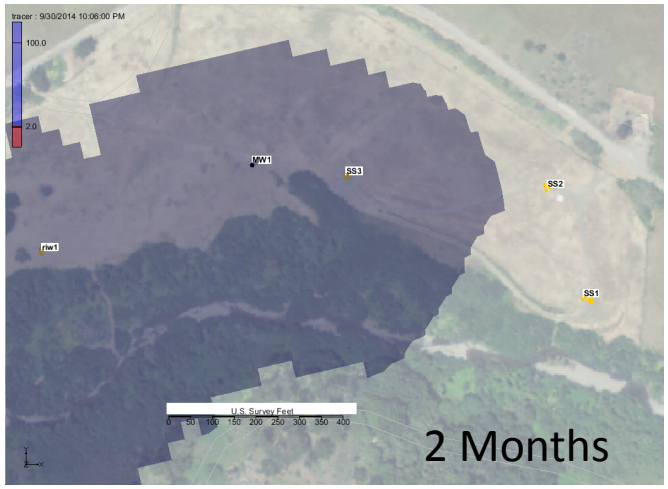
Cambria Emergency
Water Supply

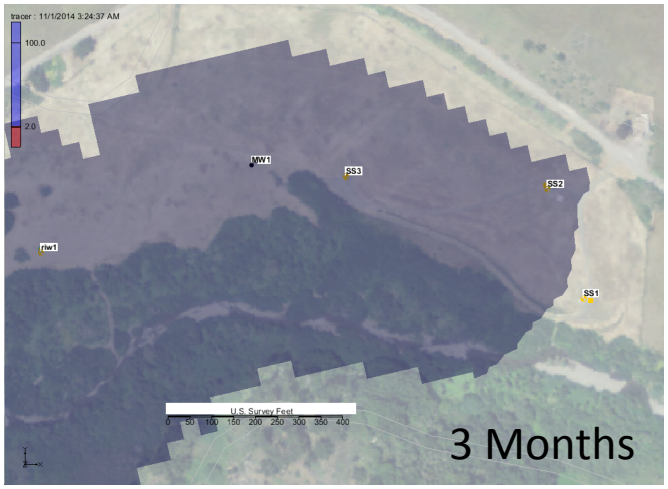
Figure 4-6
Scenario 1 – Simulation of 2 Percent Tracer Extent

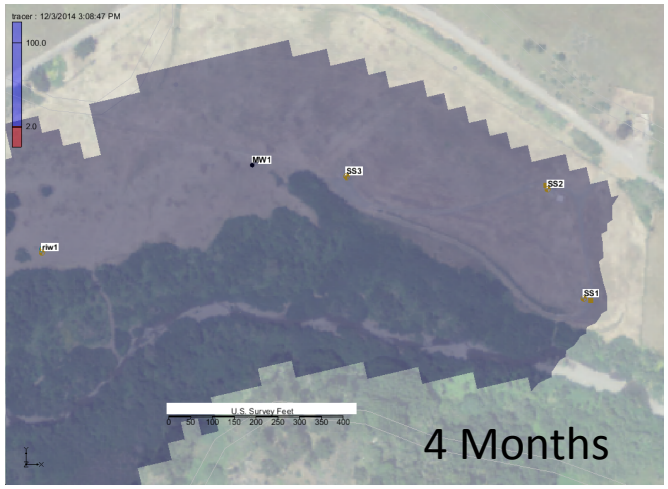
Figure 4-7
Scenario 2 Residence Time Simulation







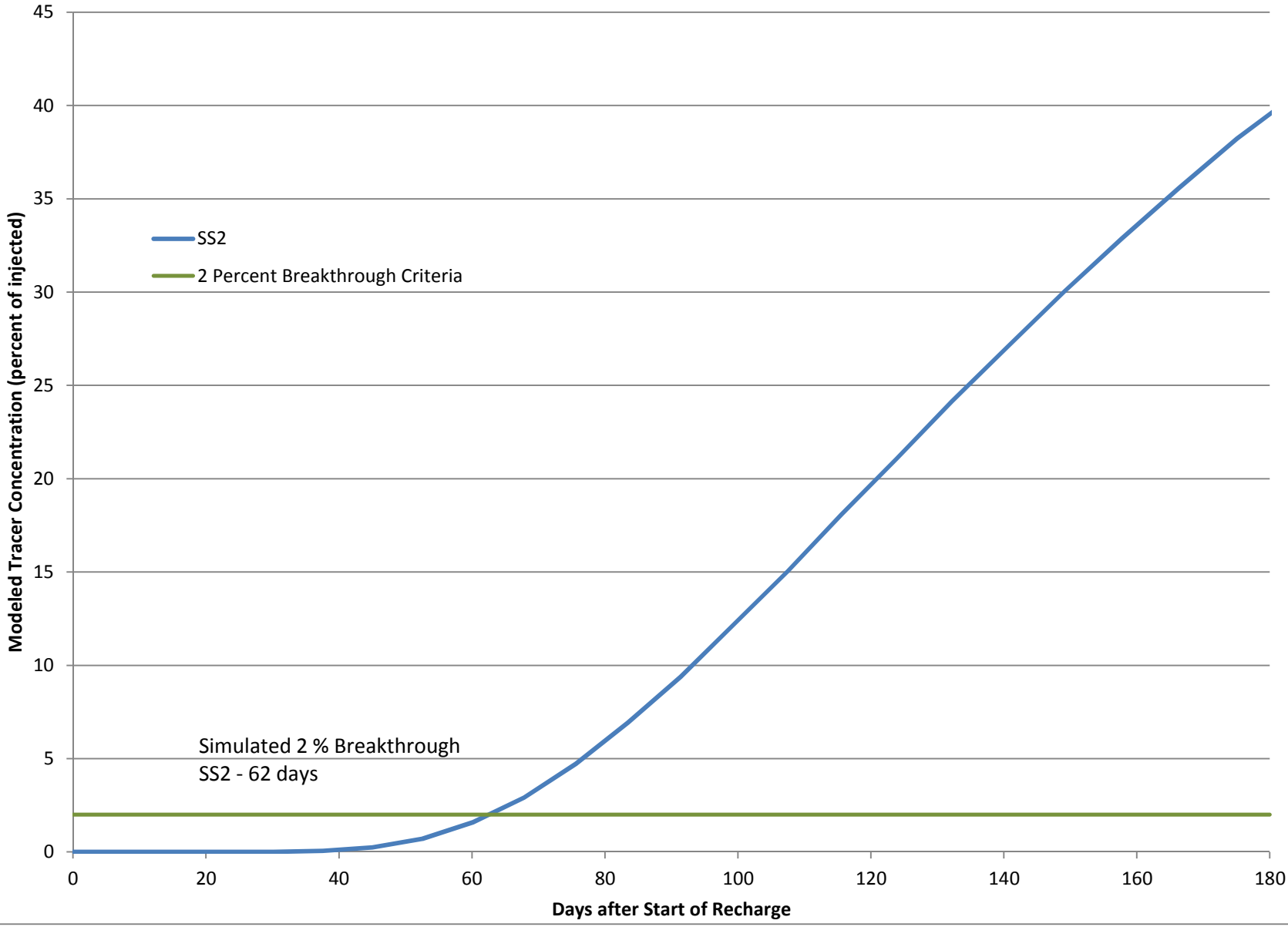


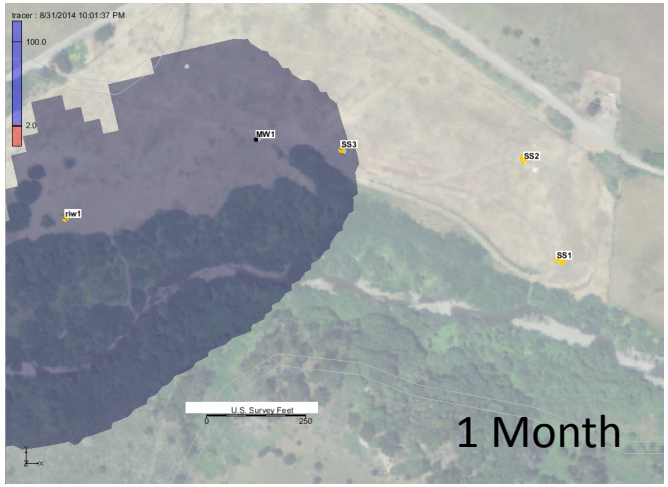


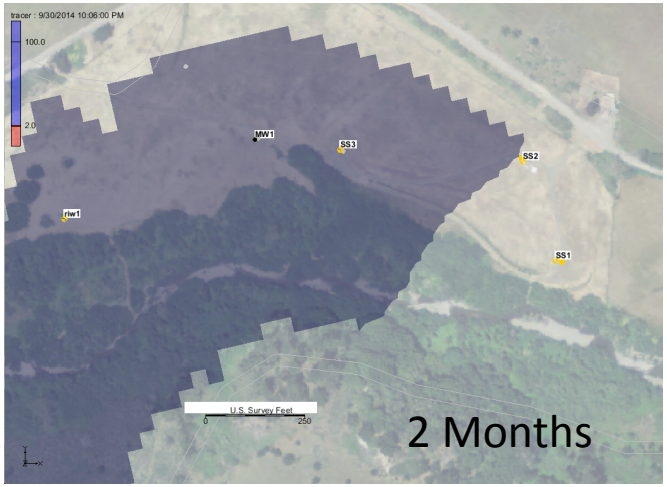
Cambria Emergency
Water Supply

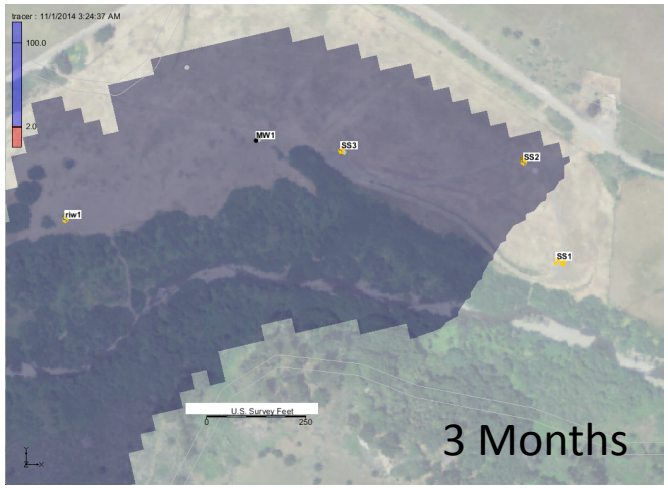
Figure 4-8
Scenario 2 – Simulation of 2 Percent Tracer Extent

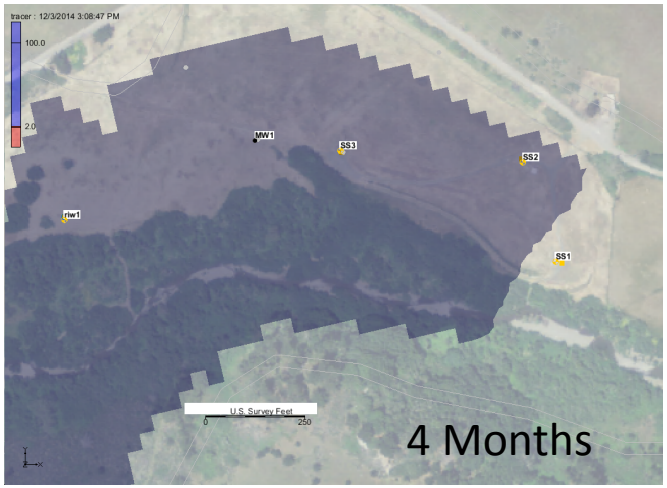
Figure 4-9
Scenario 3 Residence Time Simulation











Cambria Emergency
Water Supply

Figure 4-10
Scenario 3 – Simulation of 2 Percent Tracer Extent

Section 5
Summary and Recommendations

A field tracer test was conducted during the July to September 2014 period by pumping the maximum allowed rate allowed by the CCSD water right from wells SS1 and SS2, and injecting this water after addition of a bromide tracer into well RIW-1. An average pumping and injection rate over the test period was 435 gpm. Frequent monitoring of bromide concentrations was conducted at two wells used for monitoring, MIW-1 and SS3. The pumping wells, SS1 and SS2 were also monitored for bromide concentrations. The residence times determined during the test were as follows:

- MIW-1: 10 days,
- SS3: 29 days,
- SS2: 58 days, and
- SS1: No breakthrough during test.

When the system is operated at greater than an average flow rate of 435 gpm, the minimum two month residence time will not be met, since tracer concentration of two percent of the injected tracer concentration was observed at day 58, rather than the required 62 days.

The prior groundwater model calibration was updated using information from drilling of the injection well and monitoring well, in addition to results from the tracer test. Predicted breakthrough times using the model are comparable to the field data for wells MIW-1, SS3 and SS2, however, calibration results were poor for later times, with modeled peak concentrations exceeding the observed data and significant deviations between the modeled and field data at later times. The model provides acceptable and conservative estimates of residence time and was used to evaluate three scenarios, with injection and production rates of 300 and 400 gpm. These projections indicate that reducing the system operating rates from those used for the tracer test will result in adequate residence time for the injected water. A balanced pumping and recharge rate of 400 gpm, developed by recharging at RIW-1 and either dividing the pumping equally between SS1 and SS2, or using either SS1 or SS2 to produce at this rate, will meet the required residence time for the recharged water.

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Appendix A
Well Logs

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CDM Smith
111 Academy, Suite 150
Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER
PROJECT NAME Cambria
LOCATION
DRILLING METHOD Sonic Rotary
SAMPLING METHOD Sonic Core
GROUND SURFACE ELEVATION (FT MSL)
TOP OF CASING ELEVATION (FT MSL)
LOGGED BY Mike Hoffman
REMARKS

BORING/WELL NUMBER MIW-1
DATE DRILLED 5/20/14
CASING TYPE/DIAMETER
SCREEN TYPE/SLOT
GRAVEL PACK TYPE
GROUT TYPE/QUANTITY
STATIC WATER LEVEL (FT BTOC)
GROUND WATER ELEVATION (FT MSL)

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		60				ML		SANDY SILT		
		60			5			SILT WITH SAND		
						ML		SILT	7.5	
		60			10					
						GC		CLAYEY GRAVEL WITH SAND	11.0	
		60			15	ML		SILT	15.0	
						GC		CLAYEY GRAVEL WITH SAND	16.5	
		60			20					
						GW GC		GRAVEL WITH SAND AND CLAY	26.5	
		60			25					
						SP		SAND WITH GRAVEL	30.0	
		60			30					
					35				35.0	

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NEWGINT CAMBRIA.GPJ NEWGINT.GDT 5/20/14

CDM Smith
111 Academy, Suite 150
Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER _____ **BORING/WELL NUMBER** MIW-1

PROJECT NAME Cambria **DATE DRILLED** 5/20/14

Continued from Previous Page

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		60				SP		SAND WITH GRAVEL		
									38.0	
						ML		SILT		
					40				40.0	
		60				GP		GRAVEL WITH SAND		
									42.0	
						SP		SAND WITH GRAVEL	43.0	
						CL		SANDY CLAY	44.0	
								GRAVEL WITH SAND		
		60			45	GP				
									49.0	
								SILT		
		60			50	ML				
									52.0	
						SM		SILTY SAND		
									54.0	
								SANDY CLAY		
		60			55	CL				
									56.5	
								GRAVEL WITH SAND		
		60			60	GW				
									62.0	
								SILT		
						ML				
		60			65				65.0	
								CLAYEY GRAVEL WITH SAND		
						GC				
		60			70					
									72.0	
								SANDY CLAY		
						CL				
					75				75.0	

Continued Next Page

CDM Smith
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Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER _____ **BORING/WELL NUMBER** MIW-1

PROJECT NAME Cambria **DATE DRILLED** 5/20/14

Continued from Previous Page

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		60			80	SP		SAND WITH GRAVEL		
		60				CL		SANDY CLAY	80.0	
								GRAVEL WITH SAND	82.0	
		60			85	GW				
		60			90					
						SP		SAND WITH GRAVEL	92.0	
		60			95			CLAYEY GRAVEL WITH SAND	96.0	
		60			100	GC				
					105	CL		CLAY OR BEDROCK	105.0	
									107.0	
					110					
					115					

NEWGINT CAMBRIA.GPJ NEWGINT.GDT 5/20/14

CDM Smith
111 Academy, Suite 150
Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER
PROJECT NAME Cambria
LOCATION
DRILLING METHOD Sonic Rotary
SAMPLING METHOD Sonic Core
GROUND SURFACE ELEVATION (FT MSL) 23
TOP OF CASING ELEVATION (FT MSL)
LOGGED BY Mike Hoffman
REMARKS

BORING/WELL NUMBER RIW-1
DATE DRILLED 5/21/14 - 5/22/14
CASING TYPE/DIAMETER
SCREEN TYPE/SLOT
GRAVEL PACK TYPE
GROUT TYPE/QUANTITY
STATIC WATER LEVEL (FT BTOC)
GROUND WATER ELEVATION (FT MSL)

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		60			0			SANDY SILT		
		60			5	ML				10" mild steel casing (0-48 ft bgs)
		60			10					10-sack sand/cement slurry (0-50 ft bgs)
									12.0	
						GM		SILTY GRAVEL WITH SAND		
		60			15			GRAVEL WITH SAND	15.0	23-sack neat cement (0-40 ft bgs)
						GW				
		60			20					18" conductor casing (0-50 ft bgs)
									23.0	
						ML		SILT		
					25				25.0	
		60						GRAVEL WITH SAND		
						GW				
		60			30					
									34.0	
								SAND		
					35					

Continued Next Page

NEWGINT CAMBRIA.GPJ NEWGINT.GDT 5/22/14

CDM Smith
111 Academy, Suite 150
Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER _____ **BORING/WELL NUMBER** RIW-1

PROJECT NAME Cambria **DATE DRILLED** 5/21/14 - 5/22/14

Continued from Previous Page

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		120				SP				18" conductor casing (0-50 ft bgs)
								GRAVEL WITH SAND	38.0	
					40	GW				10-sack sand/cement slurry (0-50 ft bgs)
									42.0	
								SILT		
						ML				Coarse Aquarium Filter Pack (40-105 ft bgs)
		120			45				46.0	
								SILTY SAND		
						SM				Mechanical Coupler (48-50 ft bgs)
					50					
									53.0	
								SAND WITH GRAVEL		
		120			55	SP				10" Type 304L stainless steel wire wrap screen (0.080" slot) (50-65 ft bgs)
					60					
									61.0	
						GW		GRAVEL WITH SAND		
									64.0	
						SM		SILTY SAND		
		120			65				65.5	
						SW		SAND WITH GRAVEL		
									67.0	
								SILTY SAND		
						SM				
					70					10" Type 304L stainless steel blank casing (65-75 ft bgs)
									71.5	
						GC		CLAYEY GRAVEL WITH SAND		
					75				75.0	

Continued Next Page

NEWGINT CAMBRIA.GPJ NEWGINT.GDT 5/22/14

CDM Smith
111 Academy, Suite 150
Irvine, CA 92617
(949) 752-5452
(949) 752-3790 (FAX)

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER _____ **BORING/WELL NUMBER** RIW-1

PROJECT NAME Cambria **DATE DRILLED** 5/21/14 - 5/22/14

Continued from Previous Page

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft. bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		120			80	GW		GRAVEL WITH SAND	78.0	Coarse Aquarium Filter Pack (40-105 ft bgs)
						SW		SAND WITH GRAVEL	81.0	
						SM		SILTY SAND	83.0	
		120			85	GW		GRAVEL WITH SAND		10" Type 304L stainless steel wire wrap screen (0.080" slot) (75-95 ft bgs)
					90					
		72			95	CL		GRAVELLY CLAY	95.0	
								SILTSTONE	98.0	10" Type 304L stainless steel blank casing (95-100 ft bgs)
		48			100	ML				
					105				105.0	
					110					
					115					

NEWGINT CAMBRIA.GPJ NEWGINT.GDT 5/22/14

Appendix B
Laboratory Reports

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-82337-2
Client Project/Site: CCSD, Cambria

For:
CDM Smith, Inc.
111 Academy, Ste 150
Irvine, California 92617

Attn: Michael Hoffman

Authorized for release by:
7/15/2014 9:47:29 AM

Patty Mata, Senior Project Manager
(949)261-1022
patty.mata@testamericainc.com

Table of Contents

Sample Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-82337-1	CCSD-GW-SS2-070214	Water	07/02/14 16:02	07/03/14 16:16
440-82337-2	CCSD-GW-SS3-070214	Water	07/02/14 16:10	07/03/14 16:16
440-82337-3	CCSD-GW-SS1-070214	Water	07/02/14 16:15	07/03/14 16:16
440-82337-4	CCSD-GW-MIW1-070214	Water	07/02/14 19:15	07/03/14 16:16

Case Narrative

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Job ID: 440-82337-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-82337-2

Comments
No additional comments.

Receipt
The samples were received on 7/3/2014 4:16 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.8º C.

HPLC/IC
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Client Sample ID: CCSD-GW-SS2-070214

Lab Sample ID: 440-82337-1

Date Collected: 07/02/14 16:02
Matrix: Water
Date Received: 07/03/14 16:16

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		50	25	ug/L			07/14/14 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*103*		*90 - 115*		*07/14/14 12:31*	*1*

Client Sample ID: CCSD-GW-SS3-070214

Lab Sample ID: 440-82337-2

Date Collected: 07/02/14 16:10
Matrix: Water
Date Received: 07/03/14 16:16

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		50	25	ug/L			07/14/14 13:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*107*		*90 - 115*		*07/14/14 13:08*	*1*

Client Sample ID: CCSD-GW-SS1-070214

Lab Sample ID: 440-82337-3

Date Collected: 07/02/14 16:15
Matrix: Water
Date Received: 07/03/14 16:16

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		50	25	ug/L			07/14/14 13:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*110*		*90 - 115*		*07/14/14 13:44*	*1*

Client Sample ID: CCSD-GW-MIW1-070214

Lab Sample ID: 440-82337-4

Date Collected: 07/02/14 19:15
Matrix: Water
Date Received: 07/03/14 16:16

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	**31**	**J**	50	25	ug/L			07/14/14 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*110*		*90 - 115*		*07/14/14 14:20*	*1*

Method Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Method	Method Description	Protocol	Laboratory
300.1B	Disinfection By-Products, (IC)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Client Sample ID: CCSD-GW-SS2-070214

Lab Sample ID: 440-82337-1

Date Collected: 07/02/14 16:02

Matrix: Water

Date Received: 07/03/14 16:16

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		1	5 mL	1.0 mL	193715	07/14/14 12:31	YZ	TAL IRV

Client Sample ID: CCSD-GW-SS3-070214

Lab Sample ID: 440-82337-2

Date Collected: 07/02/14 16:10

Matrix: Water

Date Received: 07/03/14 16:16

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		1	5 mL		193715	07/14/14 13:08	YZ	TAL IRV

Client Sample ID: CCSD-GW-SS1-070214

Lab Sample ID: 440-82337-3

Date Collected: 07/02/14 16:15

Matrix: Water

Date Received: 07/03/14 16:16

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		1	5 mL		193715	07/14/14 13:44	YZ	TAL IRV

Client Sample ID: CCSD-GW-MIW1-070214

Lab Sample ID: 440-82337-4

Date Collected: 07/02/14 19:15

Matrix: Water

Date Received: 07/03/14 16:16

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		1	5 mL		193715	07/14/14 14:20	YZ	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 300.1B - Disinfection By-Products, (IC)

Lab Sample ID: MB 440-193715/4
Matrix: Water
Analysis Batch: 193715

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		50	25	ug/L			07/14/14 06:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*101*		*90 - 115*		*07/14/14 06:57*	*1*

Lab Sample ID: LCS 440-193715/3
Matrix: Water
Analysis Batch: 193715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide			250	251		ug/L		100	75 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*106*		*90 - 115*

Lab Sample ID: MRL 440-193715/2
Matrix: Water
Analysis Batch: 193715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide			50.0	51.7		ug/L		103	50 - 150		

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*104*		*90 - 115*

Lab Sample ID: 440-82337-1 MS
Matrix: Water
Analysis Batch: 193715

Client Sample ID: CCSD-GW-SS2-070214
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide	ND		500	461		ug/L		92	75 - 125		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*105*		*90 - 115*

Lab Sample ID: 440-82337-1 MSD
Matrix: Water
Analysis Batch: 193715

Client Sample ID: CCSD-GW-SS2-070214
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	ND		500	468		ug/L		94	75 - 125	2	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*108*		*90 - 115*

QC Association Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

HPLC/IC

Analysis Batch: 193715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-82337-1	CCSD-GW-SS2-070214	Total/NA	Water	300.1B	
440-82337-1 MS	CCSD-GW-SS2-070214	Total/NA	Water	300.1B	
440-82337-1 MSD	CCSD-GW-SS2-070214	Total/NA	Water	300.1B	
440-82337-2	CCSD-GW-SS3-070214	Total/NA	Water	300.1B	
440-82337-3	CCSD-GW-SS1-070214	Total/NA	Water	300.1B	
440-82337-4	CCSD-GW-MIW1-070214	Total/NA	Water	300.1B	
LCS 440-193715/3	Lab Control Sample	Total/NA	Water	300.1B	
MB 440-193715/4	Method Blank	Total/NA	Water	300.1B	
MRL 440-193715/2	Lab Control Sample	Total/NA	Water	300.1B	

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-82337-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-15
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-14 *
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

17461 Derian Ave
Suite 100
Irvine, CA 92614
Phone: 949.261.1022 Fax:

Chain of Custody Record

025776

440-82337

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Mike Hoffman	Site Contact: Mike Hoffman	Date: 7/2/14	COC No:
Company Name: CDM Smith	Tel/Fax: 949 530-9814	Lab Contact: Patty Mata	Carrier:	____ of ____ COCs
Address: 111 Academy, Suite 150	Analysis Turnaround Time			Sampler:
City/State/Zip: Irvine, CA 92617	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 949 752-5452	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Cambria CCSD	☐ 1 week			Job / SDG No:
Site: Cambria	☐ 2 days			
P O #	☐ 1 day			

440-82337 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Bromide 300 / ORGFM 28D	Sample Specific Notes:
CCSD-GW-SS2-070214	7/2/14	16:02	G	GW	1	X	X	X	
CCSD-GW-SS3-070214	7/2/14	16:10	G	GW	1	X	X	X	
CCSD-GW-SS1-070214	7/2/14	16:15	G	GW	1	X	X	X	
CCSD-GW-MIW1-070214	7/2/14	19:15	G	GW	1	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact. ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 2.9 Corr'd: 2.8 | Therm ID No. 63

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mike Hoffman	CDM Smith	7/3/14 1616			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TAI	7/3/14 1616

7/15/2014

Login Sample Receipt Checklist

Client: CDM Smith, Inc.

Job Number: 440-82337-2

Login Number: 82337

List Source: TestAmerica Irvine

List Number: 1

Creator: Chavez, Elizabeth

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-84825-1
Client Project/Site: CCSD, Cambria

For:
CDM Smith, Inc.
111 Academy, Ste 150
Irvine, California 92617

Attn: Michael Hoffman

Authorized for release by:
8/7/2014 3:58:56 PM

Patty Mata, Senior Project Manager
(949)261-1022
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Table of Contents

Sample Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-84825-1	CCSD-RIW1-072614	Water	07/26/14 11:09	08/05/14 19:08
440-84825-2	CCSD-RIW1-073014	Water	07/30/14 08:14	08/05/14 19:08
440-84825-3	CCSD-RIW1-080114	Water	08/01/14 08:44	08/05/14 19:08
440-84825-4	CCSD-RIW1-080314	Water	08/03/14 07:22	08/05/14 19:08
440-84825-5	CCSD-TRACER-080514	Water	08/05/14 12:00	08/05/14 19:08

Job ID: 440-84825-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-84825-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2014 7:08 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

HPLC/IC
No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

Client Sample ID: CCSD-RIW1-072614

Lab Sample ID: 440-84825-1
Date Collected: 07/26/14 11:09
Matrix: Water
Date Received: 08/05/14 19:08

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	5600		500	250	ug/L			08/06/14 09:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*105*		*90 - 115*		*08/06/14 09:11*	*10*

Client Sample ID: CCSD-RIW1-073014

Lab Sample ID: 440-84825-2
Date Collected: 07/30/14 08:14
Matrix: Water
Date Received: 08/05/14 19:08

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	6500		500	250	ug/L			08/06/14 09:47	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*97*		*90 - 115*		*08/06/14 09:47*	*10*

Client Sample ID: CCSD-RIW1-080114

Lab Sample ID: 440-84825-3
Date Collected: 08/01/14 08:44
Matrix: Water
Date Received: 08/05/14 19:08

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	6400		500	250	ug/L			08/06/14 10:23	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*103*		*90 - 115*		*08/06/14 10:23*	*10*

Client Sample ID: CCSD-RIW1-080314

Lab Sample ID: 440-84825-4
Date Collected: 08/03/14 07:22
Matrix: Water
Date Received: 08/05/14 19:08

Method: 300.1B - Disinfection By-Products, (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	6300		500	250	ug/L			08/06/14 10:59	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*101*		*90 - 115*		*08/06/14 10:59*	*10*

Client Sample ID: CCSD-TRACER-080514

Lab Sample ID: 440-84825-5
Date Collected: 08/05/14 12:00
Matrix: Water
Date Received: 08/05/14 19:08

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	89000		10000	5000	mg/L			08/06/14 20:08	20000

Method Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
300.1B	Disinfection By-Products, (IC)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

Client Sample ID: CCSD-RIW1-072614
Lab Sample ID: 440-84825-1
Date Collected: 07/26/14 11:09
Matrix: Water
Date Received: 08/05/14 19:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		10	5 mL		198062	08/06/14 09:11	YZ	TAL IRV

Client Sample ID: CCSD-RIW1-073014
Lab Sample ID: 440-84825-2
Date Collected: 07/30/14 08:14
Matrix: Water
Date Received: 08/05/14 19:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		10	5 mL		198062	08/06/14 09:47	YZ	TAL IRV

Client Sample ID: CCSD-RIW1-080114
Lab Sample ID: 440-84825-3
Date Collected: 08/01/14 08:44
Matrix: Water
Date Received: 08/05/14 19:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		10	5 mL		198062	08/06/14 10:23	YZ	TAL IRV

Client Sample ID: CCSD-RIW1-080314
Lab Sample ID: 440-84825-4
Date Collected: 08/03/14 07:22
Matrix: Water
Date Received: 08/05/14 19:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.1B		10	5 mL		198062	08/06/14 10:59	YZ	TAL IRV

Client Sample ID: CCSD-TRACER-080514
Lab Sample ID: 440-84825-5
Date Collected: 08/05/14 12:00
Matrix: Water
Date Received: 08/05/14 19:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		20000	5 mL		198153	08/06/14 20:08	NN	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-198153/2
Matrix: Water
Analysis Batch: 198153

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.50	0.25	mg/L			08/06/14 11:55	1

Lab Sample ID: LCS 440-198153/8
Matrix: Water
Analysis Batch: 198153

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	5.00	5.09		mg/L		102	90 - 110

Lab Sample ID: 440-84774-A-1 MS
Matrix: Water
Analysis Batch: 198153

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	1.3	J	5.00	5.67		mg/L		87	80 - 120

Lab Sample ID: 440-84774-A-1 MSD
Matrix: Water
Analysis Batch: 198153

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	1.3	J	5.00	5.57		mg/L		85	80 - 120	2	20

Method: 300.1B - Disinfection By-Products, (IC)

Lab Sample ID: MB 440-198062/4
Matrix: Water
Analysis Batch: 198062

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		50	25	ug/L			08/06/14 07:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dichloroacetic acid(Surr)	*99*		*90 - 115*		*08/06/14 07:22*	*1*

Lab Sample ID: LCS 440-198062/3
Matrix: Water
Analysis Batch: 198062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	250	250		ug/L		100	75 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*100*		*90 - 115*

Method: 300.1B - Disinfection By-Products, (IC) (Continued)

Lab Sample ID: MRL 440-198062/2
Matrix: Water
Analysis Batch: 198062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide			50.0	43.6	J	ug/L		87	50 - 150		

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*100*		*90 - 115*

Lab Sample ID: 440-84825-A-1 MS
Matrix: Water
Analysis Batch: 198062

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide	1700		500	5880	4	ug/L		60	75 - 125		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*98*		*90 - 115*

Lab Sample ID: 440-84825-A-1 MSD
Matrix: Water
Analysis Batch: 198062

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	1700		500	5860	4	ug/L		55	75 - 125	0	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dichloroacetic acid(Surr)	*101*		*90 - 115*

QC Association Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

HPLC/IC

Analysis Batch: 198062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-84825-1	CCSD-RIW1-072614	Total/NA	Water	300.1B	
440-84825-2	CCSD-RIW1-073014	Total/NA	Water	300.1B	
440-84825-3	CCSD-RIW1-080114	Total/NA	Water	300.1B	
440-84825-4	CCSD-RIW1-080314	Total/NA	Water	300.1B	
440-84825-A-1 MS	Matrix Spike	Total/NA	Water	300.1B	
440-84825-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.1B	
LCS 440-198062/3	Lab Control Sample	Total/NA	Water	300.1B	
MB 440-198062/4	Method Blank	Total/NA	Water	300.1B	
MRL 440-198062/2	Lab Control Sample	Total/NA	Water	300.1B	

Analysis Batch: 198153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-84774-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-84774-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
440-84825-5	CCSD-TRACER-080514	Total/NA	Water	300.0	
LCS 440-198153/8	Lab Control Sample	Total/NA	Water	300.0	
MB 440-198153/2	Method Blank	Total/NA	Water	300.0	

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: CDM Smith, Inc.
Project/Site: CCSD, Cambria

TestAmerica Job ID: 440-84825-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-15
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614
Phone: 949.261.1022 Fax:

Chain of Custody Record

048431

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Mike Hoffman	Site Contact:	Date:	COC No:
Company Name: CDM Smith	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 111 Academy Suite 150	Analysis Turnaround Time			Sampler:
City/State/Zip: Irvine CA 92617	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 949 752-5452	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: CCSD Cambria	☐ 1 week			
Site: Cambria	☒ 2 days			Job / SDG No :
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	300.1 Br low detect (2.005 mg/L)	300.1 Br (high conc) (5.00 mg/L)	Sample Specific Notes:
CCSD-RIW1-072614	7/26/14	11:09	G	W	1			X		
CCSD-RIW1-073014	7/30/14	8:14	G	W	1			X		
CCSD-RIW1-080114	8/1/14	8:44	G	W	1			X		
CCSD-RIW1-080314	8/3/14	7:22	G	W	1			X		
CCSD-RIW1-080514	8/5/14	12:00	G	W	1				X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp (°C): Obs'd:____ Corr'd:____ Therm ID No.:____

Relinquished by: Mike Hoffman	Company: CDM Smith	Date/Time: 8/5/14 19:08	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [illegible]	Company: TAI	Date/Time: 8/5/14 1908

8/7/2014

Login Sample Receipt Checklist

Client: CDM Smith, Inc.

Job Number: 440-84825-1

Login Number: 84825

List Source: TestAmerica Irvine

List Number: 1

Creator: King, Ronald

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	False	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

August 15, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1482889
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 3 pages divided into 3 sections:

Case Narrative	(1 pages)	: An overview of the work performed at FGL.
Sample Results	(1 page)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-R1W1-081214	08/12/2014	08/12/2014	CC 1482889-001	GW

Sampling and Receipt Information: The sample was received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	08/13/2014:212179 All analysis quality controls are within established criteria.
	08/13/2014:209495 All preparation quality controls are within established criteria, except: The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-08-15

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CA ELAP Certification No. 2810

August 15, 2014

Lab ID : CC 1482889-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 12, 2014-10:45
Sampled By : Pam Hartman
Received On : August 12, 2014-13:50
Matrix : Ground Water

Description : CCSD-R1W1-081214
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	16.0	0.03	mg/L		300.0	08/13/14:209495	300.0	08/13/14:212179

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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CA ELAP Certification No. 2810

August 15, 2014 Lab ID : CC 1482889
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	08/13/14:209495CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	93.0 %	90-110	
			MS	mg/L	100.0	96.5 %	95-118	
		(STK1437971-001)	MSD	mg/L	100.0	95.6 %	95-118	
			MSRPD	mg/L	100.0	0.9%	≤5	
			MS	mg/L	100.0	96.6 %	95-118	
		(STK1437971-002)	MSD	mg/L	100.0	94.3 %	95-118	435
			MSRPD	mg/L	100.0	2.4%	≤5	
	300.0	08/13/14:212179CHL	CCV	ppb	5000	95.6 %	90-110	
			CCV	ppb	5000	96.6 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1482847
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 3 pages divided into 3 sections:

Case Narrative	(1 pages)	: An overview of the work performed at FGL.
Sample Results	(1 page)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
SS Well Tracer R1W1	08/07/2014	08/07/2014	CC 1482847-001	Oth

Sampling and Receipt Information: The sample was received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	08/08/2014:212042 All analysis quality controls are within established criteria
	08/08/2014:209390 All preparation quality controls are within established criteria

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S. Title: Laboratory Director Date: 2014-08-21

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August 21, 2014

Lab ID : CC 1482847-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 7, 2014-08:47
Sampled By : Justin Smith
Received On : August 7, 2014-13:52
Matrix : Other

Description : SS Well Tracer R1W1
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	6.10	0.03	mg/L		300.0	08/08/14:209390	300.0	08/08/14:212042

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014 Lab ID : CC 1482847
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	08/08/14:209390CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	91.4 %	90-110	
			MS	mg/L	100.0	97.1 %	95-118	
		(VI 1442717-001)	MSD	mg/L	100.0	96.7 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
			MS	mg/L	100.0	96.8 %	95-118	
		(STK1437920-001)	MSD	mg/L	100.0	97.5 %	95-118	
			MSRPD	mg/L	100.0	0.7%	≤5	
	300.0	08/08/14:212042CHL	CCV	ppb	5000	92.6 %	90-110	
			CCV	ppb	5000	93.3 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1482965
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 14 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(11 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD M1W1-080514	08/05/2014	08/19/2014	CC 1482965-001	GW
CCSD M1W1-080714	08/07/2014	08/19/2014	CC 1482965-002	GW
CCSD M1W1-080914	08/09/2014	08/19/2014	CC 1482965-003	GW
CCSD M1W1-081614	08/16/2014	08/19/2014	CC 1482965-004	GW
CCSD M1W1-081714	08/17/2014	08/19/2014	CC 1482965-005	GW
CCSD M1W1-081814	08/18/2014	08/19/2014	CC 1482965-006	GW
CCSD M1W1-081914	08/19/2014	08/19/2014	CC 1482965-007	GW
CCSD R1W1-081314	08/13/2014	08/19/2014	CC 1482965-008	GW
CCSD R1W1-081514	08/15/2014	08/19/2014	CC 1482965-009	GW
CCSD R1W1-081714	08/17/2014	08/19/2014	CC 1482965-010	GW
CCSD R1W1-081914	08/19/2014	08/19/2014	CC 1482965-011	GW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	08/20/2014:212603 All analysis quality controls are within established criteria
	08/21/2014:212603 All analysis quality controls are within established criteria
	08/20/2014:209811 All preparation quality controls are within established criteria

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August 21, 2014 Lab ID : CC 1482965
CDM Smith Customer : 8-1123

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-08-21

August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : CCSD M1W1-080514
Project : CCSD

Lab ID : CC 1482965-001
Customer ID : 8-1123

Sampled On : August 5, 2014-08:23
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.20	0.03	mg/L		300.0	08/20/14:209811	300.0	08/20/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

Lab ID : CC 1482965-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 7, 2014-09:31
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD M1W1-080714
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.31	0.03	mg/L		300.0	08/20/14:209811	300.0	08/20/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

Lab ID : CC 1482965-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 9, 2014-09:55
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD M1W1-080914
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.47	0.03	mg/L		300.0	08/20/14:209811	300.0	08/20/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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Lab ID : CC 1482965-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 16, 2014-09:24
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD M1W1-081614
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.20	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : CCSD M1W1-081714
Project : CCSD

Lab ID : CC 1482965-005
Customer ID : 8-1123

Sampled On : August 17, 2014-09:41
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.30	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

Lab ID : CC 1482965-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 18, 2014-08:58
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD M1W1-081814
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.46	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

Lab ID : CC 1482965-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 19, 2014-08:46
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD M1W1-081914
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.57	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

Lab ID : CC 1482965-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 13, 2014-08:00
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Description : CCSD R1W1-081314
Project : CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	15.3	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : CCSD R1W1-081514
Project : CCSD

Lab ID : CC 1482965-009
Customer ID : 8-1123

Sampled On : August 15, 2014-10:06
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	15.2	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : CCSD R1W1-081714
Project : CCSD

Lab ID : CC 1482965-010
Customer ID : 8-1123

Sampled On : August 17, 2014-09:18
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	15.7	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : CCSD R1W1-081914
Project : CCSD

Lab ID : CC 1482965-011
Customer ID : 8-1123

Sampled On : August 19, 2014-11:51
Sampled By : Pam Hartman
Received On : August 19, 2014-14:26
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	12.7	0.03	mg/L		300.0	08/20/14:209811	300.0	08/21/14:212603

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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August 21, 2014 Lab ID : CC 1482965
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	08/20/14:209811CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	96.2 %	90-110	
			MS	mg/L	100.0	104 %	95-118	
		(SP 1409456-002)	MSD	mg/L	100.0	102 %	95-118	
			MSRPD	mg/L	100.0	2.0%	≤5	
			MS	mg/L	100.0	105 %	95-118	
		(SP 1409456-008)	MSD	mg/L	100.0	102 %	95-118	
			MSRPD	mg/L	100.0	2.2%	≤5	
	300.0	08/20/14:212603CHL	CCV	ppb	5000	95.7 %	90-110	
			CCV	ppb	5000	95.2 %	90-110	
			CCV	ppb	5000	95.9 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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September 8, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483027
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 37 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(34 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-M1W1-082014	08/20/2014	08/26/2014	CC 1483027-001	GW
CCSD-M1W1-082114	08/21/2014	08/26/2014	CC 1483027-002	GW
CCSD-M1W1-082214	08/22/2014	08/26/2014	CC 1483027-003	GW
CCSD-M1W1-082314	08/23/2014	08/26/2014	CC 1483027-004	GW
CCSD-M1W1-082414	08/24/2014	08/26/2014	CC 1483027-005	GW
CCSD-M1W1-082514	08/25/2014	08/26/2014	CC 1483027-006	GW
CCSD-R1W1-081914	08/19/2014	08/26/2014	CC 1483027-007	GW
CCSD-R1W1-082114	08/21/2014	08/26/2014	CC 1483027-008	GW
CCSD-R1W1-082314	08/23/2014	08/26/2014	CC 1483027-009	GW
CCSD-R1W1-082514	08/25/2014	08/26/2014	CC 1483027-010	GW
CCSD-SSII-082114	08/21/2014	08/26/2014	CC 1483027-011	GW
CCSD-SSII-082314	08/23/2014	08/26/2014	CC 1483027-012	GW
CCSD-SSII-082514	08/25/2014	08/26/2014	CC 1483027-013	GW
CCSD-SSIII-080714	08/07/2014	08/26/2014	CC 1483027-014	GW
CCSD-SSIII-080914	08/09/2014	08/26/2014	CC 1483027-015	GW
CCSD-SSIII-08114	08/11/2014	08/26/2014	CC 1483027-016	GW
CCSD-SSIII-081314	08/13/2014	08/26/2014	CC 1483027-017	GW
CCSD-SSIII-081514	08/15/2014	08/26/2014	CC 1483027-018	GW
CCSD-SSIII-081714	08/17/2014	08/26/2014	CC 1483027-019	GW
CCSD-SSIII-081914	08/17/2014	08/26/2014	CC 1483027-020	GW
CCSD-SSIII-082014	08/20/2014	08/26/2014	CC 1483027-021	GW
CCSD-SSIII-082114	08/21/2014	08/26/2014	CC 1483027-022	GW
CCSD-SSIII-082214	08/22/2014	08/26/2014	CC 1483027-023	GW
CCSD-SSIII-082314	08/23/2014	08/26/2014	CC 1483027-024	GW
CCSD-SSIII-082414	08/24/2014	08/26/2014	CC 1483027-025	GW
CCSD-SSIII-082514	08/25/2014	08/26/2014	CC 1483027-026	GW
CCSD-M1W1-080114	08/01/2014	08/26/2014	CC 1483027-027	GW
CCSD-M1W1-080314	08/03/2014	08/26/2014	CC 1483027-028	GW
CCSD-M1W1-08114	08/11/2014	08/26/2014	CC 1483027-029	GW

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September 8, 2014 Lab ID : CC 1483027
CDM Smith Customer : 8-1123

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-M1W1-081514	08/15/2014	08/26/2014	CC 1483027-030	GW
CCSD-R1W1-080514	08/05/2014	08/26/2014	CC 1483027-031	GW
CCSD-R1W1-080714	08/07/2014	08/26/2014	CC 1483027-032	GW
CCSD-R1W1-080914	08/09/2014	08/26/2014	CC 1483027-033	GW
CCSD-R1W1-08114	08/11/2014	08/26/2014	CC 1483027-034	GW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	08/28/2014:213124 All analysis quality controls are within established criteria.
	08/29/2014:213124 All analysis quality controls are within established criteria.
	08/29/2014:213296 All analysis quality controls are within established criteria.
	08/28/2014:210204 All preparation quality controls are within established criteria, except: The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.
	08/29/2014:210320 All preparation quality controls are within established criteria.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:CEA

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-09-09

September 8, 2014

Lab ID : CC 1483027-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 20, 2014-08:11
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082014
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.79	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 21, 2014-10:15
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.93	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 22, 2014-11:16
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082214
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.15	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 23, 2014-12:14
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.38	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 24, 2014-09:44
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082414
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.65	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 25, 2014-08:28
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.86	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 19, 2014-08:16
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-081914
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	15.9	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 21, 2014-09:48
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-082114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	12.8	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-009
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 23, 2014-11:31
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-082314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	12.7	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-010
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 25, 2014-07:56
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-082514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-011
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 21, 2014-10:04
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSII-082114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-012
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 23, 2014-12:09
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSII-082314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.04	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-013
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 25, 2014-08:17
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSII-082514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-014
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 7, 2014-09:17
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-080714
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.04	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-015
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 9, 2014-09:48
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-080914
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	ND	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-016
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 11, 2014-08:00
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-08114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.04	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-017
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 13, 2014-08:12
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-081314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.03	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-018
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 15, 2014-10:15
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-081514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.04	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-019
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 17, 2014-09:26
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-081714
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-020
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 17, 2014-08:27
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-081914
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.09	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-021
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 20, 2014-07:52
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082014
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.1	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-022
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 21, 2014-09:55
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.12	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-023
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 22, 2014-11:10
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082214
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.15	0.03	mg/L		300.0	08/28/14:210204	300.0	08/28/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-024
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 23, 2014-11:38
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.14	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-025
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 24, 2014-09:19
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082414
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.19	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-026
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 25, 2014-08:05
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.21	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-027
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 1, 2014-09:31
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-080114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-028
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 3, 2014-07:57
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-080314
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.09	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-029
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 11, 2014-08:10
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-08114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.66	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-030
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 15, 2014-10:22
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-081514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.07	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-031
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 5, 2014-08:03
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-080514
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	6.37	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-032
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 7, 2014-08:59
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-080714
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	6.25	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-033
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 9, 2014-09:40
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-080914
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	6.34	0.03	mg/L		300.0	08/28/14:210204	300.0	08/29/14:213124

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014

Lab ID : CC 1483027-034
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
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Sampled On : August 11, 2014-07:50
Sampled By : Not Available
Received On : August 26, 2014-14:35
Matrix : Ground Water

Description : CCSD-R1W1-08114
Project : CCSD San Simean CA

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	6.51	0.03	mg/L		300.0	08/29/14:210320	300.0	08/29/14:213296

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 8, 2014 Lab ID : CC 1483027
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	08/28/14:210204CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	93.2 %	90-110	
			MS	mg/L	100.0	103 %	95-118	
		(STK1438545-002)	MSD	mg/L	100.0	100 %	95-118	
			MSRPD	mg/L	100.0	2.8%	≤5	
			MS	mg/L	100.0	98.0 %	95-118	
		(STK1438545-006)	MSD	mg/L	100.0	94.5 %	95-118	435
			MSRPD	mg/L	100.0	3.7%	≤5	
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	93.0 %	90-110	
			MS	mg/L	100.0	98.8 %	95-118	
		(CC 1483027-014)	MSD	mg/L	100.0	98.1 %	95-118	
			MSRPD	mg/L	100.0	0.8%	≤5	
			MS	mg/L	100.0	99.8 %	95-118	
		(CC 1483027-015)	MSD	mg/L	100.0	100 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	91.1 %	90-110	
			MS	mg/L	100.0	98.4 %	95-118	
		(CC 1483027-024)	MSD	mg/L	100.0	100 %	95-118	
			MSRPD	mg/L	100.0	1.9%	≤5	
	300.0	08/28/14:213124CHL	CCV	ppb	5000	91.9 %	90-110	
			CCV	ppb	5000	91.4 %	90-110	
			CCV	ppb	5000	93.0 %	90-110	
			CCV	ppb	5000	93.3 %	90-110	
			CCV	ppb	5000	92.5 %	90-110	
			CCV	ppb	5000	93.6 %	90-110	
	300.0	08/29/14:210320CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	92.6 %	90-110	
			MS	mg/L	100.0	101 %	95-118	
		(CH 1475027-001)	MSD	mg/L	100.0	101 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
			MS	mg/L	100.0	99.0 %	95-118	
		(CH 1475028-001)	MSD	mg/L	100.0	99.0 %	95-118	
			MSRPD	mg/L	100.0	0.06%	≤5	
	300.0	08/29/14:213124CHL	CCV	ppb	5000	90.9 %	90-110	
			CCV	ppb	5000	92.7 %	90-110	
	300.0	08/29/14:213296CHL	CCV	ppb	5000	92.2 %	90-110	
			CCV	ppb	5000	90.8 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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September 12, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483098
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 19 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(16 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-M1W1-082614	08/26/2014	09/02/2014	CC 1483098-001	GW
CCSD-M1W1-082714	08/27/2014	09/02/2014	CC 1483098-002	GW
CCSD-M1W1-082814	08/28/2014	09/02/2014	CC 1483098-003	GW
CCSD-M1W1-082914	08/29/2014	09/02/2014	CC 1483098-004	GW
CCSD-M1W1-083014	08/30/2014	09/02/2014	CC 1483098-005	GW
CCSD-M1W1-083114	08/31/2014	09/02/2014	CC 1483098-006	GW
CCSD-M1W1-090114	09/01/2014	09/02/2014	CC 1483098-007	GW
CCSD-M1W1-090214	09/02/2014	09/02/2014	CC 1483098-008	GW
CCSD-SSIII-082614	08/26/2014	09/02/2014	CC 1483098-009	GW
CCSD-SSIII-082714	08/27/2014	09/02/2014	CC 1483098-010	GW
CCSD-SSIII-082814	08/28/2014	09/02/2014	CC 1483098-011	GW
CCSD-SSIII-082914	08/29/2014	09/02/2014	CC 1483098-012	GW
CCSD-SSIII-083014	08/30/2014	09/02/2014	CC 1483098-013	GW
CCSD-SSIII-083114	08/31/2014	09/02/2014	CC 1483098-014	GW
CCSD-SSIII-090114	09/01/2014	09/02/2014	CC 1483098-015	GW
CCSD-SSIII-090214	09/02/2014	09/02/2014	CC 1483098-016	GW

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

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September 12, 2014 Lab ID : CC 1483098
CDM Smith Customer : 8-1123

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	09/05/2014:213713 All analysis quality controls are within established criteria.
	09/06/2014:213713 All analysis quality controls are within established criteria.
	09/09/2014:213789 All analysis quality controls are within established criteria.
	09/05/2014:210603 All preparation quality controls are within established criteria.
	09/09/2014:210706 All preparation quality controls are within established criteria, except: The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery. The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-09-12

September 12, 2014

Lab ID : CC 1483098-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 26, 2014-10:20
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082614
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.05	0.03	mg/L		300.0	09/05/14:210603	300.0	09/05/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 27, 2014-09:41
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082714
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.39	0.03	mg/L		300.0	09/05/14:210603	300.0	09/05/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 28, 2014-08:35
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082814
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.58	0.03	mg/L		300.0	09/05/14:210603	300.0	09/05/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 29, 2014-09:30
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-082914
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.64	0.03	mg/L		300.0	09/05/14:210603	300.0	09/05/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
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Sampled On : August 30, 2014-08:22
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-083014
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.93	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 31, 2014-08:04
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-083114
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.15	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 1, 2014-07:41
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-090114
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.43	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 2, 2014-08:58
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-M1W1-090214
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.49	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-009
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 26, 2014-10:10
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082614
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.24	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-010
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 27, 2014-09:30
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082714
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.25	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-011
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 28, 2014-08:19
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082814
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.35	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-012
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 29, 2014-09:08
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-082914
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.39	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-013
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 30, 2014-08:10
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-083014
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.36	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-014
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 31, 2014-07:53
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-083114
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.38	0.03	mg/L		300.0	09/05/14:210603	300.0	09/06/14:213713

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-015
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 1, 2014-07:29
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-090114
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.42	0.03	mg/L		300.0	09/09/14:210706	300.0	09/09/14:213789

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014

Lab ID : CC 1483098-016
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 2, 2014-08:47
Sampled By : Pam Hartman
Received On : September 2, 2014-14:35
Matrix : Ground Water

Description : CCSD-SSIII-090214
Project : Ground Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.45	0.03	mg/L		300.0	09/09/14:210706	300.0	09/09/14:213789

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 12, 2014 Lab ID : CC 1483098
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	09/05/14:210603CHL	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	93.6 %	90-110	
			MS	mg/L	100.0	98.8 %	95-118	
		(CC 1483098-001)	MSD	mg/L	100.0	100 %	95-118	
			MSRPD	mg/L	100.0	1.5%	≤5	
			MS	mg/L	100.0	95.7 %	95-118	
		(CC 1483098-002)	MSD	mg/L	100.0	101 %	95-118	
			MSRPD	mg/L	100.0	4.9%	≤5	
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	97.8 %	90-110	
			MS	mg/L	100.0	103 %	95-118	
		(CC 1483098-003)	MSD	mg/L	100.0	104 %	95-118	
			MSRPD	mg/L	100.0	0.9%	≤5	
			MS	mg/L	100.0	104 %	95-118	
		(CC 1483098-004)	MSD	mg/L	100.0	101 %	95-118	
			MSRPD	mg/L	100.0	2.8%	≤5	
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	97.0 %	90-110	
			MS	mg/L	100.0	101 %	95-118	
		(CC 1483098-014)	MSD	mg/L	100.0	100 %	95-118	
			MSRPD	mg/L	100.0	0.6%	≤5	
	300.0	09/05/14:213713CHL	CCV	ppb	5000	92.8 %	90-110	
			CCV	ppb	5000	91.4 %	90-110	
			CCV	ppb	5000	90.9 %	90-110	
			CCV	ppb	5000	95.7 %	90-110	
			ICV	ppb	10000	96.9 %	90-110	
			CCV	ppb	5000	95.1 %	90-110	
			CCV	ppb	5000	95.4 %	90-110	
	300.0	09/09/14:210706CHL	LCS	mg/L	5.000	90.3 %	90-110	
			MS	mg/L	100.0	94.0 %	95-118	435
		(CC 1483098-015)	MSD	mg/L	100.0	94.0 %	95-118	435
			MSRPD	mg/L	100.0	0.03%	≤5	
			MS	mg/L	100.0	90.0 %	95-118	435
		(CC 1483098-016)	MSD	mg/L	100.0	96.0 %	95-118	
			MSRPD	mg/L	100.0	6.4%	≤5	435
			Blank	mg/L		ND	<0.03	
	300.0	09/09/14:213789SBL	ICV	ppb	10000	90.3 %	90-110	
			CCV	ppb	5000	91.7 %	90-110	

Definition

ICV	: Initial Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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September 16, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483184
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 15 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(12 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-SSIII-090314	09/03/2014	09/09/2014	CC 1483184-001	GW
CCSD-SSIII-090414	09/04/2014	09/09/2014	CC 1483184-002	GW
CCSD-SSIII-090514	09/05/2014	09/09/2014	CC 1483184-003	GW
CCSD-SSIII-090614	09/06/2014	09/09/2014	CC 1483184-004	GW
CCSD-SSIII-090714	09/07/2014	09/09/2014	CC 1483184-005	GW
CCSD-SSIII-090814	09/08/2014	09/09/2014	CC 1483184-006	GW
CCSD-M1W1-090314	09/03/2014	09/09/2014	CC 1483184-007	GW
CCSD-M1W1-090414	09/04/2014	09/09/2014	CC 1483184-008	GW
CCSD-M1W1-090514	09/05/2014	09/09/2014	CC 1483184-009	GW
CCSD-M1W1-090614	09/06/2014	09/09/2014	CC 1483184-010	GW
CCSD-M1W1-090714	09/07/2014	09/09/2014	CC 1483184-011	GW
CCSD-M1W1-090814	09/08/2014	09/09/2014	CC 1483184-012	GW

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	09/10/2014:214121 All analysis quality controls are within established criteria.
	09/11/2014:214121 All analysis quality controls are within established criteria.
	09/10/2014:210955 All preparation quality controls are within established criteria, except:

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September 16, 2014 Lab ID : CC 1483184
CDM Smith Customer : 8-1123

Inorganic - Wet Chemistry QC

300.0	The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **David Terz, B.A., M.B.A.** Digitally signed by David Terz, B.A., M.B.A.
Title: QA Director
Date: 2014-09-18

September 16, 2014

Lab ID : CC 1483184-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 3, 2014-08:13
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090314
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.69	0.03	mg/L		300.0	09/10/14:210955	300.0	09/10/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 4, 2014-08:50
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090414
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.71	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 5, 2014-12:20
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090514
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.85	0.03	mg/L		300.0	09/10/14:210955	300.0	09/10/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 6, 2014-08:55
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090614
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.90	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 7, 2014-09:45
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090714
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.90	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 8, 2014-08:30
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-SSIII-090814
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.92	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 3, 2014-08:26
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090314
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.62	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 4, 2014-09:00
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090414
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	5.19	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-009
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 5, 2014-12:35
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090514
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.73	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-010
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 6, 2014-09:10
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090614
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	5.01	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-011
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 7, 2014-09:50
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090714
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.85	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014

Lab ID : CC 1483184-012
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 8, 2014-09:10
Sampled By : Pamela Hartman
Received On : September 9, 2014-14:50
Matrix : Ground Water

Description : CCSD-M1W1-090814
Project : San Simean, CA CCSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.77	0.03	mg/L		300.0	09/10/14:210955	300.0	09/11/14:214121

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 16, 2014 Lab ID : CC 1483184
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	09/10/14:210955CJJ	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	96.5 %	90-110	
			MS	mg/L	100.0	106 %	95-118	
		(CC 1483184-003)	MSD	mg/L	100.0	107 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
			MS	mg/L	100.0	105 %	95-118	
		(CC 1483184-004)	MSD	mg/L	100.0	98.9 %	95-118	
			MSRPD	mg/L	100.0	6.0%	≤5	435
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	96.5 %	90-110	
			MS	mg/L	100.0	106 %	95-118	
		(CC 1483184-003)	MSD	mg/L	100.0	107 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
			MS	mg/L	100.0	105 %	95-118	
		(CC 1483184-004)	MSD	mg/L	100.0	98.9 %	95-118	
			MSRPD	mg/L	100.0	6.0%	≤5	435
	300.0	09/10/14:214121SBL	CCV	ppb	5000	103 %	90-110	
			CCV	ppb	5000	103 %	90-110	
			CCV	ppb	5000	100 %	90-110	
			CCV	ppb	5000	92.3 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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September 23, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483366
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 9 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(6 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-SS3-090914	09/09/2014	09/16/2014	CC 1483366-001	GW
CCSD-SS3-091014	09/10/2014	09/16/2014	CC 1483366-002	GW
CCSD-SS3-091114	09/11/2014	09/16/2014	CC 1483366-003	GW
CCSD-SS3-091214	09/12/2014	09/16/2014	CC 1483366-004	GW
CCSD-SS3-091314	09/13/2014	09/16/2014	CC 1483366-005	GW
CCSD-SS3-091414	09/14/2014	09/16/2014	CC 1483366-006	GW

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	09/18/2014:214476 All analysis quality controls are within established criteria
	09/17/2014:211086 All preparation quality controls are within established criteria

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September 23, 2014 Lab ID : CC 1483366
CDM Smith Customer : 8-1123

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-09-23

September 23, 2014

Lab ID : CC 1483366-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 9, 2014-09:50
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-090914
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.99	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014

Lab ID : CC 1483366-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 10, 2014-08:50
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-091014
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.16	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014

Lab ID : CC 1483366-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 11, 2014-08:33
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-091114
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.07	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014

Lab ID : CC 1483366-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 12, 2014-09:45
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-091214
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.12	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014

Lab ID : CC 1483366-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 13, 2014-09:52
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-091314
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.13	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014

Lab ID : CC 1483366-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 14, 2014-09:48
Sampled By : CDM Smith
Received On : September 16, 2014-14:10
Matrix : Ground Water

Description : CCSD-SS3-091414
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.31	0.03	mg/L		300.0	09/17/14:211086	300.0	09/18/14:214476

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 23, 2014 Lab ID : CC 1483366
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	09/17/14:211086MCA	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	93.6 %	90-110	
			MS	mg/L	100.0	99.2 %	95-118	
		(CH 1477022-001)	MSD	mg/L	100.0	98.2 %	95-118	
			MSRPD	mg/L	100.0	1.0%	≤5	
			MS	mg/L	100.0	100 %	95-118	
		(CH 1477096-002)	MSD	mg/L	100.0	99.7 %	95-118	
			MSRPD	mg/L	100.0	0.5%	≤5	
	300.0	09/18/14:214476SBL	CCV	ppb	5000	92.5 %	90-110	
			CCV	ppb	5000	89.9 %	90-110	
			CCV	ppb	5000	91.5 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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September 29, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483476
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 43 pages divided into 3 sections:

Case Narrative	(3 pages)	: An overview of the work performed at FGL.
Sample Results	(39 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-SS1-092514	09/25/2014	09/25/2014	CC 1483476-001	GW
CCSD-SS2-092514	09/25/2014	09/25/2014	CC 1483476-002	GW
CCSD-SS2-092414	09/24/2014	09/25/2014	CC 1483476-003	GW
CCSD-SS2-092314	09/23/2014	09/25/2014	CC 1483476-004	GW
CCSD-SS1-092214	09/22/2014	09/25/2014	CC 1483476-005	GW
CCSD-SS1-092114	09/21/2014	09/25/2014	CC 1483476-006	GW
CCSD-MIWI-092514	09/25/2014	09/25/2014	CC 1483476-007	GW
CCSD-SS3-092514	09/25/2014	09/25/2014	CC 1483476-008	GW
CCSD-MIWI-092414	09/24/2014	09/25/2014	CC 1483476-009	GW
CCSD-SS3-092414	09/24/2014	09/25/2014	CC 1483476-010	GW
CCSD-SS3-092314	09/23/2014	09/25/2014	CC 1483476-011	GW
CCSD-MIWI-092314	09/23/2014	09/25/2014	CC 1483476-012	GW
CCSD-SS3-092214	09/22/2014	09/25/2014	CC 1483476-013	GW
CCSD-MIWI-092214	09/22/2014	09/25/2014	CC 1483476-014	GW
CCSD-SS3-092114	09/21/2014	09/25/2014	CC 1483476-015	GW
CCSD-MIWI-092114	09/21/2014	09/25/2014	CC 1483476-016	GW
CCSD-SS3-092014	09/20/2014	09/25/2014	CC 1483476-017	GW
CCSD-MIWI-092014	09/20/2014	09/25/2014	CC 1483476-018	GW
CCSD-SS3-091914	09/19/2014	09/25/2014	CC 1483476-019	GW
CCSD-MIWI-091914	09/19/2014	09/25/2014	CC 1483476-020	GW
CCSD-SS2-092014	09/20/2014	09/25/2014	CC 1483476-021	GW
CCSD-SS2-091914	09/19/2014	09/25/2014	CC 1483476-022	GW
CCSD-SS3-091814	09/18/2014	09/25/2014	CC 1483476-023	GW
CCSD-MIWI-091814	09/18/2014	09/25/2014	CC 1483476-024	GW
CCSD-SS1-091814	09/18/2014	09/25/2014	CC 1483476-025	GW
CCSD-SS3-091714	09/17/2014	09/25/2014	CC 1483476-026	GW
CCSD-MIWI-091714	09/17/2014	09/25/2014	CC 1483476-027	GW
CCSD-SS1-091714	09/17/2014	09/25/2014	CC 1483476-028	GW
CCSD-SS3-091614	09/16/2014	09/25/2014	CC 1483476-029	GW

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September 29, 2014 Lab ID : CC 1483476
CDM Smith Customer : 8-1123

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CCSD-MIWI-091614	09/16/2014	09/25/2014	CC 1483476-030	GW
CCSD-SS2-091614	09/15/2014	09/25/2014	CC 1483476-031	GW
CCSD-SS3-091514	09/15/2014	09/25/2014	CC 1483476-032	GW
CCSD-MIWI-091514	09/15/2014	09/25/2014	CC 1483476-033	GW
CCSD-SS2-091514	09/15/2014	09/25/2014	CC 1483476-034	GW
CCSD-SS2-090814	09/08/2014	09/25/2014	CC 1483476-035	GW
CCSD-SS1-090114	09/01/2014	09/25/2014	CC 1483476-036	GW
CCSD-SS2-081314	08/13/2014	09/25/2014	CC 1483476-037	GW
CCSD-SS2-080714	08/07/2014	09/25/2014	CC 1483476-038	GW
CCSD-SS2-073014	07/30/2014	09/25/2014	CC 1483476-039	GW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding except those as listed in the table below.

Lab ID	Analyte/Method	Required Holding Time	Actual Holding Time
CC 1483476-037	Bromide	28	44 Days
CC 1483476-038	Bromide	28	50 Days
CC 1483476-039	Bromide	28	58 Days

All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	09/26/2014:214790 All analysis quality controls are within established criteria.
	09/27/2014:214790 All analysis quality controls are within established criteria.
	09/26/2014:211475 All preparation quality controls are within established criteria, except: The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

September 29, 2014 Lab ID : CC 1483476
CDM Smith Customer : 8-1123

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:CEA

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2014-09-29

September 29, 2014

Lab ID : CC 1483476-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 25, 2014-13:00
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-092514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.09	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 25, 2014-13:07
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-092514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.24	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 24, 2014-07:48
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-092414
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.22	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 23, 2014-07:56
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-092314
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.20	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 22, 2014-07:46
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-092214
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.08	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 21, 2014-13:41
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-092114
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 25, 2014-08:46
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 25, 2014-08:35
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.63	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-009
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 24, 2014-08:32
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092414
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.19	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-010
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 24, 2014-08:20
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092414
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.45	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-011
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 23, 2014-08:18
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092314
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.48	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-012
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 23, 2014-08:40
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092314
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.28	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-013
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 22, 2014-08:13
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092214
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.42	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-014
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 22, 2014-08:30
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092214
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.48	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-015
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 21, 2014-13:32
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092114
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.34	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-016
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 21, 2014-13:55
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092114
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.58	0.03	mg/L		300.0	09/26/14:211475	300.0	09/26/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-017
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 20, 2014-12:37
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-092014
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.33	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-018
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 20, 2014-12:58
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-092014
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.70	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-019
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 19, 2014-10:26
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-091914
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.15	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-020
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 19, 2014-10:56
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-091914
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.82	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-021
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 20, 2014-12:46
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-092014
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.16	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-022
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 19, 2014-10:30
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-091914
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.16	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-023
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 18, 2014-08:40
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-091814
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-024
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 18, 2014-08:57
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-091814
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-025
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 18, 2014-08:21
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-091814
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-026
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 17, 2014-08:40
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-091714
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.26	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-027
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 17, 2014-09:02
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-091714
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.25	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-028
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 17, 2014-08:48
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-091714
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.07	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-029
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 16, 2014-08:24
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-091614
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.06	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-030
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 16, 2014-08:40
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-091614
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.37	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-031
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 15, 2014-08:01
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-091614
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.14	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-032
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 15, 2014-10:04
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS3-091514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.07	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-033
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 15, 2014-10:35
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-MIWI-091514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	4.44	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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Lab ID : CC 1483476-034
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
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Sampled On : September 15, 2014-10:20
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-091514
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.13	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-035
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 8, 2014-08:20
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-090814
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.08	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-036
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 1, 2014-07:10
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS1-090114
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-037
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 13, 2014-08:23
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-081314
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-038
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : August 7, 2014-09:17
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-080714
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014

Lab ID : CC 1483476-039
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : July 30, 2014-08:00
Sampled By : CDM Smith
Received On : September 25, 2014-14:39
Matrix : Ground Water

Description : CCSD-SS2-073014
Project : Low-Level Bromide Testing

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.05	0.03	mg/L		300.0	09/26/14:211475	300.0	09/27/14:214790

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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September 29, 2014 Lab ID : CC 1483476
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	09/26/14:211475CJJ	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	99.2 %	90-110	
			MS	mg/L	100.0	109 %	95-118	
		(CC 1483476-012)	MSD	mg/L	100.0	111 %	95-118	
			MSRPD	mg/L	100.0	1.6%	≤5	
			MS	mg/L	100.0	111 %	95-118	
		(CC 1483476-013)	MSD	mg/L	100.0	111 %	95-118	
			MSRPD	mg/L	100.0	0.2%	≤5	
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	106 %	90-110	
			MS	mg/L	100.0	102 %	95-118	
		(VI 1443495-011)	MSD	mg/L	100.0	111 %	95-118	
			MSRPD	mg/L	100.0	8.9%	≤5	435
			MS	mg/L	100.0	99.6 %	95-118	
		(CH 1476731-001)	MSD	mg/L	100.0	112 %	95-118	
			MSRPD	mg/L	100.0	11.9%	≤5	435
			Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	98.4 %	90-110	
			MS	mg/L	100.0	109 %	95-118	
		(VI 1443440-001)	MSD	mg/L	100.0	106 %	95-118	
			MSRPD	mg/L	100.0	2.4%	≤5	
			MS	mg/L	100.0	108 %	95-118	
		(CH 1477304-004)	MSD	mg/L	100.0	108 %	95-118	
			MSRPD	mg/L	100.0	0.4%	≤5	
	300.0	09/26/14:214790SBL	CCV	ppb	5000	102 %	90-110	
			CCV	ppb	5000	103 %	90-110	
			CCV	ppb	5000	103 %	90-110	
			CCV	ppb	5000	104 %	90-110	
			CCV	ppb	5000	105 %	90-110	
			CCV	ppb	5000	105 %	90-110	
			CCV	ppb	5000	108 %	90-110	
			CCV	ppb	5000	104 %	90-110	
			CCV	ppb	5000	103 %	90-110	
			ICV	ppb	10000	105 %	90-110	
			CCV	ppb	5000	107 %	90-110	

Definition

ICV	: Initial Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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October 6, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Lab ID : CC 1483521
Customer : 8-1123

Laboratory Report

Introduction: This report package contains total of 20 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(17 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
SSII	09/30/2014	09/30/2014	CC 1483521-001	W
SSIII	09/30/2014	09/30/2014	CC 1483521-002	W
MIWI	09/30/2014	09/30/2014	CC 1483521-003	W
SSI	09/30/2014	09/30/2014	CC 1483521-004	W
SSI	09/09/2014	09/30/2014	CC 1483521-005	W
SSIII	09/09/2014	09/30/2014	CC 1483521-006	W
MIWI	09/09/2014	09/30/2014	CC 1483521-007	W
SSII	09/09/2014	09/30/2014	CC 1483521-008	W
SSII	09/28/2014	09/30/2014	CC 1483521-009	W
SSIII	09/28/2014	09/30/2014	CC 1483521-010	W
MIWI	09/28/2014	09/30/2014	CC 1483521-011	W
SSII	09/27/2014	09/30/2014	CC 1483521-012	W
SSIII	09/27/2014	09/30/2014	CC 1483521-013	W
MIWI	09/27/2014	09/30/2014	CC 1483521-014	W
SSI	09/26/2014	09/30/2014	CC 1483521-015	W
SSIII	09/26/2014	09/30/2014	CC 1483521-016	W
MIWI	09/26/2014	09/30/2014	CC 1483521-017	W

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

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October 6, 2014 Lab ID : CC 1483521
CDM Smith Customer : 8-1123

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Wet Chemistry QC

300.0	10/02/2014:215044 All analysis quality controls are within established criteria.
	10/01/2014:211675 All preparation quality controls are within established criteria, except: The following note applies to Bromide: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Discussion of Analytical Results: Amended Report

Amended to correct sample dates.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:SB

Approved By **David Terz, B.A., M.B.A.** Digitally signed by David Terz, B.A., M.B.A.
Title: QA Director
Date: 2014-10-06

October 6, 2014

Lab ID : CC 1483521-001
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 30, 2014-12:15
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.22	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-002
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 30, 2014-10:39
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSIII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.69	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-003
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 30, 2014-12:40
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : MIWI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.77	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-004
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 30, 2014-10:49
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	ND	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-005
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 9, 2014-07:35
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.1	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-006
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 9, 2014-08:09
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSIII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.63	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-007
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 9, 2014-08:11
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : MIWI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.65	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-008
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 9, 2014-08:17
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.29	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-009
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 28, 2014-08:28
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.1	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-010
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 28, 2014-08:48
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSIII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.68	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-011
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 28, 2014-09:06
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : MIWI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	3.01	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-012
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 27, 2014-06:58
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.27	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-013
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 27, 2014-07:26
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSIII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.74	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Description : MIWI
Project : Water Monitoring

Lab ID : CC 1483521-014
Customer ID : 8-1123

Sampled On : September 27, 2014-07:45
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.82	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-015
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 26, 2014-08:07
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	0.26	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-016
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 26, 2014-08:07
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : SSIII
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	1.74	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014

Lab ID : CC 1483521-017
Customer ID : 8-1123

CDM Smith
Attn: Michael Hoffman
111 Academy, Suite 150
Irvine, CA 92617

Sampled On : September 26, 2014-08:41
Sampled By : Justin Smith
Received On : September 30, 2014-14:38
Matrix : Water

Description : MIWI
Project : Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry[P:1]								
Bromide	2.86	0.03	mg/L		300.0	10/01/14:211675	300.0	10/02/14:215044

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A ‡Surrogate. * PQL adjusted for dilution.

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October 6, 2014 Lab ID : CC 1483521
CDM Smith Customer : 8-1123

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Bromide	300.0	10/01/14:211675CJJ	Blank	mg/L		ND	<0.03	
			LCS	mg/L	5.000	102 %	90-110	
			MS	mg/L	100.0	111 %	95-118	
		(CC 1483521-001)	MSD	mg/L	100.0	101 %	95-118	
			MSRPD	mg/L	100.0	9.4%	≤5	435
			MS	mg/L	100.0	108 %	95-118	
		(CC 1483521-002)	MSD	mg/L	100.0	110 %	95-118	
			MSRPD	mg/L	100.0	1.5%	≤5	
	300.0	10/02/14:215044SBL	CCV	ppb	5000	105 %	90-110	
			CCV	ppb	5000	104 %	90-110	
			CCV	ppb	5000	108 %	90-110	
			CCV	ppb	5000	104 %	90-110	

Definition

CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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Appendix C

Cambria Emergency Water Supply - Tracer Test Sampling and Analysis Plan

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Cambria Community
Services District

Cambria Emergency Water Supply

Tracer Testing Sampling and Analysis Plan

Cambria, California

May 2014

CDM Smith

The information contained in the document titled "Cambria Emergency Water Supply Tracer Testing Sampling and Analysis Plan" dated May 2014 has received appropriate technical review and approval. The conclusions and recommendations presented represent professional judgments and are based upon findings from the investigations and sampling identified in the report and the interpretation of such data based on our experience and background. This acknowledgement is made in lieu of all warranties, either expressed or implied. The activities outlined in this report were performed under the supervision of a California Registered Professional Engineer.

Prepared by:

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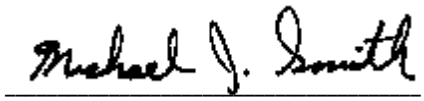

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Section 1
Introduction

1.1 Background Information

This investigation is being conducted for the Cambria Community Services District (CCSD), which provides water, and collects and treats wastewater for the town of Cambria and adjacent service areas. The area of specific interest in this investigation is the lower portion of the San Simeon Creek valley, extending about 3.5 miles upstream from the Pacific Ocean. The study area and major features are shown on Figure 1-1.

The study area includes areas underlain by a significant alluvial aquifer along San Simeon Creek, including the Van Gordon Creek tributary. Near the headwaters, the creek valley forms a steep, narrow canyon. Along the final three to five miles before reaching the ocean, the valley widens to a floodplain that is up to one thousand feet wide. The floodplain is underlain by the groundwater basin and is flanked by steep hillsides that rise 200 to 800 feet above the valley floor. A fresh water lagoon is present in the lower portion of the valley that serves as an important ecological resource. This lagoon forms behind an ocean beach berm and is supported by groundwater discharge and surface water inflows.

CCSD and agricultural water users along San Simeon Creek use wells in a thin, narrow groundwater basin within the alluvium. Groundwater occurs in the alluvial deposits beneath the creek, which drains the western flanks of the Santa Lucia Range in San Luis Obispo County and discharges into the Pacific Ocean. The alluvial deposits form flat valley floors, which are used for irrigated agriculture. The alluvial aquifer is recharged primarily by seepage from San Simeon Creek, which typically flows during the winter and spring rainy season.

The CCSD has a well field consisting of four potable water supply wells located approximately one mile inland from the ocean. They also utilize a series of percolation ponds between the well field and the ocean where secondary treated waste water is recharged back to the aquifer. Pumping during the dry season results in seasonal declines in groundwater levels since production is supported by removal of water from storage in the aquifer when the stream is not flowing.

Numerous private wells are present that irrigate farmlands on flat areas adjacent to the creek bottoms. Native vegetation consists of trees, grass, and shrubs that grow along the creeks and field borders. Grassy hillsides along the sides of the valleys are used for grazing. San Simeon State Park occupies the western extent of the basin and includes a large campground, which is a contracted customer of the Cambria CSD for its water supply.

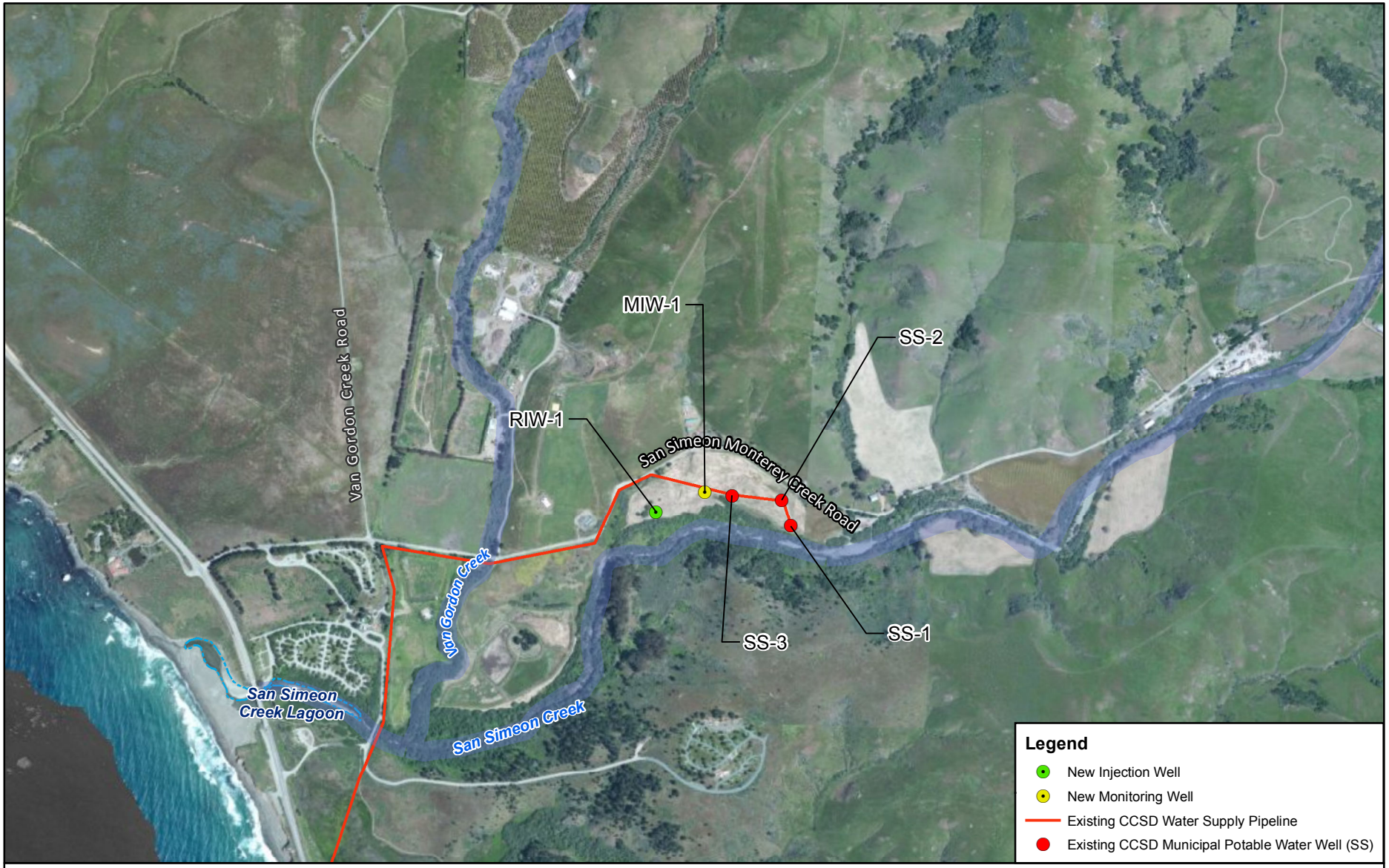
1.2 Regulatory Summary

This project is subject to the requirements and approval of the California Department of Public Health (CDPH) and the Central Coast Regional Water Quality Control Board (RWQCB). The primary requirement is to demonstrate that the injected water resides for a minimum of 60 days in the aquifer before being pumped into the CCSD production wells.

1.3 Objective

Extended drought conditions in the central coastal area of California have persisted over the past year, which have resulted in a limited water supply for the CCSD well field. Long term studies have been ongoing to identify additional water sources for the CCSD including indirect potable reuse of the percolated secondary effluent. However, the persistent drought conditions have elevated concern on availability of a reliable water supply since water levels continue to decline as aquifer storage is depleted. A groundwater modeling study was developed to support evaluation of the basin water management alternatives to develop additional water supplies for CCSD to meet the emergency conditions and to support the longer term water supply reliability issues These evaluations concluded that it is feasible to extract and treat brackish water on CCSD property located off of San Simeon Creek Road to enhance the CCSD water supply.

To provide an additional water source, the CCSD is planning on treating water from well 9P7, located adjacent to the recharge ponds, and injecting it back into the shallow alluvial aquifer, down gradient of the CCSD well field. The water will be a combination of percolated, secondary effluent from the CCSD wastewater treatment plant, treated injected water and possibly deeper brackish water depending on precipitation and groundwater levels. A new injection well and monitoring well were installed in the San Simeon Creek groundwater basin. The injection well was installed between the CCSD well field and recharge ponds. The monitoring well was installed between the injection well and the CCSD well field (Figure 1-1). The objective of the tracer testing is to evaluate residence time of highly treated injected water to verify that the required CDPH 60-day retention period in the shallow aquifer can be met before being pumped from the aquifer by the CCSD production wells



Cambria Emergency Water Supply Project
Tracer Testing

Figure 1-1
Vicinity Map

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Section 2
Sample Design

2.1 Summary of Testing Methodology

In order to meet the objective of assessing residence time using a field test to validate modeling assessments, a tracer test will be conducted under conditions similar to the proposed operating conditions for the emergency supply alternative. The field test will use one of the existing CCSD supply wells, SS-2, as the source of water. The pumped water will be amended with a low concentration of a tracer compound and recharged to a new injection well, RIW-1. RIW-1 is located approximately midway between the secondary treated wastewater percolation ponds and CCSD production wells SS-1 and SS-2 (Figure 2-1). The injected water will be conveyed between the production wells and the injection well using temporary surface piping attached to the SS-2 pump to waste line. The tracer will be the boron ^{10}B isotope in the form of ^{10}B enriched boric acid, which has been used for tracer tests in potable systems in California. The tracer will be added to the injected water at a concentration of about 20 µg/L (as boron), which will maintain the net concentration of boron significantly lower than the California drinking water standard of 1,000 µg/L. The boric acid is provided in powder form and will be mixed in temporary 500-gallon mixing tanks stage at the injection point with water from SS-2. The tracer solution will be introduced into the injected water at a rate of approximately 2 L/hour. A recording digital totalizer will be installed to measure and record the injection rate and tracer solution volume. A diagram of the tracer injection system is provided in Figure 2-2.

The injection rate into RIW-1 will be 454 gpm, or the maximum rate injectable at 25 psi. The maximum allowable injection pressure is 0.5 psi per foot of depth to the top of the well screen. The top of the injection well screen is 50 feet bgs. A flow-through packer will be installed just below the static water level in Well RIW-1 to accommodate the injection water. A sample port will be installed on the injection line just before the injection wells to collect samples of the tracer solution.

In addition to the new well RIW-1, a new monitoring well, MIW-1 was installed approximately 500 feet northeast of RIW-1, along the flow path between RIW-1 and SS-1 and SS-2 (Figure 2-1). The tracer solution will be injected for the first 30 days of the test, and injection and extraction pumping will continue for an additional 37 days for a total test duration of 67 days.

CCSD staff will collect groundwater samples from the sample ports at wells SS-1 and SS-2 every other day. One sample per week will be analyzed for total and boron isotope analysis, reported as fractional enrichment compared to the standard isotopic ratios. Groundwater samples will be collected weekly from MIW-1 using 12-volt whale pump. Additionally, water samples will be collected weekly from the sample port at RIW-1 to confirm the tracer concentration remains constant. CCSD will ship the water samples to the TetraTech Laboratory in Fort Collins, CO for the boron isotope analyses. Samples will be filtered in the field through a 0.45 micron (µm) filter and shipped in polyethylene sample bottles. No preservation or temperature control is required for boron analyses. Field duplicates will be submitted for ten percent of the samples to assess quality control.

- Injection Well:
  - Flow-through packer – injecting into RIW-1.
  - Inline flow meter/totalizer – recording and calculating injection rate.
  - CLA-VAL pressure reducing valve Model 90-01 (or equivalent) – reducing CCSD system pressure to less than the maximum injection pressure of 25 psi.
  - Gate valve – Controlling injection rate.
  - Sample Port – Collecting injection water samples for boron analysis.
  - In-Situ Level Troll 700 Pressure Transducer/Data loggers (2) – measuring and recording water level in RIW-1 above and below the packer.
  - Insitu Level Troll 700 (2) - measuring and recording water level in monitoring wells MIW-1 and 9L1.
- Tracer Injection System:
  - ^{10}B enriched boric acid (>96 percent) – tracer.
  - 500-gallon poly tank (2) – mixing and storing boric acid solution.
  - Grundfos DME 60 (or equivalent) digital dosing pump – injection of tracer solution into injection line.
  - Inline flow meter/totalizer – recording and dosing rate.
- Temporary Pipeline:
  - Four-inch diameter melamine pipe (approximately 1,245 feet) – temporary injection line from SS-2 to injection well RIW-1.

2.2 Injection Well Design

An exploration boring was initially drilled to assess the geology and to finalize well design for the injection well. One new injection well, RIW-1, was installed for the tracer testing. A permanent, 18-inch diameter conductor casing and sanitary seal was installed to a depth of 50 feet bgs prior to well installation. Well RIW-1 is constructed from ten-inch diameter mild steel blank casing and Type 304L stainless steel wire wrap screen with 0.080-inch slots and a 4 x12 gradation filter pack. Well RIW-1 is screened from 50 feet to the bedrock contact, at 95 feet bgs. An inflatable packer with a four-inch flow-through pipe will be installed in RIW-1 for the injection testing. A temporary four-inch, melamine injection line will be attached to the existing CCSD supply well SS-2 pump to waste line. Flow from SS-2 will be diverted from the distribution line to temporary injection line. The injection line will be fitted with a sample port, pressure gauge and pressure reducing valve allowing injection of the desired flow rate below the allowable injection pressure. Figure 2-3 illustrates the injection well and related equipment. Well RIW-1 was installed approximately 1,800 feet up gradient from CCSD gradient control well 9P7 and approximately 1,200 feet down gradient from CCSD production wells SS-1 and SS-2 (Figure 2-1). The injection water for the tracer test will be provided from well SS-2. The injection rate will be 454 gpm.

2.3 Monitoring Well Design

One new monitoring well, MIW-1, was installed for the tracer testing. Well MIW-1 was drilled via the sonic rotary drilling method and constructed from four-inch diameter schedule 40 PVC casing and schedule 40 PVC mill slot screen. Well MIW-1 is screened from 45 to 95 feet bgs. The monitoring well was installed approximately 500 feet up gradient from RIW-1, between RIW-1 and the CCSD production wells (Figure 2-1).

2.4 Injection Test Procedures

An eight-hour, step injection test will be performed at RIW-1 after the completion of construction and development. The anticipated injection rates will be at 125, 250, 375 and 500 gpm in order to define well efficiency and verify final test rates.

The 67-day constant injection, tracer test will start the day after the step injection test, allowing the aquifer to recover overnight. The injection rate will be the maximum rate determined during the step injection test up to 454 gpm. The tracer injection will start at the beginning of the test and continue for the first 30 days. After Day 30, tracer injection will cease, but the injection test will continue for an additional 30 days. Water levels will be monitored with pressure transducers in above and below the packer in the injection well, in monitoring well MIW-1 and irrigation well 9L1 approximately 200 feet southwest, if accessible.

Boric acid enriched to 96 percent with the ^{10}B isotope at a concentration of 20 micrograms per liter (as boron) (µg/L) will be used as the tracer for this study. Boron is a naturally occurring, trace element occurring in nearly all groundwater and has a CDPH Notification level of 1,000 µg/L. The background boron concentrations in the area are approximately 200 to 300 µg/L, with an isotopic ratio of approximately 80 percent ^{11}B isotope and 20 percent ^{10}B isotope. The total boron concentration in the injection well will be the background concentration plus the 20 µg/L of enriched boron. The enriched boron will be in the form of boric acid, which will be mixed with CCSD groundwater from SS-2 in a temporary, above ground mixing tank. The tank will be staged near well SS-2. The solution will be injected into the temporary injection line with a chemical feed pump at a rate of approximately 2 liters/hour. This will provide a tracer concentration of 20 µg/L (as boron). Detailed calculations supporting the tracer design are provided in Attachment 1.

2.5 Sampling and Monitoring Schedule

CCSD staff will collect groundwater samples every other day at CCSD wells SS-1, and SS-2, and at the new monitoring well MIW-1. One sample per week will be submitted to the TetraTech Laboratory in Fort Collins, Colorado for total boron, and boron isotope (^{11}B and ^{10}B) analyses. Samples collected but not submitted at or near the time of tracer break through may be used for confirmation sampling. Sampling and analysis of the injection water and injection water sampling will take place according the schedule in Table 2-1.

Table 2-1 Sampling and Analysis Schedule

Well Name:	SS-1	SS-2	SS-3	MIW-1	RIW-1
Source Type:	Groundwater				Injection Water
Sampling Frequency	Every other day		Weekly		Weekly
Analyses Frequency	Weekly				
Analyses	Total Dissolve Boron, Boron Isotope Characterization				
Method	Boron – Method 6020 (ICP-MS) Boron isotopes using a TIMS set in negative ion mode.				

The injection rate at RIW-1 is tentatively planned to be at a maximum rate of 454 gpm at a pressure of no greater than 25 psi. The actual rate will be determined after conducting the step injection test. The injection water source is CCSD well SS-2 gpm from each well. The injection rate at RIW-1 will be monitored using an inline totalizer/flowmeter. The pumping rates from well SS-2 will be measured and recorded using the existing CCSD SCADA system. Water levels will be measure with pressure transducers/data loggers. Two In-Situ Level Troll 700s will be installed in RIW-1, one near the well screen to measure downhole pressure, and a second just above the packer to verify packer integrity. In-Situ Level Trolls will be used to monitor and record water levels in MIW-1 and Well 9L1 if accessible. The data loggers will be set up to record water levels at ten-minute intervals. Similarly to record water levels in wells SS-1 and SS-2, portable data loggers will be used at the two well sites. The monitoring schedule is summarized in Table 2-2.

Table 2-2 Water Level Monitoring

Well Name:	SS-1	SS-2	SS-3	MIW-1	RIW-1
Monitoring Device	Level Troll			Level Troll	Level Troll (2)
Recording Interval	10 minutes			10 minutes	

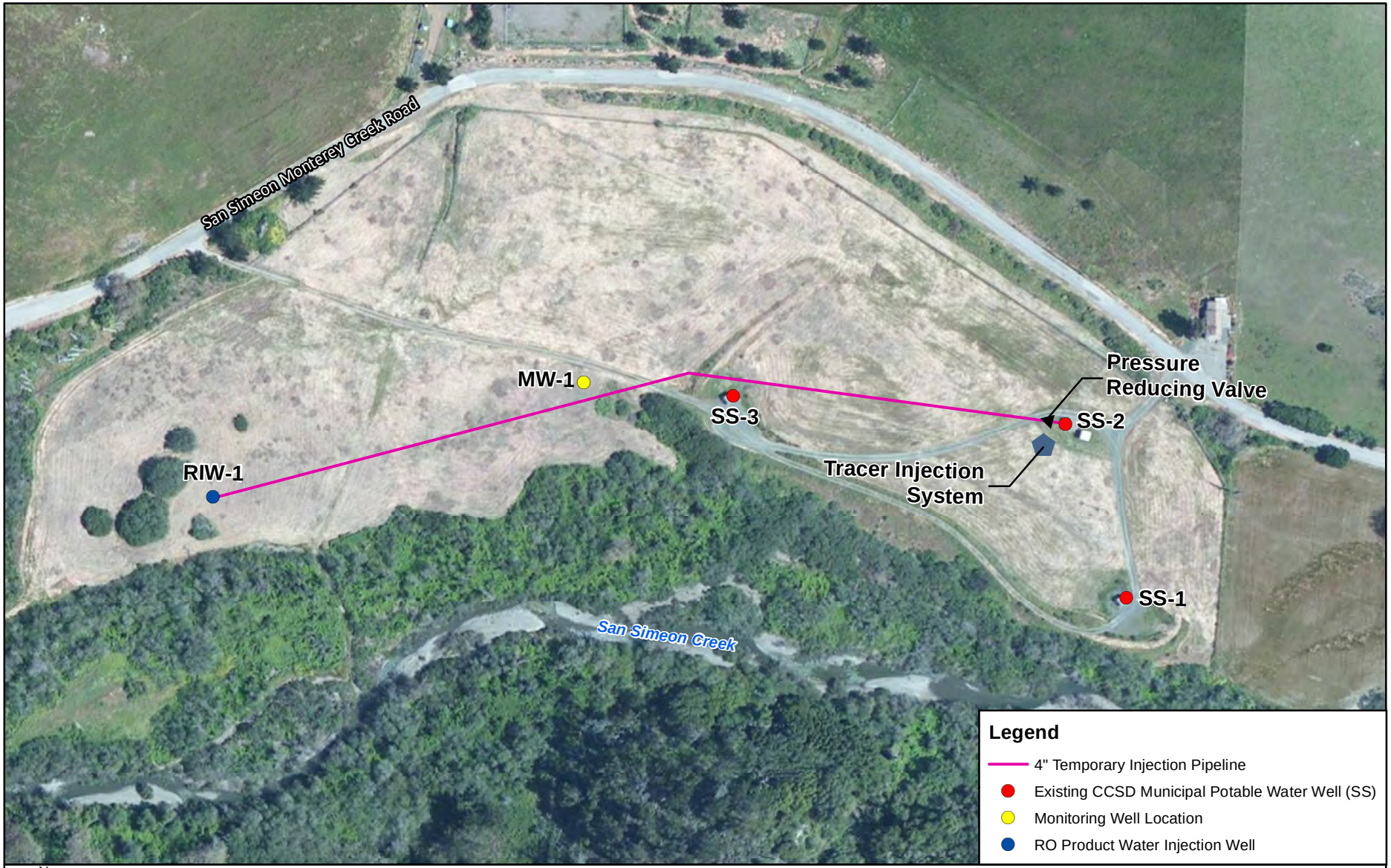
2.6 Tracer Test Duration and Sampling

The tracer test will be 67 days in duration. The tracer solution will be pumped into the injected water for 30 days. The tracer is expected to be detected in the new monitoring well by approximately day 30. At this time injection of the tracer solution will cease. An adequate amount of tracer will be in the aquifer to be detected in wells SS-1 and SS-2 if it reaches those wells within the 60 day test period. Samples from the 30 day and 60 day periods will be expedited in the laboratory to obtain a three week reporting time. The normal lab turnaround time is 30 to 60 days, which will be used for other samples.

CCSD staff will collect water samples to be analyzed for ^{10}B isotope at regular intervals during testing. Wells SS-1 and SS-2 will sampled every other day, and one sample per week will be submitted for analysis. Samples will be collected from the sampling ports on the well discharge pipe and filtered with a disposable 0.45 µm filter. The monitoring well, well SS-3 and injection water will be sampled and analyzed weekly. Three casing volumes will be purged from the monitoring well and SS-3 prior to sample collection to ensure representative groundwater is collected. The injection water will sampled from a sample port located on the injection line near the injection well. The sample water will be filtered with a 0.45 micron filter and collected in 1-liter plastic bottles. The samples will be shipped by CCSD staff to Tetra Tech Laboratory in Fort Collins, Colorado.

2.7 Data Analysis and Reporting

A report that includes a description of all sample results will be prepared summarizing finding for residence time between the injection well and well SS-2, which is the closest production well. The report will include plots of tracer concentrations and associated calculations. The report will be prepared within ten days of receipt of lab results from the 60 day samples, which will be approximately a month following the completion of the 67 day test.



Cambria Emergency Water Supply

Figure 2-1
Site Map

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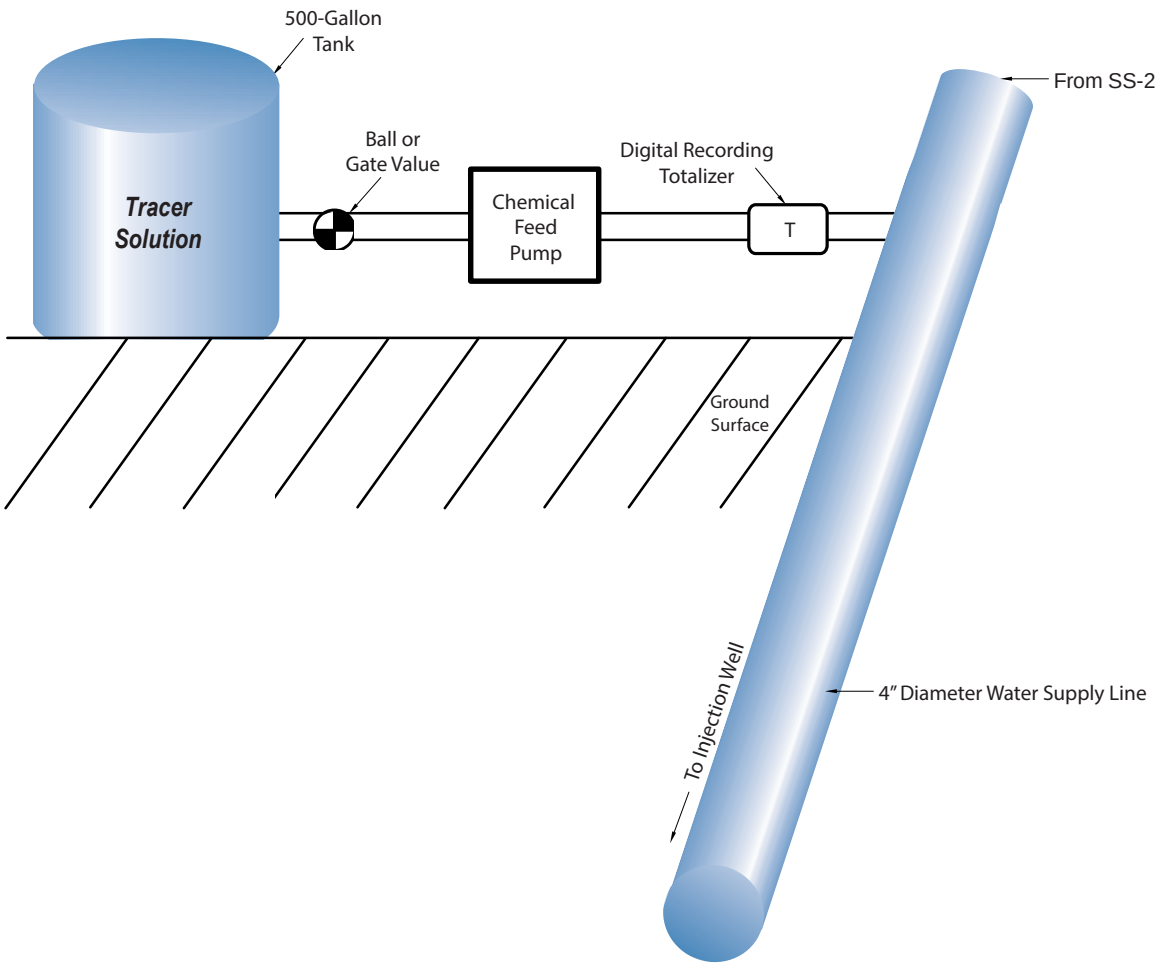
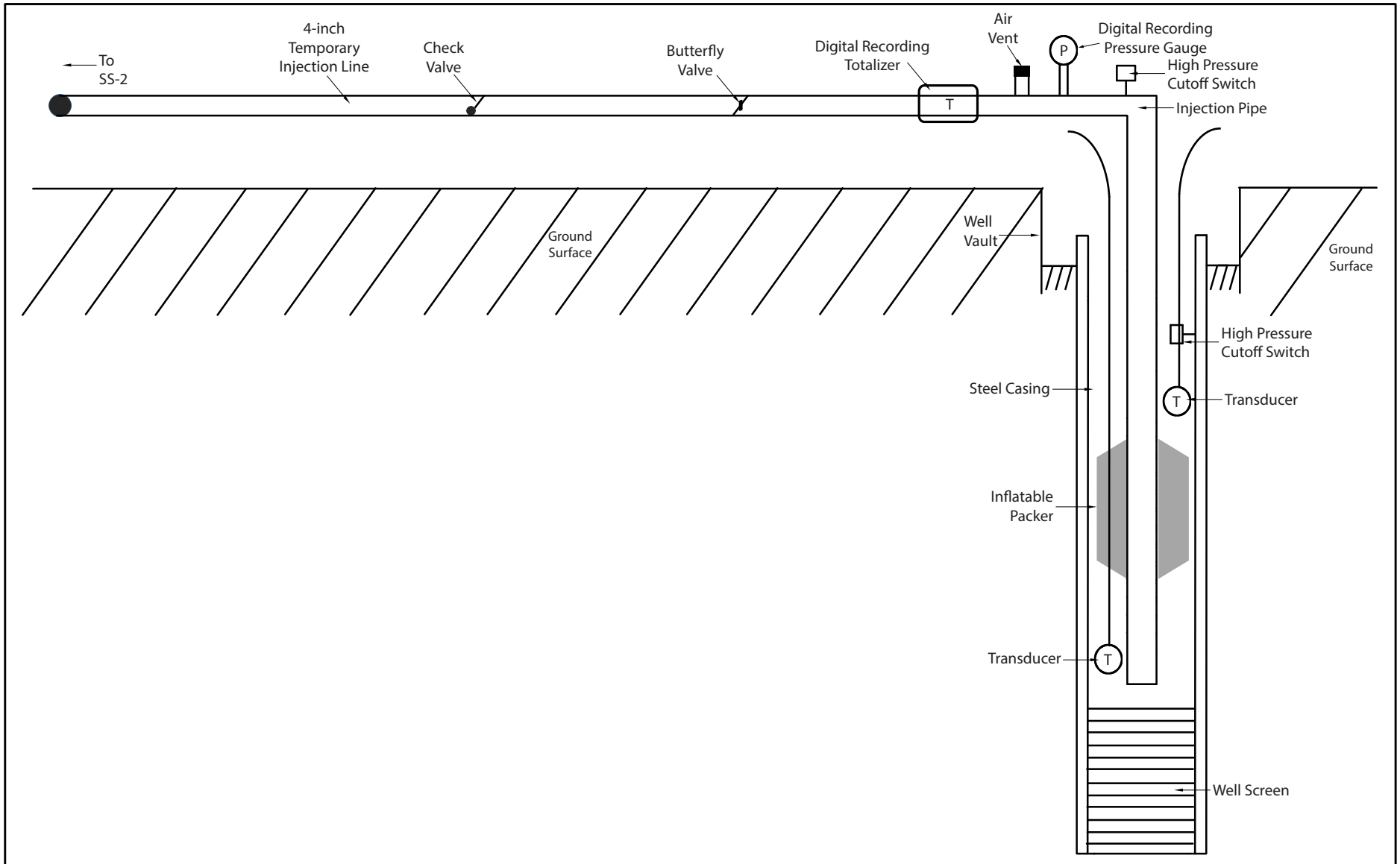


Cambria Emergency Water Supply

Figure 2-2
Tracer Injection System Diagram



Cambria Emergency Water Supply

Figure 2-3
Injection System Diagram

Section 3
Sampling Methods

3.1 Sample Collection and Preservation

Water samples will be collected in 1-liter polyethylene bottles by CCSD staff. No preservation is needed for the samples and there is no established hold time. However, the samples will be stored in a refrigerator and prior to analysis. Confirmation samples will be analyzed within six months of collection. One duplicate sample will be collected and analyzed for every ten samples analyzed. A Chain of Custody (COC) form will be completed by the sampler and shipped with the samples to the Tetra Tech laboratory. The COC will have the following information:

- Name, address and phone number of owner (CCSD),
- Name of sampler,
- Names of samples collected,
- Date and time of sample collection,
- Quantity and type of sample container,
- List of analyses and method, and
- Signature, date and time when sample is relinquished.

3.2 Analytical Methods

Groundwater samples will be analyzed for total boron by ALS laboratories in Ft. Collins, Colorado and for the isotopes of boron at the Tetra Tech Boron Isotope Laboratory in Ft. Collins, Colorado. Boron analysis will be performed following SW-846 method 6020 (ICP-MS). Boron isotopes (10B and 11B) will be measured in groundwater using a thermal ionization mass spectrometer (TIMS) set in negative ion mode. Prior to analysis and when necessary based on low levels of boron in the sample, boron may be extracted from the sample using a boron specific ion exchange resin, eluted off the column with HCl, evaporated to dryness and the re-dissolved with boron free sea water. The analytical method developed by Tetra Tech is based on the research described in Hemming and Hanson (1984).

The minimum reporting limit for boron in groundwater by ALS is 50 ug/L. For the boron isotope measurements the mean value of 100 measured ratios is reported as measured, corrected for instrument bias, and also reported as delta 11B relative the standard reference material (NIST SRM 951) for each analysis. Instrument bias and accuracy are determined by analyzing NIST SRM 951 in every batch of sample.

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