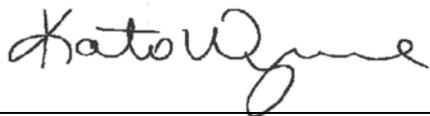


NPDES – Third Quarter 2014 Monitoring Report

Watkins-Johnson Superfund Site
Scotts Valley, California

October 31, 2014



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Staff Geologist



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**NPDES – Third Quarter 2014
Monitoring Report**

Watkins-Johnson
Superfund Site
Scotts Valley, California

Prepared for:
California Regional Water Quality Control
Board

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RC000463.0112.MD214

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1. Introduction	1
2. Groundwater Extraction and Treatment System	1
2.1 GWETS Operational Summary	2
2.1.1 Description of Operations	2
2.1.2 Third Quarter 2014 Summary	3
2.2 Chemical Parameter Data	3
2.2.1 Treatment System Operation	4
2.2.2 Bean Creek	5
3. Conclusions and Recommendations	5

Tables

1	Summary of Groundwater Extraction, Usage, and Discharge to Bean Creek
2	Results of Laboratory Analyses for Volatile Organic Compounds in the Treatment System
3	Physical Parameter Values for Water Samples from the Treatment System
4	Groundwater Extraction and Treatment System Mass Removal Summary

Figures

1	Locations of Bean Creek Sampling Points
2	Volume of Water Extracted, Treated, and Discharged to Bean Creek

Appendices

A	Groundwater Treatment System Process and Instrumentation Diagram
B	Laboratory Analytical Reports and Chain-of-Custody Documentation

1. Introduction

ARCADIS has prepared this Third Quarter 2014 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 third quarter 2014 (July 1 through September 30, 2014).

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*).



NPDES – Third Quarter 2014 Monitoring Report

Watkins-Johnson
Superfund Site
Scotts Valley, California

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, with the recommendation that the treatment system be permanently shut down because remedial goals for the Site had been reached. The USEPA requested in a letter dated August 17, 2009 that the GWETS be 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 shutdown during the fourth quarter 2011 to complete a carbon changeout. 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 are presented in this second quarter 2014 NPDES report. The results indicate 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. A modified startup will be completed and results reported in the fourth quarter 2014 NPDES report.

2.1 GWETS Operational Summary

This section describes the operation of the GWETS and summarizes the data for the third quarter 2014.

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



NPDES – Third Quarter 2014 Monitoring Report

Watkins-Johnson
Superfund Site
Scotts Valley, California

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, routed through a system of mostly above-ground piping, then into a second 10,000-gallon polypropylene storage tank. Treated groundwater is discharged under permit to Bean Creek, a tributary of the San Lorenzo River. As part of the remedial strategy for the Site, from June 1988 to May 2000, a portion of the treated 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 Third Quarter 2014 Summary

During the third quarter 2014, approximately 3.1 million gallons of water were extracted from the Regional Zone using extraction well RA-2, representing an average of approximately 34,904 gallons per day (gpd) and about 16 gallons per minute (gpm). The system totalizer was not properly operating during a portion of September and/or October 2014. Repairs were completed October 30, 2014 and will be reported in the next NPDES Report. Estimated monthly volumes for the third quarter 2014 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 July 21, August 21, and September 17, 2014. 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 3.7 and 4.4 µg/L;
- TCE concentrations were not-detected above the reporting limit;
- No other VOCs were detected;
- Nickel concentrations ranged from below detection limits to 25.0 µg/L;
- Chromium concentrations ranged from 5.2 µg/L to 5.6 µg/L ;
- Hexavalent Chromium concentrations ranged from 4.0 to 4.6 µg/L;

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

- VOCs were not detected;
- Nickel was not detected;
- Chromium concentrations ranged from 6.2 to 7.0 µg/L;
- Hexavalent Chromium concentrations ranged from 4.2 to 5.2 µg/L;

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

- VOCs were not detected;
- Nickel was not detected;
- Chromium was not detected;
- Hexavalent Chromium concentrations ranged from below detection limits to 0.52 µg/L;
- Total dissolved solids (TDS), total suspended solids (TSS) and acute toxicity results are included in Appendix B;
- Physical parameters pH, turbidity, temperature, and dissolved oxygen (DO) were measured using a water-meter on August 21, 2014 as shown on Table 3. The physical parameters were within historical ranges.



**NPDES – Third
Quarter 2014
Monitoring Report**

Watkins-Johnson
Superfund Site
Scotts Valley, California

As noted in Section 2.1.2, during the third quarter 2014, the GWETS treated approximately 3.1 million gallons of groundwater based on the system totalizer readings (Table 1). This constituted an average flow rate of approximately 16 gpm. The GWETS performance data, including the cumulative mass of VOCs removed during the third quarter 2014 are presented in Table 4. The estimated mass of total VOCs removed from groundwater using the GWETS during the third quarter 2014 was approximately 0.0491 pounds.

2.2.2 Bean Creek

The third quarter 2014 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 third quarter 2014, 0.0491 pounds of total VOCs were removed by pumping approximately 3.1 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 Third Quarter 2014 Monitoring Report

Month	Notes	Groundwater Extracted (gallons)	Treated Water Reused by Facility (gallons)	Treated Water Discharged to Bean Creek (gallons)	Perched Zone Infiltration ¹
Third Quarter 2014 Total					
Jul-14	2	1,750,108	--	1,750,108	0
Aug-14	2	1,222,546	--	1,222,546	0
Sep-14	3	168,667	--	168,667	0
Third Quarter 2014 Total		3,141,320	0	3,141,320	0

Notes:

- 1 The groundwater infiltration system has been shut off since May 2000.
Total monthly volumes were estimated based on average daily flow rates between site visits on July 21, August 21 and September 17, 2014.
- 2 System totalizer was not properly operating upon technician arrival on October 17 although water was flowing through pipe. Repairs were scheduled and completed October 30, 2014.
- 3 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 Third Quarter 2014 Monitoring Report

Sample Identification	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	07/21/14	4.4	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	5.2	4.3	6.6
		08/21/14	4.1	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	5.6	4.6 b	<5.0
		09/17/14	3.7	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	5.5	4.0	25.0
TS-MID	Water Between LPGAC Vessels	07/21/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	7.0	5.2	<5.0
		08/21/14	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	6.6	5.2 b	<5.0
		09/17/14	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	6.2	4.2	<5.0
TS-OUT	Treatment System Effluent Water	07/21/14	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<5.0	<0.50	<5.0
		08/21/14	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<5.0	0.52 b	<5.0
		09/17/14	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<5.0	<0.50	<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

TS-OUT Treatment System Effluent Water

1,1,1-TCA 1,1,1-Trichloroethane

MTBE methyl tertiary butyl ether

cis-1,2-DCE cis-1,2-Dichloroethane

LPGAC Liquid phase granular activated carbon

PCE Tetrachloroethene

TCE Trichloroethene

µg/L Micrograms per liter

< Symbol indicates not detected at or above the laboratory reporting limit as noted.

Table 3
Physical Parameter Values for Water Samples
from the Treatment System
 Watkins-Johnson Superfund Site
 Scotts Valley, California
 NPDES Third Quarter 2014 Monitoring Report

Sampling Location	Date Sample Collected	pH	Turbidity (NTUs)	Temperature (°C)	Dissolved Oxygen (mg/L)
Third Quarter 2014					
TS-OUT	08/21/14	7.38	1.3	21.10	9.10

Notes:

- mg/L milligrams per liter
- NTUs nephelometric turbidity units
- °C degrees centigrade
- TS-OUT Treatment System Effluent Water

Table 4
Groundwater Extraction and Treatment System Mass Removal Summary
 Watkins-Johnson Superfund Site
 Scotts Valley, California
 NPDES Third Quarter 2014 Monitoring Report

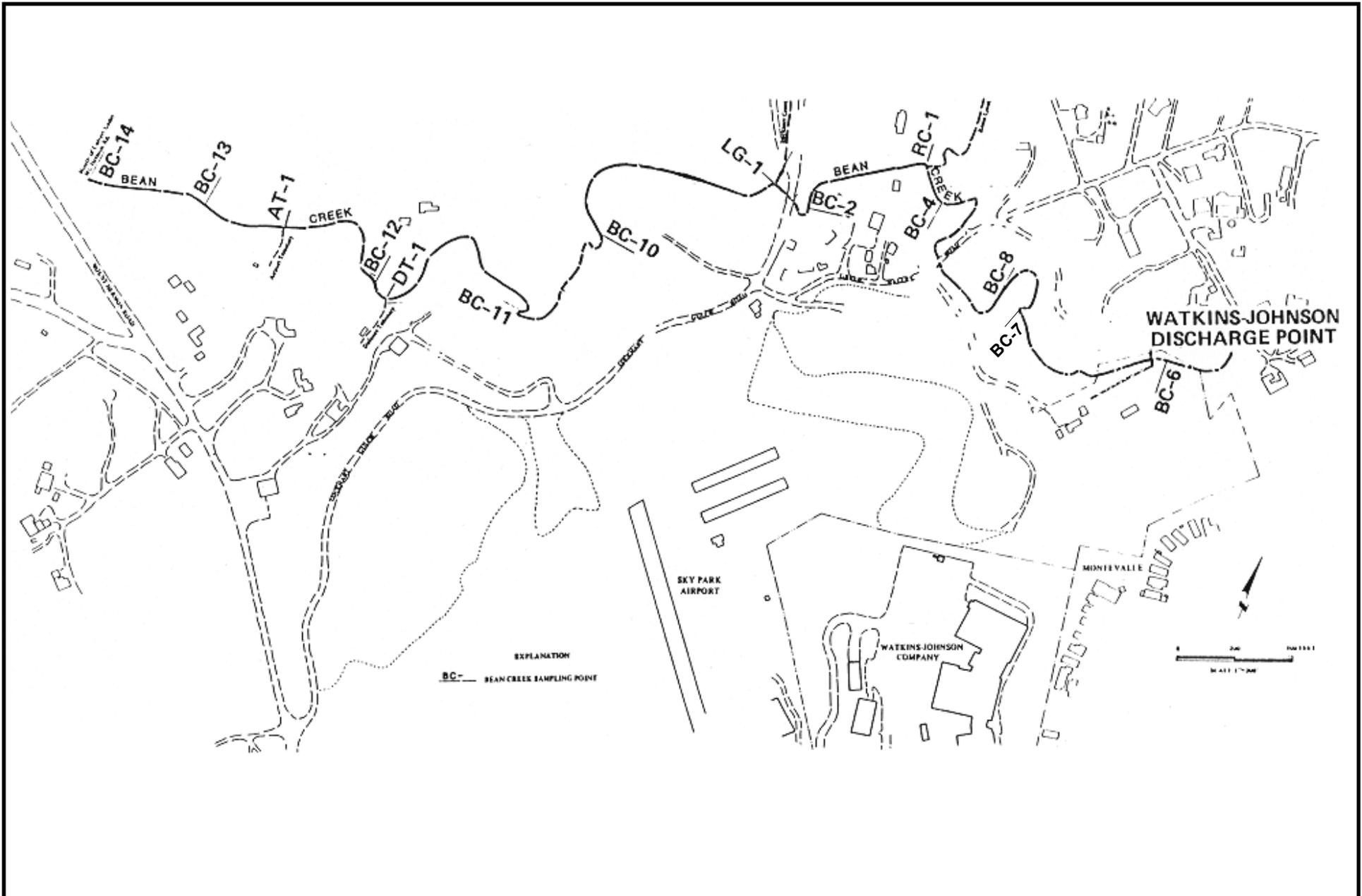
Month	Notes	Volume Extracted (gallons)	Influent VOC Concentration (µg/L) ¹	Total VOC Mass Removed (lb)
Third Quarter 2014 Total				
Jul-14		1,750,108	4.4	0.0283
Aug-14		1,222,546	4.1	0.0184
Sep-14		168,667	3.7	0.0023
Third Quarter 2014 Total		3,141,320	---	0.0491

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.

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Figures



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

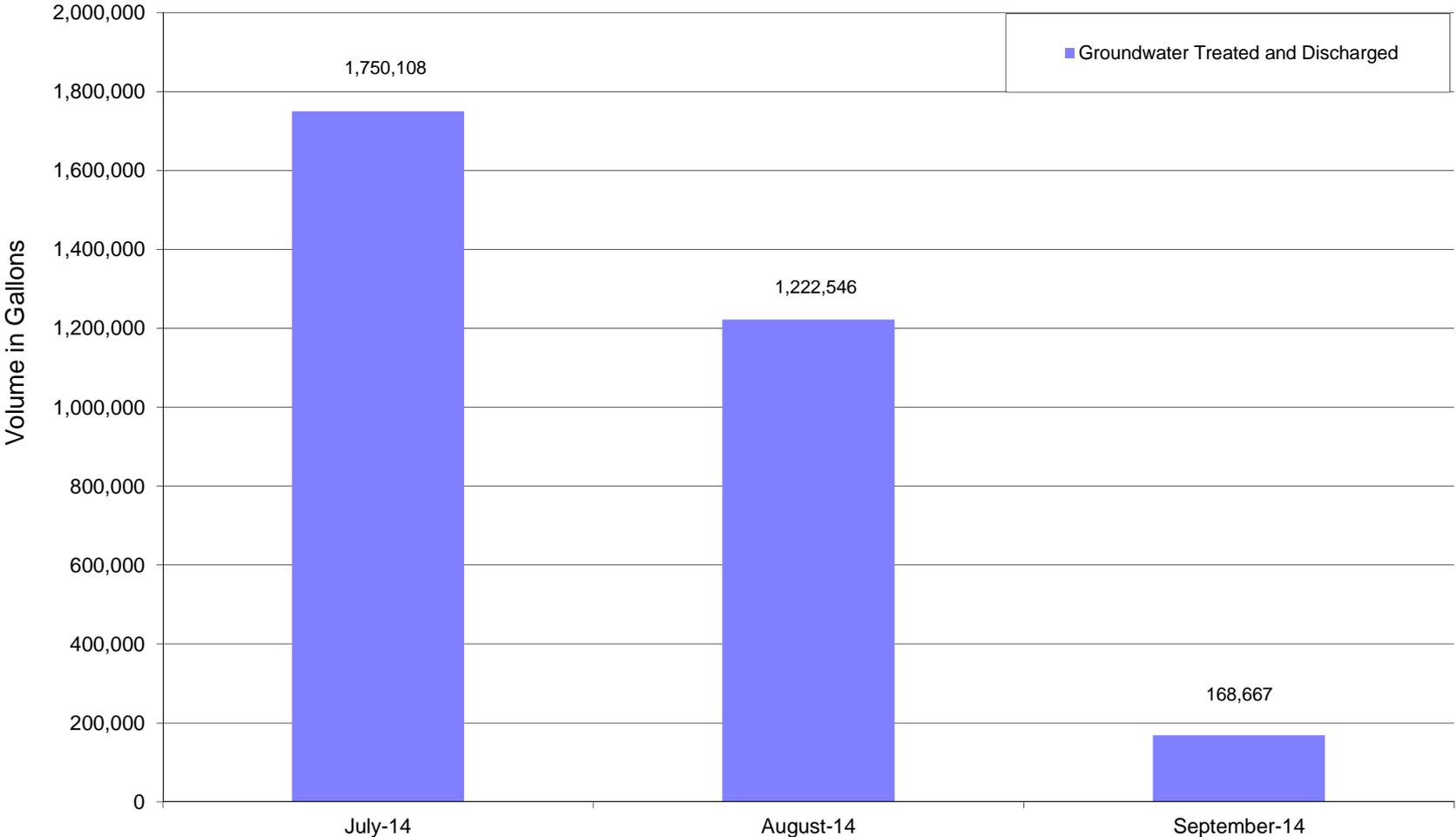
Silicon Valley Group
Scotts Valley, California

RC000463.0015

FIGURE

1

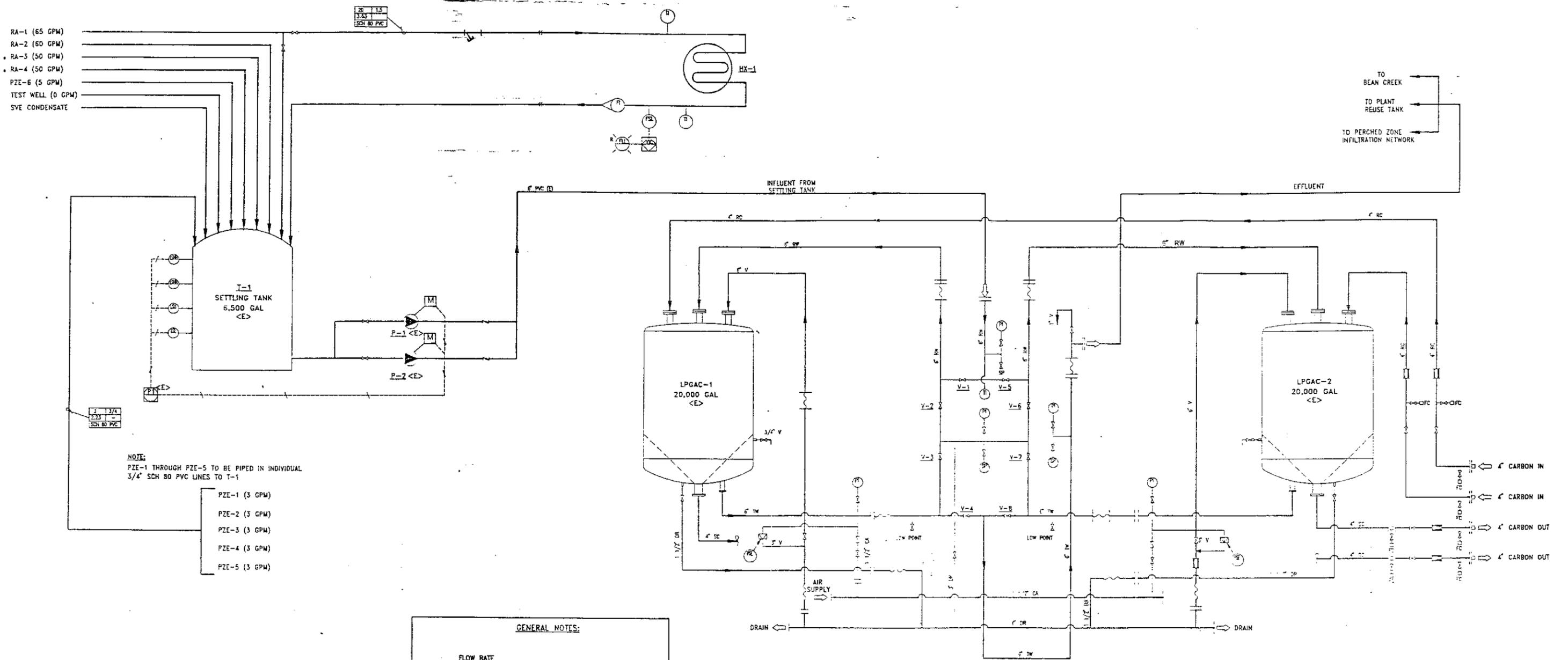
Figure 2
Volume of Groundwater Extracted, Treated, and Discharged to Bean Creek
NPDES Third Quarter 2014 Monitoring Report



Note: Groundwater infiltration system has been off since May 2000

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

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 NAME		W-J CO, SCOTTS VALLEY, CA	
										PROJECT No		920G-134	
										DR		K.N.	
REV	DATE	DESCRIPTION	BY	CHD	APP	CHK	DATE	DWG No	S000811A				
						APP	DATE	SCALE	FIGURE 2.4				

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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 259146
ANALYTICAL REPORT

Arcadis
2000 Powell St
Emeryville, CA 94608

Project : RC000463
Location : SVG-Scotts Valley, CA
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	259146-001
TS-MID	259146-002
TS-IN	259146-003

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: _____

Date: 07/28/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 259146
Client: Arcadis
Project: RC000463
Location: SVG-Scotts Valley, CA
Request Date: 07/21/14
Samples Received: 07/21/14

This data package contains sample and QC results for three water samples, requested for the above referenced project on 07/21/14. The samples were received cold and intact.

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

No analytical problems were encountered.

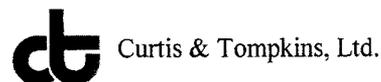
Metals (EPA 6010B):

No analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (EPA 7199):

No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 259146 Date Received 7/21/14 Number of coolers 1
Client ARCADIS Project RC000463-CH2 - NA214

Date Opened 7/21/14 By (print) [Signature] (sign)
Date Logged in 7/21/14 By (print) [Signature] (sign)

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) 5.50

Samples received on ice & cold without a temperature blank; temp taken with 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? 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 259146

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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Analyst: FS

Date: 7/21/14

Detections Summary for 259146

Client : Arcadis
 Project : RC000463
 Location : SVG-Scotts Valley, CA

Client Sample ID : TS-OUT Laboratory Sample ID : 259146-001

No Detections

Client Sample ID : TS-MID Laboratory Sample ID : 259146-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Chromium	7.0		5.0	0.34	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	5.2		0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TS-IN Laboratory Sample ID : 259146-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	4.4		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Chromium	5.2		5.0	0.34	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Nickel	6.6		5.0	0.46	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	4.3		0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Purgeable Organics by GC/MS

Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	213513
Lab ID:	259146-001	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	5.0
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 #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	213513
Lab ID:	259146-001	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	132	77-136
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	213513
Lab ID:	259146-002	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	5.0
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 #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	213513
Lab ID:	259146-002	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	135	77-136
1,2-Dichloroethane-d4	114	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	213513
Lab ID:	259146-003	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	5.0
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	4.4	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	213513
Lab ID:	259146-003	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Analyzed:	07/22/14
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	135	77-136
1,2-Dichloroethane-d4	114	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	213513
Units:	ug/L	Analyzed:	07/22/14
Diln Fac:	1.000		

Type: BS Lab ID: QC750092

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	13.88	111	65-134
Benzene	12.50	13.82	111	80-124
Trichloroethene	12.50	12.60	101	80-120
Toluene	12.50	12.89	103	80-122
Chlorobenzene	12.50	13.69	110	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	119	77-136
1,2-Dichloroethane-d4	112	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

Type: BSD Lab ID: QC750093

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	13.14	105	65-134	6	20
Benzene	12.50	13.40	107	80-124	3	20
Trichloroethene	12.50	12.54	100	80-120	1	20
Toluene	12.50	12.53	100	80-122	3	20
Chlorobenzene	12.50	13.32	107	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	119	77-136
1,2-Dichloroethane-d4	112	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC750094	Batch#:	213513
Matrix:	Water	Analyzed:	07/22/14
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	5.0
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 #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC750094	Batch#:	213513
Matrix:	Water	Analyzed:	07/22/14
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	130	77-136
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit

Chromium			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Prepared:	07/23/14
Diln Fac:	1.000	Analyzed:	07/23/14
Batch#:	213574		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	259146-001	ND	5.0
TS-MID	SAMPLE	259146-002	7.0	5.0
TS-IN	SAMPLE	259146-003	5.2	5.0
	BLANK	QC750326	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Sampled:	07/21/14
Matrix:	Water	Received:	07/21/14
Units:	ug/L	Prepared:	07/23/14
Diln Fac:	1.000	Analyzed:	07/23/14
Batch#:	213574		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	259146-001	ND	5.0
TS-MID	SAMPLE	259146-002	ND	5.0
TS-IN	SAMPLE	259146-003	6.6	5.0
	BLANK	QC750326	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	213574
Field ID:	TS-OUT	Sampled:	07/21/14
MSS Lab ID:	259146-001	Received:	07/21/14
Matrix:	Water	Prepared:	07/23/14
Units:	ug/L	Analyzed:	07/23/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC750327		100.0	99.32	99	80-120		
BSD	QC750328		100.0	99.60	100	80-120	0	20
MS	QC750329	2.936	100.0	102.9	100	76-120		
MSD	QC750330		100.0	107.7	105	76-120	5	20

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	213574
Field ID:	TS-OUT	Sampled:	07/21/14
MSS Lab ID:	259146-001	Received:	07/21/14
Matrix:	Water	Prepared:	07/23/14
Units:	ug/L	Analyzed:	07/23/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC750327		100.0	95.90	96	80-120		
BSD	QC750328		100.0	97.20	97	80-120	1	20
MS	QC750329	2.512	100.0	98.14	96	73-120		
MSD	QC750330		100.0	102.1	100	73-120	4	20

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	259146	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-OUT	Batch#:	213514
MSS Lab ID:	259146-001	Sampled:	07/21/14 09:35
Matrix:	Water	Received:	07/21/14
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC750096 Analyzed: 07/21/14 13:03

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.538	95	90-110

Type: MS Diln Fac: 1.010
 Lab ID: QC750097 Analyzed: 07/21/14 20:11

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	0.2096	10.10	9.825	95	85-115

Type: MSD Diln Fac: 1.010
 Lab ID: QC750098 Analyzed: 07/21/14 20:23

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	9.688	94	85-115	1	44

RPD= Relative Percent Difference



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

Laboratory Job Number 260128
ANALYTICAL REPORT

Arcadis
2000 Powell St
Emeryville, CA 94608

Project : RC000463
Location : SVG
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	260128-001
TS-MID	260128-002
TS-IN	260128-003
TB082114	260128-004

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: _____

Date: 09/08/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CASE NARRATIVE

Laboratory number: 260128
Client: Arcadis
Project: RC000463
Location: SVG
Request Date: 08/22/14
Samples Received: 08/22/14

This data package contains sample and QC results for four water samples, requested for the above referenced project on 08/22/14. 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 (EPA 7199):

260128-001, 260128-002, and 260128-003 were analyzed outside of hold time; affected data was qualified with "b". No other analytical problems were encountered.

Total Dissolved Solids (TDS) (SM2540C):

No analytical problems were encountered.

Total Suspended Solids (TSS) (SM2540D):

High RPD was observed for total suspended solids in the MS/MSD for batch 214802; the parent sample was not a project sample, the RPD was acceptable in the BS/BSD, and this analyte was not detected at or above the RL in the associated sample. No other analytical problems were encountered.

Bioassay (EPA):

Aquatic Bioassay & Consulting in Ventura, CA performed the analysis (not NELAP certified). Please see the Aquatic Bioassay & Consulting case narrative.

260128

Curtis & Tompkins CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM



ID#:

Page 1 of 1

Lab Work Order #

Send Results to: **ARCADIS**
 Contact & Company Name: K. Wynne
 Address: OA file
 City: _____ State: _____ E-mail Address: _____
 Telephone: _____ Fax: _____

Preservative: HCL HNO3
 Filtered (✓): _____
 # of Containers: 3 1 1 1 1
 Container Information: VOAs poly poly poly cube

Keys

Preservation Key:
 A. H₂SO₄
 B. HCL
 C. HNO₃
 D. NaOH
 E. None
 F. Other: _____
 G. Other: _____
 H. Other: _____

Container Information Key:
 1. 40 ml Vial
 2. 1 L Amber
 3. 250 ml Plastic
 4. 500 ml Plastic
 5. Encore
 6. 2 oz. Glass
 7. 4 oz. Glass
 8. 8 oz. Glass
 9. Other: _____
 10. Other: _____

Matrix Key:
 SO - Soil SE - Sediment NL - NAPL/Oil
 W - Water SL - Sludge SW - Sample Wipe
 T - Tissue A - Air Other: _____

Project Name/Location (City, State): SV - Scotts Valley, CA
 Project #: RC-000463-0112-MD214
 Sampler's Printed Name: Leather Tauscher
 Sampler's Signature: [Signature]

PARAMETER ANALYSIS & METHOD

3242B
Total Chrome, Nickel
Hex Chrome 7199
TSS/TDS
Acute Toxicity Flammability

Sample ID	Collection		Type (✓)		Matrix
	Date	Time	Comp	Grab	

1	TS-OUT	08/21/14	1045		X	W	X	X	X	X	
2	TS-MID	08/21/14	1049		X	W	X	X	X		
3	TS-IN	08/21/14	1053		X	W	X	X			
4	TB08214	08/21/14	-		X	W	3				

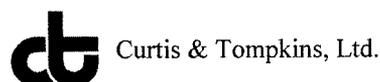
REMARKS

Special Instructions/Comments: *24 hour hold time Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name: <u>Curtis & Tompkins</u>	Cooler Custody Seal (✓) <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: <u>Leather Tauscher</u>	Signature: <u>[Signature]</u>	Printed Name: <u>Mike Chung</u>	Signature: <u>[Signature]</u>	Printed Name: _____	Signature: _____	Printed Name: _____	Signature: _____
Specify Turnaround Requirements: <u>Standard</u>	Sample Receipt:	Firm: <u>ARCADIS</u>	Date/Time: <u>08/22/14 @ 0720</u>	Firm/Courier: <u>CT</u>	Date/Time: <u>08/22/14 @ 1030</u>	Firm/Courier: _____	Date/Time: _____	Firm: _____	Date/Time: _____
Shipping Tracking #:	Condition/Cooler Temp: _____								

3 of 36

COOLER RECEIPT CHECKLIST



Login # 260128 Date Received 08/22/14 Number of coolers 1
 Client ARCADIS Project RC000463

Date Opened 08/21/14 By (print) MC (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓

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) _____

Samples received on ice & cold without a temperature blank; temp taken with 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? _____ (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

#10) -001: received only 6 containers.

Curtis & Tompkins Sample Preservation for 260128

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"/>	_____
f	<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: MAC
 Date: 8/22/14

Detections Summary for 260128

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

 Client : Arcadis
 Project : RC000463
 Location : SVG

Client Sample ID : TS-OUT Laboratory Sample ID : 260128-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Hexavalent Chromium	0.52	b	0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD
Total Dissolved Solids	310		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Client Sample ID : TS-MID Laboratory Sample ID : 260128-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Chromium	6.6		5.0	0.57	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	5.2	b	0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TS-IN Laboratory Sample ID : 260128-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	4.1		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Chromium	5.6		5.0	0.57	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	4.6	b	0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TB082114 Laboratory Sample ID : 260128-004

No Detections

b = See narrative

Purgeable Organics by GC/MS

Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	214716
Lab ID:	260128-001	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	5.0
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 #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	214716
Lab ID:	260128-001	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	103	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	214716
Lab ID:	260128-002	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	5.0
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 #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	214716
Lab ID:	260128-002	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	103	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	214716
Lab ID:	260128-003	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	5.0
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	4.1	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	214716
Lab ID:	260128-003	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB082114	Batch#:	214716
Lab ID:	260128-004	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	5.0
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 #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB082114	Batch#:	214716
Lab ID:	260128-004	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Analyzed:	08/24/14
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	102	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	214716
Units:	ug/L	Analyzed:	08/24/14
Diln Fac:	1.000		

Type: BS Lab ID: QC754784

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	14.37	115	65-134
Benzene	12.50	14.24	114	80-124
Trichloroethene	12.50	14.25	114	80-120
Toluene	12.50	13.90	111	80-122
Chlorobenzene	12.50	13.95	112	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	98	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC754785

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	15.31	123	65-134	6	20
Benzene	12.50	14.57	117	80-124	2	20
Trichloroethene	12.50	14.08	113	80-120	1	20
Toluene	12.50	13.98	112	80-122	1	20
Chlorobenzene	12.50	14.08	113	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	99	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	100	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC754786	Batch#:	214716
Matrix:	Water	Analyzed:	08/24/14
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	5.0
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 #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC754786	Batch#:	214716
Matrix:	Water	Analyzed:	08/24/14
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	77-136
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected

RL= Reporting Limit

Chromium			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Prepared:	08/27/14
Diln Fac:	1.000	Analyzed:	08/29/14
Batch#:	214834		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	260128-001	ND	5.0
TS-MID	SAMPLE	260128-002	6.6	5.0
TS-IN	SAMPLE	260128-003	5.6	5.0
	BLANK	QC755278	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	ug/L	Prepared:	08/27/14
Diln Fac:	1.000	Analyzed:	08/29/14
Batch#:	214834		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	260128-001	ND	5.0
TS-MID	SAMPLE	260128-002	ND	5.0
TS-IN	SAMPLE	260128-003	ND	5.0
	BLANK	QC755278	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	214834
Field ID:	TS-IN	Sampled:	08/21/14
MSS Lab ID:	260128-003	Received:	08/22/14
Matrix:	Water	Prepared:	08/27/14
Units:	ug/L	Analyzed:	08/29/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC755279		100.0	97.57	98	80-120		
BSD	QC755280		100.0	104.4	104	80-120	7	20
MS	QC755281	5.571	100.0	106.0	100	76-120		
MSD	QC755282		100.0	107.7	102	76-120	2	20

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	214834
Field ID:	TS-IN	Sampled:	08/21/14
MSS Lab ID:	260128-003	Received:	08/22/14
Matrix:	Water	Prepared:	08/27/14
Units:	ug/L	Analyzed:	08/29/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC755279		100.0	95.09	95	80-120		
BSD	QC755280		100.0	102.1	102	80-120	7	20
MS	QC755281	3.545	100.0	102.1	99	73-120		
MSD	QC755282		100.0	102.2	99	73-120	0	20

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	ZZZZZZZZZZ	Batch#:	214695
MSS Lab ID:	260144-002	Sampled:	08/22/14 10:45
Matrix:	Water	Received:	08/22/14
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC754712 Analyzed: 08/22/14 15:23

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	10.91	109	90-110

Type: MS Diln Fac: 1.010
 Lab ID: QC754726 Analyzed: 08/22/14 17:20

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	<0.08023	10.10	9.375	93	85-115

Type: MSD Diln Fac: 1.010
 Lab ID: QC754727 Analyzed: 08/22/14 17:31

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	9.495	94	85-115	1	44

RPD= Relative Percent Difference

Total Dissolved Solids (TDS)			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Batch#:	214803
Field ID:	TS-OUT	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	mg/L	Prepared:	08/26/14
Diln Fac:	1.000	Analyzed:	08/27/14

Type	Lab ID	Result	RL
SAMPLE	260128-001	310	10
BLANK	QC755153	ND	10

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Dissolved Solids (TDS)			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Batch#:	214803
Field ID:	ZZZZZZZZZZ	Sampled:	08/22/14
Matrix:	Water	Received:	08/22/14
Units:	mg/L	Prepared:	08/26/14
Diln Fac:	1.000	Analyzed:	08/27/14

Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
LCS		QC755154		104.0	88.00		85	74-120		
SDUP	260156-006	QC755155	1,134		1,116	10.00			2	5
SDUP	260190-001	QC755156	518.0		516.0	10.00			0	5

RL= Reporting Limit

RPD= Relative Percent Difference

Total Suspended Solids (TSS)			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Batch#:	214802
Field ID:	TS-OUT	Sampled:	08/21/14
Matrix:	Water	Received:	08/22/14
Units:	mg/L	Prepared:	08/26/14
Diln Fac:	1.000	Analyzed:	08/27/14

Type	Lab ID	Result	RL
SAMPLE	260128-001	ND	5
BLANK	QC755148	ND	5

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Suspended Solids (TSS)			
Lab #:	260128	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Batch#:	214802
Field ID:	ZZZZZZZZZZ	Sampled:	08/26/14
MSS Lab ID:	260236-001	Received:	08/26/14
Matrix:	Water	Prepared:	08/26/14
Units:	mg/L	Analyzed:	08/27/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC755149		50.00	58.00	116	80-120		
BSD	QC755150		50.00	55.00	110	80-120	5	5
MS	QC755151	6,710	50.00	5,386	-2648 NM	52-132		
MSD	QC755152		50.00	6,532	-356 NM	52-132	19 *	5

*= Value outside of QC limits; see narrative

NM= Not Meaningful: Sample concentration > 4X spike concentration

RPD= Relative Percent Difference

Laboratory Job Number 260128
Subcontracted Products
Aquatic Bioassay & Consulting



September 8, 2014

Will S. Rice
Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710

Dear Mr. Rice:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Curtis & Tompkins, Ltd.
SAMPLE I.D.:	TS-OUT
DATE RECEIVED:	23 Aug - 14
ABC LAB. NO.:	C&T0814.232

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 08 Sep-14 14:19 (p 1 of 1)
 Test Code: C&T0814.232 | 16-8218-8225

Fathead Minnow 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-9809-3435	Test Type: Survival (96h)	Analyst:
Start Date: 23 Aug-14 13:15	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 27 Aug-14 11:20	Species: Pimephales promelas	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:

Sample ID: 12-0630-4567	Code: C&T0814.232	Client: Curtis & Tompkins
Sample Date: 21 Aug-14 10:45	Material: Sample Water	Project: 260128
Receive Date: 23 Aug-14 12:00	Source: Bioassay Report	
Sample Age: 51h (3.8 °C)	Station: TS-OUT	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-7772-8803	96h Survival Rate	100	>100	NA	NA	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
10-0099-5398	96h Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
10-0099-5398	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria
16-7772-8803	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

96h Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

96h Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

CETIS Analytical Report

Report Date: 08 Sep-14 14:19 (p 1 of 2)
 Test Code: C&T0814.232 | 16-8218-8225

Fathead Minnow 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7772-8803	Endpoint: 96h Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 08 Sep-14 14:18	Analysis: Nonparametric-Two Sample	Official Results: Yes
Sample ID: 12-0630-4567	Code: C&T0814.232	Client: Curtis & Tompkins
Sample Date: 21 Aug-14 10:45	Material: Sample Water	Project: 260128
Receive Date: 23 Aug-14 12:00	Source: Bioassay Report	
Sample Age: 51h (3.8 °C)	Station: TS-OUT	

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result
Angular (Corrected)	NA	C > T	NA	NA	Passes 96h survival rate

Wilcoxon Rank Sum Two-Sample Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		100	18	NA	1	6	1.0000	Exact	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0		7			

96h Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	1	0	0.0%	0.0%
100		4	1	1	1	1	1	1	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	0.0%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	0.0%

96h Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.412	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

96h Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

CETIS Analytical Report

Report Date: 08 Sep-14 14:19 (p 1 of 1)
 Test Code: C&T0814.232 | 16-8218-8225

Fathead Minnow 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-0099-5398	Endpoint: 96h Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 08 Sep-14 14:18	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Sample ID: 12-0630-4567	Code: C&T0814.232	Client: Curtis & Tompkins
Sample Date: 21 Aug-14 10:45	Material: Sample Water	Project: 260128
Receive Date: 23 Aug-14 12:00	Source: Bioassay Report	
Sample Age: 51h (3.8 °C)	Station: TS-OUT	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

96h Survival Rate Summary

Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	40	40
100		4	1	1	1	0	0	0.0%	0.0%	40	40

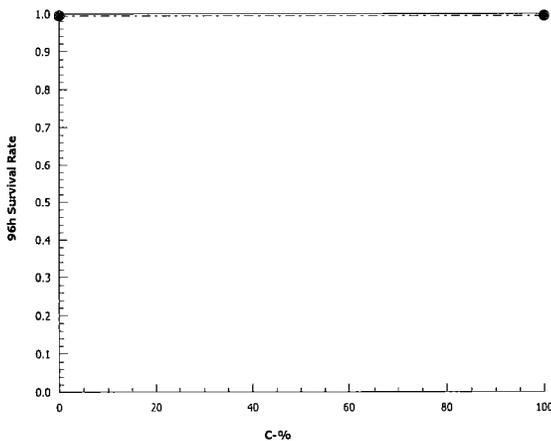
96h Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
100		1	1	1	1

96h Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics



CETIS Measurement Report

Report Date: 08 Sep-14 14:19 (p 1 of 2)
 Test Code: C&T0814.232 | 16-8218-8225

Fathead Minnow 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-9809-3435	Test Type: Survival (96h)	Analyst:
Start Date: 23 Aug-14 13:15	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 27 Aug-14 11:20	Species: Pimephales promelas	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 12-0630-4567	Code: C&T0814.232	Client: Curtis & Tompkins
Sample Date: 21 Aug-14 10:45	Material: Sample Water	Project: 260128
Receive Date: 23 Aug-14 12:00	Source: Bioassay Report	
Sample Age: 51h (3.8 °C)	Station: TS-OUT	

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	66	66	66	66	66	0	0	0.0%	0
100		3	97	97	97	97	97	0	0	0.0%	0
Overall		6	81.5			66	97				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	346	279.3	412.7	330	377	15.5	26.85	7.76%	0
100		3	520.3	502.7	538	514	528	4.096	7.095	1.36%	0
Overall		6	433.2			330	528				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.633	7.116	8.15	7.4	7.8	0.1202	0.2082	2.73%	0
100		3	8.667	4.07	13.26	7.5	10.8	1.068	1.85	21.35%	0
Overall		6	8.15			7.4	10.8				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	95	95	95	95	95	0	0	0.0%	0
100		3	125	125	125	125	125	0	0	0.0%	0
Overall		6	110			95	125				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	7.933	6.899	8.968	7.6	8.4	0.2404	0.4163	5.25%	0
100		3	7.367	5.343	9.39	6.8	8.3	0.4702	0.8145	11.06%	0
Overall		6	7.65			6.8	8.4				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	3	24	24	24	24	24	0	0	0.0%	0
100		3	24.33	23.3	25.37	24	24.8	0.2404	0.4163	1.71%	0
Overall		6	24.17			24	24.8				0 (0%)

CETIS Measurement Report

Report Date: 08 Sep-14 14:19 (p 2 of 2)
Test Code: C&T0814.232 | 16-8218-8225

Fathead Minnow 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO₃)-mg/L

C-%	Control Type	1	2	3
0	Negative Contr	66	66	66
100		97	97	97

Conductivity-µmhos

C-%	Control Type	1	2	3
0	Negative Contr	331	330	377
100		514	528	519

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3
0	Negative Contr	7.7	7.8	7.4
100		10.8	7.7	7.5

Hardness (CaCO₃)-mg/L

C-%	Control Type	1	2	3
0	Negative Contr	95	95	95
100		125	125	125

pH-Units

C-%	Control Type	1	2	3
0	Negative Contr	7.6	7.8	8.4
100		6.8	7	8.3

Temperature-°C

C-%	Control Type	1	2	3
0	Negative Contr	24	24	24
100		24.8	24.2	24

Curtis & Tompkins, Ltd.
 Analytical Laboratories, Since 1878
 2323 Fifth Street
 Berkeley, CA 94710
 (510) 486-0900
 (510) 486-0532

Project Number: 260128
 Site: SVG

Subcontract Laboratory:
 Aquatic Bioassay & Consulting
 29 North Olive Street
 Ventura, CA 93001
 (805) 643-5621
 ATTN: Michael X15

Results due: Report Level: II

Please send report to: Will S Rice (will.rice@ctberk.com)

*** Please report using Sample ID rather than C&T Lab #.

Sample ID	Sampled	Matrix	Analysis	C&T Lab #	Comments
TS-OUT	08/21 10:45	Water	BIOASSAY	260128-001	

Temp - 3.8 °C
 chloride - C.O./
 amm. 0.0

Notes:	Relinquished By:	Received By:
	Mikelle Chong	
	Date/Time: 08/22/14 @ 1600	Date/Time: 8-23-14 1200
	Date/Time:	Date/Time:

Signature on this form constitutes a firm Purchase Order for the services requested above.



Curtis & Tompkins, Ltd.

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

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

Laboratory Job Number 260986
ANALYTICAL REPORT

Arcadis
2000 Powell St
Emeryville, CA 94608

Project : RC000463
Location : SVG-Scotts Valley, CA
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TS-OUT	260986-001
TS-MID	260986-002
TS-IN	260986-003

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: _____

Date: 09/25/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 260986
Client: Arcadis
Project: RC000463
Location: SVG-Scotts Valley, CA
Request Date: 09/18/14
Samples Received: 09/18/14

This data package contains sample and QC results for three water samples, requested for the above referenced project on 09/18/14. 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 (EPA 7199):

No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 260986 Date Received 09/18/14 Number of coolers 1
Client Arcadis Project SVG - Scotts Valley
Date Opened 09/18 By (print) MC (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)

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

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

Type of ice used: Wet Blue/Gel None Temp(°C) 5.5

Samples Received on ice & cold without a temperature blank; temp. taken with 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? 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

#13) -002: 2 of 3 VOAs labeled TS-1N w/ the same sampling time as TS-M10 (09/17/14 @ 1716)

Curtis & Tompkins Sample Preservation for 260986

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: ML
 Date: 09/18/14

Detections Summary for 260986

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

 Client : Arcadis
 Project : RC000463
 Location : SVG-Scotts Valley, CA

Client Sample ID : TS-OUT Laboratory Sample ID : 260986-001

No Detections

Client Sample ID : TS-MID Laboratory Sample ID : 260986-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Chromium	6.2		5.0	0.57	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	4.2		0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Client Sample ID : TS-IN Laboratory Sample ID : 260986-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	3.7		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Chromium	5.5		5.0	0.57	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Nickel	25		5.0	0.71	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Hexavalent Chromium	4.0		0.50	0.080	ug/L	TOTAL	1.000	EPA 7199	METHOD

Purgeable Organics by GC/MS

Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	215555
Lab ID:	260986-001	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	5.0
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 #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	215555
Lab ID:	260986-001	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	113	77-136
1,2-Dichloroethane-d4	112	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	114	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	215555
Lab ID:	260986-002	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	5.0
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 #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	215555
Lab ID:	260986-002	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	113	77-136
1,2-Dichloroethane-d4	116	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	113	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	215555
Lab ID:	260986-003	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	5.0
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	3.7	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	215555
Lab ID:	260986-003	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Analyzed:	09/19/14
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	113	77-136
1,2-Dichloroethane-d4	113	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	116	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC758223	Batch#:	215555
Matrix:	Water	Analyzed:	09/19/14
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	5.0
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 #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC758223	Batch#:	215555
Matrix:	Water	Analyzed:	09/19/14
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	112	77-136
1,2-Dichloroethane-d4	111	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	117	80-120

ND= Not Detected

RL= Reporting Limit

Chromium			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Prepared:	09/22/14
Diln Fac:	1.000	Analyzed:	09/23/14
Batch#:	215624		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	260986-001	ND	5.0
TS-MID	SAMPLE	260986-002	6.2	5.0
TS-IN	SAMPLE	260986-003	5.5	5.0
	BLANK	QC758507	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Nickel			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Sampled:	09/17/14
Matrix:	Water	Received:	09/18/14
Units:	ug/L	Prepared:	09/22/14
Diln Fac:	1.000	Analyzed:	09/23/14
Batch#:	215624		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	260986-001	ND	5.0
TS-MID	SAMPLE	260986-002	ND	5.0
TS-IN	SAMPLE	260986-003	25	5.0
	BLANK	QC758507	ND	5.0

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	215624
Field ID:	ZZZZZZZZZZ	Sampled:	09/18/14
MSS Lab ID:	261046-002	Received:	09/19/14
Matrix:	Water	Prepared:	09/22/14
Units:	ug/L	Analyzed:	09/23/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC758508		100.0	103.1	103	80-120		
BSD	QC758509		100.0	104.8	105	80-120	2	20
MS	QC758510	0.6086	100.0	104.6	104	76-120		
MSD	QC758511		100.0	105.9	105	76-120	1	20

RPD= Relative Percent Difference

Batch QC Report

Nickel			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	215624
Field ID:	ZZZZZZZZZZ	Sampled:	09/18/14
MSS Lab ID:	261046-002	Received:	09/19/14
Matrix:	Water	Prepared:	09/22/14
Units:	ug/L	Analyzed:	09/23/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC758508		100.0	103.8	104	80-120		
BSD	QC758509		100.0	105.6	106	80-120	2	20
MS	QC758510	1.253	100.0	105.2	104	73-120		
MSD	QC758511		100.0	105.6	104	73-120	0	20

RPD= Relative Percent Difference

Batch QC Report

Hexavalent Chromium			
Lab #:	260986	Location:	SVG-Scotts Valley, CA
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-OUT	Batch#:	215521
MSS Lab ID:	260986-001	Sampled:	09/17/14 17:11
Matrix:	Water	Received:	09/18/14
Units:	ug/L		

Type: LCS Diln Fac: 1.000
 Lab ID: QC758099 Analyzed: 09/18/14 10:21

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	10.45	104	90-110

Type: MS Diln Fac: 1.010
 Lab ID: QC758100 Analyzed: 09/18/14 12:46

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	<0.08023	10.10	9.542	94	85-115

Type: MSD Diln Fac: 1.010
 Lab ID: QC758101 Analyzed: 09/18/14 12:58

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	10.01	99	85-115	5	44

RPD= Relative Percent Difference