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ENVIRONMENT

Mr. Don Eley
California Regional Water Quality Control Board
Central Coast Region
895 Aerovista Place, Suite 101
San Luis Obispo, California 93401-7906

Subject:
NPDES – Fourth Quarter 2013 Monitoring Report, Permit # CAG993002, Watkins-Johnson Superfund Site, 440 Kings Village Road, Scotts Valley, California

Date:
29 January 2014

Contact:
Liz Sewell

Phone:
916.786.5535

Email:
Liz.Sewell@arcadis-us.com

Our ref:
RC000463.0112.MD213

Dear Mr. Eley:

Enclosed is the *National Pollutant Discharge Elimination System (NPDES – Fourth Quarter 2013 Monitoring Report)* for the groundwater treatment system at Watkins-Johnson Superfund Site, 440 Kings Village Road, Scotts Valley, California. This report is submitted in compliance with Monitoring and Reporting Program R3-2006-0067, issued for NPDES Permit Number CAG993002.

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

Sincerely,

ARCADIS U.S., Inc.

Liz Sewell

Liz Sewell
Resource Manager

Enclosure:
NPDES – Fourth Quarter 2013 Monitoring Report

Copies:

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U.S. Environmental Protection Agency
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Mr. Rick Collins (e-mail only)
ARCADIS

Ms. Katherine Brandt (e-mail only)
ARCADIS

Imagine the result

NPDES – Fourth Quarter 2013 Monitoring Report

Watkins-Johnson Superfund Site
Scotts Valley, California

January 29, 2014

ARCADIS

Katie Wynne
Staff Geologist

Liz Sewell
Resource Manager

NPDES – Fourth Quarter 2014 Monitoring Report

Watkins-Johnson
Superfund Site
Scotts Valley, California

Prepared for:
California Regional Water Quality Control Board

Prepared by:
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Our Ref.:
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Date:
29 January 2014

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ARCADIS

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A Groundwater Treatment System Process and Instrumentation Diagram

B Laboratory Analytical Reports and Chain-of-Custody Documentation

1. Introduction

ARCADIS has prepared this Fourth Quarter 2013 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 fourth quarter 2013 (October 1 through December 31, 2013).

2. Groundwater Extraction and Treatment System

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

The current program consists of monthly sampling at the liquid-phase granular activated carbon (LPGAC) vessel influent (TS-IN), the midpoint between the two LPGAC vessels (TS-MID), and the LPGAC vessel effluent (TS-OUT). System flow rates are also monitored monthly. The samples are analyzed for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Test Method 8260B, chromium and nickel using USEPA Method 6020, and hexavalent chromium using USEPA Method 7199. Receiving waters are visually monitored at a minimum of quarterly at the Bean Creek discharge pipe (BCDP), the Bean Creek upstream receiving water sample point (BC-6), and the Bean Creek downstream receiving water sample point (BC-7). Figure 1 shows the locations of the Bean Creek monitoring points. When the system is in operation, physical parameters of the effluent are measured at TS-OUT annually during the third quarter. A system process and instrumentation diagram (P&ID) is presented in Appendix A (*Remedial Action and Operation and Maintenance Plan, Watkins-Johnson Company Scotts Valley California, Watkins-Johnson Environmental, Inc. February 25, 1994 Figure 2.*4).

With approval from the USEPA (letter from USEPA to ARCADIS dated November 21, 2008), ARCADIS shut down extraction well RA-2 on December 19, 2008 to evaluate groundwater conditions and quality at the Site under a no-pumping state (as described in *Proposal for RA-2 Shutdown and Groundwater Concentration Rebound Evaluation, ARCADIS,* November 6, 2008). On July 2, 2009, ARCADIS submitted the *Summary of RA-2 Shutdown and Groundwater Concentration Rebound Evaluation* to the USEPA, 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 shutdown approximately around 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 will be presented in the first quarter 2014 NPDES report.

2.1 GWETS Operational Summary

This section describes the operation of the GWETS and summarizes the data for the fourth quarter 2013.

2.1.1 Description of Operations

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

Extracted water is discharged into a 10,000-gallon polypropylene surge tank located adjacent to two LPGAC vessels. Collected groundwater is pumped through the two 20,000-pound LPGAC vessels, 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 Fourth Quarter 2013 Summary

During the fourth quarter 2013, approximately 3.3 million gallons of water were extracted from the Regional Zone using extraction well RA-2, representing an average of approximately 37,302 gallons per day (gpd) and about 17 gallons per minute (gpm). Estimated monthly volumes for the fourth quarter 2013 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 October 10, November 14, and December 12, 2013. 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.

In the TS-IN sample, the following was noted during the reporting period:

- PCE concentrations were between 5.2 and 6.0 µg/L;
- TCE concentrations were not-detected;
- No other VOCs were detected;
- Nickel concentrations ranged from not-detected to 94 µg/L;
- Chromium concentrations ranged from not-detected to 8.4 µg/L ;

- Hexavalent Chromium concentrations ranged from 1.2 to 2.1 µg/L;

In the TS-MID sample, the following was noted during the reporting period:

- No VOCs were detected;
- Nickel concentrations were not detected;
- Chromium concentrations ranged from not-detected to 7.2 µg/L;
- Hexavalent Chromium concentrations ranged from 6.3 to 11 µg/L;

In the TS-OUT sample, the following was noted during the reported period:

- No VOCs were detected;
- Nickel concentrations were not detected;
- Chromium concentrations ranged from not-detected to 1.9 µg/L;
- Hexavalent Chromium concentrations were between not-detected and 1.6 µg/L;

As noted in Section 2.1.2, during the fourth quarter 2013, the GWETS treated approximately 3.3 million gallons of groundwater based on the system totalizer readings (Table 1). This constituted an average flow rate of approximately 17 gpm. The GWETS performance data, including the cumulative mass of VOCs removed during the fourth quarter 2013 are presented in Table 3. The estimated mass of total VOCs removed from groundwater using the GWETS during the fourth quarter 2013 was approximately 0.0703 pounds.

2.2.2 Bean Creek

The fourth quarter 2013 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 fourth quarter 2013, 0.0703 pounds of total VOCs mass were removed by pumping approximately 3.3 million gallons of groundwater.

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Tables

Table 1
Summary of Groundwater Extraction, Usage, and Discharge to Bean Creek
Watkins-Johnson Superfund Site
Scotts Valley, California
NPDES Fourth Quarter 2013 Monitoring Report

Month	Notes	Groundwater Extracted (gallons)	Treated Water Reused by Facility (gallons)	Treated Water Discharged to Bean Creek (gallons)	Perched Zone Infiltration[1]
Fourth Quarter 2013 Total					
Oct-13	2	1,190,424	--	1,190,424	0
Nov-13	2	1,441,834	--	1,441,834	0
Dec-13	2	724,946	--	724,946	0
Fourth Quarter 2013 Total		**3,357,204**	**0**	**3,357,204**	**0**

Notes:

1 The groundwater infiltration system has been shut off since May 2000.

2 Total monthly volumes were estimated based on average daily flow rates between site visits on October 10, November 14, and December 12, 2013.

-- 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 Fourth Quarter 2013 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**	10/10/13	**5.2**	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	8.4	2.1	**94**
		11/14/13	**6.0**	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<15	1.2	<26
		12/12/13	**5.9**	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	5.1	1.5	10
TS-MID	**Water Between LPGAC Vessels**	10/10/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	7.2	6.4	<5.0
		11/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<15	11	<26
		12/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	7.0	6.3	<3.0
TS-OUT	**Treatment System Effluent Water**	10/10/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<5.0	0.81	<5.0
		11/14/13	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<15	<0.50	<26
		12/12/13	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	1.9	1.60	<3.0

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.

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

Table 3
Groundwater Extraction and Treatment System Mass Removal Summary
Watkins-Johnson Superfund Site
Scotts Valley, California
NPDES Fourth Quarter 2013 Monitoring Report

Month	Notes	Volume Extracted (gallons)	Influent VOC Concentration (µg/L)[1]	Total VOC Mass Removed (lb)
Fourth Quarter 2013 Total				
Oct-13		1,190,424	5.2	0.0228
Nov-13		1,441,834	6.0	0.0318
Dec-13		724,946	5.9	0.0157
Fourth Quarter 2013 Total		**3,357,204**	**---**	**0.0703**

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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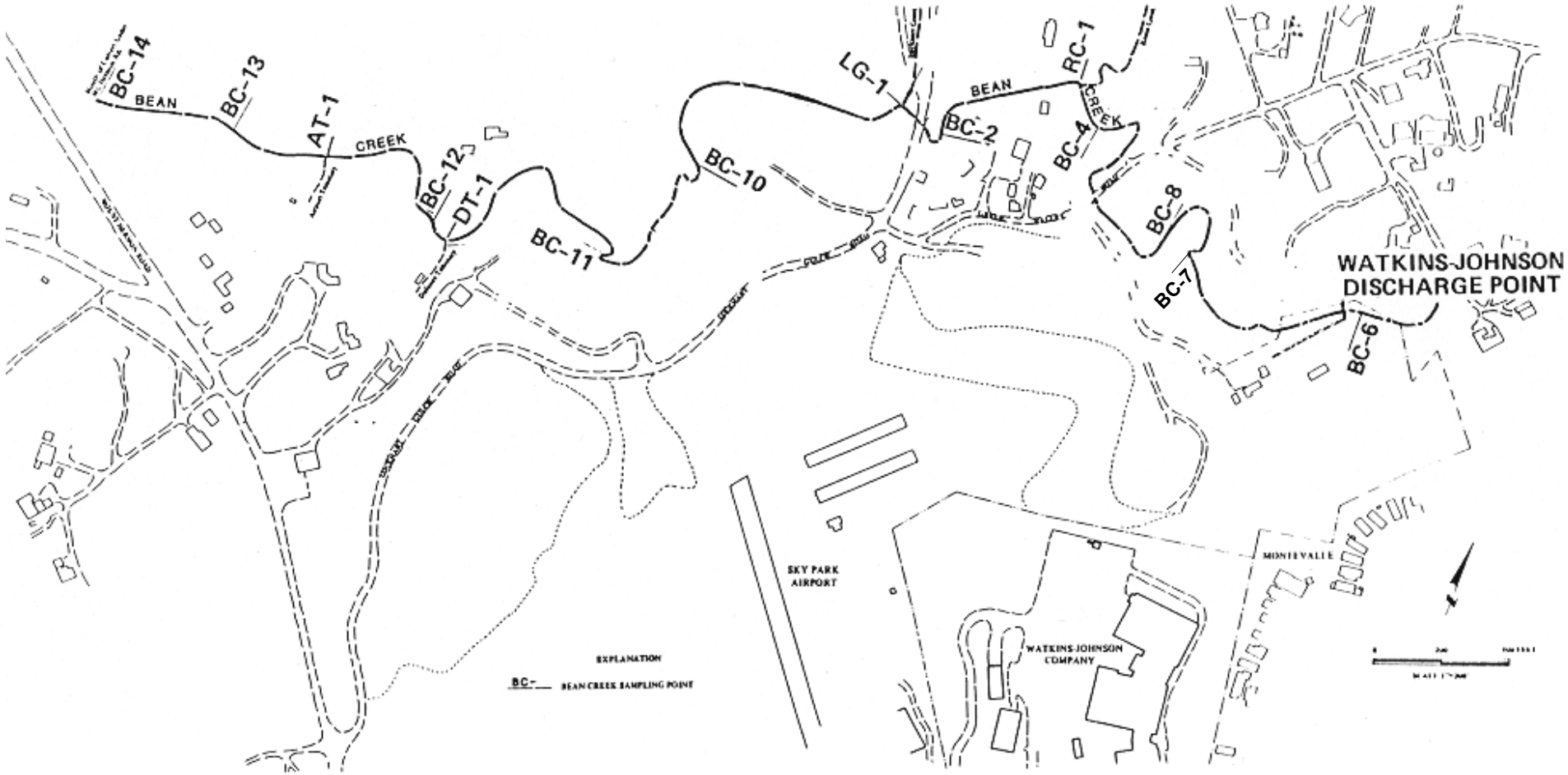
Figures



ARCADIS

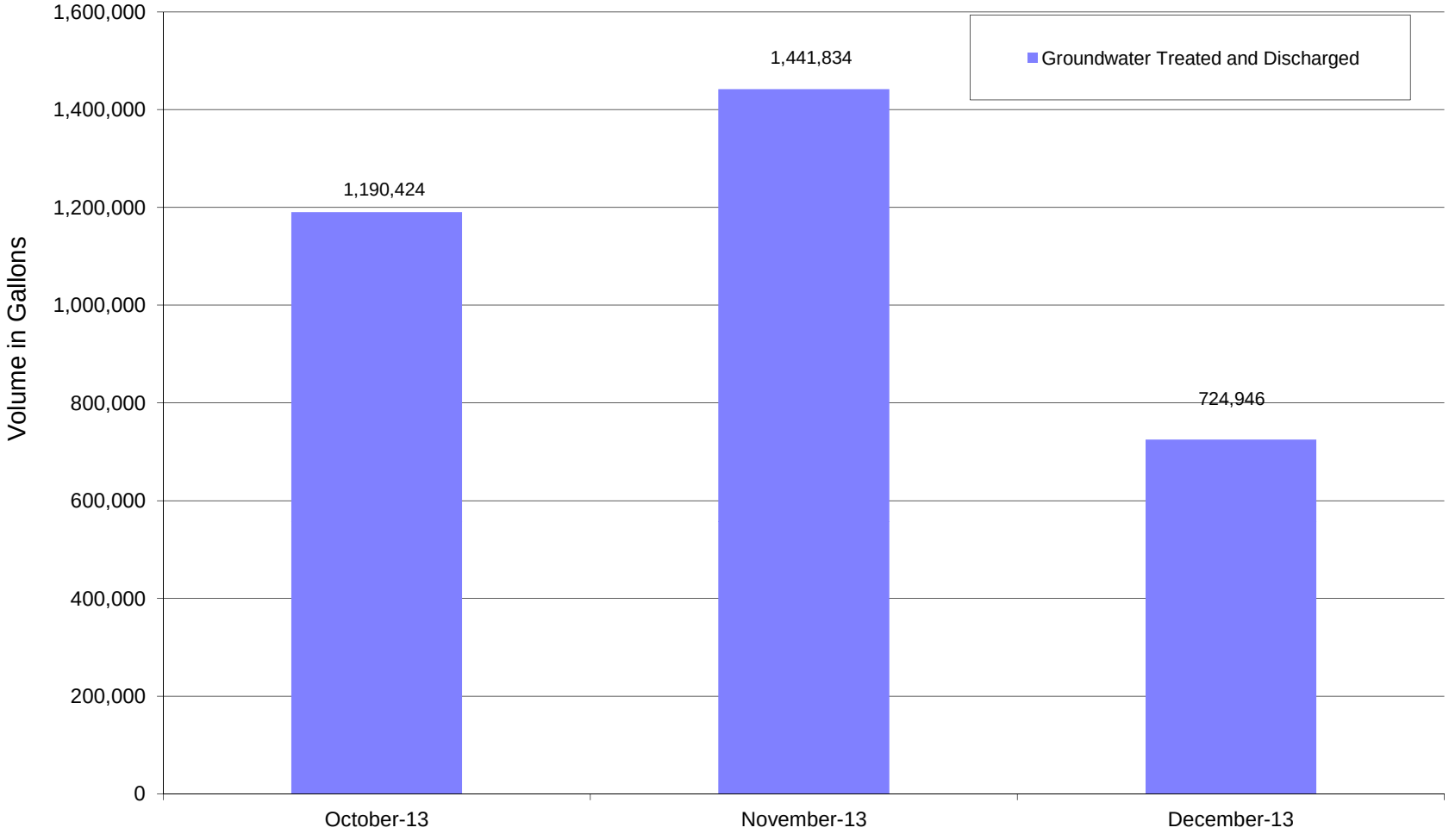
LOCATIONS OF BEAN CREEK SAMPLING POINTS
WATKINS-JOHNSON FACILITY
Silicon Valley Group
Scotts Valley, California

RC000463.0015

FIGURE

1

Figure 2
Volume of Groundwater Extracted, Treated, and Discharged to Bean Creek
NPDES Fourth Quarter 2013 Monitoring Report



Note: Groundwater infiltration system has been off since May 2000

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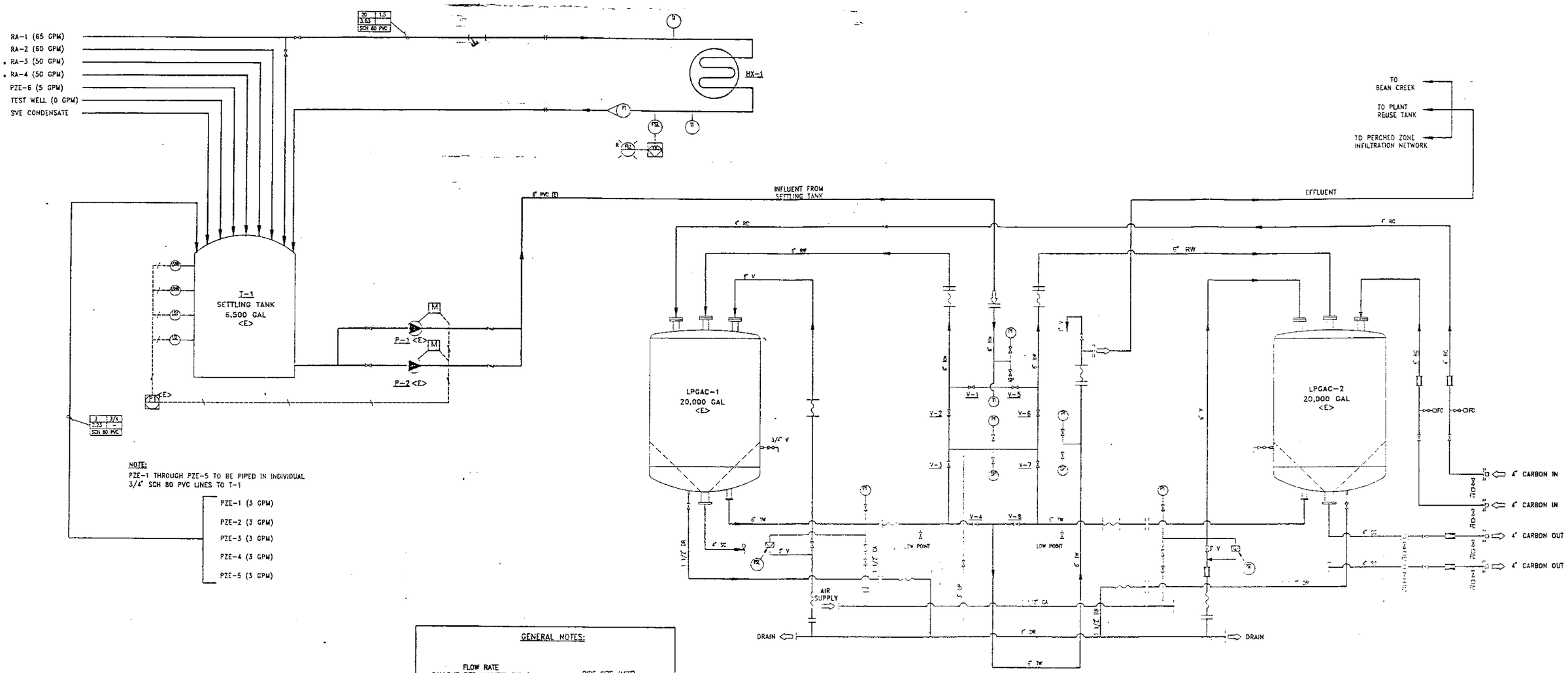
Appendix **A**

Groundwater Treatment System
Process and Instrumentation
Diagram



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)

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

WJ009325

REV	DATE	DESCRIPTION	BY	CHD	APP

WATKINS-JOHNSON ENVIRONMENTAL, INC.
Groundwater Consultants and Engineers

PROJECT NAME W-J CO, SCOTTS VALLEY, CA
PROJECT No 9200-134
DR K.N. DATE 2/25/94
CHK DATE
APP DATE

PROCESS AND INSTRUMENTATION DIAGRAM FOR GROUNDWATER TREATMENT SYSTEM

DWG No S000811A
SCALE FIGURE 2.4

ARCADIS

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 249784
ANALYTICAL REPORT

Arcadis	Project : RC000463
2000 Powell St	Location : SVG
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
TS-OUT	249784-001
TS-MID	249784-002
TS-IN	249784-003

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: 10/28/2013

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

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**249784**
Client:	**Arcadis**
Project:	**RC000463**
Location:	**SVG**
Request Date:	**10/10/13**
Samples Received:	**10/10/13**

This data package contains sample and QC results for three water samples, requested for the above referenced project on 10/10/13. 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.

Curtis + Tompkins 249794

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: R. Wynne ARCADIS
Telephone:
Address: on file
Fax:
City State Zip
E-mail Address:

Project Name/Location (City, State): SVG - Scotts Valley, CA
Project #: ACO004163.0112.NA213
Sampler's Printed Name: Heather Tauscher
Sampler's Signature:

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

PARAMETER ANALYSIS & METHOD

	Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	8260B	tot. chrome	nickel (6020)	Hex Chrome 7199				REMARKS
1	TS-OUT	10/10/13	1147		X	W	3	1	1					
2	TS-MID	10/10/13	1151		X	W	3	1	1					
3	TS-IN	10/10/13	1156		X	W	3	1	1					

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
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
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

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: Curtis + Tompkins	Cooler Custody Seal (✓)	Printed Name: Heather Tauscher	Printed Name: Ricky Grams	Printed Name: Ricky Grams	Printed Name: Precious Velarde
☒ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: Standard	Sample Receipt:	Firm: ARCADIS	Firm/Courier: C&T	Firm/Courier: C&T	Firm: C&T
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 10/10/13 @ 1430	Date/Time: 10/10/13 1430	Date/Time: 10/10/13 1622	Date/Time: 10.10.13 1622

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

intact on ice cold RC

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 249784 Date Received 10/10/13 Number of coolers 1
Client ARCADIS Project SVG

Date Opened 10/10 By (print) MG (sign) [illegible]
Date Logged in [illegible] By (print) [illegible] (sign) [illegible]

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) 3.3

☐ 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~~ M.G.
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____
_____
_____
_____
_____
_____

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 249784

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____

Analyst: MG
Date: 10/10/13

Page 1 of 1

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	204042
Lab ID:	249784-001	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	204042
Lab ID:	249784-001	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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	108	77-134
1,2-Dichloroethane-d4	106	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	204042
Lab ID:	249784-002	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	204042
Lab ID:	249784-002	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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	112	77-134
1,2-Dichloroethane-d4	106	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	93	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	204042
Lab ID:	249784-003	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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	5.2	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	204042
Lab ID:	249784-003	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
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	117	77-134
1,2-Dichloroethane-d4	106	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	93	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	204042
Units:	ug/L	Analyzed:	10/15/13
Diln Fac:	1.000		

Type: BS Lab ID: QC711884

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	12.36	99	61-137
Benzene	12.50	13.09	105	78-125
Trichloroethene	12.50	12.90	103	77-122
Toluene	12.50	12.62	101	79-123
Chlorobenzene	12.50	13.55	108	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	108	77-134
1,2-Dichloroethane-d4	107	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	94	80-120

Type: BSD Lab ID: QC711885

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	13.18	105	61-137	6	24
Benzene	12.50	13.19	105	78-125	1	20
Trichloroethene	12.50	12.46	100	77-122	3	20
Toluene	12.50	12.67	101	79-123	0	20
Chlorobenzene	12.50	13.60	109	80-120	0	20

Surrogate	%REC	Limits
Dibromofluoromethane	108	77-134
1,2-Dichloroethane-d4	107	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	93	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC711886	Batch#:	204042
Matrix:	Water	Analyzed:	10/15/13
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

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC711886	Batch#:	204042
Matrix:	Water	Analyzed:	10/15/13
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	120	77-134
1,2-Dichloroethane-d4	107	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	204042
MSS Lab ID:	249793-003	Sampled:	10/09/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Analyzed:	10/15/13
Diln Fac:	1.000		

Type: MS Lab ID: QC711910

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1117	12.50	13.19	106	68-130
Benzene	0.1474	12.50	13.61	108	80-125
Trichloroethene	<0.1000	12.50	14.21	114	72-123
Toluene	0.1887	12.50	13.06	103	80-122
Chlorobenzene	<0.1000	12.50	13.55	108	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	77-134
1,2-Dichloroethane-d4	100	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	102	80-120

Type: MSD Lab ID: QC711911

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	12.30	98	68-130	7	26
Benzene	12.50	13.21	105	80-125	3	21
Trichloroethene	12.50	13.79	110	72-123	3	20
Toluene	12.50	12.22	96	80-122	7	21
Chlorobenzene	12.50	13.48	108	80-120	1	21

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-134
1,2-Dichloroethane-d4	95	72-140
Toluene-d8	95	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chromium

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	10/10/13
Matrix:	Water	Received:	10/10/13
Units:	ug/L	Prepared:	10/14/13
Diln Fac:	1.000	Analyzed:	10/25/13
Batch#:	204036		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	249784-001	ND	5.0
TS-MID	SAMPLE	249784-002	7.2	5.0
TS-IN	SAMPLE	249784-003	8.4	5.0
	BLANK	QC711858	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Nickel

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	204036
Matrix:	Water	Sampled:	10/10/13
Units:	ug/L	Received:	10/10/13
Diln Fac:	1.000	Prepared:	10/14/13

Field ID	Type	Lab ID	Result	RL	Analyzed
TS-OUT	SAMPLE	249784-001	ND	5.0	10/25/13
TS-MID	SAMPLE	249784-002	ND	5.0	10/25/13
TS-IN	SAMPLE	249784-003	94	5.0	10/25/13
	BLANK	QC711858	ND	5.0	10/27/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	204036
Field ID:	ZZZZZZZZZZ	Sampled:	10/09/13
MSS Lab ID:	249755-001	Received:	10/09/13
Matrix:	Water	Prepared:	10/14/13
Units:	ug/L	Analyzed:	10/25/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC711859		200.0	216.0	108	80-120		
BSD	QC711860		200.0	207.9	104	80-120	4	20
MS	QC711861	2.004	200.0	197.6	98	74-120		
MSD	QC711862		200.0	210.9	104	74-120	7	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Nickel

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	EPA 3010A
Project#:	RC000463	Analysis:	EPA 6010B
Analyte:	Nickel	Batch#:	204036
Field ID:	ZZZZZZZZZZ	Sampled:	10/09/13
MSS Lab ID:	249755-001	Received:	10/09/13
Matrix:	Water	Prepared:	10/14/13
Units:	ug/L	Analyzed:	10/25/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC711859		500.0	529.9	106	80-120		
BSD	QC711860		500.0	504.2	101	80-120	5	20
MS	QC711861	8.786	500.0	479.3	94	73-120		
MSD	QC711862		500.0	511.6	101	73-120	7	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Hexavalent Chromium

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Matrix:	Water	Batch#:	203947
Units:	ug/L	Received:	10/10/13
Diln Fac:	1.000		

Field ID:	TS-OUT	Sampled:	10/10/13 11:47
Type:	SAMPLE	Analyzed:	10/10/13 16:33
Lab ID:	249784-001		

Analyte	Result	RL
Hexavalent Chromium	0.81	0.50

Field ID:	TS-MID	Sampled:	10/10/13 11:51
Type:	SAMPLE	Analyzed:	10/10/13 16:45
Lab ID:	249784-002		

Analyte	Result	RL
Hexavalent Chromium	6.4	0.50

Field ID:	TS-IN	Sampled:	10/10/13 11:56
Type:	SAMPLE	Analyzed:	10/10/13 16:57
Lab ID:	249784-003		

Analyte	Result	RL
Hexavalent Chromium	2.1	0.50

Type:	BLANK	Analyzed:	10/10/13 09:37
Lab ID:	QC711477		

Analyte	Result	RL
Hexavalent Chromium	ND	0.50

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Hexavalent Chromium

Lab #:	249784	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-OUT	Batch#:	203947
MSS Lab ID:	249784-001	Sampled:	10/10/13 11:47
Matrix:	Water	Received:	10/10/13
Units:	ug/L		

Type:	LCS	Diln Fac:	1.000
Lab ID:	QC711478	Analyzed:	10/10/13 09:49

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.785	98	90-110

Type:	MS	Diln Fac:	1.010
Lab ID:	QC711479	Analyzed:	10/10/13 17:58

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	0.8066	10.10	10.38	95	85-115

Type:	MSD	Diln Fac:	1.010
Lab ID:	QC711480	Analyzed:	10/10/13 18:10

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	10.73	98	85-115	3	39

RPD= Relative Percent Difference

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

Laboratory Job Number 250788
ANALYTICAL REPORT

Arcadis	Project : RC000463
2000 Powell St	Location : SVG
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
TS-OUT	250788-001
TS-MID	250788-002
TS-IN	250788-003
TB111413	250788-004

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: 11/26/2013

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

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**250788**
Client:	**Arcadis**
Project:	**RC000463**
Location:	**SVG**
Request Date:	**11/14/13**
Samples Received:	**11/14/13**

This data package contains sample and QC results for four water samples, requested for the above referenced project on 11/14/13. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 6020):
High recovery was observed for nickel in the BSD for batch 205249; the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. High recovery was observed for nickel in the MSD for batch 205249; the parent sample was not a project sample, the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. No other analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (EPA 7199):
No analytical problems were encountered.

CHAIN OF CUSTODY

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Berkeley, CA 94710

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Fax (510) 486-0532

Chain of Custody # _____

C&T LOGIN # 250788

Project No: RC000463.0112.NA213
Sampler: Heather Tauscher
Project Name: SVG-Scotts Valley, CA
Report To: Katie Wynne
Project P. O. No:
Company: ARCADIS
EDD Format: Report Level ☐ II ☐ III ☐ IV
Telephone: on file
Turnaround Time: ☐ RUSH ☑ Standard
Email:

Lab No.	Sample ID.	SAMPLING Date Collected	SAMPLING Time Collected	MATRIX Water	MATRIX Solid	# of Containers	CHEMICAL PRESERVATIVE HCl	H2SO4	HNO3	NaOH	None	ANALYTICAL REQUEST 8260B	8010 LIST	Total chrome nickel (6020)	Hex chrome 7199 *
1	TS-OUT	11/14/13	1010	X			X		X		X	X	X	X	X
2	TS-MID	11/14/13	1015	X			X		X		X	X	X	X	X
3	TS-IN	11/14/13	1020	X			X		X		X	X	X	X	X
4	TB111413	11/14/13	—	X			X					X			

Notes:
* temp blank
* Hex chrome 24 hr hold time.

SAMPLE RECEIPT
☐ Intact
☐ Cold
☑ On Ice
☐ Ambient

RELINQUISHED BY:
[signature] DATE: 11/14/13 TIME: 1141
DATE: TIME:
DATE: TIME:

RECEIVED BY:
[signature] DATE: 11/14/13 TIME: 1141
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 250788 Date Received 11/14/13 Number of coolers 1
Client ARCADIS Project SVG-SCOTTS VALLEY CA (RC000463.0112.NA213)

Date Opened 11/14/13 By (print) TR (sign) Tina Renka
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) TR
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) 0.8

☐ 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

#4) Received 5 containers for ~~each~~ sample (#-001 through -003 & 3 for #-004

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 250788

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____

Analyst: TR
Date: 11/14/13

Page 1 of 1

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	205232
Lab ID:	250788-001	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Analyzed:	11/19/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	72-140
Toluene-d8	105	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	205314
Lab ID:	250788-002	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Analyzed:	11/21/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	205314
Lab ID:	250788-003	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Analyzed:	11/21/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	6.0	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB111413	Batch#:	205314
Lab ID:	250788-004	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Analyzed:	11/21/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC716817	Batch#:	205232
Matrix:	Water	Analyzed:	11/19/13
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	102	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	205232
Units:	ug/L	Analyzed:	11/19/13
Diln Fac:	1.000		

Type: BS Lab ID: QC716818

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	17.50	17.18	98	61-137
Trichloroethene	17.50	17.89	102	77-122
Chlorobenzene	17.50	20.24	116	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	72-140
Toluene-d8	106	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC716819

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	17.50	17.01	97	61-137	1	24
Trichloroethene	17.50	16.77	96	77-122	6	20
Chlorobenzene	17.50	18.88	108	80-120	7	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	72-140
Toluene-d8	101	80-120
Bromofluorobenzene	107	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	205314
Units:	ug/L	Analyzed:	11/21/13
Diln Fac:	1.000		

Type: BS Lab ID: QC717120

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	10.09	81	61-137
Trichloroethene	12.50	12.68	101	77-122
Chlorobenzene	12.50	13.46	108	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	91	80-120

Type: BSD Lab ID: QC717121

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	10.41	83	61-137	3	24
Trichloroethene	12.50	12.96	104	77-122	2	20
Chlorobenzene	12.50	13.72	110	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	93	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC717122	Batch#:	205314
Matrix:	Water	Analyzed:	11/21/13
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Chromium

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Chromium	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Prepared:	11/19/13
Diln Fac:	5.000	Analyzed:	11/25/13
Batch#:	205249		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	250788-001	ND	15
TS-MID	SAMPLE	250788-002	ND	15
TS-IN	SAMPLE	250788-003	ND	15
	BLANK	QC716880	ND	15

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Nickel

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Nickel	Sampled:	11/14/13
Matrix:	Water	Received:	11/14/13
Units:	ug/L	Prepared:	11/19/13
Diln Fac:	5.000	Analyzed:	11/25/13
Batch#:	205249		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	250788-001	ND	26
TS-MID	SAMPLE	250788-002	ND	26
TS-IN	SAMPLE	250788-003	ND	26
	BLANK	QC716880	ND	26

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Chromium	Batch#:	205249
Field ID:	ZZZZZZZZZZ	Sampled:	11/05/13
MSS Lab ID:	250645-002	Received:	11/08/13
Matrix:	Water	Prepared:	11/19/13
Units:	ug/L	Analyzed:	11/25/13
Diln Fac:	5.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC716881		100.0	109.9	110	75-120		
BSD	QC716882		100.0	116.7	117	75-120	6	21
MS	QC716883	0.6470	100.0	114.8	114	68-120		
MSD	QC716884		100.0	120.3	120	68-120	5	25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Nickel

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Nickel	Batch#:	205249
Field ID:	ZZZZZZZZZZ	Sampled:	11/05/13
MSS Lab ID:	250645-002	Received:	11/08/13
Matrix:	Water	Prepared:	11/19/13
Units:	ug/L	Analyzed:	11/25/13
Diln Fac:	5.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC716881		100.0	112.7	113	72-120		
BSD	QC716882		100.0	120.7	121 *	72-120	7	23
MS	QC716883	<0.9897	100.0	115.8	116	62-120		
MSD	QC716884		100.0	122.3	122 *	62-120	5	37

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Hexavalent Chromium

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Matrix:	Water	Batch#:	205072
Units:	ug/L	Received:	11/14/13
Diln Fac:	1.000		

Field ID:	TS-OUT	Sampled:	11/14/13 10:10
Type:	SAMPLE	Analyzed:	11/14/13 11:59
Lab ID:	250788-001		

Analyte	Result	RL
Hexavalent Chromium	ND	0.50

Field ID:	TS-MID	Sampled:	11/14/13 10:15
Type:	SAMPLE	Analyzed:	11/14/13 12:22
Lab ID:	250788-002		

Analyte	Result	RL
Hexavalent Chromium	11	0.50

Field ID:	TS-IN	Sampled:	11/14/13 10:20
Type:	SAMPLE	Analyzed:	11/14/13 12:34
Lab ID:	250788-003		

Analyte	Result	RL
Hexavalent Chromium	1.2	0.50

Type:	BLANK	Analyzed:	11/14/13 10:03
Lab ID:	QC716181		

Analyte	Result	RL
Hexavalent Chromium	ND	0.50

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Hexavalent Chromium

Lab #:	250788	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	TS-IN	Batch#:	205072
MSS Lab ID:	250788-003	Sampled:	11/14/13 10:20
Matrix:	Water	Received:	11/14/13
Units:	ug/L		

Type:	LCS	Diln Fac:	1.000
Lab ID:	QC716182	Analyzed:	11/14/13 10:16

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.507	95	90-110

Type:	MS	Diln Fac:	1.010
Lab ID:	QC716183	Analyzed:	11/14/13 12:51

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	1.213	10.10	10.82	95	85-115

Type:	MSD	Diln Fac:	1.010
Lab ID:	QC716184	Analyzed:	11/14/13 13:03

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	10.73	94	85-115	1	39

RPD= Relative Percent Difference

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 251612
ANALYTICAL REPORT

Arcadis	Project : RC000463
2000 Powell St	Location : SVG
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
TS-OUT	251612-001
TS-MID	251612-002
TS-IN	251612-003
TB121213	251612-004

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: 12/20/2013

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

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**251612**
Client:	**Arcadis**
Project:	**RC000463**
Location:	**SVG**
Request Date:	**12/12/13**
Samples Received:	**12/12/13**

This data package contains sample and QC results for four water samples, requested for the above referenced project on 12/12/13. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 6020):
No analytical problems were encountered.

Hexavalent Chromium by Ion Chromatograph (EPA 7199):
No analytical problems were encountered.

CHAIN OF CUSTODY

Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1878

2323 Fifth Street
Berkeley, CA 94710

Phone (510) 486-0900
Fax (510) 486-0532

Chain of Custody # _____

C&T LOGIN # 251612

Project No: RC000463.0112.NA213
Project Name: SVG Scotts Valley
Project P. O. No:
EDD Format: Report Level ☐ II ☐ III ☐ IV
Turnaround Time: ☐ RUSH _____ ☒ Standard

Sampler: Heather Tausher
Report To: Katie Wynne
Company: ARCADIS
Telephone: ~~on file~~
Email:

Lab No.	Sample ID.	SAMPLING Date Collected	SAMPLING Time Collected	MATRIX Water	MATRIX Solid	# of Containers	CHEMICAL PRESERVATIVE HCl	H2SO4	HNO3	NaOH	None	ANALYTICAL REQUEST: 8260B 8010 LIST	Total Chrome Nickel (6020)	Hex Chrome 7199 *
1	TS-OUT	12/12/13	0945	X		5	X		X			X	X	X
2	TS-MID	12/12/13	0950	X		5	X		X			X	X	X
3	TS-IN	12/12/13	0955	X		5	X		X			X	X	X
4	TB121213	12/12/13	—	X		2	X					X		

Notes:
* temp blank
* 24 hr hold

SAMPLE RECEIPT
☐ Intact
☐ Cold
☒ On Ice
☐ Ambient

RELINQUISHED BY:
[signature] DATE: 12/12/13 TIME: 1434
[signature] DATE: 12/12/13 TIME: 1720
DATE: TIME:

RECEIVED BY:
[signature] DATE: 12/12/13 TIME: 1434
[signature] DATE: 12/12/13 TIME: 1720
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 251612 Date Received 12/12/13 Number of coolers 1
Client ARCADIS Project SVG Scotts Valley (RC000463.0112.NA213)

Date Opened 12/12/13 By (print) AM (sign) Amy Mull
Date Logged in 6 By (print) MG (sign) MG

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) 23

☐ 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

_____

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 251612

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____

Analyst: MM
Date: 12/12/13

Page 1 of 1

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-OUT	Batch#:	206311
Lab ID:	251612-001	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-MID	Batch#:	206311
Lab ID:	251612-002	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TS-IN	Batch#:	206311
Lab ID:	251612-003	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	5.9	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Field ID:	TB121213	Batch#:	206311
Lab ID:	251612-004	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	1.000		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

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

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	206311
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	1.000		

Type: BS Lab ID: QC721116

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	10.75	86	65-134
Trichloroethene	12.50	12.04	96	80-120
Chlorobenzene	12.50	12.90	103	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

Type: BSD Lab ID: QC721117

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	10.78	86	65-134	0	20
Trichloroethene	12.50	12.07	97	80-120	0	20
Chlorobenzene	12.50	12.91	103	80-120	0	20

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

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 5030B
Project#:	RC000463	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC721118	Batch#:	206311
Matrix:	Water	Analyzed:	12/18/13
Units:	ug/L		

Analyte	Result	RL
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	20
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	1.0
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

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

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Chromium

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Chromium	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Prepared:	12/17/13
Diln Fac:	5.000	Analyzed:	12/18/13
Batch#:	206280		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	251612-001	1.9	1.0
TS-MID	SAMPLE	251612-002	7.0	1.0
TS-IN	SAMPLE	251612-003	5.1	1.0
	BLANK	QC720986	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Nickel

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Nickel	Sampled:	12/12/13
Matrix:	Water	Received:	12/12/13
Units:	ug/L	Prepared:	12/17/13
Diln Fac:	5.000	Analyzed:	12/18/13
Batch#:	206280		

Field ID	Type	Lab ID	Result	RL
TS-OUT	SAMPLE	251612-001	ND	3.0
TS-MID	SAMPLE	251612-002	ND	3.0
TS-IN	SAMPLE	251612-003	10	3.0
	BLANK	QC720986	ND	3.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Chromium	Batch#:	206280
Field ID:	ZZZZZZZZZZ	Sampled:	12/10/13
MSS Lab ID:	251592-008	Received:	12/12/13
Matrix:	Water	Prepared:	12/17/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	5.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC720987		100.0	102.7	103	77-120		
BSD	QC720988		100.0	100.7	101	77-120	2	20
MS	QC720989	9.540	100.0	109.2	100	72-120		
MSD	QC720990		100.0	110.0	100	72-120	1	23

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Nickel

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	EPA 200.8
Project#:	RC000463	Analysis:	EPA 6020
Analyte:	Nickel	Batch#:	206280
Field ID:	ZZZZZZZZZZ	Sampled:	12/10/13
MSS Lab ID:	251592-008	Received:	12/12/13
Matrix:	Water	Prepared:	12/17/13
Units:	ug/L	Analyzed:	12/18/13
Diln Fac:	5.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC720987		100.0	106.6	107	72-120		
BSD	QC720988		100.0	105.2	105	72-120	1	20
MS	QC720989	40.34	100.0	136.6	96	65-120		
MSD	QC720990		100.0	138.0	98	65-120	1	35

RPD= Relative Percent Difference

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Hexavalent Chromium

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Matrix:	Water	Batch#:	206082
Units:	ug/L	Received:	12/12/13

Field ID:	TS-OUT	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	12/12/13 09:45
Lab ID:	251612-001	Analyzed:	12/12/13 17:44

Analyte	Result	RL
Hexavalent Chromium	1.6	0.50

Field ID:	TS-MID	Diln Fac:	5.000
Type:	SAMPLE	Sampled:	12/12/13 09:50
Lab ID:	251612-002	Analyzed:	12/12/13 19:56

Analyte	Result	RL
Hexavalent Chromium	6.3	2.5

Field ID:	TS-IN	Diln Fac:	2.000
Type:	SAMPLE	Sampled:	12/12/13 09:55
Lab ID:	251612-003	Analyzed:	12/12/13 20:08

Analyte	Result	RL
Hexavalent Chromium	1.5	1.0

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC720223	Analyzed:	12/12/13 10:16

Analyte	Result	RL
Hexavalent Chromium	ND	0.50

ND= Not Detected
RL= Reporting Limit

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Batch QC Report

Hexavalent Chromium

Lab #:	251612	Location:	SVG
Client:	Arcadis	Prep:	METHOD
Project#:	RC000463	Analysis:	EPA 7199
Field ID:	ZZZZZZZZZZ	Batch#:	206082
MSS Lab ID:	251614-001	Sampled:	12/12/13 09:13
Matrix:	Water	Received:	12/12/13
Units:	ug/L		

Type:	LCS	Diln Fac:	1.000
Lab ID:	QC720224	Analyzed:	12/12/13 10:29

Analyte	Spiked	Result	%REC	Limits
Hexavalent Chromium	10.00	9.535	95	90-110

Type:	MS	Diln Fac:	1.010
Lab ID:	QC720227	Analyzed:	12/12/13 22:34

Analyte	MSS Result	Spiked	Result	%REC	Limits
Hexavalent Chromium	<0.08023	10.10	8.986	89	85-115

Type:	MSD	Diln Fac:	1.010
Lab ID:	QC720228	Analyzed:	12/12/13 22:46

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Hexavalent Chromium	10.10	9.292	92	85-115	3	44

RPD= Relative Percent Difference