

Mr. Dan Niles
California Regional Water Quality Control Board
Central Coast Region
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San Luis Obispo, California 93401-7906

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Subject:
NPDES –First Quarter 2016 Monitoring Report, Permit # CAG993002
Watkins-Johnson Superfund Site, 440 Kings Village Road, Scotts Valley, CA

ENVIRONMENT

Date:
April 29 2016

Dear Mr. Niles:

Enclosed is the *National Pollutant Discharge Elimination System (NPDES – First Quarter 2016 Monitoring Report)* for the groundwater treatment system at Watkins-Johnson Superfund Site, 440 Kings Village Road, Scotts Valley, California. This report is submitted in compliance with Monitoring and Reporting Program R3-2006-0067, issued for NPDES Permit Number CAG993002.

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Jeremie Maehr

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(415) 432-6918

Email:
Jeremie.Maehr
@arcadis.com

If you have any questions regarding the attached report, please do not hesitate to contact the undersigned.

Our ref:
RC000463.0112.MD215

Sincerely,

Arcadis U.S., Inc.



Jeremie Maehr, P.E.

Project Manager



Enclosure:

NPDES –First Quarter 2016 Monitoring Report

Mr. Don Eley
April 29, 2016

Copies:

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ARCADIS

440 Kings Village, LLC

NPDES – FIRST QUARTER 2016 MONITORING REPORT

Walkins-Johnson Superfund Site
Scotts Valley, California

April 29, 2016



NPDES – FIRST QUARTER 2016 MONITORING REPORT

Christine Meyer
Staff Geoscientist

Prepared for:

California Regional Water Quality Control
Board

Jeremie Maehr P.E.
Project Manager

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Our Ref.:

RC000463.0112.MD216

Date:

29 April 2016



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1 INTRODUCTION

ARCADIS has prepared this First Quarter 2016 National Pollution Discharge Elimination System (NPDES) monitoring report for the groundwater extraction and treatment system (GWETS) at the former Watkins-Johnson Company (WJC) facility located at 440 Kings Village Road, Scotts Valley, California (the Site). The facility has changed ownership several times. WJC owned and operated the facility in the late 1980s when the Site was proposed for listing on the National Priorities List. Silicon Valley Group took possession of the Site after WJC. The property was subsequently sold to ASML U.S., Inc. (ASML), and in October 2003, ownership of the facility was transferred from ASML to Aviza Technology. In May 2013, the ownership of the facility was transferred to 440 Kings Village, LLC.

This report is submitted to comply with the requirements of Monitoring and Reporting Program (MRP) Number R3-2006-0067, issued for NPDES Permit Number CAG993002 and outlines significant events and monitoring data for the first quarter 2016 (January 1 through March 31, 2016).

2 GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

Currently, the Site GWETS treated water discharge is permitted under MRP Number R3-2006-0067, issued for NPDES Permit Number CAG993002. The GWETS Operation and Maintenance (O&M) activities follow the monitoring and reporting program MRP Number R3-2006-0067. The program includes routine treatment system, effluent, flow rate, and receiving water monitoring and quarterly reporting.

The current program consists of monthly sampling at the liquid-phase granular activated carbon (LPGAC) vessel influent (TS-IN), the midpoint between the two LPGAC vessels (TS-MID), and the LPGAC vessel effluent (TS-OUT). System flow rates are also monitored monthly. The samples are analyzed for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Test Method 8260B, chromium and nickel using USEPA Method 6020, and hexavalent chromium using USEPA Method 7199. Receiving waters are visually monitored at a minimum of quarterly at the Bean Creek discharge pipe (BCDP), the Bean Creek upstream receiving water sample point (BC-6), and the Bean Creek downstream receiving water sample point (BC-7). Figure 1 shows the locations of the Bean Creek monitoring points. When the system is in operation, physical parameters of the effluent are measured at TS-OUT annually during the third quarter. A system process and instrumentation diagram (P&ID) is presented in Appendix A (*Remedial Action and Operation and Maintenance Plan, Watkins-Johnson Company Scotts Valley California, Watkins-Johnson Environmental, Inc. February 25, 1994 Figure 2.4*).

With approval from the USEPA (letter from USEPA to ARCADIS dated November 21, 2008), ARCADIS shut down extraction well RA-2 on December 19, 2008 to evaluate groundwater conditions and quality at the Site under a no-pumping state (as described in *Proposal for RA-2 Shutdown and Groundwater Concentration Rebound Evaluation, ARCADIS, November 6, 2008*). On July 2, 2009, ARCADIS submitted the *Summary of RA-2 Shutdown and Groundwater Concentration Rebound Evaluation* to the USEPA. The USEPA requested the recommendation that the treatment system be permanently shut down because remedial objectives at the Site had been reached. The USEPA requested in a letter dated August 17, 2009 that the

restarted. ARCADIS restarted the GWETS operation November 19, 2009, as described in the *Groundwater Treatment System Startup Report* submitted to the RWQCB on December 8, 2009.

The GWETS was temporarily shut down during the fourth quarter 2011 to complete a carbon change out. The system was officially restarted on December 28, 2011.

The GWETS was temporarily shut down the week of December 23, 2013 due to a loss of power and subsequently restarted on January 9, 2014. A modified start-up procedure was approved by RWQCB in an email dated January 10, 2014. The results of the modified system start-up are presented in the first quarter 2014 NPDES report. The results indicated that the system effluent was within permitted discharge requirements for the site.

The GWETS was temporarily shut down the week of June 17, 2014 due to a pipe break within the GWETS compound. The groundwater release and subsequent repairs were reported within the ARCADIS document *The Groundwater Extraction System Groundwater Release Notice* dated June 23, 2014. The approved modified start-up results were presented in the second quarter 2014 NPDES report. The results indicated that the system effluent was within permitted discharge requirements for the site.

On October 24, 2014, the GWETS was shut down due to totalizer repairs and maintenance on RA-2 piping. During the routine October site visit a discrepancy in the totalizer volume readings was noted. The totalizer was not properly functioning and the system was shutdown. During the October 24, 2014 site visit, a small leak at the extraction well head RA-2 was noticed. The system totalizer was replaced and the leak at RA-2 was repaired on October 30, 2014. The system was restarted on November 3, 2014. A modified start up procedure was approved by RWQCB in an email dated November 5, 2014. The modified start-up was completed and results are reported within the fourth quarter 2014 NPDES report. The results concluded the system effluent was within permitted discharge requirements.

2.1 GWETS Operational Summary

This section describes the operation of the GWETS and summarizes the data for the first quarter 2016.

2.1.1 Description of Operations

The GWETS consists of a combination of groundwater extraction, treatment, and discharge facilities. Historically, groundwater was extracted from both the Perched Zone and the Santa Margarita Regional Zone (Regional Zone). By 2003, the Perched Zone extraction wells were no longer in use. Groundwater continued to be extracted from both Regional Zone wells RA-1 and RA-2, until the second quarter 2004 when the pump in RA-1 stopped operating. Prior to the pump failure, extraction well RA-1 did not pump water that exceeded the MCLs. In fact, neither trichloroethene (TCE) nor tetrachloroethene (PCE) had been detected in samples from well RA-1 since June 1999; the most recent sample was collected in June 2002 and neither compound was detected.

Extracted water is discharged into a 10,000-gallon polypropylene surge tank located adjacent to two LPGAC vessels. Collected groundwater is pumped through the two 20,000-pound LPGAC vessels through a system of mostly above-ground piping, then into a second 10,000-gallon polypropylene tank. Treated groundwater is discharged under permit to Bean Creek, a tributary of the Santa Margarita River. As part of the remedial strategy for the Site, from June 1988 to May 2000, a portion

groundwater was also discharged to the Perched Zone via infiltration galleries. Because the remediation goal for the Perched Zone was achieved in 2000, groundwater is no longer recharged through the infiltration galleries.

Measurements of the flow totalizer readings are collected monthly at the GWETS effluent point and at the extraction point for the plant domestic water system. The difference, if any, between these readings provides an estimate of the total volume of treated effluent that is discharged into Bean Creek.

2.1.2 First Quarter 2016 Summary

During the first quarter 2016, approximately 5.4 million gallons of water were extracted from the Regional Zone using extraction well RA-2, representing an average of approximately 60,109 gallons per day (gpd) and approximately 41 gallons per minute (gpm). No alarms or breakers were tripped during the reporting period, which would indicate a system shutdown. Extraction well RA-2 was operating normally on arrival. Flow readings will be evaluated for additional changes during the second quarter 2016. Estimated monthly volumes for the first quarter 2016 are shown in Table 1 and Figure 2.

2.2 Chemical Parameter Data

This section presents the chemical data for the treatment system and observations for Bean Creek.

2.2.1 Treatment System Operation

Treatment system water confirmation samples were collected on January 15, February 26, and March 30, 2016. The monitoring results for the TS-IN (influent), TS-MID (midpoint), and TS-OUT (effluent from the treatment system) samples are presented in Table 2 and are discussed below. The reporting period laboratory analytical reports and chain-of-custody documentation are presented in Appendix B.

Results for sample TS-IN during the reporting period are as follows:

- PCE concentrations were between 3.0 and 3.8 µg/L;
- No other VOCs were detected;
- Chromium and nickel were not detected;
- Hexavalent Chromium concentrations ranged from 2.8 to 3.2 µg/L;

Results for sample TS-MID during the reporting period are as follows:

- TCE concentrations ranged from below detection limits to 0.6 µg/L;
- Chromium and nickel were not detected;
- Hexavalent Chromium concentrations ranged from 3.3 to 3.6 µg/L;

Results for sample TS-OUT during the reported period are as follows:

- VOCs were not detected;
- Chromium and nickel were not detected;
- Hexavalent Chromium ranged from below detection limits to 0.59 µg/L;

As noted in Section 2.1.2, during the first quarter 2016, the GWETS treated approximately 5.4 million gallons of groundwater based on the system totalizer readings (Table 1). This constituted an average flow rate of approximately 41 gpm. The GWETS performance data, including the cumulative mass of VOCs removed during the first quarter 2016 are presented in Table 3. The estimated mass of total VOCs removed from groundwater using the GWETS during the first quarter 2016 was approximately 0.0677 pounds.

2.2.2 Bean Creek

The first quarter 2016 observation of the receiving water conditions indicates no unusual discoloration or floating matter (insects and small fish). These results are consistent with past results and observations.

3 CONCLUSIONS AND RECOMMENDATIONS

During the first quarter 2016, 0.0677 pounds of total VOCs were removed by pumping approximately 5.4 million gallons of groundwater.



TABLES



Table 1
Summary of Groundwater Extraction, Usage, and Discharge to Bean Creek

Watkins-Johnson Superfund Site
 Scotts Valley, California

NPDES First Quarter 2016 Monitoring Report

Month	Notes	Groundwater Extracted (gallons)	Treated Water Reused by Facility (gallons)	Treated Water Discharged to Bean Creek (gallons)	Perched Zone Infiltration ¹
First Quarter 2016 Total					
Jan-16	2	1,853,482	--	1,853,482	0
Feb-16	2	1,736,164	--	1,736,164	0
Mar-16	2,3	1,880,263	--	1,880,263	0
First Quarter 2016 Total		5,469,909	0	5,469,909	0

Notes:

- 1 The groundwater infiltration system has been shut off since May 2000.
- 2 Total monthly volumes were estimated based on average daily flow rates between site visits on January 15, February 26, and March 30, 2016.
- 3 The system totalizer volume appeared low for the monthly extraction rate on October 16, 2015. The extraction well RA-2 was reset.
- Following December 2008 shutdown, treated water is not reused by the facility.

Table 2
Results of Laboratory Analyses for Volatile Organic
Compounds in the Treatment System
 Watkins-Johnson Superfund Site
 Scotts Valley, California
 NPDES First Quarter 2016 Monitoring Report

First Quarter 2016 Total	Sampling Location	Date Sampled	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride	Freon 113 (µg/L)	1,1,1-TCA (µg/L)	Chromium (µg/L)	Hexavalent Chromium (µg/L)	Nickel (µg/L)
Permit Limits for Effluent Water			0.8	2.7	6	10	0.5		200	50	10	52
TS-IN	Treatment System Influent Water	01/15/16	3.8	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	3.2	<5.0
		02/26/16	3.3	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	2.9	<5.0
		03/30/16	3.0	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	2.8	<5.0
TS-MID	Water Between LPGAC Vessels	01/15/16	<0.05	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	3.6	<5.0
		02/26/16	<0.5	0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	3.3	<0.5
		03/30/16	<0.5	0.6	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	3.3	<5.0
TS-OUT	Treatment System Effluent Water	01/15/16	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	<0.5	<5.0
		02/26/16	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	<0.5	<5.0
		03/30/16	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<5.0	0.59	<5.0

Notes:

Detected values shown in bold.
 Analysis performed using United States Environmental Protection Agency (USEPA) Method 8260B.
 Analyses performed by Curtis & Tompkins Ltd., Berkeley, California.
 --- Not Analyzed.
 b - Analyzed outside of hold time.

TS-IN	Treatment System Influent Water		
TS-MID	Water between LPGAC vessels	LPGAC	Liquid phase granular activated carbon
TS-OUT	Treatment System Effluent Water	PCE	Tetrachloroethene
1,1,1-TCA	1,1,1-Trichloroethane	TCE	Trichloroethene
MTBE	methyl tertiary butyl ether	µg/L	Micrograms per liter
cis-1,2-DCE	cis-1,2-Dichloroethene	<	Symbol indicates not detected at or above the laboratory reporting limit as noted.

Table 3
Groundwater Extraction and Treatment System Mass Removal Summary
 Watkins-Johnson Superfund Site
 Scotts Valley, California
 NPDES First Quarter 2016 Monitoring Report

Month	Notes	Volume Extracted (gallons)	Influent VOC Concentration (µg/L) ¹	Total VOC Mass Removed (lb)
First Quarter 2016 Total				
Jan-16		1,853,482	3.8	0.0259
Feb-16		1,736,164	3.3	0.0211
Mar-16		1,880,263	3.0	0.0208
First Quarter 2016 Total		5,469,909	---	0.0677

Notes:

µg/L micrograms per liter

lb pounds

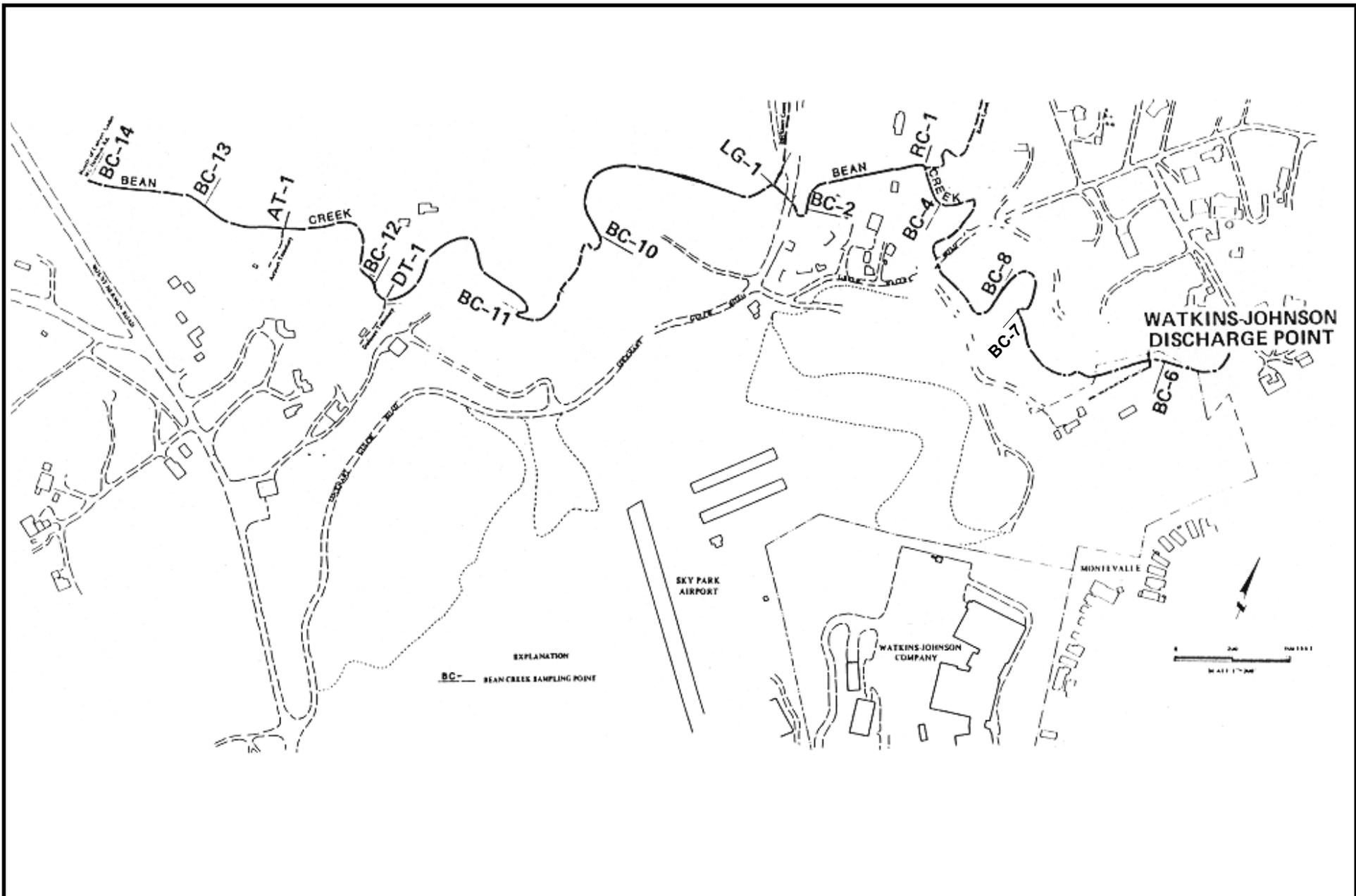
VOC volatile organic compounds

--- not applicable

1 Sum of concentrations of detected VOCs used for each month of the quarter.

FIGURES





**LOCATIONS OF BEAN CREEK SAMPLING POINTS
WATKINS-JOHNSON FACILITY**

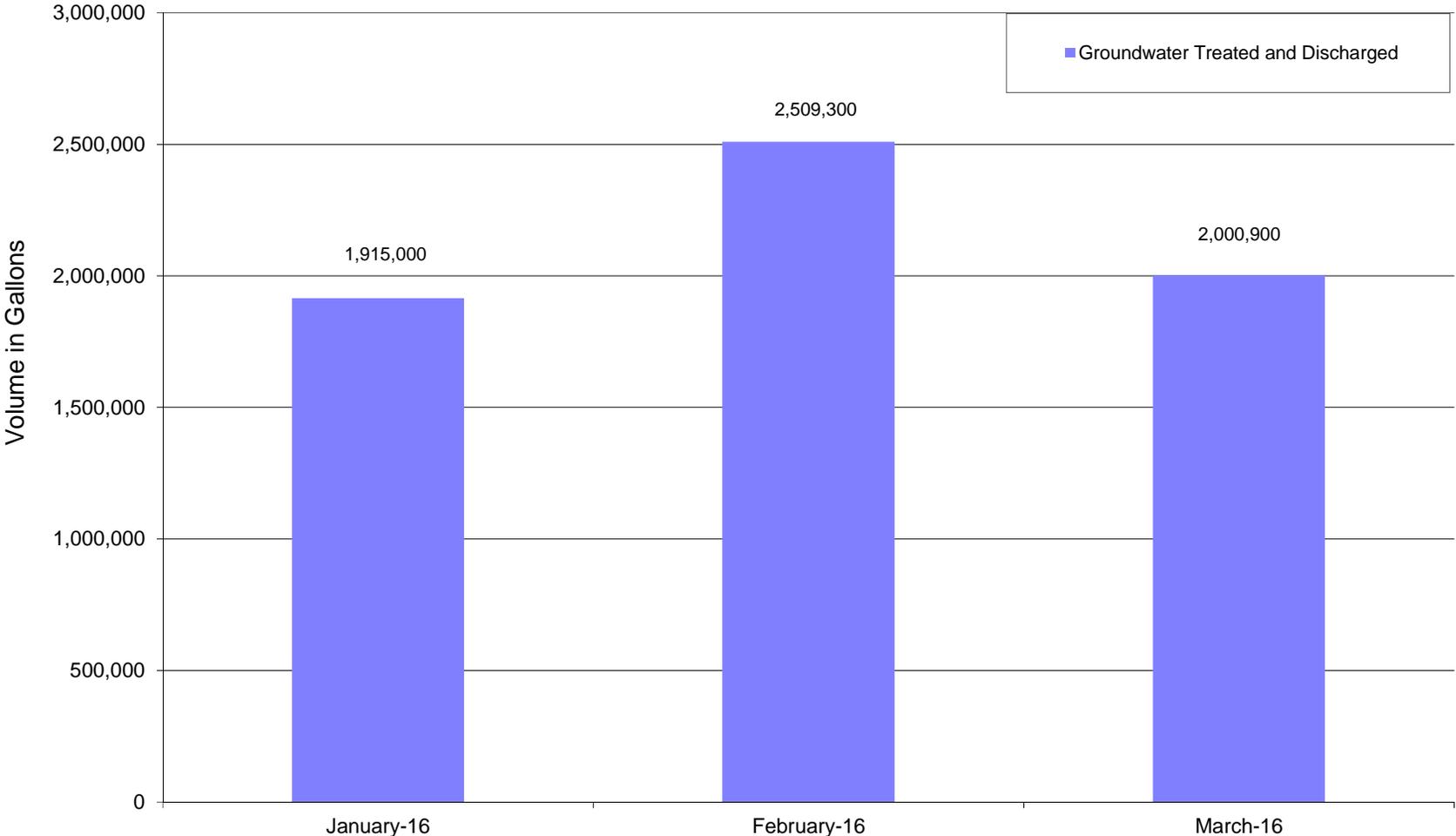
Silicon Valley Group
Scotts Valley, California

RC000463.0015

FIGURE

1

Figure 2
Volume of Groundwater Extracted, Treated, and Discharged to Bean Creek
NPDES First Quarter 2016 Monitoring Report

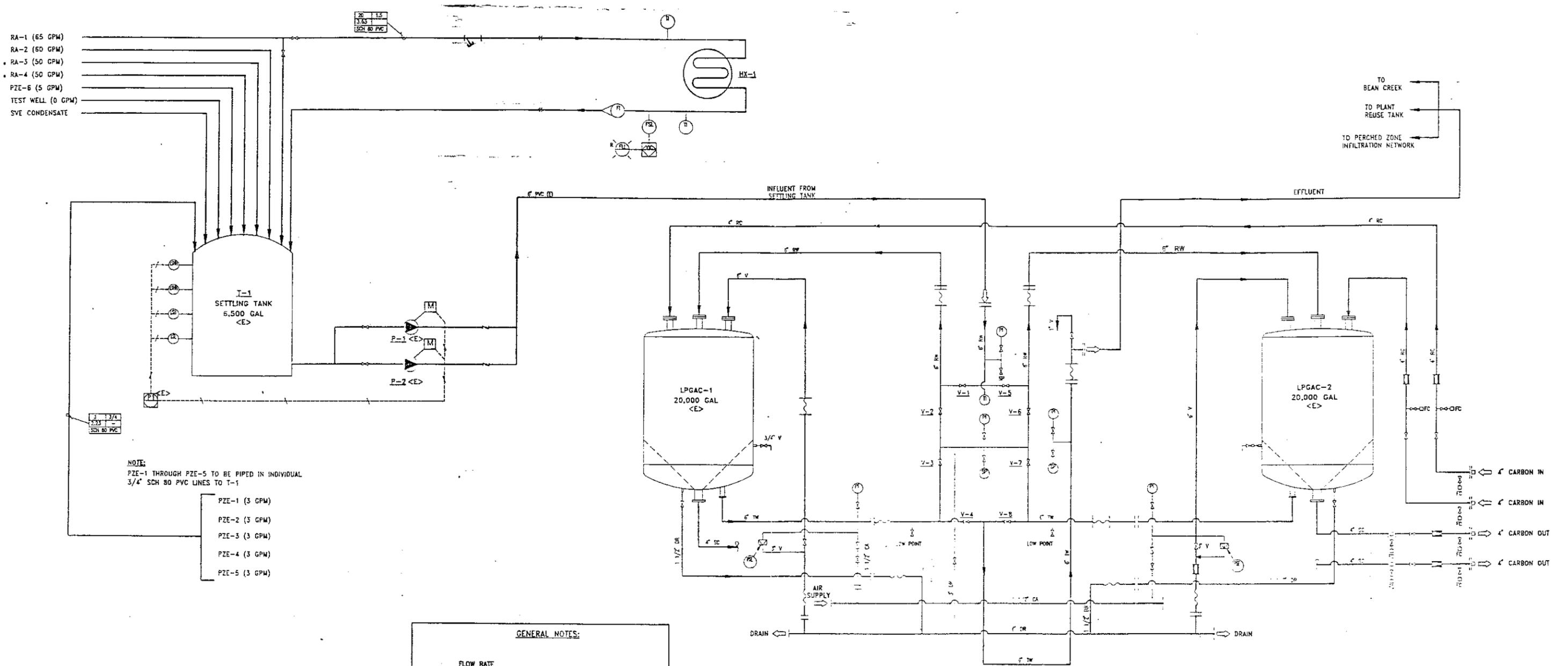


Note: Groundwater infiltration system has been off since May 2000
Totalizer was not properly recoding flow during October 2014.

APPENDIX A

Groundwater Treatment System Process and Instrumentation Diagram





RA-1 (65 GPM)
 RA-2 (60 GPM)
 RA-3 (50 GPM)
 RA-4 (50 GPM)
 PZE-6 (5 GPM)
 TEST WELL (0 GPM)
 SVE CONDENSATE

TO BEAN CREEK
 TO PLANT REUSE TANK
 TO PERCHED ZONE INFILTRATION NETWORK

NOTE:
 PZE-1 THROUGH PZE-5 TO BE PIPED IN INDIVIDUAL 3/4" SCH 80 PVC LINES TO T-1

PZE-1 (3 GPM)
 PZE-2 (3 GPM)
 PZE-3 (3 GPM)
 PZE-4 (3 GPM)
 PZE-5 (3 GPM)

LEGEND	
BW	BACKWASH WATER
CA	COMPRESSED AIR
DR	DRAIN
FC	FLUSH CONNECTION
PSE	BURST PLATE
PW	PLANT WATER
RC	REACT. (OR VIRGIN) CARBON
RW	RAW WATER
SC	SPENT CARBON SLURRY
TW	TREATED WATER

GENERAL NOTES:

FLOW RATE
 GALLONS PER MINUTES (GPM)

PIPE SIZE (NPT)
 INCHES NOM.

FLUID VELOCITY
 (FEET PER SECOND)

LINE PRESSURE
 (PSI)

PIPING MAT'L

ALL INSTRUMENT AND SYMBOL DESIGNATIONS ARE IN ACCORDANCE WITH ANSI/ISA S5.1-1984 (R1992)

WJ009325

						WATKINS-JOHNSON ENVIRONMENTAL, INC. Groundwater Consultants and Engineers		PROCESS AND INSTRUMENTATION DIAGRAM FOR GROUNDWATER TREATMENT SYSTEM	
						PROJECT No 920G-134			
						DR K.N.	DATE 2/25/94		
REV	DATE	DESCRIPTION	BY	CHD	APP	CHK	DATE	DWG No	S000811A
						APP	DATE	SCALE	FIGURE 2.4

APPENDIX B

Laboratory Analytical Reports and Chain-of-Custody Documentation





Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 274589
ANALYTICAL REPORT**

Arcadis
2000 Powell St.
Emeryville, CA 94608

Project : RC000463
Location : Scotts Valley Aviza
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	274589-001
TS-MID	274589-002
TS-IN	274589-003
TB022616	274589-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Mikelle Chong
Project Manager
mikelle.chong@ctberk.com

Date: 03/04/2016

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 274589
Client: Arcadis
Project: RC000463
Location: Scotts Valley Aviza
Request Date: 02/26/16
Samples Received: 02/26/16

This data package contains sample and QC results for four water samples, requested for the above referenced project on 02/26/16. The samples were received on ice and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Metals (EPA 6010B):

High recoveries were observed for chromium and nickel in the BS for batch 232594; the associated RPDs were within limits, and these analytes were not detected at or above the RL in the associated samples. Chromium and nickel were detected above the RL in the method blank for batch 232594; these analytes were not detected in samples at or above the RL. No other analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (EPA 7199):

No analytical problems were encountered.

CHAIN OF CUSTODY

Page 1 of 1

Chain of Custody # _____



2323 Fifth Street
Berkeley, CA 94710
Phone (510) 486-0900
Fax (510) 486-0532

C&T LOGIN # 274584

Project No: R0000463.012, NAZIF5
Project Name: Scotts Valley Aviza
Project P. O. No: _____
Report Level: I II III IV
Turnaround Time: RUSH Standard
Email: _____
Company: ARCADIS
Telephone: _____
Sampler: Heather Tauscher
Report To: K. Brandt

ANALYTICAL REQUEST

Lab No.	Sample ID.	Date Collected	Time Collected	MATRIX	SAMPLING	# of Containers	CHEMICAL PRESERVATIVE
				Water			HCl
				Solid			H2SO4
							HNO3
							NaOH
							None

Lab No.	Sample ID.	Date Collected	Time Collected	MATRIX	SAMPLING	# of Containers	CHEMICAL PRESERVATIVE
	TS-OUT	02/26/16	0927	X	X	5	X
	TS-MID	02/26/16	0933	X	X	5	X
	TS-IN	02/26/16	0937	X	X	5	X
	TB022616	02/26/16	---	X	X	2	X

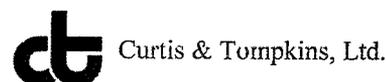
Notes: * Hexavalent was a Chromium mobile time
FF was

SAMPLE RECEIPT
 Intact
 Cold
 On Ice
 Ambient

RELINQUISHED BY: [Signature] DATE: 02/26/16 TIME: 105D

RECEIVED BY: [Signature] DATE: 2/26/16 TIME: 1319

COOLER RECEIPT CHECKLIST



Login # 274589 Date Received 02/26/16 Number of coolers 1
 Client Arcadis Project Scotts Valley Aviza
 Date Opened 02/26 By (print) SL (sign) [Signature]
 Date Logged in + By (print) + (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
 Type of ice used: Wet Blue/Gel None Temp(°C) 2.1°

Temperature blank(s) included? Thermometer# 4 IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# H412308) _____ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Curtis & Tompkins Sample Preservation for 274589

Sample	pH: <2	>9	>12	Other
-001a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
-002a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
-003a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Analyst: SL
 Date: 02/26/16

Detections Summary for 274589

Results for any subcontracted analyses are not included in this summary.

Client : Arcadis
 Project : RC000463
 Location : Scotts Valley Aviza

Client Sample ID : TS-OUT Laboratory Sample ID : 274589-001

No Detections

Client Sample ID : TS-MID Laboratory Sample ID : 274589-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Trichloroethene	0.5		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Hexavalent Chromium	3.3		0.50	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TS-IN Laboratory Sample ID : 274589-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	3.3		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Hexavalent Chromium	2.9		0.50	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TB022616 Laboratory Sample ID : 274589-004

No Detections

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	232563
Lab ID:	274589-001	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	232563
Lab ID:	274589-001	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-128
1,2-Dichloroethane-d4	112	75-139
Toluene-d8	104	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	232563
Lab ID:	274589-002	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	0.5	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	232563
Lab ID:	274589-002	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-128
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	232563
Lab ID:	274589-003	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	3.3	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	232563
Lab ID:	274589-003	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-128
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB022616	Batch#:	232563
Lab ID:	274589-004	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB022616	Batch#:	232563
Lab ID:	274589-004	Sampled:	02/26/16
Matrix:	Water	Received:	02/26/16
Units:	ug/L	Analyzed:	03/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-128
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC825349	Batch#:	232563
Matrix:	Water	Analyzed:	03/01/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC825349	Batch#:	232563
Matrix:	Water	Analyzed:	03/01/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-128
1,2-Dichloroethane-d4	106	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected

RL= Reporting Limit

Chromium			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	232594
Matrix:	Water	Sampled:	02/26/16
Units:	ug/L	Received:	02/26/16
Diln Fac:	1.000	Prepared:	03/01/16

Field ID	Type	Lab ID	Result	RL	Analyzed
TS-OUT	SAMPLE	274589-001	ND	5.0	03/04/16
TS-MID	SAMPLE	274589-002	ND	5.0	03/04/16
TS-IN	SAMPLE	274589-003	ND	5.0	03/04/16
	BLANK	QC825497	27 b	5.0	03/02/16

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	232594
Matrix:	Water	Sampled:	02/26/16
Units:	ug/L	Received:	02/26/16
Diln Fac:	1.000	Prepared:	03/01/16

Field ID	Type	Lab ID	Result	RL	Analyzed
TS-OUT	SAMPLE	274589-001	ND	5.0	03/04/16
TS-MID	SAMPLE	274589-002	ND	5.0	03/04/16
TS-IN	SAMPLE	274589-003	ND	5.0	03/04/16
	BLANK	QC825497	23 b	5.0	03/02/16

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	232594
Field ID:	ZZZZZZZZZZ	Sampled:	02/25/16
MSS Lab ID:	274533-001	Received:	02/25/16
Matrix:	Water	Prepared:	03/01/16
Units:	ug/L	Analyzed:	03/02/16
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC825498		100.0	121.3	121 *	80-120		
BSD	QC825499		100.0	119.4	119	80-120	2	20
MS	QC825500	8.427	100.0	101.3	93	80-120		
MSD	QC825501		100.0	102.4	94	80-120	1	20

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	232594
Field ID:	ZZZZZZZZZZ	Sampled:	02/25/16
MSS Lab ID:	274533-001	Received:	02/25/16
Matrix:	Water	Prepared:	03/01/16
Units:	ug/L	Analyzed:	03/02/16
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC825498		100.0	126.4	126 *	80-120		
BSD	QC825499		100.0	119.2	119	80-120	6	20
MS	QC825500	2.039	100.0	94.29	92	80-120		
MSD	QC825501		100.0	96.02	94	80-120	2	20

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	274589	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-OUT	Batch#:	232491
MSS Lab ID:	274589-001	Sampled:	02/26/16 09:27
Matrix:	Water	Received:	02/26/16
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC825050 Analyzed: 02/26/16 13:40

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.634	96	90-110

Type: MS Diln Fac: 1.010
 Lab ID: QC825051 Analyzed: 02/26/16 18:23

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	0.2345	10.10	10.27	99	85-115

Type: MSD Diln Fac: 1.010
 Lab ID: QC825052 Analyzed: 02/26/16 18:35

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	10.28	100	85-115	0	20

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd.

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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 273224
ANALYTICAL REPORT**

Arcadis
2000 Powell St.
Emeryville, CA 94608

Project : RC000463
Location : Scotts Valley Aviza
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	273224-001
TS-MID	273224-002
TS-IN	273224-003
TB01152016	273224-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Mikelle Chong
Project Manager
mikelle.chong@ctberk.com

Date: 01/22/2016

CASE NARRATIVE

Laboratory number: 273224
Client: Arcadis
Project: RC000463
Location: Scotts Valley Aviza
Request Date: 01/15/16
Samples Received: 01/15/16

This data package contains sample and QC results for four water samples, requested for the above referenced project on 01/15/16. The samples were received on ice and intact, directly from the field.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Metals (EPA 6010B):

No analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (EPA 7199):

No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 273224 Date Received 01/15/16 Number of coolers 1
Client Arcadis Project Scotts Valley Avizia
Date Opened 01/15 By (print) SC (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Subtle Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 14.1°

Temperature blank(s) included? Thermometer# 4 IR Gun#

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO

If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? (pH strip lot# H0412308) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Detections Summary for 273224

Results for any subcontracted analyses are not included in this summary.

Client : Arcadis
 Project : RC000463
 Location : Scotts Valley Aviza

Client Sample ID : TS-OUT Laboratory Sample ID : 273224-001

No Detections

Client Sample ID : TS-MID Laboratory Sample ID : 273224-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Hexavalent Chromium	3.6		0.50	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TS-IN Laboratory Sample ID : 273224-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	3.8		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Hexavalent Chromium	3.2		0.50	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TB01152016 Laboratory Sample ID : 273224-004

No Detections

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	231244
Lab ID:	273224-001	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	231244
Lab ID:	273224-001	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-128
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	231244
Lab ID:	273224-002	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	231244
Lab ID:	273224-002	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-128
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	103	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	231244
Lab ID:	273224-003	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	3.8	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	231244
Lab ID:	273224-003	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-128
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	104	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB01152016	Batch#:	231244
Lab ID:	273224-004	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB01152016	Batch#:	231244
Lab ID:	273224-004	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-128
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	231244
MSS Lab ID:	273201-001	Sampled:	01/14/16
Matrix:	Water	Received:	01/14/16
Units:	ug/L	Analyzed:	01/18/16
Diln Fac:	1.000		

Type: MS Lab ID: QC820057

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	0.4407	25.00	23.48	92	73-129
Benzene	<0.1000	25.00	23.40	94	80-120
Trichloroethene	3.586	25.00	29.46	104	73-123
Toluene	<0.1000	25.00	25.15	101	80-120
Chlorobenzene	<0.1136	25.00	25.99	104	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-128
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	103	80-120
Bromofluorobenzene	100	80-120

Type: MSD Lab ID: QC820058

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	22.77	89	73-129	3	25
Benzene	25.00	23.53	94	80-120	1	20
Trichloroethene	25.00	28.69	100	73-123	3	20
Toluene	25.00	24.60	98	80-120	2	21
Chlorobenzene	25.00	26.31	105	80-120	1	24

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-128
1,2-Dichloroethane-d4	102	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC820059	Batch#:	231244
Matrix:	Water	Analyzed:	01/18/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC820059	Batch#:	231244
Matrix:	Water	Analyzed:	01/18/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-128
1,2-Dichloroethane-d4	97	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC820107	Batch#:	231244
Matrix:	Water	Analyzed:	01/18/16
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	11.14	89	66-135
Benzene	12.50	12.05	96	80-123
Trichloroethene	12.50	12.02	96	80-123
Toluene	12.50	12.16	97	80-121
Chlorobenzene	12.50	13.48	108	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-128
1,2-Dichloroethane-d4	97	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	104	80-120

Chromium			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Prepared:	01/18/16
Diln Fac:	1.000	Analyzed:	01/19/16
Batch#:	231265		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	273224-001	ND	5.0
TS-MID	SAMPLE	273224-002	ND	5.0
TS-IN	SAMPLE	273224-003	ND	5.0
	BLANK	QC820146	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Sampled:	01/15/16
Matrix:	Water	Received:	01/15/16
Units:	ug/L	Prepared:	01/18/16
Diln Fac:	1.000	Analyzed:	01/19/16
Batch#:	231265		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	273224-001	ND	5.0
TS-MID	SAMPLE	273224-002	ND	5.0
TS-IN	SAMPLE	273224-003	ND	5.0
	BLANK	QC820146	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	231265
Field ID:	ZZZZZZZZZZ	Sampled:	01/13/16
MSS Lab ID:	273115-002	Received:	01/13/16
Matrix:	Water	Prepared:	01/18/16
Units:	ug/L	Analyzed:	01/19/16
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC820147		100.0	108.8	109	80-120		
BSD	QC820148		100.0	108.1	108	80-120	1	20
MS	QC820149	<1.000	100.0	103.0	103	80-120		
MSD	QC820150		100.0	101.1	101	80-120	2	20

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	231265
Field ID:	ZZZZZZZZZZ	Sampled:	01/13/16
MSS Lab ID:	273115-002	Received:	01/13/16
Matrix:	Water	Prepared:	01/18/16
Units:	ug/L	Analyzed:	01/19/16
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC820147		100.0	105.7	106	80-120		
BSD	QC820148		100.0	106.5	106	80-120	1	20
MS	QC820149	<0.6728	100.0	101.2	101	80-120		
MSD	QC820150		100.0	99.62	100	80-120	2	20

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	273224	Location:	Scotts Valley Aviza
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-OUT	Batch#:	231208
MSS Lab ID:	273224-001	Sampled:	01/15/16 09:47
Matrix:	Water	Received:	01/15/16
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC819902 Analyzed: 01/15/16 11:42

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.843	98	90-110

Type: MS Diln Fac: 1.010
 Lab ID: QC819907 Analyzed: 01/15/16 13:38

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	0.4353	10.10	10.42	99	85-115

Type: MSD Diln Fac: 1.010
 Lab ID: QC819908 Analyzed: 01/15/16 13:50

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	10.46	99	85-115	0	20

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 275601
ANALYTICAL REPORT**

Arcadis
2000 Powell St.
Emeryville, CA 94608

Project : RC000463
Location : SVG Aviza
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	275601-001
TS-MID	275601-002
TS-IN	275601-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____


Mikelle Chong
Project Manager
mikelle.chong@ctberk.com

Date: 04/11/2016

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 275601
Client: Arcadis
Project: RC000463
Location: SVG Aviza
Request Date: 03/31/16
Samples Received: 03/31/16

This data package contains sample and QC results for three water samples, requested for the above referenced project on 03/31/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Metals (EPA 6010B):

No analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (NIOSH 7605):

No analytical problems were encountered.

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

ID#: 275601

Lab Work Order #

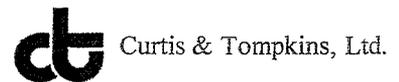
Page 1 of 1

Contact & Company Name: K. Brandt / Arcadis Telephone: 510 Address: [Redacted] City: [Redacted] State: [Redacted] Zip: [Redacted]		Project #: RC000463.0112.NAZIC	
Sample's Printed Name: Heather Tauscher		Sample's City/State: Scotts Valley, CA	
Sample ID		Collection	
TS-OUT	03/31/14 0945	Type (✓)	Matrix
TS-MID	03/31/14 0950		W
TS-IN	03/31/14 0955		W
REMARKS Hexavalent Chromium has a short hold time.			

Sample ID	Date	Time	Comp	Grab	Matrix	Preservative Filtered (✓)	Container Information	Container Information	Container Information
TS-OUT	03/31/14	0945			W	X	VIDAS	polyox poly	None
TS-MID	03/31/14	0950			W	X			
TS-IN	03/31/14	0955			W	X			

Received By	Relinquished By	Received By	Relinquished By
Printed Name: Heather Tauscher Signature: [Signature] Firm: ARCADIS Date/Time: 03/31/14 @ 1130	Printed Name: Ka Meadows Signature: [Signature] Firm: ARCADIS Date/Time: 3/31/14 1130	Printed Name: Ka Meadows Signature: [Signature] Firm: ARCADIS Date/Time: 3/31/14 1130	Printed Name: Shyne Lawton Signature: [Signature] Firm: ARCADIS Date/Time: 3/31/14 1610

COOLER RECEIPT CHECKLIST



Login # 275601 Date Received 3/31 Number of coolers 1
 Client Arcadis Project SVG Aviza

Date Opened 3/31 By (print) Charles (sign) Charles Bahr
 Date Logged in 4/1 By (print) SL (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 39°

Temperature blank(s) included? Thermometer# 4 IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# L10554612) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS
20.) Bubbles > 6mm present in 1/3 VOA for sample 3

Curtis & Tompkins Sample Preservation for 275601

Sample	pH: <2	>9	>12	Other
-001a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
-002a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
-003a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Analyst: SL
 Date: 4/1/16

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	233662
Lab ID:	275601-001	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	233662
Lab ID:	275601-001	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/01/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-128
1,2-Dichloroethane-d4	116	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	233662
Lab ID:	275601-002	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	0.6	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	233662
Lab ID:	275601-002	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-128
1,2-Dichloroethane-d4	114	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	233662
Lab ID:	275601-003	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	3.0	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	233662
Lab ID:	275601-003	Sampled:	03/31/16
Matrix:	Water	Received:	03/31/16
Units:	ug/L	Analyzed:	04/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-128
1,2-Dichloroethane-d4	112	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	233662
Units:	ug/L	Analyzed:	04/01/16
Diln Fac:	1.000		

Type: BS Lab ID: QC829781

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	12.15	97	66-135
Benzene	12.50	12.95	104	80-123
Trichloroethene	12.50	11.94	96	80-123
Toluene	12.50	11.91	95	80-121
Chlorobenzene	12.50	12.16	97	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-128
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

Type: BSD Lab ID: QC829782

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	12.12	97	66-135	0	24
Benzene	12.50	12.59	101	80-123	3	20
Trichloroethene	12.50	12.36	99	80-123	3	20
Toluene	12.50	12.41	99	80-121	4	20
Chlorobenzene	12.50	12.13	97	80-123	0	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-128
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC829783	Batch#:	233662
Matrix:	Water	Analyzed:	04/01/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC829783	Batch#:	233662
Matrix:	Water	Analyzed:	04/01/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-128
1,2-Dichloroethane-d4	107	75-139
Toluene-d8	93	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected

RL= Reporting Limit

Chromium			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	233689
Matrix:	Water	Sampled:	03/31/16
Units:	ug/L	Received:	03/31/16
Diln Fac:	1.000	Prepared:	04/03/16

Field ID	Type	Lab ID	Result	RL	Analyzed
TS-OUT	SAMPLE	275601-001	ND	5.0	04/07/16
TS-MID	SAMPLE	275601-002	ND	5.0	04/07/16
TS-IN	SAMPLE	275601-003	ND	5.0	04/07/16
	BLANK	QC829894	ND	5.0	04/06/16

ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	233689
Matrix:	Water	Sampled:	03/31/16
Units:	ug/L	Received:	03/31/16
Diln Fac:	1.000	Prepared:	04/03/16

Field ID	Type	Lab ID	Result	RL	Analyzed
TS-OUT	SAMPLE	275601-001	ND	5.0	04/07/16
TS-MID	SAMPLE	275601-002	ND	5.0	04/07/16
TS-IN	SAMPLE	275601-003	ND	5.0	04/07/16
	BLANK	QC829894	ND	5.0	04/06/16

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	233689
Field ID:	ZZZZZZZZZZ	Sampled:	03/29/16
MSS Lab ID:	275534-001	Received:	03/29/16
Matrix:	Water	Prepared:	04/03/16
Units:	ug/L	Analyzed:	04/06/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC829895	100.0	108.7	109	80-120		
BSD	QC829896	100.0	107.5	107	80-120	1	20
MS	QC829897		NA				
MSD	QC829898		NA				

NA= Not Analyzed

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	233689
Field ID:	ZZZZZZZZZZ	Sampled:	03/29/16
MSS Lab ID:	275534-001	Received:	03/29/16
Matrix:	Water	Prepared:	04/03/16
Units:	ug/L	Analyzed:	04/06/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC829895	100.0	108.4	108	80-120		
BSD	QC829896	100.0	108.5	108	80-120	0	20
MS	QC829897		NA				
MSD	QC829898		NA				

NA= Not Analyzed

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	275601	Location:	SVG Aviza
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	NIOSH 7605
Field ID:	ZZZZZZZZZZ	Batch#:	233622
MSS Lab ID:	275469-001	Sampled:	03/28/16 08:20
Matrix:	Water	Received:	03/28/16
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC829615 Analyzed: 03/31/16 15:43

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.843	98	90-110

Type: MS Diln Fac: 5.000
 Lab ID: QC829616 Analyzed: 03/31/16 19:10

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	3.069	50.00	50.44	95	85-115

Type: MSD Diln Fac: 5.000
 Lab ID: QC829617 Analyzed: 03/31/16 19:22

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	50.00	52.01	98	85-115	3	20

RPD= Relative Percent Difference

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