September 19, 2014

Ms. Barbara Cook, P.E.
Division Chief - Brownfield and Environmental Reuse Program
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California

Attention: Lynn Nakashima
Sent via: email

Subject: Response to Department of Toxic Substances Control Comments Regarding the "Monitoring Well Installation Report and Initial Groundwater Sampling Results, Vicinity of the Biologically Active Permeable Barrier, University of California, Richmond Field Station"

Dear Ms. Cook:

Terraphase Engineering Inc. (Terraphase) has prepared this letter on behalf of Zeneca Inc., to address the comments provided by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) in its August 4, 2014 letter regarding the Terraphase April 24, 2014, "Monitoring Well Installation Report and Initial Groundwater Sampling Results, Vicinity of the Biologically Active Permeable Barrier, University of California, Richmond Field Station ("Well Installation Report"). The DTSC's comments are provided below followed by the response to each comment. The Well Installation Report has been revised in accordance with Zeneca's responses and is enclosed with this letter.

Zeneca's Responses to DTSC's August 4, 2014 Comment Letter

DTSC Comment #1

Attachment 4, Cross Sections: Presently, only data that exceed applicable screening criteria are illustrated. Please amend the figures to also present contaminant concentrations that exceed 75 percent of the screening criteria. Highlight the concentrations that exceed the screening criteria.

Response

Terraphase understands that the DTSC is requesting the additional data screening measure described in this comment to identify chemicals of concern (COCs) that are at concentrations near, but not exceeding the applicable screening criteria. As required by the DTSC, four quarters of groundwater monitoring data will be collected from monitoring wells in the vicinity of the biologically active permeable barrier (BAPB) located at the University of California, Richmond Field Station (UCRFS). A technical memorandum will be provided after the four quarters of monitoring. Terraphase intends to address this comment in the technical memorandum by

providing concentration versus time graphs of the analytical results collected during the four quarters of monitoring. The graphs will include the applicable screening criteria to illustrate the concentration of the COC relative to the screening criteria. Terraphase will prepare these graphs for COCs that exceed or are within 75% of the applicable screening criteria.

DTSC Comment #2

Attachment 2: The Report is missing the monitoring well development logs for wells MW-43 and -45. Please provide the missing logs.

Response

The Well Installation Report has been revised to include the well development logs for MW-43 and MW-45.

DTSC Comment #3

Attachment 3, Laboratory Analytical Reports: This attachment contains laboratory data sheets for analysis of chloride, sulfate, and alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO3); however, the tables found in the Report do not report the data. Please include a table with the results of the analysis.

Response

For reference, the Well Installation Report tabulated the analytical results for the COCs detected in samples collected from the new wells. The analytical data that this comment is referring to is not analytical data for COCs. This additional data will support an evaluation of the geochemical conditions of the groundwater in and within the vicinity of the BAPB at the UCRFS. As discussed earlier, after the four quarters of analytical data is collected in this area, Terraphase will prepare and submit to DTSC a technical memorandum that will summarize the data. That technical memorandum will include data tables that will tabulate all the analytical data collected from the new monitoring wells to support the technical discussion within the memorandum and will include the information referenced in this comment.

Comment #4

Attachment 4, Cross Section C-C': Correct the values identified for TCE and PCE in monitoring well SB-41/MW-41. It appears that the data collected in June 2012 was used rather than the more recent October 2013 results.

Response

The Well Installation Report has been revised to include the updated cross section. The cross sections have been updated to only present the data that exceeds the applicable screening criteria.

Terraphase has revised the Well Installation Report in accordance with the comment responses discussed in this letter. The Revised Well Installation Report has been electronically submitted to the DTSC along with this

letter. If you have any questions with regard to the response to the DTSC comments discussed in this letter, please do not hesitate to give me a call at (510) 326-1473.

Sincerely,

For Terraphase Engineering Inc.

Andrew Romolo, P.G. (8110)
Vice President and Principal Geologist

Enclosure: Revised Monitoring Well Installation Report and Initial Groundwater Sampling Results, Vicinity of the Biologically Active Permeable Barrier, University of California, Richmond Field Station

cc:
Mr. Bill Marsh, Esq. - Edgcomb Law Group
Ms. Lynn Nakashima - DTSC
Mr. Charles Elmendorf - Zeneca Inc.
Karl Hans - University of California Berkeley

April 24, 2014 (REV 1.0; September 19, 2014)

Ms. Barbara Cook, P.E.
Assistant Deputy Director
Brownfields and Environmental Restoration Program
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California

Attention: Lynn Nakashima
Sent via: email

Subject: Revised Monitoring Well Installation Report and Initial Groundwater Sampling Results, Vicinity of the Biologically Active Permeable Barrier, University of California, Berkeley Richmond Field Station.

Dear Ms. Cook:

Terraphase Engineering Inc. (Terraphase) has prepared this well installation report on behalf of Zeneca Inc. (Zeneca) to describe the procedures used to install the monitoring wells in the southeastern portion of the University of California, Berkeley (UC Berkeley) Richmond Field Station (RFS) in 2013 (Figure 1). For reference, Figure 1 also illustrates the approximate location of monitoring wells installed in the area prior to 2013. This report also transmits the analytical data for the initial groundwater samples collected from the newly installed groundwater monitoring wells and select groundwater monitoring wells sampled in October 2013. The monitoring wells were installed in accordance with the procedures described in the October 11, 2013 Terraphase Work Plan, "Monitoring Well Installation Work Plan, Vicinity of the Biologically Active Permeable Barrier, University of California Richmond Field Station" (the "Work Plan"). The California Department of Toxic Substances Control (DTSC) approved the Work Plan in a letter dated October 16, 2013.

Background and Objective

The Work Plan was prepared to address the comments provided by the DTSC in a May 20, 2013 letter ("the May 20th Letter") regarding the Terraphase December 18, 2012, "Draft Groundwater Investigation Within and In the Vicinity of the BAPB at the University of California Richmond Field Station" (UC BAPB Investigation Report). The UC BAPB Investigation Report concluded that the portion of the biologically active permeable barrier (BAPB) located at the UCRFS was performing in accordance with its intended design. In the May 20th Letter, the DTSC concurred with this conclusion. However, based on shallow groundwater data collected upgradient of the BAPB (included on Tables 2 and 3), the DTSC required an assessment to evaluate if additional remedial alternatives are warranted for groundwater in this area. In a June 11, 2013 meeting between representatives for Zeneca, UC, and the DTSC, previous remedial activities in this area of the RFS were discussed. To further assess the effectiveness of the previous

remedial activities completed in the area, the DTSC required Zeneca to perform additional groundwater monitoring.

Therefore, Terraphase prepared the Work Plan on behalf of Zeneca to install and sample additional monitoring wells in the southeastern portion of the RFS at the approximate locations illustrated within Figure 1 (the 2013 monitoring well locations). The data collected at the monitoring wells will be assessed in conjunction with additional data to be collected by UC Berkeley west of the newly-installed monitoring wells. The combined data set will be assessed to evaluate if additional groundwater remedial alternatives are warranted and, if determined to be warranted, will be used to evaluate and assess the applicability and feasibility of additional remedial alternatives.

Well Installation and Sampling Procedures

The well installation and sampling procedures discussed in this well installation report were conducted in accordance with the procedures described in the DTSC-approved Work Plan. The length of the screen intervals constructed for the monitoring wells varied to account for the lithology observed and recorded at each well location. The well construction details were discussed with the DTSC prior to final construction. The well construction procedures, sampling procedures, and well installation details are discussed in more detail below.

Pre-Field Activities

Terraphase updated the project Health and Safety Plan (HASP) in accordance with the activities described in the Work Plan. Prior to implementing field activities, Underground Service Alert (USA) was notified 48 hours in advance of mobilization to the field. In addition, Terraphase coordinated with RFS representatives to review the proposed monitoring well locations relative to RFS utility drawings to support the effort in identifying any subsurface utilities in the area of work. Terraphase also obtained the applicable county and state permits required for the work.

Monitoring Well Installations

Monitoring wells MW-42, MW-43, MW-44, MW-45 and MW-46 were installed at the approximate locations illustrated on Figure 1. The well installation activities were completed using track-mounted limited access drilling equipment. Routes to the monitoring well locations were selected to minimize the disruption to the existing vegetation. Prior to drilling and installing the monitoring wells, a continuous soil core was collected at each proposed monitoring well location (as technically feasible) using direct push drilling technology. The soil core was examined and the lithology was logged by a Terraphase field geologist. Soil samples were screened in the field using a photoionization detector (PID). The soil lithology and PID measurements were recorded onto soil boring logs/monitoring well construction logs prepared under the direction of a Terraphase California Professional Geologist. The soil boring logs/monitoring well construction logs are provided in Attachment 1.

The lithology was assessed at each location to determine the well construction details for each monitoring well. In accordance with the Work Plan, the screen interval for each monitoring well was constructed at a depth interval that will allow for the assessment of shallow groundwater above the

bottom of the existing BAPB. A review of the lithology at some of the monitoring well locations (see lithologic logs in Attachment 1) indicates a soil horizon of a few inches in thickness that may potentially be affected by cinder material. When the cinder affected soil horizon was observed, the DTSC was consulted that the screen interval and bentonite seal for the corresponding well would be installed below the cinder affected material. Grab groundwater samples collected during previous investigations in this area (Table 2 and Table 3) assess groundwater quality within the cinder affected soil horizon. The screen interval for the monitoring wells were constructed below these horizons to assess if metals in groundwater detected within the cinder affected soil horizon were leaching to groundwater below that horizon. Based on this rationale, the DTSC provided verbal approval of the well construction details. The well construction details are provided in Table 1.

The monitoring wells were installed using hollow stem auger (HSA) drilling technology. After the desired depth of the boreholes was reached, the augers were slowly removed from the borehole as the monitoring well casing, sand, bentonite, and/or grout were added from the bottom up. A threaded two inch schedule 40 PVC groundwater monitoring well was then constructed within the HSA. The screen interval for each monitoring well was constructed using 0.010-inch slotted Schedule 40 PVC.

As the hollow stem augers were being removed, the annular space between the PVC well screen and the formation was filled with 2/16 sand to a depth of approximately 1 foot above the top of the screened interval, except at MW-45 where the top of the screen interval is shallower than 5 feet below ground surface (bgs). At this location, the sand was placed ½ foot above the top of the screened interval to accommodate more space for the surface seal. In accordance with the Work Plan, the top of the screened interval was not installed shallower than 4 feet bgs at any monitoring well.

Approximately 2 to 3 feet of bentonite chips were placed above the sand pack and hydrated to form a coherent seal. Due to the shallow nature of the monitoring wells, the bentonite seal was dropped down the annulus from the surface. A tamping device was used to prevent bridging of the bentonite material. The bentonite seal was placed in lifts of approximately 6-inches each. Each lift was hydrated with potable water in such a way as to prevent the displacement of the bentonite material. The bentonite seal was allowed to hydrate in accordance with the manufacturer's recommendations. The remaining annular space above the bentonite was filled with cement grout in accordance with the Work Plan and Contra Costa County (the County) requirements. A locking well cap was placed on top of the well casing, and each well was completed above grade, approximately 3 feet above the ground surface.

The newly installed monitoring wells were developed to remove sediment from around the screen and to enhance hydraulic communication with the surrounding formation. The grout installed within the annular seal for the monitoring wells was allowed to cure for a minimum of 72 hours before initiating well development activities. The wells were developed using a combination of surging and pumping techniques. Observations of indicator parameters, including pH, temperature, specific conductance, quantity, and clarity, were recorded onto water-quality data sheets after each well volume is purged. The wells were developed until a minimum of 6 to 10 well casing volumes were removed, relatively sediment-free water is produced, or indicator parameters stabilize in accordance with the following criteria:

Parameter	pH	Conductivity	Turbidity
Stabilization Criterion	±0.1 units	±3%	±10%

The well development field forms are provided in Appendix B.

The elevation, northing, and easting of each newly installed monitoring well were surveyed by a California-licensed surveyor following installation. Elevations of groundwater monitoring wells were surveyed to the nearest 0.01 foot relative to the 1929 National Geodetic Vertical Datum. These data allows for the measurement of groundwater elevations and the assessment of groundwater flow direction.

Groundwater Sampling

Groundwater samples were collected from the newly installed temporary monitoring wells using the low flow sampling techniques in accordance with the procedures described in the Work Plan. Groundwater samples were collected a minimum of 48 hours following well development activities. In addition, samples were collected from the previously installed monitoring wells determined to be representative of the groundwater conditions in the vicinity of the BAPB as reported in the July 1, 2013 report entitled "Revised Groundwater Investigation Within and in the Vicinity of the BAPB at the University of California Richmond Field Station." Depth to groundwater was measured in each well and water-quality parameters (pH, conductivity, ORP, DO, and temperature) were also be monitored during purging. The groundwater samples were labeled, logged on chain-of-custody forms, and placed in an ice-chilled cooler for transport to a state certified laboratory for the analysis prescribed by the sample matrix provided in the Work Plan. Groundwater sampling field forms are provided in Attachment 2. Analytical data for the groundwater sampling is summarized in Table 2 and Table 3 and the analytical reports are provided in Attachment 3. In accordance with DTSC requirements, the monitoring wells will be sampled on a quarterly basis through 2014. Assessment of the data will be ongoing through collection and a technical memorandum discussing the data assessment will be provided to the DTSC after completion of the four quarters of sampling.

Investigation-Derived Waste

Investigation-derived waste (IDW), water and soil generated during the well installation and sampling activities, were temporarily staged at the RFS in 55-gallon drums. The temporary drum storage location was coordinated with UC Berkeley RFS representatives. The drums were handled and disposed of in accordance with state and federal requirements as well as the requirements of UC Berkeley. Terraphase coordinated the pickup and disposal of the IDW with UC Berkeley representatives.

For reference, the cross sections provided in the UC BAPB Investigation Report have been updated to include the newly installed monitoring wells and have been provided in Attachment 4. If you have any questions with regard to the procedures described in this Work Plan, please do not hesitate to give me a call at (510) 326-1473.

Sincerely,

For Terraphase Engineering Inc.

Andrew Romolo, P.G. (8110)
Vice President and Principal Geologist

Attachments:

Table 1	Groundwater Monitoring Well Construction Details
Table 2	Groundwater Analytical Results – Volatile Organic Compounds
Table 3	Groundwater Analytical Results - Metals
Figure 1	Sample Locations
Attachment 1	Soil Boring Logs/Monitoring Well Construction Logs
Attachment 2	Groundwater Sampling Field Forms
Attachment 3	Laboratory Analytical Reports
Attachment 4	Cross-Sections

cc:
Mr. Bill Marsh, Esq., Edgcomb Law Group
Lynn Nakashima, DTSC
Chuck Elmendorf, Zeneca Inc.
Karl Hans, University of California Berkeley
Brett Henricksen, Esq.
Jenifer Beatty, Arcadis-US

TABLES

THIS PAGE LEFT INTENTIONALLY BLANK

Table 1
Groundwater Monitoring Well Construction Details
Southeastern Portion Of The UCRFS, Richmond, California

Well Name	Well Installation Date	Total Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Surface Completion	TOC Elevation (feet) (a)	Ground Elevation (a)	Comments
MW-42	10/17/2013	19.0	2 PVC	13-19	Riser	10.99	8.1	Monitores groundwater upgradient of the BAPB. Monitoring well will be used to assess the effectiveness of the BAPB
MW-43	10/17/2013	17.0	2 PVC	12-17	Riser	8.3	5.5	Monitores groundwater downgradient of the BAPB. Monitoring well will be used to assess the effectiveness of the BAPB
MW-44	10/18/2013	15.0	2 PVC	10-15	Riser	9.1	5.9	Monitores groundwater upgradient of the BAPB.
MW-45	10/17/2013	15.0	2 PVC	5-15	RIser	7.45	4.5	Monitores groundwater downgradient and to the west of the BAPB.
MW-46	10/18/2013	12.0	2 PVC	7-12	Riser	5.66	3.1	Monitores groundwater downgradient of the BAPB.

Abbreviations:
bgs = Below ground surface
MW = Monitoring well
PVC = Polyvinyl chloride
TOC = Top of casing

Notes:
(a) Top of casing elevations and ground surface elevations based on the National Geodetic Vertical Datum 29 Standard

Table 2
Groundwater Analytical Results - Volatile Organic Compounds
UC BAPB Investigation
Richmond, California
concentrations in micrograms/liter (µg/L)

Sample Location	Sample Identification	Groundwater Horizon	Sample Date	Vinyl Chloride	1,1-Dichloroethene	Carbon Disulfide	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	Carbon Tetrachloride	1,2-Dichloroethane	Benzene	Trichloroethene	Toluene	Tetrachloroethene	Chlorobenzene	Ethylbenzene	m,p-Xylenes	o-Xylene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Naphthalene
RFS-BABP-GGW-1	RFS-BAPB-GGW-1-12	Upper	5/3/2012	<0.5	0.5	2.8	0.7	<0.5	<0.5	<0.5	10.0	<0.5	53.0	<0.5	3.6	12.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	RFS-BAPB-GGW-1-35	Lower	5/3/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
RFS-BABP-GGW-2	RFS-BAPB-GGW-2-9	Upper	5/3/2012	<0.5	<0.5	3.3	<0.5	5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	RFS-BAPB-GGW-2-16	Upper	5/3/2012	<0.5	0.5	2.5	0.5	26.0	<0.5	<0.5	14.0	<0.5	55.0	<0.5	5.7	11.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	RFS-BAPB-GGW-2-28	Lower	5/3/2012	<0.5	<0.5	<0.5	<0.5	1.3	1.9	<0.5	3.2	<0.5	54.0	<0.5	7.3	25.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
RFS-BABP-GGW-3	RFS-BAPB-GGW-3-12	Upper	5/2/2012	<0.5	<0.5	4.8	<0.5	9.6	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	0.7	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.0
	RFS-BAPB-GGW-3-23	Lower	5/2/2012	<17.0	<17.0	<17.0	<17.0	<17.0	49.0	<17.0	26.0	<17.0	120	<17.0	360	2,800	<17.0	<17.0	<17.0	<17.0	<17.0	<67.0
RFS-BABP-GGW-4	RFS-BAPB-GGW-4-12	Upper	5/2/2012	<2.5	<2.5	<2.5	<2.5	23.0	<2.5	<2.5	<2.5	<2.5	8.9	<2.5	9.2	6.4	3.6	3.9	2.6	3.6	6.1	***440***
	RFS-BAPB-GGW-4-22	Upper	5/2/2012	<20.0	<20.0	<20.0	<20.0	<20.0	77.0	<20.0	48.0	<20.0	250	<20.0	**1,400**	3,500	<20.0	<20.0	<20.0	<20.0	<20.0	<80.0
	RFS-BAPB-GGW-4-39	Lower	5/2/2012	<6.3	<6.3	<6.3	<6.3	<6.3	41.0	<6.3	21.0	7.0	99.0	<6.3	300	2,700	<6.3	<6.3	<6.3	<6.3	<6.3	<25
RFS-BABP-GGW-5	RFS-BAPB-GGW-5-10	Upper	5/3/2012	<0.5	0.7	<0.5	1.3	20.0	<0.5	<0.5	1.2	<0.5	48.0	<0.5	***83.0***	7.6	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	RFS-BAPB-GGW-5-28	Lower	5/3/2012	<0.5	<0.5	<0.5	<0.5	<0.5	5.6	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	RFS-BAPB-GGW-5-47	Lower	5/3/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
RFS-BABP-GGW-6	RFS-BAPB-GGW-6-31	Lower	5/4/2012	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / 0.5	7.8 / 9.3	<0.5 / <0.5	4.2 / 4.7	1.7 / 1.6	4.0 / 5.1	<0.5 / <0.5	0.8 / 1.1	54.0 / 61.0	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<2.0 / <2.0
	RFS-BAPB-GGW-6-47	Lower	5/4/2012	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / 0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<2.0 / <2.0
RFS-BABP-GGW-7	RFS-BAPB-GGW-7-16	Upper	5/4/2012	<13.0	<13.0	<13.0	<13.0	33.0	15.0	<13.0	42.0	<13.0	270	<13.0	**1,300**	1,500	<13.0	<13.0	<13.0	<13.0	<13.0	<50.0
SB-39	RFS-BAPB-GGW-8-7.5	Upper	5/25/2012	0.9	<0.5	0.8	0.9	4.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.2	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-34	MW-34	Upper	1/7/2011*	<0.5	<0.5	<0.5	<0.5	1.8	2.0	<0.5	3.1	0.3 J	20	<0.5	13	92	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
			10/30/2013	<0.5	<0.5	<0.5	<0.5	2.1	0.7	<0.5	2.0	<0.5	19	<0.5	9.1	61	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-35	MW-35	Upper	1/7/2011*	0.4 J	<0.5	<0.5	0.5	4.5	<0.5	<0.5	0.6	0.7	0.7	<0.5	<0.5	26	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-36	MW-36	Upper	10/30/2013	<1.0	<1.0	<1.0	<1.0	18	<1.0	<1.0	4.5	1.6	21	<1.0	9.9	270	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0
			1/7/2011*	<1.3	<1.3	<1.3	<1.3	1.1 J	2.6	<1.3	3	1.1 J	9.3	<1.3	11	160	<1.3	<1.3	<1.3	<1.3	<1.3	<5.0
MW-37	MW-37	Upper	1/7/2011*	<0.5	0.5 J	<0.5	1.9	24	<0.5	<0.5	3.9	0.4 J	32	<0.5	***87***	29	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-38	MW-38	Upper	1/7/2011*	3.3 / 3.4	<1 / <2.5	<1.0 / <2.5	0.8 J / <2.5	41 / 38	1.7 / 1.5J	<1.0 / <2.5	13 / 12	1.6 / 1.5J	86 / 82	<1.0 / <2.5	***190 /180***	300 / 280	<1.0 / <2.5	<1.0 / <2.5	<1.0 / <2.5	<1.0 / <2.5	<1.0 / <2.5	<4.0 / <10
MW-40	MW-40	Upper	6/5/2012	<0.5 / <0.5	<0.5 / <0.5	25.0 / 12.0	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	1.0 / 1.0	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	8.1 / 8.3	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<2.0 / <2.0
			10/30/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-41	MW-41	Upper	6/5/2012	<2.5	<2.5	<2.5	<2.5	42.0	<2.5	<2.5	15.0	<2.5	130	<2.5	***300***	270	<2.5	<2.5	<2.5	<2.5	<2.5	<10.0
			10/29/2013	3.2	<2.5	<2.5	<2.5	56	<2.5	<2.5	26	<2.5	190	<2.5	**670**	490	<2.5	<2.5	<2.5	<2.5	<2.5	<10
MW-42	MW-42	Upper	10/29/2013	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	28 / 27	<8.3 / <8.3	36 / 34	<8.3 / <8.3	210 / 210	<8.3 / <8.3	**830 / 810**	1,400 / 1,300	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	<8.3 / <8.3	<33 / <33
MW-43	MW-43	Upper	10/29/2013	<7.1	<7.1	<7.1	<7.1	24	40	<7.1	74	<7.1	200	<7.1	***390***	1,100	<7.1	<7.1	<7.1	<7.1	<7.1	<29
MW-44	MW-44	Upper	10/30/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-45	MW-45	Upper	10/29/2013	<0.5	0.7	<0.5	0.7	36	<0.5	<0.5	5.6	<0.5	32	<0.5	4.5	14	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-46	MW-46	Upper	10/29/2013	<1.0	<1.0	<1.0	<1.0	1.2	1.5	<1.0	3.3	1.0	12	<1.0	12	170	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0
Human Health Risk-Based SSGs [1]																						
SSG for On-site Groundskeeper/Maintenance Worker (µg/L)				3.0E+02	6.3E+05	1.3E+06	5.1E+05	2.7E+05	2.5E+03	1.6E+02	2.9E+03	4.4E+02	8.9E+02	5.7E+05	2.2E+01	1.4E+05	4.2E+05	7.8E+05	7.8E+05	-	1.6E+05	9.0E+01
Aquatic Criteria [2] Lot 3 (Upper Horizon, near BAPB)																						
5x Aquatic Criteria [3] (µg/L)				2.6E+04	1.6E+02	-	7.0E+06	-	2.4E+04	2.2E+02	5.0E+03	3.6E+03	4.1E+03	1.0E+07	4.4E+02	1.1E+06	1.5E+06	-	-	-	-	-
Lot 3 (Lower Horizon)																						
160x Aquatic Criteria [3] (µg/L)				8.4E+05	5.1E+03	-	2.2E+08	-	7.5E+05	7.0E+03	1.6E+05	1.1E+05	1.3E+05	3.2E+08	1.4E+04	3.4E+07	4.6E+07	-	-	-	-	-

Notes:

[1] Groundwater SSGs are developed in Appendix G of the Revised HHRA (EKI 2008a) for chemicals retained as COPCs in groundwater and volatile COPCs in soil. The formulas used to calculate SSGs are presented in Appendix H of the Revised HHRA. Please note that groundwater SSGs have not been compared to the solubility in water; therefore some SSGs may exceed the COPC's solubility in water. Additionally, the Human Consumption of Aquatic Organisms criteria, Salt Water Aquatic Criteria, and Freshwater Aquatic Criteria are used to select screening criteria for Lot 3 groundwater.

2 The aquatic criteria are the more stringent of the 10x Human Consumption of Aquatic Organisms value and the Salt Water Aquatic Criteria value.

3 The dilution factors of 5, 40, and 160 for Lot 3 groundwater are developed and presented in Appendix I of the Draft Feasibility Study and Remedial Action Plan for Lots 1, 2, and 3 (EKI 2008b)

4 The storm-water criteria are the more stringent of the Human Consumption of Aquatic Organisms value (without the 10x factor), the Salt Water Aquatic Criteria value, and Freshwater Aquatic Criteria value.

<5 / <5 Indicates sample results for the primary and duplicate samples collected for the well

Italic Font Indicates a detection in upper horizon groundwater above the groundskeeper/maintenance worker SSG

Blue Font Indicates a detection in upper horizon groundwater above 5x the aquatic criterion

Red Font Indicates a detection in lower horizon groundwater above 160x the aquatic criterion

* Sample collected by Arcadis US, Inc.
MTBE was detected in well MW-44 at a concentration of 0.8 ug/L

J estimated value

Table 3
Groundwater Analytical Results - Metals
UC BAPB Investigation
Richmond, CA
concentrations in micrograms per liter (µg/L)

Sample Location	Sample Identification	Groundwater Horizon	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
RFS-BAPB-GGW-1	RFS-BAPB-GGW-1-12	Upper	5/3/2012	<10	16	20	<2.0	<5.0	<5.0	15	<5.0	<5.0	<0.20	<5.0	17	<10	<5.0	<10	<5.0	**480**
	RFS-BAPB-GGW-1-35	Lower	5/3/2012	<10	<5.0	510	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	6.2	<5.0	<10	<5.0	<10	<5.0	<20
RFS-BAPB-GGW-2	RFS-BAPB-GGW-2-9	Upper	5/3/2012	<10	19	130	<2.0	<5.0	34	9.1	**29**	11	<0.20	18	27	<10	<5.0	<10	74	250
	RFS-BAPB-GGW-2-16	Upper	5/3/2012	<10	25	24	<2.0	<5.0	<5.0	30	<5.0	<5.0	<0.20	7.1	41	<10	<5.0	<10	<5.0	400
	RFS-BAPB-GGW-2-28	Lower	5/3/2012	<10	<5.0	23	<2.0	<5.0	<5.0	8.1	<5.0	<5.0	<0.20	<5.0	14	<10	<5.0	<10	<5.0	270
RFS-BAPB-GGW-3	RFS-BAPB-GGW-3-12	Upper	5/2/2012	<10	48	58	<2.0	35	46	66	**61**	**130**	**12**	<5.0	**120**	<10	<5.0	<10	80	**12,000**
	RFS-BAPB-GGW-3-23	Lower	5/2/2012	<10	<5.0	39	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.57	<5.0	49	<10	<5.0	<10	<5.0	21
RFS-BAPB-GGW-4	RFS-BAPB-GGW-4-12	Upper	5/2/2012	<10	***340***	95	3.3	**71**	130	250	**2,000**	**250**	**38**	<5.0	**400**	<10	<5.0	<5.0	200	**33,000**
	RFS-BAPB-GGW-4-22	Upper	5/2/2012	<10	<5.0	35	<2.0	**72**	13	120	**280**	8.1	0.22	<5.0	**1,900**	12	**15**	<10	<5.0	**18,000**
	RFS-BAPB-GGW-4-39	Lower	5/2/2012	<10	<5.0	36	<2.0	12	<5.0	7.3	<5.0	<5.0	0.31	5.9	450	<10	8.0	<10	<5.0	2,000
RFS-BAPB-GGW-5	RFS-BAPB-GGW-5-10	Upper	5/3/2012	<10	<5.0	20	<2.0	<5.0	<5.0	75	<5.0	<5.0	<0.20	<5.0	**270**	<10	<5.0	<10	<5.0	**490**
	RFS-BAPB-GGW-5-28	Lower	5/3/2012	<10	<5.0	310	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	7.3	<5.0	<10	<5.0	<10	<5.0	<20
	RFS-BAPB-GGW-5-47	Lower	5/3/2012	<10	<5.0	240	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	8.3	<5.0	<10	<5.0	<10	<5.0	<20
RFS-BAPB-GGW-6	RFS-BAPB-GGW-6-31	Lower	5/4/2012	<10 / <10	<5.0 / <5.0	130 / 210	<2.0 / <2.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<0.20 / <0.20	14 / 12	6.0 / 8.7	<10 / <10	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	<20 / <20
	RFS-BAPB-GGW-6-47	Lower	5/4/2012	<10 / <10	<5.0 / <5.0	210 / 200	<2.0 / <2.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<0.20 / <0.20	9.1 / 10	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	<20 / <20
RFS-BAPB-GGW-7	RFS-BAPB-GGW-7-16	Upper	5/4/2012	<10	6.7	31	<2.0	29	14	8.3	<5.0	<5.0	<0.20	<5.0	**520**	23	6.1	<10	<5.0	**4,300**
SB-39	RFS-BAPB-GGW-8-5	Upper	5/25/2012	<10	<5.0	140	<2.0	<5.0	<5.0	22	<5.0	<5.0	<0.20	57	22	<10	6.7	<10	<5.0	<20
	RFS-BAPB-GGW-8-7.5	Upper	5/25/2012	<10	<5.0	200	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	28	5.2	<10	<5.0	<10	7.6	<20
MW-34	MW-34	Upper	1/7/2011*	<10	<5	19	<2	<5	6.9	<5	<5	<5	<0.2	<5	30	13	7.1	<10	<5	<20
			10/30/2013	<10	17	17	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	<5.0	**110**	<10	<5.0	<10	<5.0	21
MW-35	MW-35	Upper	1/7/2011*	<10	<5	75	<2	<5	7.7	6.2	<5	<5	<0.2	5.2	11	**65**	6.3	<10	<5	<20
			8/10/2011	<10	15	120	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	<5.0	<5.0	**28**	<5.0	<10	<5.0	<20
MW-36	MW-36	Upper	1/7/2011*	<10	<5	31	<2	<5	12	160	<5	<5	<0.2	<5	**460**	**43**	7.6	<10	<5	310
			10/30/2013	<10	7.8	25	<2.0	<5.0	<5.0	28	<5.0	<5.0	<0.20	<5.0	**73**	<10	<5.0	<10	<5.0	<20
MW-37	MW-37	Upper	1/7/2011*	<10	<5	53	<2	<5	7.9	320	<5	<5	<0.2	<5	**360**	25	<5	<10	<5	**23,000**
			8/10/2011	<10	<7.1	20	<2.0	<5.0	<5.0	500	<5.0	5.8	<0.20	<5.0	**630**	**50**	<5.0	<10	<5.0	**43,000**
MW-38	MW-38	Upper	1/7/2011*	<10 / <10	63 / 61	100 / 100	<2 / <2	<5 / <5	11 / 11	19 / 19	<5 / <5	<5 / <5	<0.2 / <0.2	6.4 / 6.4	**90 / 91**	**47 / 41**	7.1 / 7.2	<10 / <10	<5 / <5	**590 / 590**
			8/10/2011	<10	52	78	<2.0	<5.0	<5.0	22	<5.0	<5.0	<0.20	<5.0	**110**	**48**	<5.0	<10	<5.0	**710**
MW-40	MW-40	Upper	6/5/2012	<10 / <10	<5.0 / <5.0	120 / 120	<2.0 / <2.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<5.0 / <5.0	<0.20 / <0.20	<5.0 / <5.0	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	<20 / <20
			10/30/2013	<10	<5.0	130	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
MW-41	MW-41	Upper	6/5/2012	<10	63	61	<2.0	<5.0	6.9	26	<5.0	<5.0	<0.20	<5.0	**100**	12	<5.0	<10	<5.0	**820**
			10/29/2013	<10	12	42	<2.0	<5.0	6.8	19	<5.0	<5.0	<0.20	<5.0	**91**	<10	<5.0	<10	<5.0	47
MW-42	MW-42	Upper	10/29/2013	<10 / <10	<5.0 / <5.0	18 / 18	<2.0 / <2.0	20 / 20	13 / 13	10 / 10	<5.0 / <5.0	<5.0 / <5.0	0.66 / 0.69	<5.0 / <5.0	**460 / 470**	**27 / 37**	<5.0 / <5.0	<10 / <10	<5.0 / <5.0	**1,400 / 1,400**
MW-43	MW-43	Upper	10/29/2013	<10	<5.0	23	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	<5.0	7.7	<10	<5.0	<10	<5.0	<20
MW-44	MW-44	Upper	10/30/2013	<10	<5.0	97	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.20	<5.0	27	<10	<5.0	<10	<5.0	<20
MW-45	MW-45	Upper	10/29/2013	<10	9.5	13	<2.0	<5.0	<5.0	36	<5.0	<5.0	<0.20	<5.0	25	<10	<5.0	<10	<5.0	**530**
MW-46	MW-46	Upper	10/29/2013	<10	<5.0	52	<2.0	<5.0	<5.0	6.7	<5.0	<5.0	<0.20	<5.0	17	<10	<5.0	<10	<5.0	<20
Human Health Risk-Based SSGs [1]																				
SSG for On-site Groundskeeper/Maintenance Worker (µg/L)				1.5E+05	1.1E+02	7.5E+07	-	1.9E+05	5.6E+08	-	1.5E+07	-	1.1E+05	-	9.3E+07	1.9E+06	3.1E+06	2.5E+04	3.7E+05	1.9E+08
Aquatic Criteria [2] **Lot 3 (Upper Horizon, near BAPB)**																				
5x Aquatic Criteria [3] (µg/L)				2.2E+05	1.8E+02	-	-	4.7E+01	-	-	1.6E+01	4.1E+01	1.1E+01	-	4.1E+01	2.5E+01	9.5E+00	3.2E+02	-	4.1E+02
Lot 3 (Lower Horizon)																				
160x Aquatic Criteria [3] (µg/L)				6.9E+06	5.8E+03	-	-	1.5E+03	-	-	5.0E+02	1.3E+03	3.4E+02	-	1.3E+03	8.0E+02	3.0E+02	1.0E+04	-	1.3E+04

Notes:

1 Groundwater SSGs are developed in Appendix G of the Revised HHRA (EKI 2008a) for chemicals retained as COPCs in groundwater and volatile COPCs in soil. The formulas used to calculate SSGs are presented in Appendix H of the Revised HHRA. Please note that groundwater SSGs have not been compared to the solubility in water; therefore some SSGs may exceed the COPC's solubility in water. Additionally, the Human Consumption of Aquatic Organisms criteria, Salt Water Aquatic Criteria, and Freshwater Aquatic Criteria are used to select screening criteria for Lot 3 groundwater.

2 The aquatic criteria are the more stringent of the 10x Human Consumption of Aquatic Organisms value and the Salt Water Aquatic Criteria value

3 The dilution factors of 5, 40, and 160 for Lot 3 groundwater are developed and presented in Appendix I of the Draft Feasibility Study and Remedial Action Plan for Lots 1, 2, and 3 (EKI 2008b

4 The storm-water criteria are the more stringent of the Human Consumption of Aquatic Organisms value (without the 10x factor), the Salt Water Aquatic Criteria value, and Freshwater Aquatic Criteria value

<5 / <5 Indicates sample results for the primary and duplicate samples collected for the well

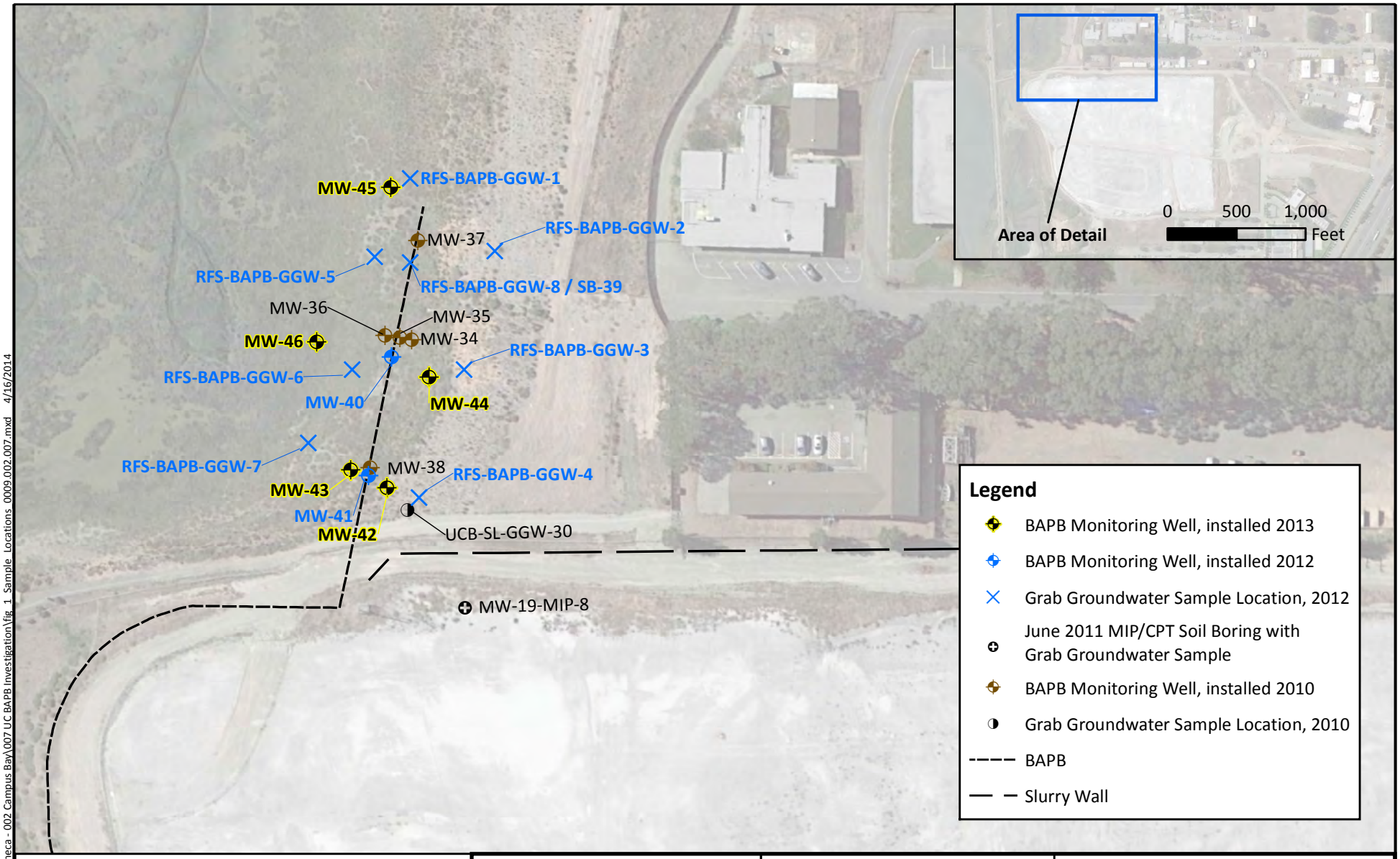
Italic Font Indicates a detection in upper horizon groundwater above the groundskeeper/maintenance worker SSC

Blue Font Indicates a detection in upper horizon groundwater above 5x the aquatic criterion

* Sample collected by Arcadis US, Inc.

FIGURES

THIS PAGE LEFT INTENTIONALLY BLANK



J:\GIS Backup\GIS Data\0009 Zeneca - 002 Campus Bay\007 UC BAPB Investigation\fig 1 Sample Locations 0009.002.007.mxd 4/16/2014

SAFETY FIRST

terraphase engineering

CLIENT:	Zeneca, Inc.
PROJECT:	Campus Bay Richmond, CA
PROJECT NUMBER:	0009.002.007

Sample Locations

FIGURE 1

ATTACHMENT 1
SOIL BORING LOGS/MONITORING WELL CONSTRUCTION LOGS

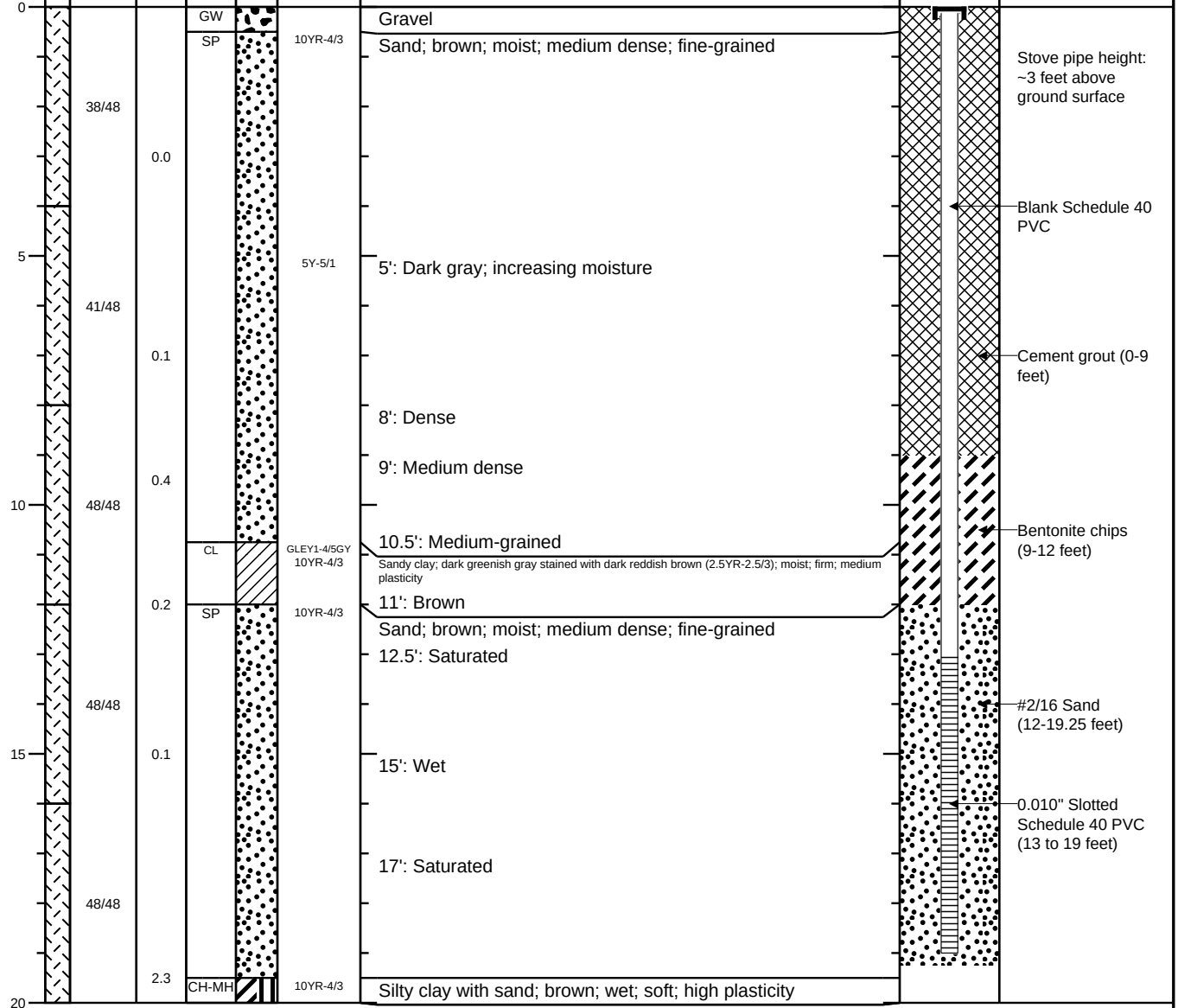
THIS PAGE LEFT INTENTIONALLY BLANK

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Log of Boring MW-42

Sheet 1 of 1

Date(s) Drilled **10/17/13**	Logged By **Emily Mosen**	Checked By **Andrew Romolo**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8" auger**	Total Depth of Borehole **20 feet bgs**
Drill Rig Type **Marl M5T**	Drilling Contractor **Gregg Drilling and Testing**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **2" acetate liner**	Hammer Data **N/A**
Borehole Backfill **Cement Grout**	Location **North of MW-41**	



R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

terraphase engineering

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Key to Log of Boring

Sheet 1 of 1

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Sample Type: Type of soil sample collected at the depth interval shown.
3. Recovered (in) / Total (in): Inches of recovery / total inches of boring tubing.
4. PID Reading (ppm): The reading from a photo-ionization detector, in parts per million. CB denotes sample reading was taken in a closed (sealed) Ziplock(TM) bag. NB denotes the reading of the sample was taken with no bag, in the opening in coring sleeve. This semi-closed space has minor influences from ambient air. OH indicates a reading taken from the open hole.
5. USCS Symbol: USCS symbol of the subsurface material.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. Munsell Soil-Color: Color of subsurface material according to Munsell soil-color charts.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Well Log: Graphical representation of well installed upon completion of drilling and sampling.
10. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS


Bentonite chips


Fat CLAY/SILT (CH-MH)


Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)


Grout


Well graded GRAVEL (GW)


Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS


Hard plastic (acetate) liner (2-inch OD)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)

Water level (after waiting)

Minor change in material properties within a stratum

Inferred/gradational contact between strata

Queried contact between strata

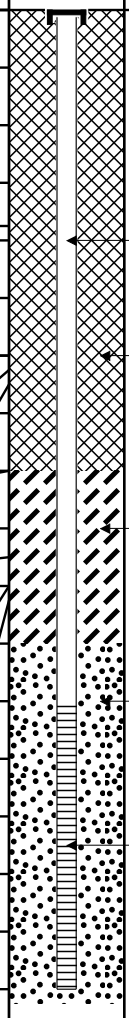
GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: **UC RFS BAPB - Well Installation** Project Location: **Richmond, California** Project Number: **0009.002.007**	Log of Boring MW-43 **Sheet 1 of 1**

Date(s) Drilled **10/17/13**	Logged By **Emily Mosen**	Checked By **Andrew Romolo**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8" auger**	Total Depth of Borehole **20 feet bgs**
Drill Rig Type **Marl M5T**	Drilling Contractor **Gregg Drilling and Testing**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **2" acetate liner**	Hammer Data **N/A**
Borehole Backfill **Cement Grout**	Location **South of MW-41**	

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION
0				CL		10YR-3/2	Sandy clay; very dark grayish brown; moist; firm; medium plasticity
		34/48	0.2				
			0.5	SP		2.5Y-3/1	Sand; very dark gray; moist; medium dense; fine-grained
5							4.75': Saturated to wet
		48/48		CH		GLEY1-4/1	Clay; dark greenish gray; moist; soft; high plasticity
				SM		7.5R-2.5/3	Silty sand; very dusky red; saturated; loose; coarse-grained
				CL-ML		10YR-3/4	Silty clay with sand; brown; moist; soft to firm; medium plasticity
			0.4	SP		2.5Y-3/1	Sand with minor gravel; very dark gray; wet; medium dense
							9'-9.5': Saturated
				CL-ML		10YR-4/3	Silty clay with sand; brown; moist; soft to firm; medium plasticity
10		48/48		SC		7.5R-2.5/3	10'-10.25': Clayey sand; very dusky red; saturated; loose; coarse-grained
			0.2	CL-ML			
		23/48					
15			1.9				
							17': Hard
		20/48	1.3				
20							



REMARKS AND OTHER TESTS

- Stove pipe height: ~3 feet above ground surface
- Blank Schedule 40 PVC
- Cement grout (0-8 feet)
- Bentonite chips (8-11 feet)
- #2/16 Sand (11-17.25 feet)
- 0.010" Slotted Schedule 40 PVC (12 to 17 feet)

terraphase engineering

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Key to Log of Boring
Sheet 1 of 1

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Sample Type: Type of soil sample collected at the depth interval shown.
3. Recovered (in) / Total (in): Inches of recovery / total inches of boring tubing.
4. PID Reading (ppm): The reading from a photo-ionization detector, in parts per million. CB denotes sample reading was taken in a closed (sealed) Ziplock(TM) bag. NB denotes the reading of the sample was taken with no bag, in the opening in coring sleeve. This semi-closed space has minor influences from ambient air. OH indicates a reading taken from the open hole.
5. USCS Symbol: USCS symbol of the subsurface material.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. Munsell Soil-Color: Color of subsurface material according to Munsell soil-color charts.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Well Log: Graphical representation of well installed upon completion of drilling and sampling.
10. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Bentonite chips
- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- SILTY CLAY (CL-ML)
- Grout
- Clayey SAND (SC)
- Silty SAND (SM)
- Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Hard plastic (acetate) liner (2-inch OD)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

terraphase engineering

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

Project: **UC RFS BAPB - Well Installation** Project Location: **Richmond, California** Project Number: **0009.002.007**	Log of Boring MW-44 **Sheet 1 of 1**

Date(s) Drilled **10/18/13**	Logged By **Emily Mosen**	Checked By **Andrew Romolo**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8" auger**	Total Depth of Borehole **20 feet bgs**
Drill Rig Type **Marl M5T**	Drilling Contractor **Gregg Drilling and Testing**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **2" acetate liner**	Hammer Data **N/A**
Borehole Backfill **Cement Grout**	Location **Northeast of MW-40**	

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION
0				CL		10YR-2/2	Sandy clay; very dark brown; moist; hard; low plasticity
		32/48		SP		10YR-3/1	Sand; very dark gray; moist to wet; medium dense; fine-grained
			1.5				
5			1.2				
		48/48		CL		7.5R-2.5/3	Sandy clay; very dusky red; moist; firm; sand is fine-grained
				CL-ML		5Y-3/2	Silty clay with sand; dark olive gray; moist; hard; medium plasticity
			1.6	SP		10YR-3/1	Top 2.25' of 8'-12' sample: sand; very dark gray (likely slough)
10		48/48	1.2	CL-ML		5Y-3/2	Silty clay with sand; dark olive gray; moist; hard; medium plasticity
			0.0	SP		10YR-3/1	Top 2.5' of 12'-16' sample: sand; very dark gray (likely slough)
		48/48					
15			1.3	CH-MH		10YR-3/3	Silty clay with sand; dark brown; moist; soft to firm; high plasticity
		0/48					
20							

Well Log

REMARKS AND OTHER TESTS

- Stove pipe height: ~3 feet above ground surface
- Blank Schedule 40 PVC
- Cement grout (0-6 feet)
- Bentonite chips (6-9 feet)
- #2/16 Sand (9-15.25 feet)
- 0.010" Slotted Schedule 40 PVC (10 to 15 feet)

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

terraphase engineering

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Key to Log of Boring

Sheet 1 of 1

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Sample Type: Type of soil sample collected at the depth interval shown.
3. Recovered (in) / Total (in): Inches of recovery / total inches of boring tubing.
4. PID Reading (ppm): The reading from a photo-ionization detector, in parts per million. CB denotes sample reading was taken in a closed (sealed) Ziplock(TM) bag. NB denotes the reading of the sample was taken with no bag, in the opening in coring sleeve. This semi-closed space has minor influences from ambient air. OH indicates a reading taken from the open hole.
5. USCS Symbol: USCS symbol of the subsurface material.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. Munsell Soil-Color: Color of subsurface material according to Munsell soil-color charts.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Well Log: Graphical representation of well installed upon completion of drilling and sampling.
10. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Bentonite chips
- Fat CLAY/SILT (CH-MH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- SILTY CLAY (CL-ML)
- Grout
- Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Hard plastic (acetate) liner (2-inch OD)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

terraphase engineering

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

Project: **UC RFS BAPB - Well Installation** Project Location: **Richmond, California** Project Number: **0009.002.007**	Log of Boring MW-45 **Sheet 1 of 1**

Date(s) Drilled **10/17/13**	Logged By **Emily Mosen**	Checked By **Andrew Romolo**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8" auger**	Total Depth of Borehole **20 feet bgs**
Drill Rig Type **Marl M5T**	Drilling Contractor **Gregg Drilling and Testing**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **2" acetate liner**	Hammer Data **N/A**
Borehole Backfill **Cement Grout**	Location **West of MW-37**	

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION
0				CL-ML		10YR-3/2	Silty clay with sand; very dark grayish brown; moist; hard; medium plasticity; with roots to 1.5'
		38/48	1.7			2.5Y-4/1	2': Dark gray; firm
5							5': Soft
		42/48		CL		GLEY1-3/10Y	Sandy clay; very dark greenish gray mottled with dark yellowish brown (10YR-3/6); moist; firm to hard; low plasticity
			1.8	SC		5Y-4/2	Clayey sand; olive gray; moist; medium dense; medium coarse-grained
				CH-MH		2.5Y-3/1	Silty clay with sand; very dark gray; moist; very soft; high plasticity
				SC		5Y-3/2	Clayey sand with gravel up to 1"; dark olive gray; moist to wet; loose; medium- to coarse-grained; moderately well graded
10		48/48	2.3	CL-ML		2.5Y-3/3	Silty clay with sand; dark olive brown; moist; hard; medium plasticity
				SP		2.5Y-3/3	Sand with gravel up to 3/4"; dark olive brown; saturated; medium dense to loose; coarse-grained; subrounded to subangular
		48/48		CH-MH		10YR-4/4	Silty clay; dark yellowish brown; moist; firm; high plasticity
15			2.4	SP			Top 1' of 8'-12' sample: sand; saturated; coarse-grained (likely slough)
				CH			Sandy clay with silt and gravel up to 1"; saturated; soft; high plasticity
		48/48	1.5				
20				CL-ML		10YR-3/6	Silty clay with sand; dark yellowish brown; moist; firm; low

Well Log

REMARKS AND OTHER TESTS

- Stove pipe height: ~3 feet above ground surface
- Blank Schedule 40 PVC
- Cement grout (0-3.5 feet)
- Bentonite chips (3.5-4.5 feet)
- #2/16 Sand (4.5-15.25 feet)
- 0.010" Slotted Schedule 40 PVC (5-15 feet)

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

terraphase engineering

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Key to Log of Boring
Sheet 1 of 1

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Sample Type: Type of soil sample collected at the depth interval shown.
3. Recovered (in) / Total (in): Inches of recovery / total inches of boring tubing.
4. PID Reading (ppm): The reading from a photo-ionization detector, in parts per million. CB denotes sample reading was taken in a closed (sealed) Ziplock(TM) bag. NB denotes the reading of the sample was taken with no bag, in the opening in coring sleeve. This semi-closed space has minor influences from ambient air. OH indicates a reading taken from the open hole.
5. USCS Symbol: USCS symbol of the subsurface material.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. Munsell Soil-Color: Color of subsurface material according to Munsell soil-color charts.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Well Log: Graphical representation of well installed upon completion of drilling and sampling.
10. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Bentonite chips
- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- Fat CLAY/SILT (CH-MH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- SILTY CLAY (CL-ML)
- Grout
- Clayey SAND (SC)
- Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Hard plastic (acetate) liner (2-inch OD)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

terraphase engineering

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

Project: **UC RFS BAPB - Well Installation** Project Location: **Richmond, California** Project Number: **0009.002.007**	Log of Boring MW-46 **Sheet 1 of 1**

Date(s) Drilled **10/18/13**	Logged By **Emily Mosen**	Checked By **Andrew Romolo**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8" auger**	Total Depth of Borehole **20 feet bgs**
Drill Rig Type **Marl M5T**	Drilling Contractor **Gregg Drilling and Testing**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **2" acetate liner**	Hammer Data **N/A**
Borehole Backfill **Cement Grout**	Location **Southwest of MW-40**	

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
0				CL		10YR-3/1	Sandy clay with minor gravel; very dark gray mottled with dark brown (7.5YR-3/3); moist; very soft; medium plasticity		Stove pipe height: ~3 feet above ground surface
		34/48	0.9						Blank Schedule 40 PVC
			0.4						Cement grout (0-5 feet)
5				SP		7.5R-2.5/3 2.5Y-3/2	Sand; very dusky red; moist; medium dense		
		48/48		CH-MH			Silty clay with sand; very dark grayish brown; moist; hard to soft (7'); high plasticity		Bentonite chips (5-6 feet)
			0.7	CH-MH			Top 1' of 8'-12' sample: clay with gravel; saturated (likely slough)		#2/16 Sand (6-12.25 feet)
				CH-MH			Silty clay with sand and minor gravel; very dark grayish brown; moist; soft to firm (12'); high plasticity		
10		44/48	1.4						0.010" Slotted Schedule 40 PVC (7-12 feet)
		48/48							
15			1.2				16': Saturated		
		24/48							
20			0.4						

terraphase engineering

R:\Projects\Active Projects\0009 Zeneca\Technical\UC BAPB Well Install\Boring Logs\UC RFS BAPB Well Installation Boring Logs October 2013 0009.002.007.bg4[terraphase well log recovery & pid no sample.tpl]

Project: **UC RFS BAPB - Well Installation**
Project Location: **Richmond, California**
Project Number: **0009.002.007**

Key to Log of Boring

Sheet 1 of 1

Depth (feet)	Sample Type	Recovered (in) / Total (in)	PID Reading (ppm)	USCS Symbol	Graphic Log	Munsell Soil-Color	MATERIAL DESCRIPTION	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Sample Type: Type of soil sample collected at the depth interval shown.
3. Recovered (in) / Total (in): Inches of recovery / total inches of boring tubing.
4. PID Reading (ppm): The reading from a photo-ionization detector, in parts per million. CB denotes sample reading was taken in a closed (sealed) Ziplock(TM) bag. NB denotes the reading of the sample was taken with no bag, in the opening in coring sleeve. This semi-closed space has minor influences from ambient air. OH indicates a reading taken from the open hole.
5. USCS Symbol: USCS symbol of the subsurface material.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. Munsell Soil-Color: Color of subsurface material according to Munsell soil-color charts.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Well Log: Graphical representation of well installed upon completion of drilling and sampling.
10. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Bentonite chips
Fat CLAY/SILT (CH-MH)
Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
Grout
Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Hard plastic (acetate) liner (2-inch OD)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

ATTACHMENT 2
GROUNDWATER SAMPLING FIELD FORMS

THIS PAGE LEFT INTENTIONALLY BLANK

Water Level Measurement Log

terraphase engineering

Project Name: UC RFS BAPB GW Monitoring

Date: 10/29/2013 Page 1 of 1

Project Number: 0009.002.007

Site Location: Richmond, CA

Measured by: K. Quan-Montgomery

Measured With: ☑ Water Level Indicator Solinst 101 ☐ Oil/Water Interface Probe ☐ Other

Weather Conditions: partly cloudy

Well Number	Time	Free Phase Monitoring		Depth to Water (Feet Below TOC)		Depth to Bottom of Well	Conditon of Well (Surface Seal, Casing, Well Vault, Surrounding Ground Surface)
		Detected (Y/N)	Thickness (ft)	Measurement 1	Measurement 2		
MW-46	0839	N	—	2.72	2.72	15.09	OK; DTB = 15.36
MW-45	0847	N	—	4.34	4.34	17.78	OK; DTB = 18.05
MW-37	0855	N	—	4.90	4.90	17.63	OK; DTB = 17.90
MW-36	0901	N	—	3.76	3.76	19.52	OK; DTB = 19.79
MW-35	0907	N	—	3.99	3.99	18.07	OK; DTB = 18.34
MW-34	0912	N	—	4.09	4.09	21.68	OK; DTB = 21.95
MW-40	0918	N	—	4.28	4.28	17.03	OK; DTB = 17.30
MW-44	0923	N	—	5.83	5.83	17.55	OK; DTB = 17.82
MW-43	0930	N	—	5.16	5.16	20.11	OK; DTB = 20.38
MW-38	0935	N	—	4.97	4.97	20.60	OK; DTB = 20.87
MW-41	0940	N	—	4.20	4.20	15.51	OK; DTB = 15.78
MW-42	0944	N	—	7.74	7.74	21.80	OK; DTB = 22.07

Solinst DTB measurements → add 3.25" = 0.27 ft due to recessed conductivity

High tide at 0908 → 5.35 ft at Richmond Inner Harbor. Low tide at 1522 → 1.71 ft

at 0915 → 5.23 ft at Point Isabel. Low tide at 1525 → 1.76 ft.

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-34 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/30/2013

Weather Conditions: ~~overcast~~ partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 4.20 Well Depth (ft): 21.95 Pump Inlet ~17

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 17.75

Well Volume (gal): 2.84

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	mCond (µS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1045	4.46	0	16.33	2.53	8.24	5.77	18	9.39	
1049	4.52	0.1	17.29	2.44	9.64	5.36	-5	5.87	
1053	4.57	0.2	17.45	1.87	9.57	5.23	-20	4.35	
1057	4.59	0.3	17.66	1.72	8.82	5.22	9	3.07	
1101	4.61	0.45	17.81	1.63	7.19	5.22	66	2.96	
1105	4.62	0.6	17.80	1.51	6.70	5.22	101	2.74	
1109	4.63	0.75	17.82	1.45	6.63	5.23	117	2.63	
1112	4.64	0.85	17.82	1.44	6.62	5.23	119	2.26	
1116	4.65	1.0	17.86	1.42	6.62	5.23	123	1.93	
1140	sampled								

Not filtered:

- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ TOC
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly &TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:

- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-36 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KBM Sample Date: 10/30/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 3.86 Well Depth (ft): 19.79 Pump Inlet ~15

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 15.93

Well Volume (gal): 2.55 x 3 = 7.65 gal

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	m Cond (µS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1201	4.15	0	18.16	3.82	8.13	5.11	62	31.4	
1205	4.25	0.1	18.42	8.58	11.13	4.82	-56	25.3	
1209	4.25	0.2	18.44	8.62	11.74	4.70	-65	26.8	
1213	4.27	0.3	18.70	8.05	11.68	4.69	-57	28.9	
1217	4.28	0.4	18.99	6.93	11.43	4.67	-37	31.2	
1221	4.28	0.5	19.24	4.90	9.74	4.67	-171	33.1	
1225	4.29	0.6	19.34	2.39	7.29	4.66	154	33.7	
1229	4.30	0.7	19.35	1.76	6.78	4.66	172	34.3	
1233	4.30	0.8	19.35	1.67	6.66	4.67	136	34.0	
1237	4.29	0.9	19.38	1.61	6.60	4.67	90	32.2	
1241	4.29	1.0	19.47	1.56	6.59	4.67	77	33.5	
1245	4.29	1.1	19.58	1.51	6.58	4.66	71	31.6	
1249	4.29	1.2	19.70	1.47	6.55	4.66	62	28.6	
1315	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ TOC
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly & TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-40 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/30/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 4.39 Well Depth (ft): 17.30 Pump Inlet ~12

Well Diameter: 1.5" ☐ 1" (0.04 gal/feet) ☐ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 12.91

Well Volume (gal):

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes: Fizzing rxn w/ HCl in voas. Rxn w/ H_2SO_4 too.

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	m Cond (uS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1339	5.10	0	19.92	2.32	6.74	5.76	-28	19.7	
1343	5.08	0.1	20.31	3.19	7.01	7.26	-145	17.6	
1347	5.04	0.2	20.87	2.48	7.04	7.40	-168	19.4	
1351	5.12	0.3	21.04	2.22	7.04	7.35	-176	20.9	
1355	5.15	0.4	21.22	1.99	7.03	7.30	-191	22.8	
1359	5.14	0.5	21.42	1.68	7.01	7.25	-205	25.2	
1403	5.14	0.6	21.59	1.50	6.98	7.25	-222	25.9	
1430	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly & TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-41 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/29/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 4.32 Well Depth (ft): 15.78 Pump Inlet ~10.5

Well Diameter: 1.5" ☐ 1" (0.04 gal/feet) ☐ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 11.46

Well Volume (gal):

1132 start purge

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (mS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1135	4.73	0	20.44	18.42	7.88	6.46	-115	5.21	Black silt
1139	4.74	0.1	20.37	11.59	7.80	6.39	-172	4.10	
1143	4.72	0.25	20.27	3.87	7.44	6.21	-235	4.46	
1147	4.71	0.4	20.29	3.49	7.08	6.08	-227	5.12	
1151	4.72	0.6	20.40	3.18	~~7~~6.82	6.02	-214	6.82	
1155	4.72	0.75	20.53	2.79	6.63	6.01	-201	8.15	
1159	4.73	0.9	20.74	3.81	6.58	5.99	-196	8.95	
1203	4.71	1.1	20.93	5.91	6.58	5.97	-194	9.24	
1207	4.72	1.2	~~20.93~~ 21.09	6.00	6.58	5.94	-192	10.0	
1215	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly & TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH
- ☑ TOC

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-42 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☑ Duplicate Sample

Sampler: KQM Sample Date: 10/29/2013 ☐ Field Blank

Weather Conditions: partly cloudy Sample Plan By: A. Romolo ☐ Other

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 7.83 Well Depth (ft): 22.07 Pump Inlet ~17

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 14.24

Well Volume (gal): 2.28

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (µS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1244	8.01	0	21.58	5.92	6.39	5.80	-33	12.8	
1248	8.02	0.25	21.22	4.91	6.42	5.80	-30	12.9	
1252	8.02	0.5	20.65	2.99	6.43	5.81	-24	11.6	
1256	8.03	0.8	20.59	2.36	6.39	5.83	-24	10.7	
1300	8.03	1.2	20.58	2.06	6.35	5.84	-31	10.4	
1304	8.03	1.4	20.38	1.84	6.32	5.87	-65	9.92	
1308	8.03	1.75	20.26	1.75	6.34	5.90	-73	9.45	
1312	8.03	2.0	20.20	2.79	6.33	5.90	-62	9.31	
1330									
~~1320~~	sampled								
~~1330~~	sampled duplicate								
1345									

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ TOC
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly & TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-43 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/29/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 5.15 Well Depth (ft): ~~20.11~~ 20.38 Pump Inlet ~15

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 15.23

Well Volume (gal): 2.44 1028 start purge

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes: Minor fizzing w/HCl in vocs.

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (mS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1030	5.80	0	17.75	25.05	7.05	7.88	179	12.3	
1034	5.99	0.1	18.11	5.73	7.09	7.86	188	11.6	
1038	6.07	0.2	18.28	4.79	7.09	7.85	189	10.7	
1042	6.05	0.3	18.66	3.43	7.10	7.79	193	10.2	
1046	6.04	0.4	18.82	3.12	7.10	7.76	200	9.31	
1050	6.03	0.5	19.03	2.79	7.09	7.73	209	9.13	
1054	6.02	0.6	19.17	2.58	7.09	7.70	211	8.59	
1058	6.00	0.7	19.31	2.38	7.08	7.67	211	8.15	
1115	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☑ ~~TOC~~ amber w/ H_2SO_4
- ☑ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly &TSS
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-44 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/30/2013

Weather Conditions: overcast Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 5.88 Well Depth (ft): 17.82 Pump Inlet ~13

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 11.94

Well Volume (gal): 1.91 x 3 = 5.73 gal

Purge Water Storage Location and Container Type: 55-gallon drum on site 0940 start purge flowcell leak fixed

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (µS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
0951	6.39	0	13.55	3.58	6.58	6.31	136	26.9	
0955	6.48	0.1	~~13.55~~ 14.09	3.33	6.68	6.28	113	24.5	
0959	6.51	0.2	14.78	2.77	6.78	6.16	82	23.4	
1003	6.54	0.3	14.92	2.57	6.77	6.13	69	22.0	
1007	6.58	0.4	15.15	2.44	6.77	6.11	51	21.7	
1011	6.59	0.5	15.29	2.34	6.77	6.10	37	21.0	
1030	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☐ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-45 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/29/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 4.52 Well Depth (ft): 18.05 Pump Inlet ~13

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 13.53

Well Volume (gal): 2.16

Purge Water Storage Location and Container Type: 55-gallon drum on site

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (uS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1507	5.55	0	19.42	1.39	6.79	9.08	-25	109	
1511	5.56	0.35	20.25	1.44	6.33	3.91	45	84.2	
1515	5.56	0.8	20.19	0.94	6.37	3.49	43	68.5	
1519	5.56	1.15	20.18	0.88	6.34	3.44	45	49.9	
1523	5.56	1.4	20.22	0.87	6.29	3.42	48	41.2	
1527	5.56	1.75	20.28	0.88	6.29	3.40	-2	31.2	
1531	5.56	2.1	20.39	0.85	6.29	3.37	-3	25.4	
1535	5.56	2.55	20.49	0.83	6.28	3.34	-4	18.5	
1539	5.56	2.9	20.61	0.81	6.30	3.31	-6	15.6	
1543	5.56	3.2	20.71	0.80	6.30	3.28	-5	13.2	
1555	sampled								

Not filtered:

- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☐ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:

- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

Water Quality Sampling Field Log

terraphase engineering

Project Name: UC RFS BAPB GWM Sample ID: MW-46 Page 1 of 1

Project Number: 0009.002.007 Site Location: Richmond, California Sample Type: ☑ Primary Sample ☐ Duplicate Sample ☐ Field Blank ☐ Other

Sampler: KQM Sample Date: 10/29/2013

Weather Conditions: partly cloudy Sample Plan By: A. Romolo

Purge Data

Purge Method: ☑ Peristaltic Pump ☐ Disposable Bailer ☐ Centrifugal Pump ☐ Bladder Pump ☐ Other

Depth to Water (ft): 2.74 Well Depth (ft): 15.36 Pump Inlet ~10

Well Diameter: ☐ 1" (0.04 gal/feet) ☑ 2" (0.16 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 6" (1.47 gal/feet)

Water Column Height (ft): 12.62

Well Volume (gal): 2.02

Purge Water Storage Location and Container Type: 55-gallon drum on site 1407 start purge

Notes

Time	Depth To Water (ft)	Volume Purged (gal)	Temperature (°C)	DO (mg/l)	pH (SU)	Cond (uS/cm C)	ORP (mV)	Turbidity (NTU)	Comments
1409	3.30	0	20.46	3.67	6.70	8.06	-56	26.7	
1413	3.71	0.25	20.26	2.19	7.18	12.1	-42	22.8	
1417	3.83	0.4	19.45	1.70	7.16	12.3	-23	20.6	
1421	3.91	0.55	19.26	1.52	7.15	12.5	-18	19.4	
1425	3.97	0.7	19.08	1.31	7.15	12.5	-40	18.5	
1429	4.00	0.8	19.06	1.19	7.14	12.5	-57	18.1	
1433	4.05	0.9	18.99 ~~19.06~~	1.10	7.14	12.6	-64	17.0	
1450	sampled								

Not filtered:
- ☑ VOCs (8260) - 3 x 40mL VOAS w/HCl
- ☐ OPP (8270SIM) - 500mL Amber
- ☐ OCPs (8081) - 2 x 1L Amber
- ☐ General Minerals (Alkalinity, Chloride, Sulfate & TDS) - 1L poly
- ☑ Dissolved Sulfides (4500S2-D) - 250mL poly w/ NaOH

Filtered:
- ☑ Title 22 Metals (6010) - 500mL poly w/HNO3
- ☑ Ferrous Iron (3500 FeB) - 125mL poly w/ HCl
- ☐ Arsenic (6010) - 250mL poly w/ HNO3

GREGG

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID —

Well Number MW-42
Date 10/21/13
Time Start: 110 End:
Client TETRA PHASE ENGINEERING
Project CAMPUS BAY - RICHMOND, CA
Job Number D2170267
Installation Date —
Well Diameter 2"

Borehole Diameter 8"
Screen Length 10 FT
Measured Depth (pre-development) 22.10
Measured Depth (post-development) 22.10
Static Water Level (ft.) 9.38
Standing Water Column (ft.) 12.72
One Casing Volume (gal.) 2.1624
One Annulus Vol. (gal.)

Qty. of Drilling Fluid Lost —
Minimum Gal. to be Purged 21.1624
Development Method BAIL. SURGE. BAIL PUMP
Purging Equipment SS BAILER · 2" PUMP
Water Level Equipment SOLINST
pH/EC Meter HORIBA U-53
Turbidity Meter HORIBA U-53
Other —

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM / ~~W.L.~~	W.L.	
150	10	7.13	5.99	312	—	17.22	3.2	1/2	10.11	
154	12	6.70	3.96	100	—	17.18	3.1	1/2	10.11	Bail-2nd
158	14	6.67	5.90	72.4	—	17.20	3.2	1/2	10.11	Surge. 10min
204	16	6.37	5.92	30.5	—	17.24	3.2	1/2	10.11	Bail-3.5 Gal
208	18	6.38	5.95	11.3	—	17.20	3.2	1/2	10.11	
212	20	6.40	5.96	10.9	—	17.19	3.2	1/2	10.11	
216	22	6.41	5.94	10.3	—	17.18	3.2	1/2	10.11	

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Well Number MW-4/3
Date 10/22/13
Time Start: 1120 End: 1240
Client
Project
Job Number
Installation Date
Well Diameter 2"

Borehole Diameter 8"
Screen Length 10FT
Measured Depth (pre-development) 20.40
Measured Depth (post-development) 20.40
Static Water Level (ft.) 7.11
Standing Water Column (ft.) 13.29
One Casing Volume (gal.) 2.2
One Annulus Vol. (gal.)

Sample ID —
Qty. of Drilling Fluid Lost —
Minimum Gal. to be Purged 22.0
Development Method Bail-Surge-Bail pump
Purging Equipment Waterra-2 pumps
Water Level Equipment Solinst
pH/EC Meter Horiba U53
Turbidity Meter Horiba U52
Other

Time	Amount Purged (gal.)	Field Parameters Measured						GPM / W.L.	Comments		Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.		W.L.		
1150	10	6.49	8.34	291	—	16.09	4.6	1/2	12.40	Bail-3 bbl	
1154	11	6.73	8.35	90.6	—	16.54	4.6	1/2	13.10	Surge-100 lbs	
1158	12	6.79	8.12	38.8	—	16.60	4.5	1 1/2	14.00	Bail-3 bbl	
1202	13	6.77	8.14	44.9	—	16.62	4.5	1/2	14.20		
1206	14	6.79	8.12	37.5	—	16.64	4.5	1/2	14.60		
1210	15	6.78	8.15	33.1	—	16.61	4.5	1/2	14.93		
1214	16	6.80	8.14	16.2	—	16.60	4.5	1/2	14.99		
1218	17	6.79	8.12	9.4	—	16.63	4.4	1/2	15.31		
1222	18	6.77	8.13	10.0	—	16.61	4.4	1/2	15.60		
1226	19	6.79	8.11	11.1	—	16.64	4.4	1/2	15.81		
1230	20	6.77	8.10	12.8	—	16.62	4.4	1/2	15.86		
FINAL FIELD PARAMETER MEASUREMENTS											
1234	21	6.79	8.11	14.2	—	16.64	4.4	1/2	16.00		
1238	22	6.78	8.13	13.8	—	16.63	4.4	1/2	16.00		

GREGG

MONITORING WELL DEVELOPMENT LOG

Page _____ of _____

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number MW-44
Date 10/21/13
Time Start: 1130 End: 1305
Client TERRphase Engineering
Project Compass Bay, Richmond, CA
Job Number D212b267
Installation Date _____
Well Diameter 8"

Borehole Diameter 8"
Screen Length 5FT
Measured Depth (pre-development) 17.85
Measured Depth (post-development) 17.85
Static Water Level (ft.) 9.77
Standing Water Column (ft.) 8.08
One Casing Volume (gal.) 1.3736
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost _____
Minimum Gal. to be Purged 13.736
Development Method Bail-Surge-Bail-pump
Purging Equipment SS Bailer-2"pump
Water Level Equipment Solinst
pH/EC Meter Horiba U53
Turbidity Meter Horiba U53
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured						GPM / W.L.	Comments		Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.		W.L.		
1215	7	7.19	16.2	423	—	16.11	5.2	1/4	11.66	Bail-2.5	GC
1219	8	7.06	15.9	390	—	16.45	4.3	1/4	11.98	Surge-10min	
1223	9	6.80	7.59	130	—	16.38	4.2	1/4	12.69	Bail-2.5	GC
1227	10	6.76	7.55	50.7	—	16.40	4.2	1/4	12.69		
1231	11	6.78	7.58	36.3	—	16.42	4.2	1/4	12.90		
1235	12	6.52	7.05	17.8	—	16.45	4.2	1/4	13.26		
1239	13	6.56	7.02	14.1	—	16.48	4.2	1/4	13.26		
1243	14	10.53	7.00	16.8	—	16.45	4.2	1/4	13.26		
1247	15	6.54	7.02	13.9	—	16.41	4.2	1/4	13.26		
1251	16	6.56	7.05	15.1	—	16.42	4.2	1/4	13.26		

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

Page _____ of _____

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Well Number MW-45
Date 10-22-13
Time Start: 930 End: _____
Client _____
Project _____
Job Number _____
Installation Date _____
Well Diameter 2"

Borehole Diameter 8"
Screen Length 10FT
Measured Depth (pre-development) 18.10
Measured Depth (post-development) 18.10
Static Water Level (ft.) 6.85
Standing Water Column (ft.) _____
One Casing Volume (gal.) _____
One Annulus Vol. (gal.) _____

Sample ID _____
Qty. of Drilling Fluid Lost _____
Minimum Gal. to be Purged _____
Development Method Bail-Surge-Bail-pump
Purging Equipment SS Bailer - 2" pump
Water Level Equipment Solinst
pH/EC Meter Horiba U53
Turbidity Meter Horiba U53
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured						GPM / W.L.	W.L.	Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.				
1029	17	7.03	3.56	94.8	—	15.21	1.9	1/2	6.94	Bail-2.5	LC
1033	19	6.65	3.49	62.8	—	15.56	1.8	1/2	6.94	Surge-10min	
1037	21	6.42	3.51	42.7	—	15.52	1.8	1/2	6.94	Bail-35LC	
1040	23	6.29	3.49	25.0	—	16.35	1.8	1/2	6.94		
1044	25	6.28	3.47	16	—	16.36	1.8	1/2	6.94		
1046	27	6.28	3.47	39.2	—	16.37	1.8	1/2	6.94		
1050	29	6.24	3.46	19.2	—	16.40	1.8	1/2	6.94		
1054	31	6.25	3.41	20.3	—	16.41	1.8	1/2	6.94		
1058	33	6.26	3.42	20.1	—	16.42	1.8	1/2	6.94		
1102	35	6.27	3.41	19.9	—	16.44	1.8	1/2	6.94		

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Well Number MW-46
Date 10/21/13
Time Start: 900 End:
Client TERRAPHASE
Project Campus Bay
Job Number D2120267
Installation Date —
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5FT
Measured Depth (pre-development) 15.40
Measured Depth (post-development) 15.40
Static Water Level (ft.) 2.93
Standing Water Column (ft.) 12.47
One Casing Volume (gal.) 2.1199
One Annulus Vol. (gal.) —

Sample ID —
Qty. of Drilling Fluid Lost —
Minimum Gal. to be Purged 22
Development Method Bail-Surge-Bail-pump
Purging Equipment SS Bailer-2" pump
Water Level Equipment Solinst
pH/EC Meter Horiba U53
Turbidity Meter Horiba U53
Other —

Time	Amount Purged (gal.)	Field Parameters Measured: pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM / W.L.	W.L	Comments	Field Tech.
1006	9	7.84	13.6	710	—	14.34	7.8	1/4	12.70	Bail-2.5 gal	
1010	10	7.18	13.6	692	—	14.55	7.8	1/4	12.84	Surge-10min	
1014	11	7.13	13.8	700		14.52	7.7	1/4	12.90	Bail-2.5 gal	
1018	12	7.02	13.5	1032	—	14.66	7.7	1/4	12.96		
1022	13	7.00	13.7	1050	—	14.61	7.7	1/4	13.00		
1026	14	6.98	13.4	642	—	14.58	7.7	1/4	13.08		
1030	15	6.97	13.5	651	—	14.60	7.7	1/4	(Stop to Recharge)		
1054	16	6.95	13.6	205	—	14.13	7.7	1/4	10.85		
1058	17	6.72	13.0	166	—	14.26	7.7	1/4	10.90		
1102	18	6.73	13.2	70.5	—	14.25	7.6	1/4	11.12		
1106	19	6.73	13.4	42.8	—	14.24	7.6	1/4	11.33		
FINAL FIELD PARAMETER MEASUREMENTS											
1110	20	6.75	13.4	21.7	—	14.25	7.6	1/4	11.48		
1114	21	6.74	13.5	22.9	=	14.21	7.6	1/4	11.52		
1118	22	6.75	13.6	21.5	=	14.24	7.6	1/4	11.70		

ATTACHMENT 3
LABORATORY ANALYTICAL REPORTS

THIS PAGE LEFT INTENTIONALLY BLANK


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 250329
ANALYTICAL REPORT

Terraphase Engineering	Project : 0009.002.007
1404 Franklin Street	Location : UC RFS BAPB GWM
Oakland, CA 94612	Level : II

Sample ID	Lab ID
MW-43	250329-001
MW-41	250329-002
MW-42	250329-003
MW-42-D	250329-004
MW-46	250329-005
MW-45	250329-006
EB-10-29-13	250329-007
TRIP BLANK-10-29-13	250329-008

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: Tracy Babjar Date: 11/13/2013

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**250329**
Client:	**Terraphase Engineering**
Project:	**0009.002.007**
Location:	**UC RFS BAPB GWM**
Request Date:	**10/29/13**
Samples Received:	**10/29/13**

This data package contains sample and QC results for eight water samples, requested for the above referenced project on 10/29/13. The samples were received cold and intact.

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

Metals (EPA 6010B and EPA 7470A):
No analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Dissolved Sulfide (SM4500S2-D):
No 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 204533; the parent sample was not a project sample, and the RPD was acceptable in the BS/BSD. No other analytical problems were encountered.

Total Organic Carbon (TOC) (SM5310C):
No analytical problems were encountered.

Ferrous Iron (Fe+2) (SM3500FE-B):
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 # 250329

Project No: 0009.002.007
Project Name: UC RFS BAPB GWM
Project P. O. No:
EDD Format: Report Level ☐ II ☐ III ☐ IV
Turnaround Time: ☐ RUSH ☑ Standard

Sampler: Kara Quan-Montgomery
Report To: Andrew Romolo
Company: Terraphase
Telephone: 510-645-1850
Email: andrew.romolo@terraphase.com

Lab No.	Sample ID.	SAMPLING		MATRIX				# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST																		
		Date Collected	Time Collected	Water	Solid				HCl	H2SO4	HNO3	NaOH	None	VOCs (8260B)	Title 22 Metals (6010B/7470A)	Ferrous Iron (3500FeB)	Dissolved Sulfide (4500S2-D)	General Minerals: Alkalinity (2320B), Chloride (300.0), Sulfate (300.0), TDS (2540C), TSS (2540D)	TOC (5310C)												
1	MW-43	10/29/2013	1115	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
2	MW-41		1215	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
3	MW-42		1330	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
4	MW-42-D		1345	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
5	MW-46		1450	✓				6	✓		✓	✓		✓	✓	✓	✓															
6	MW-45		1555	✓				6	✓		✓	✓		✓	✓	✓	✓															
7	EB-10-29-13		1620	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
8	Trip Blank-10-29-13		1645	✓				2	✓					✓																		

Notes:

SAMPLE RECEIPT
☐ Intact
☐ Cold
☐ On Ice
☐ Ambient

RELINQUISHED BY:
DATE: 10/29/13 TIME: 1700
DATE: TIME:
DATE: TIME:

RECEIVED BY:
DATE: 10/29 TIME: 17:00
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 25Φ329 Date Received 1Φ/29/13 Number of coolers 2
Client TERRAPHASE Project UC RFS BAPB GWM (ΦΦΦ9.ΦΦ2.ΦΦ7)

Date Opened 1Φ/29/13 By (print) TR (sign) Tina Rarka
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
#15.) Received samp #-ΦΦ1 -ΦΦ2, -ΦΦ5, & -ΦΦ6 for diss sulfides w/pH<12, added 1 mL NaOH (lot # 229303) on 1Φ/29/13 @ 173Φ

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 250329

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[X]	[ ]	[ ]	
g	[ ]	[ ]	[X]	
h	[ ]	[ ]	[ ]	
-002a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[X]	[ ]	[ ]	
g	[ ]	[ ]	[X]	
h	[ ]	[ ]	[ ]	
-003a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[X]	[ ]	[ ]	
g	[ ]	[ ]	[X]	
h	[ ]	[ ]	[ ]	
-004a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[X]	[ ]	[ ]	
g	[ ]	[ ]	[X]	
h	[ ]	[ ]	[ ]	
-005a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[ ]	[ ]	[X]	
-006a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[ ]	[ ]	[X]	
-007a	[ ]	[ ]	[ ]	
b	[ ]	[ ]	[ ]	
c	[ ]	[ ]	[ ]	
d	[ ]	[ ]	[ ]	
e	[X]	[ ]	[ ]	
f	[X]	[ ]	[ ]	
g	[ ]	[ ]	[X]	
h	[ ]	[ ]	[ ]	

Analyst: JR
Date: 10/29/13

Page 1 of 1

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-43	Batch#:	204598
Lab ID:	250329-001	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	14.29		

Analyte	Result	RL
Freon 12	ND	14
Chloromethane	ND	14
Vinyl Chloride	ND	7.1
Bromomethane	ND	14
Chloroethane	ND	14
Trichlorofluoromethane	ND	14
Acetone	ND	140
Freon 113	ND	29
1,1-Dichloroethene	ND	7.1
Methylene Chloride	ND	140
Carbon Disulfide	ND	7.1
MTBE	ND	7.1
trans-1,2-Dichloroethene	ND	7.1
Vinyl Acetate	ND	140
1,1-Dichloroethane	ND	7.1
2-Butanone	ND	140
cis-1,2-Dichloroethene	24	7.1
2,2-Dichloropropane	ND	7.1
Chloroform	40	7.1
Bromochloromethane	ND	7.1
1,1,1-Trichloroethane	ND	7.1
1,1-Dichloropropene	ND	7.1
Carbon Tetrachloride	ND	7.1
1,2-Dichloroethane	74	7.1
Benzene	ND	7.1
Trichloroethene	200	7.1
1,2-Dichloropropane	ND	7.1
Bromodichloromethane	ND	7.1
Dibromomethane	ND	7.1
4-Methyl-2-Pentanone	ND	140
cis-1,3-Dichloropropene	ND	7.1
Toluene	ND	7.1
trans-1,3-Dichloropropene	ND	7.1
1,1,2-Trichloroethane	ND	7.1
2-Hexanone	ND	140
1,3-Dichloropropane	ND	7.1
Tetrachloroethene	390	7.1

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-43	Batch#:	204598
Lab ID:	250329-001	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	14.29		

Analyte	Result	RL
Dibromochloromethane	ND	7.1
1,2-Dibromoethane	ND	7.1
Chlorobenzene	1,100	7.1
1,1,1,2-Tetrachloroethane	ND	7.1
Ethylbenzene	ND	7.1
m,p-Xylenes	ND	7.1
o-Xylene	ND	7.1
Styrene	ND	7.1
Bromoform	ND	14
Isopropylbenzene	ND	7.1
1,1,2,2-Tetrachloroethane	ND	7.1
1,2,3-Trichloropropane	ND	7.1
Propylbenzene	ND	7.1
Bromobenzene	ND	7.1
1,3,5-Trimethylbenzene	ND	7.1
2-Chlorotoluene	ND	7.1
4-Chlorotoluene	ND	7.1
tert-Butylbenzene	ND	7.1
1,2,4-Trimethylbenzene	ND	7.1
sec-Butylbenzene	ND	7.1
para-Isopropyl Toluene	ND	7.1
1,3-Dichlorobenzene	ND	7.1
1,4-Dichlorobenzene	ND	7.1
n-Butylbenzene	ND	7.1
1,2-Dichlorobenzene	ND	7.1
1,2-Dibromo-3-Chloropropane	ND	29
1,2,4-Trichlorobenzene	ND	7.1
Hexachlorobutadiene	ND	29
Naphthalene	ND	29
1,2,3-Trichlorobenzene	ND	7.1

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	90	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-41	Units:	ug/L
Lab ID:	250329-002	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Freon 12	ND	5.0	5.000	204598	10/31/13
Chloromethane	ND	5.0	5.000	204598	10/31/13
Vinyl Chloride	3.2	2.5	5.000	204598	10/31/13
Bromomethane	ND	5.0	5.000	204598	10/31/13
Chloroethane	ND	5.0	5.000	204598	10/31/13
Trichlorofluoromethane	ND	5.0	5.000	204598	10/31/13
Acetone	ND	50	5.000	204598	10/31/13
Freon 113	ND	10	5.000	204598	10/31/13
1,1-Dichloroethene	ND	2.5	5.000	204598	10/31/13
Methylene Chloride	ND	50	5.000	204598	10/31/13
Carbon Disulfide	ND	2.5	5.000	204598	10/31/13
MTBE	ND	2.5	5.000	204598	10/31/13
trans-1,2-Dichloroethene	ND	2.5	5.000	204598	10/31/13
Vinyl Acetate	ND	50	5.000	204598	10/31/13
1,1-Dichloroethane	ND	2.5	5.000	204598	10/31/13
2-Butanone	ND	50	5.000	204598	10/31/13
cis-1,2-Dichloroethene	56	2.5	5.000	204598	10/31/13
2,2-Dichloropropane	ND	2.5	5.000	204598	10/31/13
Chloroform	ND	2.5	5.000	204598	10/31/13
Bromochloromethane	ND	2.5	5.000	204598	10/31/13
1,1,1-Trichloroethane	ND	2.5	5.000	204598	10/31/13
1,1-Dichloropropene	ND	2.5	5.000	204598	10/31/13
Carbon Tetrachloride	ND	2.5	5.000	204598	10/31/13
1,2-Dichloroethane	26	2.5	5.000	204598	10/31/13
Benzene	ND	2.5	5.000	204598	10/31/13
Trichloroethene	190	2.5	5.000	204598	10/31/13
1,2-Dichloropropane	ND	2.5	5.000	204598	10/31/13
Bromodichloromethane	ND	2.5	5.000	204598	10/31/13
Dibromomethane	ND	2.5	5.000	204598	10/31/13
4-Methyl-2-Pentanone	ND	50	5.000	204598	10/31/13
cis-1,3-Dichloropropene	ND	2.5	5.000	204598	10/31/13
Toluene	ND	2.5	5.000	204598	10/31/13
trans-1,3-Dichloropropene	ND	2.5	5.000	204598	10/31/13
1,1,2-Trichloroethane	ND	2.5	5.000	204598	10/31/13
2-Hexanone	ND	50	5.000	204598	10/31/13
1,3-Dichloropropane	ND	2.5	5.000	204598	10/31/13
Tetrachloroethene	670	5.0	10.00	204642	11/01/13
Dibromochloromethane	ND	2.5	5.000	204598	10/31/13
1,2-Dibromoethane	ND	2.5	5.000	204598	10/31/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-41	Units:	ug/L
Lab ID:	250329-002	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Chlorobenzene	490	2.5	5.000	204598	10/31/13
1,1,1,2-Tetrachloroethane	ND	2.5	5.000	204598	10/31/13
Ethylbenzene	ND	2.5	5.000	204598	10/31/13
m,p-Xylenes	ND	2.5	5.000	204598	10/31/13
o-Xylene	ND	2.5	5.000	204598	10/31/13
Styrene	ND	2.5	5.000	204598	10/31/13
Bromoform	ND	5.0	5.000	204598	10/31/13
Isopropylbenzene	ND	2.5	5.000	204598	10/31/13
1,1,2,2-Tetrachloroethane	ND	2.5	5.000	204598	10/31/13
1,2,3-Trichloropropane	ND	2.5	5.000	204598	10/31/13
Propylbenzene	ND	2.5	5.000	204598	10/31/13
Bromobenzene	ND	2.5	5.000	204598	10/31/13
1,3,5-Trimethylbenzene	ND	2.5	5.000	204598	10/31/13
2-Chlorotoluene	ND	2.5	5.000	204598	10/31/13
4-Chlorotoluene	ND	2.5	5.000	204598	10/31/13
tert-Butylbenzene	ND	2.5	5.000	204598	10/31/13
1,2,4-Trimethylbenzene	ND	2.5	5.000	204598	10/31/13
sec-Butylbenzene	ND	2.5	5.000	204598	10/31/13
para-Isopropyl Toluene	ND	2.5	5.000	204598	10/31/13
1,3-Dichlorobenzene	ND	2.5	5.000	204598	10/31/13
1,4-Dichlorobenzene	ND	2.5	5.000	204598	10/31/13
n-Butylbenzene	ND	2.5	5.000	204598	10/31/13
1,2-Dichlorobenzene	ND	2.5	5.000	204598	10/31/13
1,2-Dibromo-3-Chloropropane	ND	10	5.000	204598	10/31/13
1,2,4-Trichlorobenzene	ND	2.5	5.000	204598	10/31/13
Hexachlorobutadiene	ND	10	5.000	204598	10/31/13
Naphthalene	ND	10	5.000	204598	10/31/13
1,2,3-Trichlorobenzene	ND	2.5	5.000	204598	10/31/13

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	94	77-134	5.000	204598	10/31/13
1,2-Dichloroethane-d4	97	72-140	5.000	204598	10/31/13
Toluene-d8	96	80-120	5.000	204598	10/31/13
Bromofluorobenzene	89	80-120	5.000	204598	10/31/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-42	Batch#:	204598
Lab ID:	250329-003	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	16.67		

Analyte	Result	RL
Freon 12	ND	17
Chloromethane	ND	17
Vinyl Chloride	ND	8.3
Bromomethane	ND	17
Chloroethane	ND	17
Trichlorofluoromethane	ND	17
Acetone	ND	170
Freon 113	ND	33
1,1-Dichloroethene	ND	8.3
Methylene Chloride	ND	170
Carbon Disulfide	ND	8.3
MTBE	ND	8.3
trans-1,2-Dichloroethene	ND	8.3
Vinyl Acetate	ND	170
1,1-Dichloroethane	ND	8.3
2-Butanone	ND	170
cis-1,2-Dichloroethene	ND	8.3
2,2-Dichloropropane	ND	8.3
Chloroform	28	8.3
Bromochloromethane	ND	8.3
1,1,1-Trichloroethane	ND	8.3
1,1-Dichloropropene	ND	8.3
Carbon Tetrachloride	ND	8.3
1,2-Dichloroethane	36	8.3
Benzene	ND	8.3
Trichloroethene	210	8.3
1,2-Dichloropropane	ND	8.3
Bromodichloromethane	ND	8.3
Dibromomethane	ND	8.3
4-Methyl-2-Pentanone	ND	170
cis-1,3-Dichloropropene	ND	8.3
Toluene	ND	8.3
trans-1,3-Dichloropropene	ND	8.3
1,1,2-Trichloroethane	ND	8.3
2-Hexanone	ND	170
1,3-Dichloropropane	ND	8.3
Tetrachloroethene	830	8.3

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-42	Batch#:	204598
Lab ID:	250329-003	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	16.67		

Analyte	Result	RL
Dibromochloromethane	ND	8.3
1,2-Dibromoethane	ND	8.3
Chlorobenzene	1,400	8.3
1,1,1,2-Tetrachloroethane	ND	8.3
Ethylbenzene	ND	8.3
m,p-Xylenes	ND	8.3
o-Xylene	ND	8.3
Styrene	ND	8.3
Bromoform	ND	17
Isopropylbenzene	ND	8.3
1,1,2,2-Tetrachloroethane	ND	8.3
1,2,3-Trichloropropane	ND	8.3
Propylbenzene	ND	8.3
Bromobenzene	ND	8.3
1,3,5-Trimethylbenzene	ND	8.3
2-Chlorotoluene	ND	8.3
4-Chlorotoluene	ND	8.3
tert-Butylbenzene	ND	8.3
1,2,4-Trimethylbenzene	ND	8.3
sec-Butylbenzene	ND	8.3
para-Isopropyl Toluene	ND	8.3
1,3-Dichlorobenzene	ND	8.3
1,4-Dichlorobenzene	ND	8.3
n-Butylbenzene	ND	8.3
1,2-Dichlorobenzene	ND	8.3
1,2-Dibromo-3-Chloropropane	ND	33
1,2,4-Trichlorobenzene	ND	8.3
Hexachlorobutadiene	ND	33
Naphthalene	ND	33
1,2,3-Trichlorobenzene	ND	8.3

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-134
1,2-Dichloroethane-d4	96	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-42-D	Batch#:	204598
Lab ID:	250329-004	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	16.67		

Analyte	Result	RL
Freon 12	ND	17
Chloromethane	ND	17
Vinyl Chloride	ND	8.3
Bromomethane	ND	17
Chloroethane	ND	17
Trichlorofluoromethane	ND	17
Acetone	ND	170
Freon 113	ND	33
1,1-Dichloroethene	ND	8.3
Methylene Chloride	ND	170
Carbon Disulfide	ND	8.3
MTBE	ND	8.3
trans-1,2-Dichloroethene	ND	8.3
Vinyl Acetate	ND	170
1,1-Dichloroethane	ND	8.3
2-Butanone	ND	170
cis-1,2-Dichloroethene	ND	8.3
2,2-Dichloropropane	ND	8.3
Chloroform	27	8.3
Bromochloromethane	ND	8.3
1,1,1-Trichloroethane	ND	8.3
1,1-Dichloropropene	ND	8.3
Carbon Tetrachloride	ND	8.3
1,2-Dichloroethane	34	8.3
Benzene	ND	8.3
Trichloroethene	210	8.3
1,2-Dichloropropane	ND	8.3
Bromodichloromethane	ND	8.3
Dibromomethane	ND	8.3
4-Methyl-2-Pentanone	ND	170
cis-1,3-Dichloropropene	ND	8.3
Toluene	ND	8.3
trans-1,3-Dichloropropene	ND	8.3
1,1,2-Trichloroethane	ND	8.3
2-Hexanone	ND	170
1,3-Dichloropropane	ND	8.3
Tetrachloroethene	810	8.3

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-42-D	Batch#:	204598
Lab ID:	250329-004	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	16.67		

Analyte	Result	RL
Dibromochloromethane	ND	8.3
1,2-Dibromoethane	ND	8.3
Chlorobenzene	1,300	8.3
1,1,1,2-Tetrachloroethane	ND	8.3
Ethylbenzene	ND	8.3
m,p-Xylenes	ND	8.3
o-Xylene	ND	8.3
Styrene	ND	8.3
Bromoform	ND	17
Isopropylbenzene	ND	8.3
1,1,2,2-Tetrachloroethane	ND	8.3
1,2,3-Trichloropropane	ND	8.3
Propylbenzene	ND	8.3
Bromobenzene	ND	8.3
1,3,5-Trimethylbenzene	ND	8.3
2-Chlorotoluene	ND	8.3
4-Chlorotoluene	ND	8.3
tert-Butylbenzene	ND	8.3
1,2,4-Trimethylbenzene	ND	8.3
sec-Butylbenzene	ND	8.3
para-Isopropyl Toluene	ND	8.3
1,3-Dichlorobenzene	ND	8.3
1,4-Dichlorobenzene	ND	8.3
n-Butylbenzene	ND	8.3
1,2-Dichlorobenzene	ND	8.3
1,2-Dibromo-3-Chloropropane	ND	33
1,2,4-Trichlorobenzene	ND	8.3
Hexachlorobutadiene	ND	33
Naphthalene	ND	33
1,2,3-Trichlorobenzene	ND	8.3

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	95	80-120
Bromofluorobenzene	89	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-46	Batch#:	204642
Lab ID:	250329-005	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	2.000		

Analyte	Result	RL
Freon 12	ND	2.0
Chloromethane	ND	2.0
Vinyl Chloride	ND	1.0
Bromomethane	ND	2.0
Chloroethane	ND	2.0
Trichlorofluoromethane	ND	2.0
Acetone	ND	20
Freon 113	ND	4.0
1,1-Dichloroethene	ND	1.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	1.0
MTBE	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Vinyl Acetate	ND	20
1,1-Dichloroethane	ND	1.0
2-Butanone	ND	20
cis-1,2-Dichloroethene	1.2	1.0
2,2-Dichloropropane	ND	1.0
Chloroform	1.5	1.0
Bromochloromethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
1,1-Dichloropropene	ND	1.0
Carbon Tetrachloride	ND	1.0
1,2-Dichloroethane	3.3	1.0
Benzene	1.0	1.0
Trichloroethene	12	1.0
1,2-Dichloropropane	ND	1.0
Bromodichloromethane	ND	1.0
Dibromomethane	ND	1.0
4-Methyl-2-Pentanone	ND	20
cis-1,3-Dichloropropene	ND	1.0
Toluene	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
2-Hexanone	ND	20
1,3-Dichloropropane	ND	1.0
Tetrachloroethene	12	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-46	Batch#:	204642
Lab ID:	250329-005	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	2.000		

Analyte	Result	RL
Dibromochloromethane	ND	1.0
1,2-Dibromoethane	ND	1.0
Chlorobenzene	170	1.0
1,1,1,2-Tetrachloroethane	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0
Styrene	ND	1.0
Bromoform	ND	2.0
Isopropylbenzene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
1,2,3-Trichloropropane	ND	1.0
Propylbenzene	ND	1.0
Bromobenzene	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0
2-Chlorotoluene	ND	1.0
4-Chlorotoluene	ND	1.0
tert-Butylbenzene	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0
sec-Butylbenzene	ND	1.0
para-Isopropyl Toluene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
n-Butylbenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	4.0
1,2,4-Trichlorobenzene	ND	1.0
Hexachlorobutadiene	ND	4.0
Naphthalene	ND	4.0
1,2,3-Trichlorobenzene	ND	1.0

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-134
1,2-Dichloroethane-d4	93	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-45	Batch#:	204598
Lab ID:	250329-006	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	0.7	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	0.7	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	36	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	5.6	0.5
Benzene	ND	0.5
Trichloroethene	32	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	4.5	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-45	Batch#:	204598
Lab ID:	250329-006	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	14	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	90	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	EB-10-29-13	Batch#:	204554
Lab ID:	250329-007	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/30/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	EB-10-29-13	Batch#:	204554
Lab ID:	250329-007	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/30/13
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	97	77-134
1,2-Dichloroethane-d4	103	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	TRIP BLANK-10-29-13	Batch#:	204554
Lab ID:	250329-008	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/30/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	TRIP BLANK-10-29-13	Batch#:	204554
Lab ID:	250329-008	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Analyzed:	10/30/13
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	95	77-134
1,2-Dichloroethane-d4	102	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	94	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	204554
Units:	ug/L	Analyzed:	10/30/13
Diln Fac:	1.000		

Type: BS Lab ID: QC714030

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	10.07	81	61-137
Benzene	12.50	11.65	93	78-125
Trichloroethene	12.50	12.15	97	77-122
Toluene	12.50	12.11	97	79-123
Chlorobenzene	12.50	12.84	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	94	77-134
1,2-Dichloroethane-d4	101	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	92	80-120

Type: BSD Lab ID: QC714031

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	9.711	78	61-137	4	24
Benzene	12.50	11.44	91	78-125	2	20
Trichloroethene	12.50	12.10	97	77-122	0	20
Toluene	12.50	11.92	95	79-123	2	20
Chlorobenzene	12.50	12.67	101	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	94	77-134
1,2-Dichloroethane-d4	102	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714032	Batch#:	204554
Matrix:	Water	Analyzed:	10/30/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714032	Batch#:	204554
Matrix:	Water	Analyzed:	10/30/13
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	95	77-134
1,2-Dichloroethane-d4	102	72-140
Toluene-d8	95	80-120
Bromofluorobenzene	93	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC714221	Batch#:	204598
Matrix:	Water	Analyzed:	10/31/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	24.59	98	61-137
Benzene	25.00	24.56	98	78-125
Trichloroethene	25.00	25.03	100	77-122
Toluene	25.00	25.04	100	79-123
Chlorobenzene	25.00	27.90	112	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	88	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714222	Batch#:	204598
Matrix:	Water	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714222	Batch#:	204598
Matrix:	Water	Analyzed:	10/31/13
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	95	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	95	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	204642
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type: BS Lab ID: QC714417

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	29.05	116	61-137
Benzene	25.00	26.95	108	78-125
Trichloroethene	25.00	26.66	107	77-122
Toluene	25.00	25.80	103	79-123
Chlorobenzene	25.00	28.46	114	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC714418

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	31.61	126	61-137	8	24
Benzene	25.00	28.65	115	78-125	6	20
Trichloroethene	25.00	29.32	117	77-122	9	20
Toluene	25.00	27.97	112	79-123	8	20
Chlorobenzene	25.00	29.83	119	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-134
1,2-Dichloroethane-d4	87	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714419	Batch#:	204642
Matrix:	Water	Analyzed:	11/01/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714419	Batch#:	204642
Matrix:	Water	Analyzed:	11/01/13
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	102	77-134
1,2-Dichloroethane-d4	86	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	204642
MSS Lab ID:	250427-002	Sampled:	10/30/13
Matrix:	Water	Received:	10/31/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type: MS Lab ID: QC714498

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1000	25.00	27.38	110	68-130
Benzene	<0.1000	25.00	25.15	101	80-125
Trichloroethene	<0.1000	25.00	25.38	102	72-123
Toluene	<0.1000	25.00	24.56	98	80-122
Chlorobenzene	<0.1136	25.00	25.74	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-120

Type: MSD Lab ID: QC714499

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	30.39	122	68-130	10	26
Benzene	25.00	28.33	113	80-125	12	21
Trichloroethene	25.00	28.12	112	72-123	10	20
Toluene	25.00	27.34	109	80-122	11	21
Chlorobenzene	25.00	27.96	112	80-120	8	21

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-43	Diln Fac:	1.000
Lab ID:	250329-001	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	23	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	7.7	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-41	Diln Fac:	1.000
Lab ID:	250329-002	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	12	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	42	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	6.8	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	19	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	91	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	47	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-42	Diln Fac:	1.000
Lab ID:	250329-003	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	18	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	20	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	13	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	10	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	0.66	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	460	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	27	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	1,400	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-42-D	Diln Fac:	1.000
Lab ID:	250329-004	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	18	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	20	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	13	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	10	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	0.69	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	470	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	37	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	1,400	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-46	Diln Fac:	1.000
Lab ID:	250329-005	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	52	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	6.7	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	17	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-45	Diln Fac:	1.000
Lab ID:	250329-006	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	9.5	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	13	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	36	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	25	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	530	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250329	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	EB-10-29-13	Diln Fac:	1.000
Lab ID:	250329-007	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Barium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204618	10/31/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Nickel	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204609	11/08/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204609	11/08/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204609	11/08/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714259	Batch#:	204609
Matrix:	Water	Prepared:	10/31/13
Units:	ug/L	Analyzed:	11/08/13

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	5.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	204609
Units:	ug/L	Prepared:	10/31/13
Diln Fac:	1.000	Analyzed:	11/08/13

Type: BS Lab ID: QC714260

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	471.4	94	75-120
Arsenic	100.0	101.6	102	78-120
Barium	2,000	2,076	104	80-120
Beryllium	50.00	51.86	104	80-120
Cadmium	50.00	55.03	110	80-120
Chromium	200.0	211.8	106	80-120
Cobalt	500.0	516.4	103	79-120
Copper	250.0	253.7	101	77-120
Lead	100.0	101.7	102	78-120
Molybdenum	400.0	418.8	105	80-120
Nickel	500.0	523.3	105	80-120
Selenium	100.0	102.2	102	75-120
Silver	50.00	52.13	104	77-120
Thallium	100.0	107.7	108	79-120
Vanadium	500.0	539.7	108	80-120
Zinc	500.0	537.5	108	80-120

Type: BSD Lab ID: QC714261

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	505.5	101	75-120	7	20
Arsenic	100.0	106.5	107	78-120	5	22
Barium	2,000	2,176	109	80-120	5	20
Beryllium	50.00	54.42	109	80-120	5	20
Cadmium	50.00	58.23	116	80-120	6	20
Chromium	200.0	221.7	111	80-120	5	20
Cobalt	500.0	538.5	108	79-120	4	20
Copper	250.0	265.4	106	77-120	5	20
Lead	100.0	107.7	108	78-120	6	20
Molybdenum	400.0	443.3	111	80-120	6	20
Nickel	500.0	548.9	110	80-120	5	20
Selenium	100.0	103.7	104	75-120	1	25
Silver	50.00	53.85	108	77-120	3	20
Thallium	100.0	114.9	115	79-120	6	23
Vanadium	500.0	565.4	113	80-120	5	20
Zinc	500.0	565.5	113	80-120	5	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	204609
MSS Lab ID:	250327-001	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	ug/L	Prepared:	10/31/13
Diln Fac:	1.000	Analyzed:	11/08/13

Type: MS Lab ID: QC714262

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<0.7245	500.0	477.7	96	74-120
Arsenic	9.622	100.0	110.1	101	74-130
Barium	39.11	2,000	2,076	102	75-120
Beryllium	<0.3432	50.00	51.00	102	80-123
Cadmium	<0.2854	50.00	53.73	107	72-121
Chromium	<0.6258	200.0	204.2	102	74-120
Cobalt	<0.1801	500.0	492.3	98	73-120
Copper	<1.141	250.0	248.1	99	73-121
Lead	<1.246	100.0	97.32	97	68-120
Molybdenum	1.896	400.0	405.4	101	78-120
Nickel	<0.9400	500.0	494.3	99	73-120
Selenium	1.626	100.0	100.8	99	67-129
Silver	<0.8951	50.00	50.73	101	62-124
Thallium	<1.402	100.0	104.9	105	67-120
Vanadium	<0.5349	500.0	518.6	104	80-120
Zinc	10.83	500.0	523.3	102	72-123

Type: MSD Lab ID: QC714263

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	519.2	104	74-120	8	20
Arsenic	100.0	121.8	112	74-130	10	23
Barium	2,000	2,229	110	75-120	7	23
Beryllium	50.00	54.91	110	80-123	7	20
Cadmium	50.00	57.71	115	72-121	7	20
Chromium	200.0	219.6	110	74-120	7	20
Cobalt	500.0	529.4	106	73-120	7	20
Copper	250.0	266.8	107	73-121	7	21
Lead	100.0	105.3	105	68-120	8	24
Molybdenum	400.0	436.9	109	78-120	7	20
Nickel	500.0	529.6	106	73-120	7	20
Selenium	100.0	106.9	105	67-129	6	39
Silver	50.00	54.52	109	62-124	7	20
Thallium	100.0	110.9	111	67-120	6	24
Vanadium	500.0	558.3	112	80-120	7	20
Zinc	500.0	559.5	110	72-123	7	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	204618
Lab ID:	QC714295	Prepared:	10/31/13
Matrix:	Filtrate	Analyzed:	10/31/13
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	204618
Matrix:	Filtrate	Prepared:	10/31/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC714296	2.500	2.490	100	80-120		
BSD	QC714297	2.500	2.240	90	80-120	11	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	204618
Field ID:	ZZZZZZZZZZ	Sampled:	10/10/13
MSS Lab ID:	249838-001	Received:	10/14/13
Matrix:	Filtrate	Prepared:	10/31/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC714298	0.1660	2.500	2.720	102	62-124		
MSD	QC714299		2.500	2.920	110	62-124	7	35

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	204656
Units:	mg/L	Received:	10/29/13

Field ID:	MW-43	Diln Fac:	200.0
Type:	SAMPLE	Sampled:	10/29/13 11:15
Lab ID:	250329-001	Analyzed:	11/01/13 12:37

Analyte	Result	RL
Chloride	1,400	40
Sulfate	2,400	100

Field ID:	MW-41	Diln Fac:	100.0
Type:	SAMPLE	Sampled:	10/29/13 12:15
Lab ID:	250329-002	Analyzed:	11/01/13 12:55

Analyte	Result	RL
Chloride	960	20
Sulfate	1,900	50

Field ID:	MW-42	Diln Fac:	100.0
Type:	SAMPLE	Sampled:	10/29/13 13:30
Lab ID:	250329-003	Analyzed:	11/01/13 13:12

Analyte	Result	RL
Chloride	780	20
Sulfate	2,400	50

Field ID:	MW-42-D	Diln Fac:	100.0
Type:	SAMPLE	Sampled:	10/29/13 13:45
Lab ID:	250329-004	Analyzed:	11/01/13 13:30

Analyte	Result	RL
Chloride	800	20
Sulfate	2,400	50

Field ID:	EB-10-29-13	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	10/29/13 16:20
Lab ID:	250329-007	Analyzed:	11/01/13 15:49

Analyte	Result	RL
Chloride	ND	0.20
Sulfate	ND	0.50

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714471	Analyzed:	11/01/13 10:15

Analyte	Result	RL
Chloride	ND	0.20
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC714472	Batch#:	204656
Matrix:	Water	Analyzed:	11/01/13 10:33
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Chloride	4.000	3.810	95	80-120
Sulfate	10.00	9.531	95	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
MSS Lab ID:	250459-003	Batch#:	204656
Matrix:	Water	Sampled:	11/01/13 12:25
Units:	mg/L	Received:	11/01/13

Type: MS Analyzed: 11/02/13 13:45
Lab ID: QC714536

Analyte	MSS Result	Spiked	Result	%REC	Limits
Chloride	707.6	200.0	881.8	87	77-120
Sulfate	399.8	500.0	875.7	95	80-120

Type: MSD Analyzed: 11/02/13 14:02
Lab ID: QC714537

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Chloride	200.0	898.6	95	77-120	2	20
Sulfate	500.0	879.2	96	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Matrix:	Water	Sampled:	10/29/13
Units:	mg/L	Received:	10/29/13
Batch#:	204741	Analyzed:	11/05/13

Field ID: MW-43 Lab ID: 250329-001
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	550	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	550	6.7

Field ID: MW-41 Lab ID: 250329-002
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	350	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	350	6.7

Field ID: MW-42 Lab ID: 250329-003
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	180	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	180	6.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Matrix:	Water	Sampled:	10/29/13
Units:	mg/L	Received:	10/29/13
Batch#:	204741	Analyzed:	11/05/13

Field ID: MW-42-D
Type: SAMPLE
Lab ID: 250329-004
Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	180	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	180	6.7

Field ID: EB-10-29-13
Type: SAMPLE
Lab ID: 250329-007
Diln Fac: 1.000

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

Type: BLANK
Lab ID: QC714813
Diln Fac: 1.000

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Units:	mg/L
Type:	LCS	Diln Fac:	4.000
Lab ID:	QC714814	Batch#:	204741
Matrix:	Water	Analyzed:	11/05/13

Spiked	Result	%REC	Limits
200.0	180.4	90	90-110

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Diln Fac:	10.00
Field ID:	ZZZZZZZZZZ	Batch#:	204741
MSS Lab ID:	250342-004	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Analyzed:	11/05/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC714815	914.0	500.0	1,329	83	80-120		
MSD	QC714816		500.0	1,331	83	80-120	0	25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Sulfide

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Batch#:	204645
Matrix:	Water	Sampled:	10/29/13
Units:	mg/L	Received:	10/29/13
Diln Fac:	1.000	Analyzed:	11/01/13

Field ID	Type	Lab ID	Result	RL
MW-43	SAMPLE	250329-001	ND	0.04
MW-41	SAMPLE	250329-002	0.08	0.04
MW-42	SAMPLE	250329-003	ND	0.04
MW-42-D	SAMPLE	250329-004	0.08	0.04
MW-46	SAMPLE	250329-005	ND	0.04
MW-45	SAMPLE	250329-006	ND	0.04
EB-10-29-13	SAMPLE	250329-007	ND	0.04
	BLANK	QC714427	ND	0.04

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Sulfide

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Diln Fac:	1.000
Field ID:	MW-44	Batch#:	204645
MSS Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	11/01/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC714428	<0.04000	0.6530	0.6917	106	57-131		
MSD	QC714429		0.6530	0.7268	111	57-131	5	21
LCS	QC714430		0.6530	0.6988	107	80-120		

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Ferrous Iron (Fe+2)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Batch#:	204540
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Analyzed:	10/29/13 17:40
Diln Fac:	1.000		

Field ID	Type	Lab ID	Result	RL	Sampled
MW-43	SAMPLE	250329-001	ND	0.10	10/29/13 11:15
MW-41	SAMPLE	250329-002	11	1.3	10/29/13 12:15
MW-42	SAMPLE	250329-003	ND	0.10	10/29/13 13:30
MW-42-D	SAMPLE	250329-004	ND	0.10	10/29/13 13:45
MW-46	SAMPLE	250329-005	0.32	0.10	10/29/13 14:50
MW-45	SAMPLE	250329-006	11	1.3	10/29/13 15:55
EB-10-29-13	SAMPLE	250329-007	ND	0.10	10/29/13 16:20
	BLANK	QC713972	ND	0.10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Ferrous Iron (Fe+2)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Diln Fac:	1.000
Field ID:	MW-42	Batch#:	204540
MSS Lab ID:	250329-003	Sampled:	10/29/13 13:30
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Analyzed:	10/29/13 17:40

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC713973		0.8000	0.7944	99	90-110		
MS	QC713974	<0.1000	0.8000	0.8323	104	80-124		
MSD	QC713975		0.8000	0.7699	96	80-124	8	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Dissolved Solids (TDS)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Prepared:	11/01/13
Batch#:	204652	Analyzed:	11/04/13

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-43	SAMPLE	250329-001	6,470	50	5.000
MW-41	SAMPLE	250329-002	4,920	25	2.500
MW-42	SAMPLE	250329-003	5,230	25	2.500
MW-42-D	SAMPLE	250329-004	5,310	25	2.500
EB-10-29-13	SAMPLE	250329-007	ND	10	1.000
	BLANK	QC714453	ND	10	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Dissolved Solids (TDS)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Batch#:	204652
Field ID:	ZZZZZZZZZZ	Sampled:	10/29/13
Matrix:	Water	Prepared:	11/01/13
Units:	mg/L	Analyzed:	11/04/13
Diln Fac:	1.000		

Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim	Received
LCS		QC714454		104.0	88.00		85	74-120			
SDUP	250341-001	QC714455	734.0		732.0	10.00			0	5	10/29/13
SDUP	250355-004	QC714456	786.0		786.0	10.00			0	5	10/30/13

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Organic Carbon (TOC)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM5310C
Analyte:	Total Organic Carbon	Batch#:	204604
Matrix:	Water	Sampled:	10/29/13
Units:	mg/L	Received:	10/29/13
Diln Fac:	1.000	Analyzed:	10/31/13

Field ID	Type	Lab ID	Result	RL
MW-43	SAMPLE	250329-001	2.4	0.50
MW-41	SAMPLE	250329-002	2.1	0.50
MW-42	SAMPLE	250329-003	1.2	0.50
MW-42-D	SAMPLE	250329-004	1.3	0.50
EB-10-29-13	SAMPLE	250329-007	ND	0.50
	BLANK	QC714242	ND	0.50

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Organic Carbon (TOC)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM5310C
Analyte:	Total Organic Carbon	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	204604
MSS Lab ID:	250366-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	10/31/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC714243		10.00	9.975	100	90-110		
MS	QC714244	1.379	2.000	3.382	100	39-139		
MSD	QC714245		2.000	3.350	99	39-139	1	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Suspended Solids (TSS)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Sampled:	10/29/13
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Prepared:	10/29/13
Diln Fac:	1.000	Analyzed:	10/31/13
Batch#:	204533		

Field ID	Type	Lab ID	Result	RL
MW-43	SAMPLE	250329-001	6	5
MW-41	SAMPLE	250329-002	ND	5
MW-42	SAMPLE	250329-003	ND	5
MW-42-D	SAMPLE	250329-004	ND	5
EB-10-29-13	SAMPLE	250329-007	ND	5
	BLANK	QC713932	ND	5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Suspended Solids (TSS)

Lab #:	250329	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Batch#:	204533
Field ID:	ZZZZZZZZZZ	Sampled:	10/28/13
MSS Lab ID:	250318-001	Received:	10/29/13
Matrix:	Water	Prepared:	10/29/13
Units:	mg/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC713933		50.00	47.00	94	80-120		
BSD	QC713934		50.00	45.00	90	80-120	4	5
MS	QC713935	<5.000	50.00	52.00	104	61-129		
MSD	QC713936		50.00	44.00	88	61-129	17 *	5

*= Value outside of QC limits; see narrative
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 250376
ANALYTICAL REPORT

Terraphase Engineering	Project : 0009.002.007
1404 Franklin Street	Location : UC RFS BAPB GWM
Oakland, CA 94612	Level : II

Sample ID	Lab ID
MW-44	250376-001
MW-34	250376-002
MW-36	250376-003
MW-40	250376-004
TRIPBLANK-10-30-13	250376-005

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: Tracy Babjar Date: 11/08/2013

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**250376**
Client:	**Terraphase Engineering**
Project:	**0009.002.007**
Location:	**UC RFS BAPB GWM**
Request Date:	**10/30/13**
Samples Received:	**10/30/13**

This data package contains sample and QC results for five water samples, requested for the above referenced project on 10/30/13. The samples were received cold and intact.

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

Metals (EPA 6010B and EPA 7470A):
Low recoveries were observed for mercury in the MS/MSD for batch 204655; the parent sample was not a project sample, and the BS/BSD were within limits. No other analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Dissolved Sulfide (SM4500S2-D):
No 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 BS/BSD for batch 204702. No other analytical problems were encountered.

Total Organic Carbon (TOC) (SM5310C):
No analytical problems were encountered.

Ferrous Iron (Fe+2) (SM3500FE-B):
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 # 250376

Project No: 0009.002.007
Project Name: UC RFS BAFB GWM
Project P. O. No:
EDD Format: Report Level ☐ II ☐ III ☐ IV
Turnaround Time: ☐ RUSH ☑ Standard

Sampler: K. Quan-Montgomery
Report To: Andrew Romolo
Company: Terraphase
Telephone: 510-645-1850
Email: andrew.romolo@terraphase.com

Lab No.	Sample ID.	SAMPLING		MATRIX				# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST																
		Date Collected	Time Collected	Water	Solid				HCl	H2SO4	HNO3	NaOH	None	VOCs (8260)	Title 22 Metals (6010 & 7470A)	Ferrous Iron (3500 FeB)	Dissolved sulfide (4500S2-D)	General Minerals: Alkalinity (2320B), Chloride (300.0), Sulfate (300.0)	TDS (2540C), TSS (2540D)	TOC (5310C)										
	MW-44	10/30/2013	1030	✓				6	✓		✓	✓		✓	✓	✓	✓			✓										
	MW-34	10/30/2013	1140	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓										
	MW-36	10/30/2013	1315	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓										
	MW-40	10/30/2013	1430	✓				8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓										
	TripBlank-10-30-13	10/30/2013	1600	✓				2	✓					✓																

Notes:

SAMPLE RECEIPT
☐ Intact
☐ Cold
☑ On Ice
☐ Ambient

RELINQUISHED BY:
Kara [signature] DATE: 10/30/13 TIME: 1612
DATE: TIME:
DATE: TIME:

RECEIVED BY:
Pat [signature] DATE: 10/30/13 TIME: 1612
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 250376 Date Received 10/30/13 Number of coolers 1
Client Tetra Tech Project UC RFS BAPB GWM

Date Opened 10/30 By (print) MB (sign)
Date Logged in L By (print) L (sign) L

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
-004 rec'd w pH>2, added 1mL HNO3 (10/#L17065) to pH<2 on 10/30/13 @ 1625

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 250376

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[X]	[ ]	[ ]	_____
f	[ ]	[ ]	[X]	_____
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[X]	[ ]	[ ]	_____
f	[X]	[ ]	[ ]	_____
g	[ ]	[ ]	[X]	_____
h	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[X]	[ ]	[ ]	_____
f	[X]	[ ]	[ ]	_____
g	[ ]	[ ]	[X]	_____
h	[ ]	[ ]	[ ]	_____
-004a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[X]	[ ]	[ ]	_____
f	[X]	[ ]	[ ]	_____
g	[ ]	[ ]	[X]	_____
h	[ ]	[ ]	[ ]	_____

Analyst: MG
Date: 10/30/13

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-44	Batch#:	204616
Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	0.8	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	0.6	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-44	Batch#:	204616
Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	2.1	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	77-134
1,2-Dichloroethane-d4	94	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-34	Batch#:	204616
Lab ID:	250376-002	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	2.1	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	0.7	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	2.0	0.5
Benzene	ND	0.5
Trichloroethene	19	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	9.1	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-34	Batch#:	204616
Lab ID:	250376-002	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	61	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	77-134
1,2-Dichloroethane-d4	95	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-36	Units:	ug/L
Lab ID:	250376-003	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Freon 12	ND	2.0	2.000	204616	10/31/13
Chloromethane	ND	2.0	2.000	204616	10/31/13
Vinyl Chloride	ND	1.0	2.000	204616	10/31/13
Bromomethane	ND	2.0	2.000	204616	10/31/13
Chloroethane	ND	2.0	2.000	204616	10/31/13
Trichlorofluoromethane	ND	2.0	2.000	204616	10/31/13
Acetone	ND	20	2.000	204616	10/31/13
Freon 113	ND	4.0	2.000	204616	10/31/13
1,1-Dichloroethene	ND	1.0	2.000	204616	10/31/13
Methylene Chloride	ND	20	2.000	204616	10/31/13
Carbon Disulfide	ND	1.0	2.000	204616	10/31/13
MTBE	ND	1.0	2.000	204616	10/31/13
trans-1,2-Dichloroethene	ND	1.0	2.000	204616	10/31/13
Vinyl Acetate	ND	20	2.000	204616	10/31/13
1,1-Dichloroethane	ND	1.0	2.000	204616	10/31/13
2-Butanone	ND	20	2.000	204616	10/31/13
cis-1,2-Dichloroethene	18	1.0	2.000	204616	10/31/13
2,2-Dichloropropane	ND	1.0	2.000	204616	10/31/13
Chloroform	ND	1.0	2.000	204616	10/31/13
Bromochloromethane	ND	1.0	2.000	204616	10/31/13
1,1,1-Trichloroethane	ND	1.0	2.000	204616	10/31/13
1,1-Dichloropropene	ND	1.0	2.000	204616	10/31/13
Carbon Tetrachloride	ND	1.0	2.000	204616	10/31/13
1,2-Dichloroethane	4.5	1.0	2.000	204616	10/31/13
Benzene	1.6	1.0	2.000	204616	10/31/13
Trichloroethene	21	1.0	2.000	204616	10/31/13
1,2-Dichloropropane	ND	1.0	2.000	204616	10/31/13
Bromodichloromethane	ND	1.0	2.000	204616	10/31/13
Dibromomethane	ND	1.0	2.000	204616	10/31/13
4-Methyl-2-Pentanone	ND	20	2.000	204616	10/31/13
cis-1,3-Dichloropropene	ND	1.0	2.000	204616	10/31/13
Toluene	ND	1.0	2.000	204616	10/31/13
trans-1,3-Dichloropropene	ND	1.0	2.000	204616	10/31/13
1,1,2-Trichloroethane	ND	1.0	2.000	204616	10/31/13
2-Hexanone	ND	20	2.000	204616	10/31/13
1,3-Dichloropropane	ND	1.0	2.000	204616	10/31/13
Tetrachloroethene	9.9	1.0	2.000	204616	10/31/13
Dibromochloromethane	ND	1.0	2.000	204616	10/31/13
1,2-Dibromoethane	ND	1.0	2.000	204616	10/31/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-36	Units:	ug/L
Lab ID:	250376-003	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Chlorobenzene	270	3.1	6.250	204642	11/01/13
1,1,1,2-Tetrachloroethane	ND	1.0	2.000	204616	10/31/13
Ethylbenzene	ND	1.0	2.000	204616	10/31/13
m,p-Xylenes	ND	1.0	2.000	204616	10/31/13
o-Xylene	ND	1.0	2.000	204616	10/31/13
Styrene	ND	1.0	2.000	204616	10/31/13
Bromoform	ND	2.0	2.000	204616	10/31/13
Isopropylbenzene	ND	1.0	2.000	204616	10/31/13
1,1,2,2-Tetrachloroethane	ND	1.0	2.000	204616	10/31/13
1,2,3-Trichloropropane	ND	1.0	2.000	204616	10/31/13
Propylbenzene	ND	1.0	2.000	204616	10/31/13
Bromobenzene	ND	1.0	2.000	204616	10/31/13
1,3,5-Trimethylbenzene	ND	1.0	2.000	204616	10/31/13
2-Chlorotoluene	ND	1.0	2.000	204616	10/31/13
4-Chlorotoluene	ND	1.0	2.000	204616	10/31/13
tert-Butylbenzene	ND	1.0	2.000	204616	10/31/13
1,2,4-Trimethylbenzene	ND	1.0	2.000	204616	10/31/13
sec-Butylbenzene	ND	1.0	2.000	204616	10/31/13
para-Isopropyl Toluene	ND	1.0	2.000	204616	10/31/13
1,3-Dichlorobenzene	ND	1.0	2.000	204616	10/31/13
1,4-Dichlorobenzene	ND	1.0	2.000	204616	10/31/13
n-Butylbenzene	ND	1.0	2.000	204616	10/31/13
1,2-Dichlorobenzene	ND	1.0	2.000	204616	10/31/13
1,2-Dibromo-3-Chloropropane	ND	4.0	2.000	204616	10/31/13
1,2,4-Trichlorobenzene	ND	1.0	2.000	204616	10/31/13
Hexachlorobutadiene	ND	4.0	2.000	204616	10/31/13
Naphthalene	ND	4.0	2.000	204616	10/31/13
1,2,3-Trichlorobenzene	ND	1.0	2.000	204616	10/31/13

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	103	77-134	2.000	204616	10/31/13
1,2-Dichloroethane-d4	98	72-140	2.000	204616	10/31/13
Toluene-d8	97	80-120	2.000	204616	10/31/13
Bromofluorobenzene	103	80-120	2.000	204616	10/31/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-40	Batch#:	204616
Lab ID:	250376-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	0.9	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 #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	MW-40	Batch#:	204616
Lab ID:	250376-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	6.3	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	77-134
1,2-Dichloroethane-d4	96	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	TRIPBLANK-10-30-13	Batch#:	204616
Lab ID:	250376-005	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	TRIPBLANK-10-30-13	Batch#:	204616
Lab ID:	250376-005	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
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	101	77-134
1,2-Dichloroethane-d4	91	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714287	Batch#:	204616
Matrix:	Water	Analyzed:	10/31/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714287	Batch#:	204616
Matrix:	Water	Analyzed:	10/31/13
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	103	77-134
1,2-Dichloroethane-d4	92	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	204616
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	1.000		

Type: BS Lab ID: QC714288

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	20.00	22.78	114	61-137
Benzene	20.00	21.92	110	78-125
Trichloroethene	20.00	22.32	112	77-122
Toluene	20.00	20.45	102	79-123
Chlorobenzene	20.00	22.47	112	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	91	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	103	80-120

Type: BSD Lab ID: QC714289

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	20.00	23.32	117	61-137	2	24
Benzene	20.00	20.82	104	78-125	5	20
Trichloroethene	20.00	21.32	107	77-122	5	20
Toluene	20.00	20.11	101	79-123	2	20
Chlorobenzene	20.00	21.51	108	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-134
1,2-Dichloroethane-d4	89	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	204616
MSS Lab ID:	250386-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Analyzed:	10/31/13
Diln Fac:	2.000		

Type: MS Lab ID: QC714341

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	4.191	40.00	50.38	115	68-130
Benzene	<0.2000	40.00	43.86	110	80-125
Trichloroethene	51.55	40.00	95.03	109	72-123
Toluene	<0.2000	40.00	42.00	105	80-122
Chlorobenzene	<0.2272	40.00	45.41	114	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-134
1,2-Dichloroethane-d4	95	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

Type: MSD Lab ID: QC714342

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	40.00	51.36	118	68-130	2	26
Benzene	40.00	42.81	107	80-125	2	21
Trichloroethene	40.00	93.03	104	72-123	2	20
Toluene	40.00	40.50	101	80-122	4	21
Chlorobenzene	40.00	45.12	113	80-120	1	21

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-134
1,2-Dichloroethane-d4	94	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	104	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	204642
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type: BS Lab ID: QC714417

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	29.05	116	61-137
Benzene	25.00	26.95	108	78-125
Trichloroethene	25.00	26.66	107	77-122
Toluene	25.00	25.80	103	79-123
Chlorobenzene	25.00	28.46	114	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC714418

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	31.61	126	61-137	8	24
Benzene	25.00	28.65	115	78-125	6	20
Trichloroethene	25.00	29.32	117	77-122	9	20
Toluene	25.00	27.97	112	79-123	8	20
Chlorobenzene	25.00	29.83	119	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-134
1,2-Dichloroethane-d4	87	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714419	Batch#:	204642
Matrix:	Water	Analyzed:	11/01/13
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	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714419	Batch#:	204642
Matrix:	Water	Analyzed:	11/01/13
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	102	77-134
1,2-Dichloroethane-d4	86	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 5030B
Project#:	0009.002.007	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	204642
MSS Lab ID:	250427-002	Sampled:	10/30/13
Matrix:	Water	Received:	10/31/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type: MS Lab ID: QC714498

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1000	25.00	27.38	110	68-130
Benzene	<0.1000	25.00	25.15	101	80-125
Trichloroethene	<0.1000	25.00	25.38	102	72-123
Toluene	<0.1000	25.00	24.56	98	80-122
Chlorobenzene	<0.1136	25.00	25.74	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-120

Type: MSD Lab ID: QC714499

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	30.39	122	68-130	10	26
Benzene	25.00	28.33	113	80-125	12	21
Trichloroethene	25.00	28.12	112	72-123	10	20
Toluene	25.00	27.34	109	80-122	11	21
Chlorobenzene	25.00	27.96	112	80-120	8	21

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-134
1,2-Dichloroethane-d4	90	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250376	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-44	Diln Fac:	1.000
Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204725	11/04/13	11/07/13	EPA 3010A	EPA 6010B
Barium	97	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204655	11/01/13	11/01/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Nickel	27	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204725	11/04/13	11/07/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250376	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-34	Diln Fac:	1.000
Lab ID:	250376-002	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Arsenic	17	5.0	204725	11/04/13	11/07/13	EPA 3010A	EPA 6010B
Barium	17	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204655	11/01/13	11/01/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Nickel	110	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204725	11/04/13	11/07/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Zinc	21	20	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250376	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-36	Diln Fac:	1.000
Lab ID:	250376-003	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Arsenic	7.8	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Barium	25	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cobalt	28	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204655	11/01/13	11/01/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Nickel	73	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	250376	Project#:	0009.002.007
Client:	Terraphase Engineering	Location:	UC RFS BAPB GWM
Field ID:	MW-40	Diln Fac:	1.000
Lab ID:	250376-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Barium	130	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Chromium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Copper	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Lead	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Mercury	ND	0.20	204655	11/01/13	11/01/13	METHOD	EPA 7470A
Molybdenum	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Nickel	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Selenium	ND	10	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Silver	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Thallium	ND	10	204725	11/04/13	11/07/13	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B
Zinc	ND	20	204725	11/04/13	11/06/13	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	204655
Lab ID:	QC714465	Prepared:	11/01/13
Matrix:	Water	Analyzed:	11/01/13
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	204655
Matrix:	Water	Prepared:	11/01/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC714466	2.500	2.600	104	80-120		
BSD	QC714467	2.500	2.530	101	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	204655
Field ID:	ZZZZZZZZZZ	Sampled:	10/18/13
MSS Lab ID:	250034-011	Received:	10/18/13
Matrix:	Water	Prepared:	11/01/13
Units:	ug/L	Analyzed:	11/01/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC714468	<0.03605	2.500	0.07500	3 *	62-124		
MSD	QC714469		2.500	0.1070	4 *	62-124	35	35

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

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC714757	Batch#:	204725
Matrix:	Water	Prepared:	11/04/13
Units:	ug/L	Analyzed:	11/06/13

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	5.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	204725
Units:	ug/L	Prepared:	11/04/13
Diln Fac:	1.000	Analyzed:	11/06/13

Type: BS Lab ID: QC714758

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	430.9	86	75-120
Arsenic	100.0	102.2	102	78-120
Barium	2,000	1,924	96	80-120
Beryllium	50.00	47.87	96	80-120
Cadmium	50.00	52.06	104	80-120
Chromium	200.0	195.5	98	80-120
Cobalt	500.0	480.9	96	79-120
Copper	250.0	230.7	92	77-120
Lead	100.0	94.58	95	78-120
Molybdenum	400.0	389.8	97	80-120
Nickel	500.0	482.5	97	80-120
Selenium	100.0	92.04	92	75-120
Silver	50.00	47.88	96	77-120
Thallium	100.0	105.6	106	79-120
Vanadium	500.0	495.4	99	80-120
Zinc	500.0	507.6	102	80-120

Type: BSD Lab ID: QC714759

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	438.8	88	75-120	2	20
Arsenic	100.0	98.52	99	78-120	4	22
Barium	2,000	1,931	97	80-120	0	20
Beryllium	50.00	47.90	96	80-120	0	20
Cadmium	50.00	51.75	104	80-120	1	20
Chromium	200.0	195.7	98	80-120	0	20
Cobalt	500.0	483.2	97	79-120	0	20
Copper	250.0	231.2	92	77-120	0	20
Lead	100.0	94.56	95	78-120	0	20
Molybdenum	400.0	393.8	98	80-120	1	20
Nickel	500.0	486.4	97	80-120	1	20
Selenium	100.0	90.57	91	75-120	2	25
Silver	50.00	48.06	96	77-120	0	20
Thallium	100.0	105.0	105	79-120	1	23
Vanadium	500.0	498.1	100	80-120	1	20
Zinc	500.0	500.8	100	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	EPA 3010A
Project#:	0009.002.007	Analysis:	EPA 6010B
Field ID:	MW-44	Batch#:	204725
MSS Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	ug/L	Prepared:	11/04/13
Diln Fac:	1.000	Analyzed:	11/06/13

Type: MS Lab ID: QC714760

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<0.7245	500.0	511.7	102	74-120
Arsenic	4.848	100.0	124.2	119	74-130
Barium	97.30	2,000	2,009	96	75-120
Beryllium	<0.3432	50.00	48.39	97	80-123
Cadmium	<0.2854	50.00	51.14	102	72-121
Chromium	<0.6258	200.0	195.2	98	74-120
Cobalt	3.087	500.0	472.5	94	73-120
Copper	4.265	250.0	265.1	104	73-121
Lead	<1.246	100.0	82.62	83	68-120
Molybdenum	1.985	400.0	396.0	99	78-120
Nickel	26.78	500.0	486.1	92	73-120
Selenium	<1.347	100.0	96.11	96	67-129
Silver	<0.8951	50.00	53.88	108	62-124
Thallium	<2.337	100.0	103.0	103	67-120
Vanadium	2.195	500.0	515.7	103	80-120
Zinc	13.89	500.0	497.7	97	72-123

Type: MSD Lab ID: QC714761

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	538.1	108	74-120	5	20
Arsenic	100.0	129.2	124	74-130	4	23
Barium	2,000	2,088	100	75-120	4	23
Beryllium	50.00	49.83	100	80-123	3	20
Cadmium	50.00	52.68	105	72-121	3	20
Chromium	200.0	199.4	100	74-120	2	20
Cobalt	500.0	484.0	96	73-120	2	20
Copper	250.0	273.9	108	73-121	3	21
Lead	100.0	87.44	87	68-120	6	24
Molybdenum	400.0	415.8	103	78-120	5	20
Nickel	500.0	499.8	95	73-120	3	20
Selenium	100.0	95.39	95	67-129	1	39
Silver	50.00	55.87	112	62-124	4	20
Thallium	100.0	107.4	107	67-120	4	24
Vanadium	500.0	529.5	105	80-120	3	20
Zinc	500.0	513.8	100	72-123	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	204606
Units:	mg/L	Received:	10/30/13

Field ID: MW-34 Diln Fac: 200.0
Type: SAMPLE Sampled: 10/30/13 11:40
Lab ID: 250376-002 Analyzed: 11/01/13 00:50

Analyte	Result	RL
Chloride	1,500	40
Sulfate	3,400	100

Field ID: MW-36 Diln Fac: 200.0
Type: SAMPLE Sampled: 10/30/13 13:15
Lab ID: 250376-003 Analyzed: 11/01/13 01:07

Analyte	Result	RL
Chloride	1,400	40
Sulfate	2,000	100

Field ID: MW-40 Diln Fac: 200.0
Type: SAMPLE Sampled: 10/30/13 14:30
Lab ID: 250376-004 Analyzed: 11/01/13 01:25

Analyte	Result	RL
Chloride	1,600	40
Sulfate	170	100

Type: BLANK Diln Fac: 1.000
Lab ID: QC714252 Analyzed: 10/31/13 09:40

Analyte	Result	RL
Chloride	ND	0.20
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC714253	Batch#:	204606
Matrix:	Water	Analyzed:	10/31/13 09:57
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Chloride	4.000	4.015	100	80-120
Sulfate	10.00	10.10	101	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	5.000
MSS Lab ID:	250429-001	Batch#:	204606
Matrix:	Water	Sampled:	10/31/13 08:39
Units:	mg/L	Received:	10/31/13

Type: MS Analyzed: 11/01/13 06:03
Lab ID: QC714387

Analyte	MSS Result	Spiked	Result	%REC	Limits
Chloride	20.67	10.00	29.55	89	77-120
Sulfate	0.5698	25.00	24.29	95	80-120

Type: MSD Analyzed: 11/01/13 06:21
Lab ID: QC714388

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Chloride	10.00	29.57	89	77-120	0	20
Sulfate	25.00	24.45	96	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Matrix:	Water	Sampled:	10/30/13
Units:	mg/L	Received:	10/30/13
Batch#:	204792	Analyzed:	11/06/13

Field ID: MW-34 Lab ID: 250376-002
Type: SAMPLE Diln Fac: 5.000

Analyte	Result	RL
Alkalinity, Bicarbonate	370	5.0
Alkalinity, Carbonate	ND	5.0
Alkalinity, Hydroxide	ND	5.0
Alkalinity, Total as CaCO3	370	5.0

Field ID: MW-36 Lab ID: 250376-003
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	510	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	510	6.7

Field ID: MW-40 Lab ID: 250376-004
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	2,400	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	2,400	6.7

Type: BLANK Diln Fac: 1.000
Lab ID: QC715019

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Units:	mg/L
Type:	LCS	Diln Fac:	4.000
Lab ID:	QC715020	Batch#:	204792
Matrix:	Water	Analyzed:	11/06/13

Spiked	Result	%REC	Limits
200.0	180.0	90	90-110

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Diln Fac:	4.000
Field ID:	ZZZZZZZZZZ	Batch#:	204792
MSS Lab ID:	250366-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	11/06/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC715021	265.6	200.0	427.2	81	80-120		
MSD	QC715022		200.0	432.0	84	80-120	1	25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Sulfide

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Batch#:	204645
Matrix:	Water	Sampled:	10/30/13
Units:	mg/L	Received:	10/30/13
Diln Fac:	1.000	Analyzed:	11/01/13

Field ID	Type	Lab ID	Result	RL
MW-44	SAMPLE	250376-001	ND	0.04
MW-34	SAMPLE	250376-002	ND	0.04
MW-36	SAMPLE	250376-003	ND	0.04
MW-40	SAMPLE	250376-004	0.41	0.04
	BLANK	QC714427	ND	0.04

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Sulfide

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Diln Fac:	1.000
Field ID:	MW-44	Batch#:	204645
MSS Lab ID:	250376-001	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	11/01/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC714428	<0.04000	0.6530	0.6917	106	57-131		
MSD	QC714429		0.6530	0.7268	111	57-131	5	21
LCS	QC714430		0.6530	0.6988	107	80-120		

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Ferrous Iron (Fe+2)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Diln Fac:	1.000
Matrix:	Water	Batch#:	204540
Units:	mg/L	Received:	10/30/13

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
MW-44	SAMPLE	250376-001	ND	0.10	10/30/13 10:30	10/30/13 16:25
MW-34	SAMPLE	250376-002	ND	0.10	10/30/13 11:40	10/30/13 16:25
MW-36	SAMPLE	250376-003	0.79	0.10	10/30/13 13:15	10/30/13 16:25
MW-40	SAMPLE	250376-004	3.4	0.25	10/30/13 14:30	10/30/13 16:25
	BLANK	QC713972	ND	0.10		10/29/13 17:40

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Ferrous Iron (Fe+2)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Diln Fac:	1.000
Field ID:	MW-42	Batch#:	204540
MSS Lab ID:	250329-003	Sampled:	10/29/13 13:30
Matrix:	Water	Received:	10/29/13
Units:	mg/L	Analyzed:	10/29/13 17:40

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC713973		0.8000	0.7944	99	90-110		
MS	QC713974	<0.1000	0.8000	0.8323	104	80-124		
MSD	QC713975		0.8000	0.7699	96	80-124	8	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Dissolved Solids (TDS)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Prepared:	11/01/13
Batch#:	204652	Analyzed:	11/04/13

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-34	SAMPLE	250376-002	8,120	50	5.000
MW-36	SAMPLE	250376-003	5,720	33	3.333
MW-40	SAMPLE	250376-004	4,970	33	3.333
	BLANK	QC714453	ND	10	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Dissolved Solids (TDS)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Batch#:	204652
Field ID:	ZZZZZZZZZZ	Sampled:	10/29/13
Matrix:	Water	Prepared:	11/01/13
Units:	mg/L	Analyzed:	11/04/13
Diln Fac:	1.000		

Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim	Received
LCS		QC714454		104.0	88.00		85	74-120			
SDUP	250341-001	QC714455	734.0		732.0	10.00			0	5	10/29/13
SDUP	250355-004	QC714456	786.0		786.0	10.00			0	5	10/30/13

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Organic Carbon (TOC)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM5310C
Analyte:	Total Organic Carbon	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	10/31/13
Batch#:	204604		

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-34	SAMPLE	250376-002	1.1	0.50	1.000
MW-36	SAMPLE	250376-003	1.7	0.50	1.000
MW-40	SAMPLE	250376-004	30	5.0	10.00
	BLANK	QC714242	ND	0.50	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Organic Carbon (TOC)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM5310C
Analyte:	Total Organic Carbon	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	204604
MSS Lab ID:	250366-004	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Analyzed:	10/31/13

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC714243		10.00	9.975	100	90-110		
MS	QC714244	1.379	2.000	3.382	100	39-139		
MSD	QC714245		2.000	3.350	99	39-139	1	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Suspended Solids (TSS)

Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Sampled:	10/30/13
Matrix:	Water	Received:	10/30/13
Units:	mg/L	Prepared:	11/04/13
Diln Fac:	1.000	Analyzed:	11/05/13
Batch#:	204702		

Field ID	Type	Lab ID	Result	RL
MW-34	SAMPLE	250376-002	13	5
MW-36	SAMPLE	250376-003	14	5
MW-40	SAMPLE	250376-004	17	5
	BLANK	QC714651	ND	5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Suspended Solids (TSS)

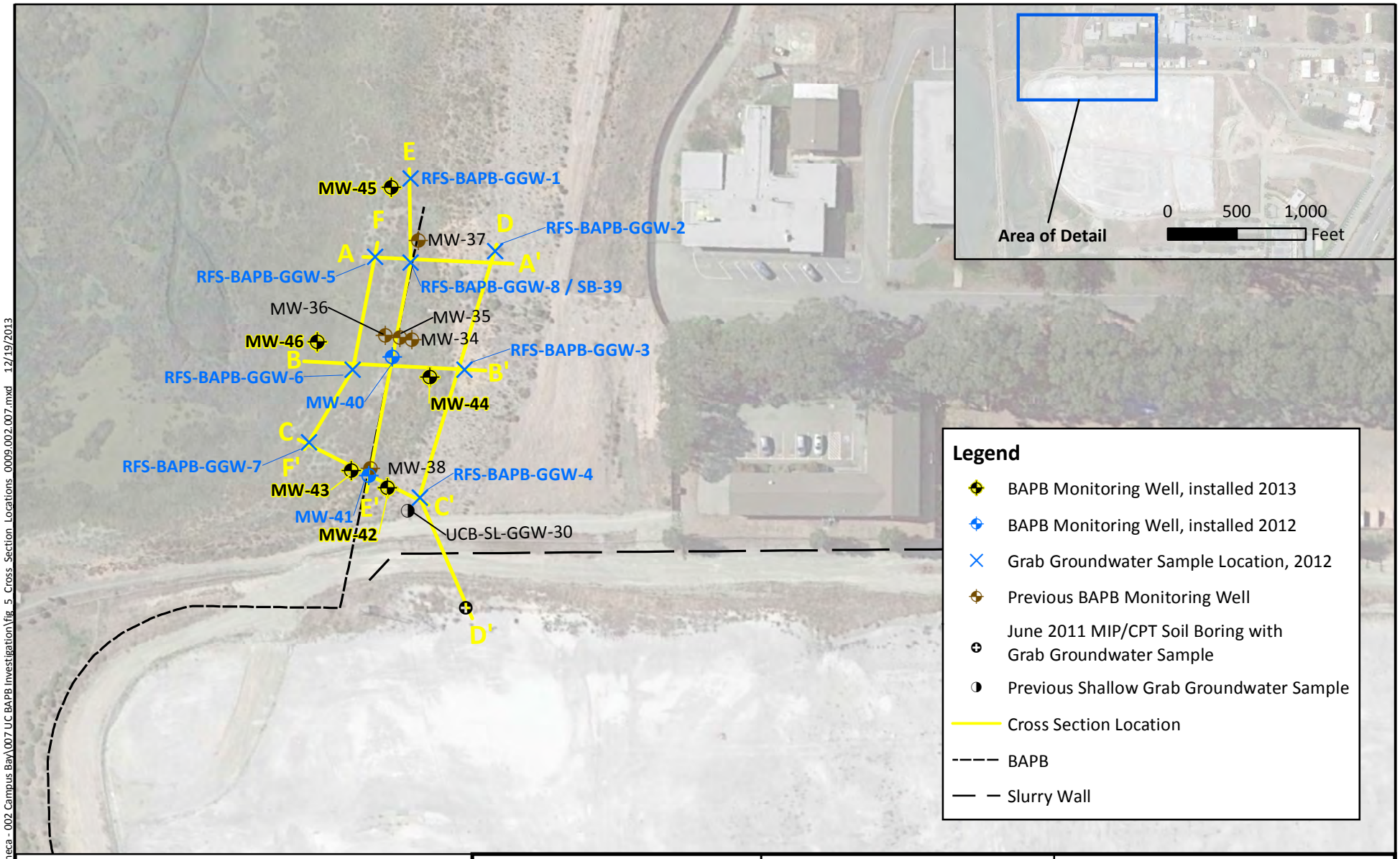
Lab #:	250376	Location:	UC RFS BAPB GWM
Client:	Terraphase Engineering	Prep:	METHOD
Project#:	0009.002.007	Analysis:	SM2540D
Analyte:	Total Suspended Solids	Batch#:	204702
Field ID:	ZZZZZZZZZZ	Sampled:	11/01/13
MSS Lab ID:	250457-024	Received:	11/01/13
Matrix:	Water	Prepared:	11/04/13
Units:	mg/L	Analyzed:	11/05/13
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC714652		50.00	52.00	104	80-120		
BSD	QC714653		50.00	49.00	98	80-120	6 *	5
MS	QC714654	19.00	50.00	60.00	82	61-129		
MSD	QC714655		50.00	59.00	80	61-129	2	5

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

ATTACHMENT 4
CROSS-SECTIONS

THIS PAGE LEFT INTENTIONALLY BLANK



N

0 25 50 75 100

Feet

1 Inch = 100 Feet

SAFETY FIRST

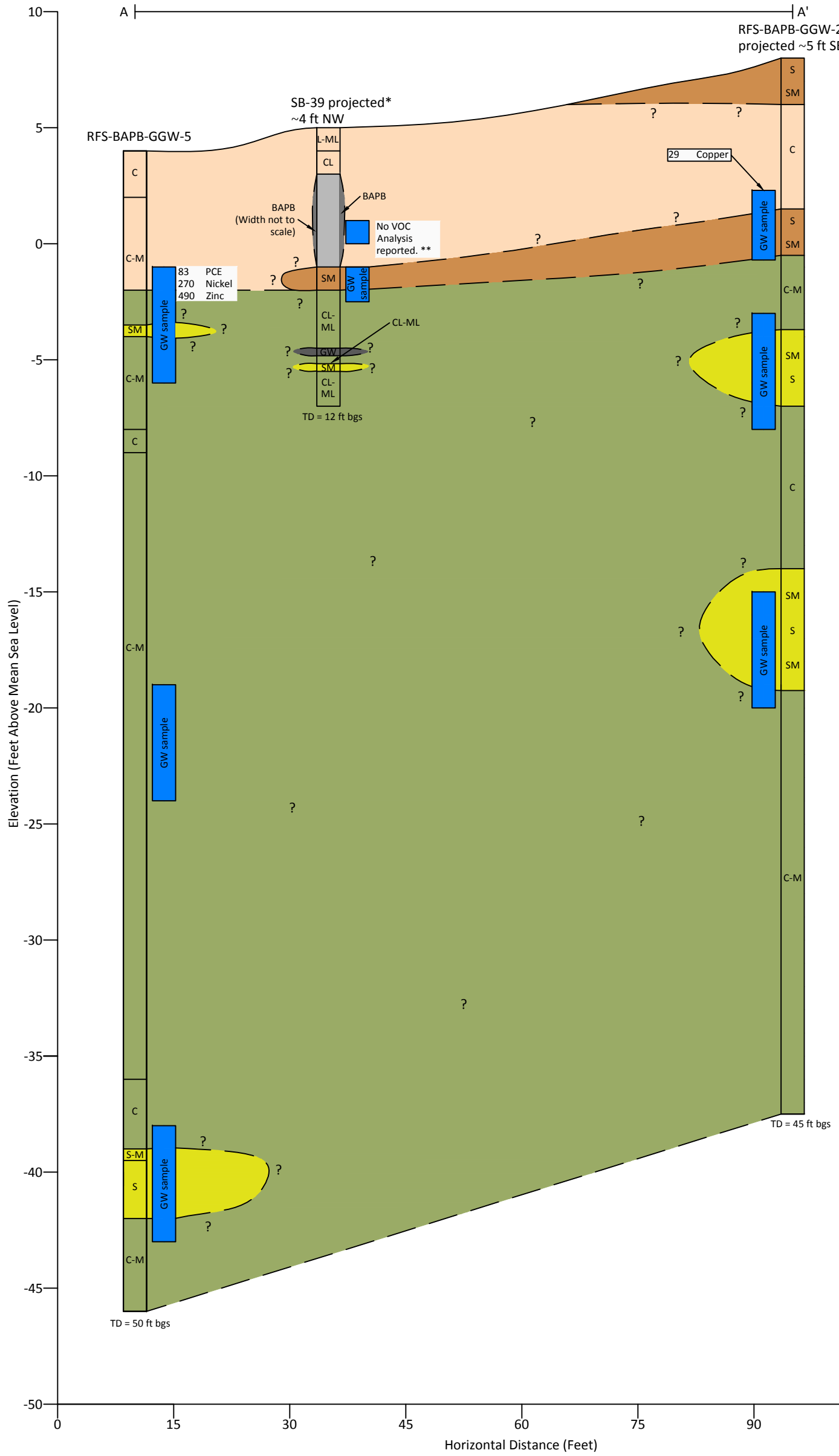
terraphase engineering

CLIENT:	Zeneca, Inc.
PROJECT:	Campus Bay Richmond, CA
PROJECT NUMBER:	0009.002.007

Cross Section Locations

FIGURE 5

J:\GIS Backup\GIS Data\0009 Zeneca - 002 Campus Bay\007 UC BAPB Investigation\fig_5_Cross_Section_Locations_0009.002.007.mxd 12/19/2013



Legend

- Sandy fill material
- Silty fill material
- Sand, silty sand
- Silt/Silty clay/Clay
- Gravels
- Organic-rich sand with peat
- Groundwater sample interval
- ? Extents are approximate

Concentration in µg/L

83	PCE
270	Nickel
490	Zinc

Analyte above applicable site specific screening

Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.

Acronyms

BAPB	biological active permeable barrier
bgs	below ground surface
ft	feet
GW	groundwater
HCl	hydrochloric acid
NW	northwest
PCE	tetrachloroethylene
SE	southeast
TD	total depth
VOC	volatile organic compound

Notes

1. SB-39 geology displayed grab groundwater sample from RFS-BAPB-GGW-8, an adjacent borehole.

2. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).

* Lithology from SB-39. Grab groundwater sample from RFS-BAPB-GGW-8.

** VOC sample discarded due to fizzing when contacted with HCl.

0' 7.5' 15' 30'
Approximate Horizontal Scale in Feet

0' 2.5' 5' 10'
Approximate Vertical Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: Zeneca Inc.

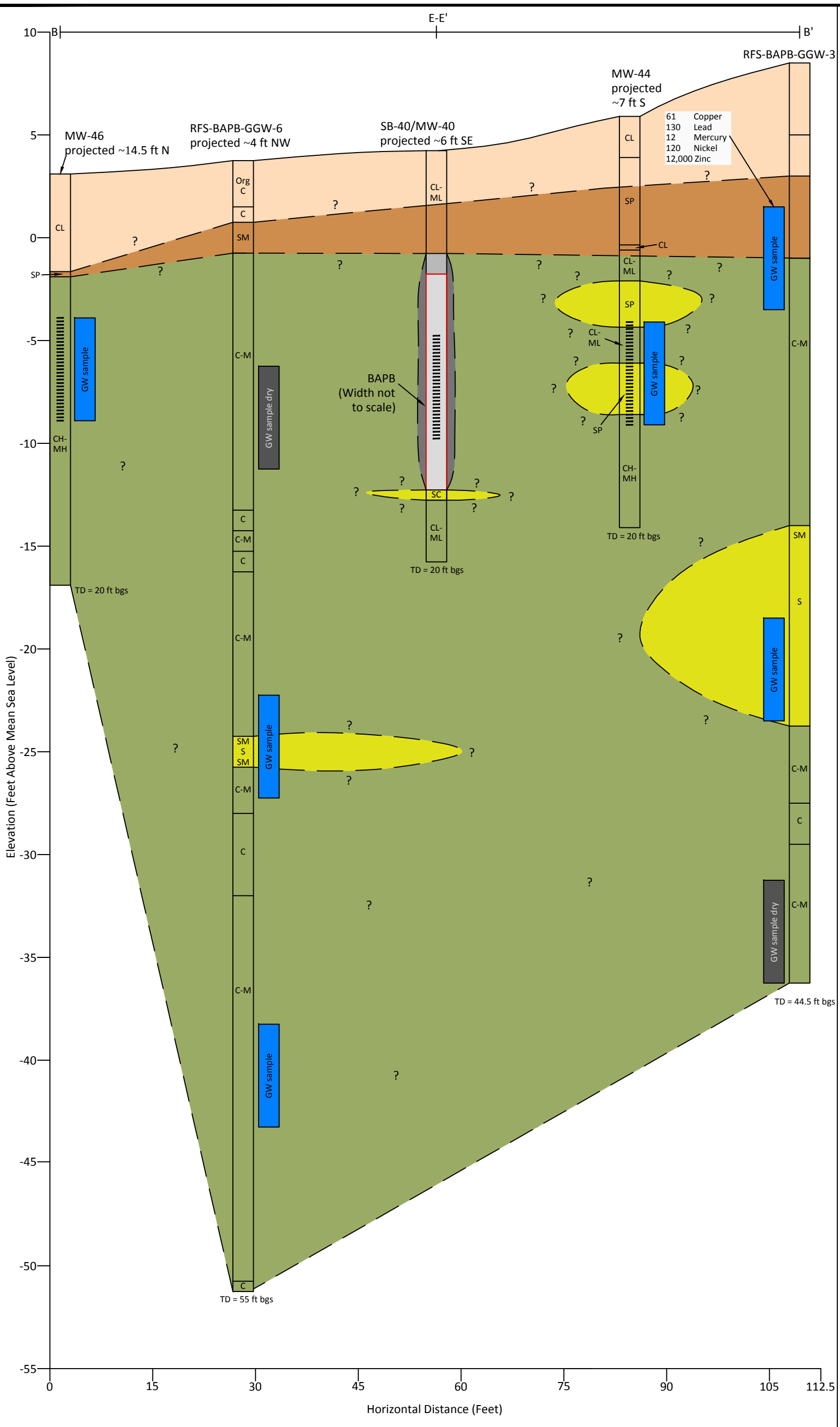
PROJECT: UC BAPB Investigation

PROJECT NUMBER: 0009.002.007

Cross Section A-A'

Figure 6

J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by: KW ; Checked by: AMR



Legend

- Sandy fill material
- Silty fill material
- Sand, silty sand
- Silt/Silty clay/Clay
- Gravels
- Peat and/or organic-rich clay
- Organic-rich sandwith peat
- Groundwater sample interval
- Groundwater sample interval that was dry and therefore not sampled
- Well screen interval
- ? Extents are approximate

Concentration in µg/L

61	Copper
130	Lead
12	Mercury
120	Nickel
12,000	Zinc

Analyte above applicable site specific screening

Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.

Acronyms

BAPB	biological active permeable barrier
bgs	below ground surface
ft	feet
GW	groundwater
NW	northwest
PCE	tetra-chloroethylene
SE	southeast
TCE	trichloroethylene
TD	total depth
VOC	volatile organic compound

Notes

1. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).

0' 7.5' 15' 30'
Approximate Horizontal Scale in Feet

0' 2.5' 5' 10'
Approximate Vertical Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: Zeneca Inc.

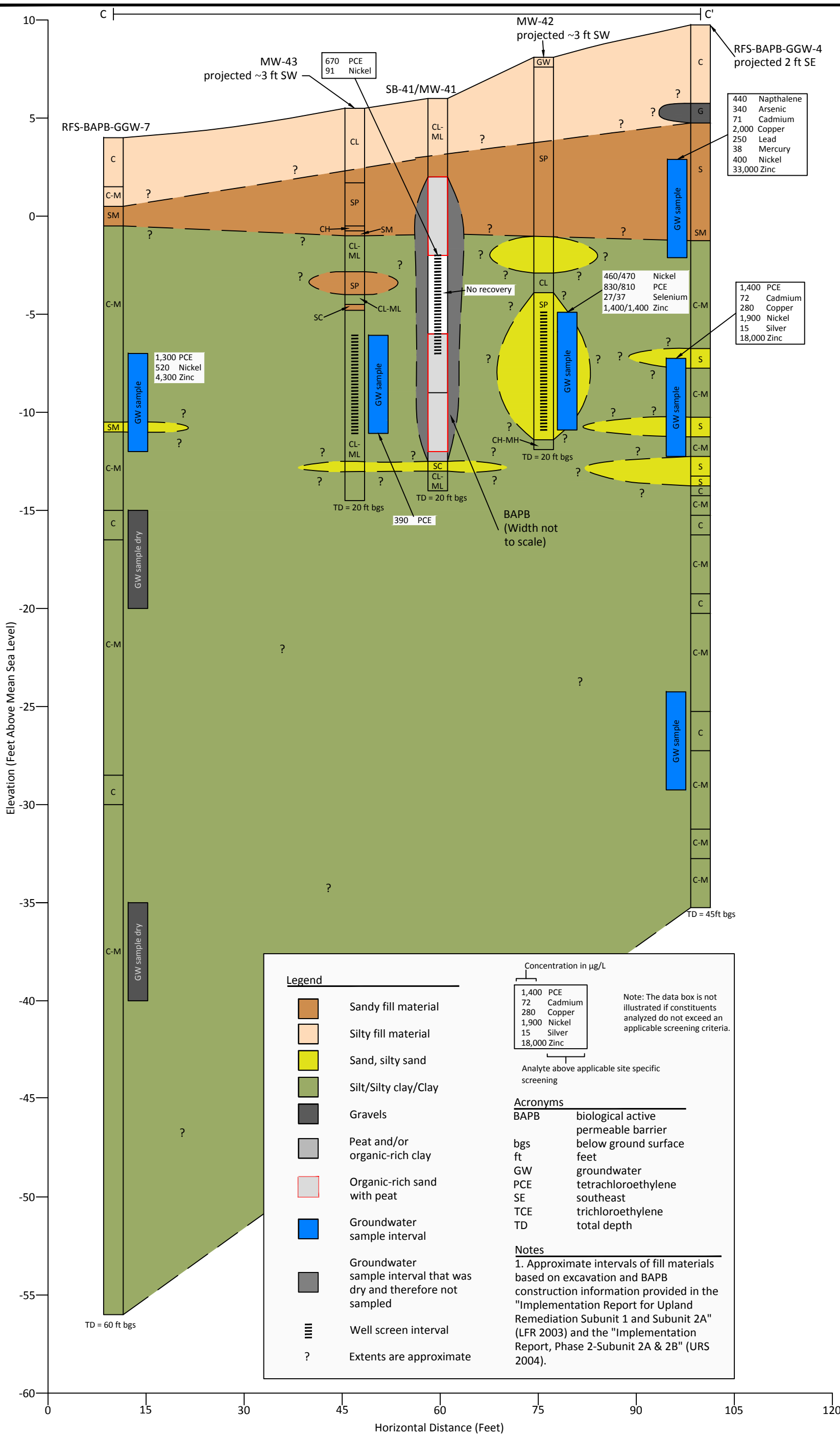
PROJECT: UC BAPB Investigation

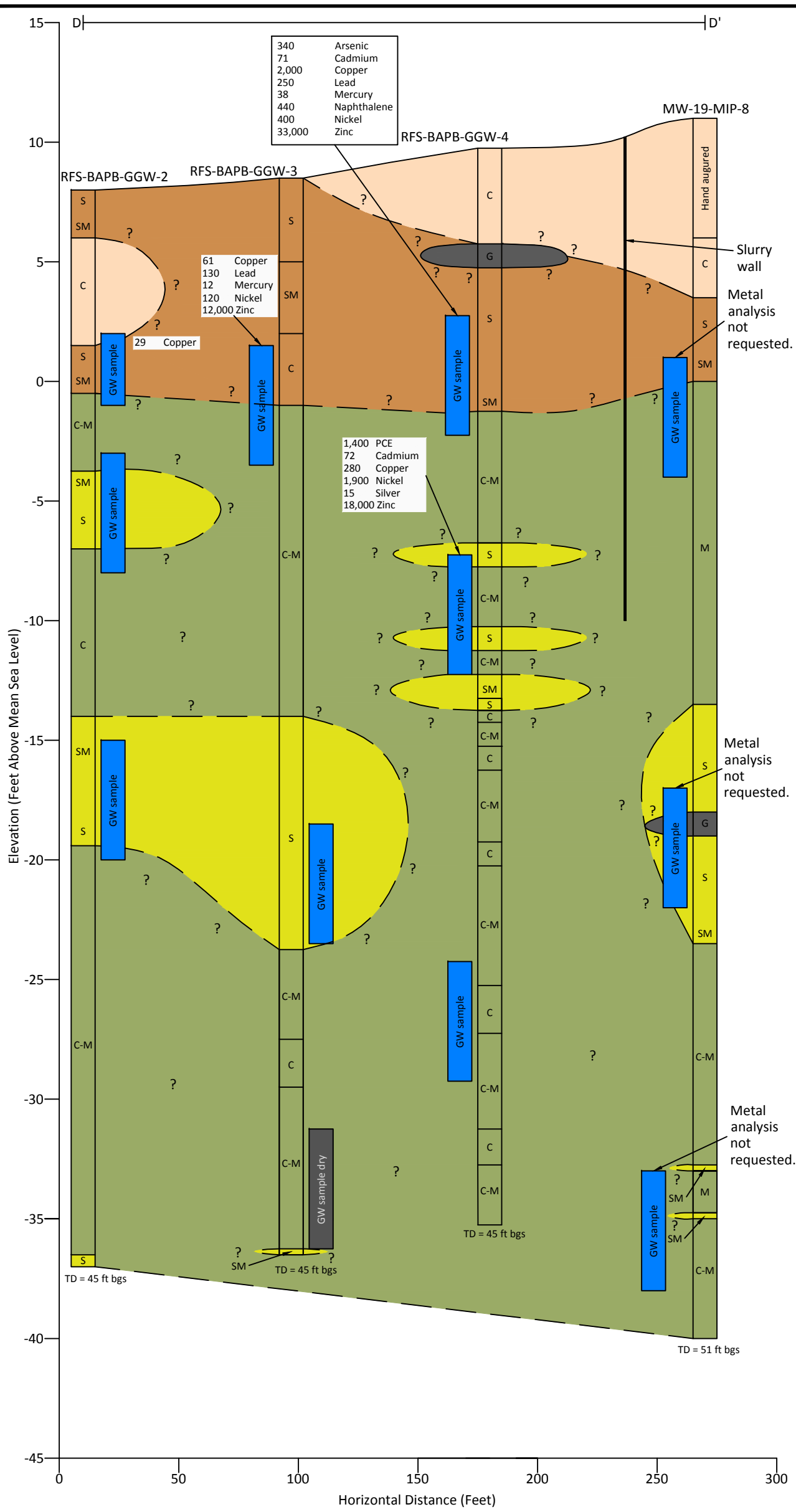
PROJECT NUMBER: 0009.002.007

Cross Section B-B'

Figure 7

J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by: KW ; Checked by: AMR


C
C'
MW-42
projected ~3 ft SW
RFS-BAPB-GGW-4
projected 2 ft SE
MW-43
projected ~3 ft SW
670 PCE
91 Nickel
SB-41/MW-41
RFS-BAPB-GGW-7
440 Napthalene
340 Arsenic
71 Cadmium
2,000 Copper
250 Lead
38 Mercury
400 Nickel
33,000 Zinc
GW sample
No recovery
460/470 Nickel
830/810 PCE
27/37 Selenium
1,400/1,400 Zinc
1,400 PCE
72 Cadmium
280 Copper
1,900 Nickel
15 Silver
18,000 Zinc
1,300 PCE
520 Nickel
4,300 Zinc
TD = 20 ft bgs
390 PCE
BAPB
(Width not
to scale)
GW sample dry
TD = 45ft bgs
TD = 60 ft bgs
Elevation (Feet Above Mean Sea Level)
Horizontal Distance (Feet)
Legend
Sandy fill material
Silty fill material
Sand, silty sand
Silt/Silty clay/Clay
Gravels
Peat and/or organic-rich clay
Organic-rich sand with peat
Groundwater sample interval
Groundwater sample interval that was dry and therefore not sampled
Well screen interval
Extents are approximate
Concentration in µg/L
1,400 PCE
72 Cadmium
280 Copper
1,900 Nickel
15 Silver
18,000 Zinc
Analyte above applicable site specific screening
Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.
Acronyms
BAPB biological active permeable barrier
bgs below ground surface
ft feet
GW groundwater
PCE tetrachloroethylene
SE southeast
TCE trichloroethylene
TD total depth
Notes
1. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).
Approximate Horizontal Scale in Feet
Approximate Vertical Scale in Feet
SAFETY FIRST
terraphase engineering
CLIENT: Zeneca Inc.
PROJECT: UC BAPB Investigation
PROJECT NUMBER: 0009.002.007
Cross Section C-C'
Figure 8
J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by: KW ; Checked by: AMR



Legend

- Sandy fill material
- Silty fill material
- Sand, silty sand
- Silt/Silty clay/Clay
- Gravels
- Groundwater sample interval
- Groundwater sample interval that was dry and therefore not sampled
- ? Extents are approximate

Concentration in µg/L

29 Copper

Analyte above applicable site specific screening

Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.

Acronyms

BAPB	Biological active permeable barrier
bgs	below ground surface
ft	feet
GW	groundwater
NW	northwest
PCE	tetrachloroethylene
TCE	trichloroethylene
TD	total depth

Notes

1. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).

0' 25' 50' 100'
Approximate Horizontal Scale in Feet

0' 2.5' 5' 10'
Approximate Vertical Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: Zeneca Inc.

PROJECT: UC BAPB Investigation

PROJECT NUMBER: 0009.002.007

Cross Section D-D'

Figure 9

J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by:_KW_; Checked by:_AMR_

E
E'
MW-45
projected ~13.2 ft W
(See Inset #1)
SB-39/RFS-BAPB-GW-8
MW-35
(See Inset #2)
SB-40/MW-40
SB-41/MW-41
RFS-BAPB-GGW-1
CL-ML
CL
C
SM
M
S
GW sample
GW sample dry
GW
BAPB
670 PCE
91 Nickel
No recovery
480 Zinc
TD = 12 ft bgs
See Inset #1
See Inset #2
SC
TD = 20 ft bgs
C-M
Cemented S
Refusal
TD = 50 ft bgs
Elevation (Feet Above Mean Sea Level)
Horizontal Distance (Feet)

Inset #1

RFS-BAPB-GGW-1
6'
MW-45
CH-MH
CH
530 Zinc
TD = 20 ft
Elevation (Feet Above Mean Sea Level)
Horizontal Distance (Feet)
Approximate Horizontal Scale in Feet
Approximate Vertical Scale in Feet

Inset #2

MW-35
14'
SB-40/
MW-40
Grout
Bentonite Seal
Sand
Screen Interval
BAPB
Elevation (Feet Above Mean Sea Level)
Horizontal Distance (Feet)
Approximate Horizontal Scale in Feet
Approximate Vertical Scale in Feet

Legend

- Sandy fill material
- Silty fill material
- Sand, silty sand
- Silt/Silty clay/Clay
- Gravels
- Peat and/or organic-rich clay
- ? Extents are approximate
- Organic-rich sand with peat
- Groundwater sample interval
- Groundwater sample interval that was dry and therefore not sampled
- Well screen interval

Concentration in µg/L
530 Zinc
Analyte above applicable site specific screening

Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.

Notes

1. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).

Acronyms

BAPB	biological active permeable barrier
bgs	below ground surface
ft	feet
GW	groundwater
PCE	tetrachloroethylene
SW	southwest
TCE	trichloroethylene
TD	total depth
VOC	volatile organic compound

Approximate Horizontal Scale in Feet
Approximate Vertical Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: Zeneca Inc.

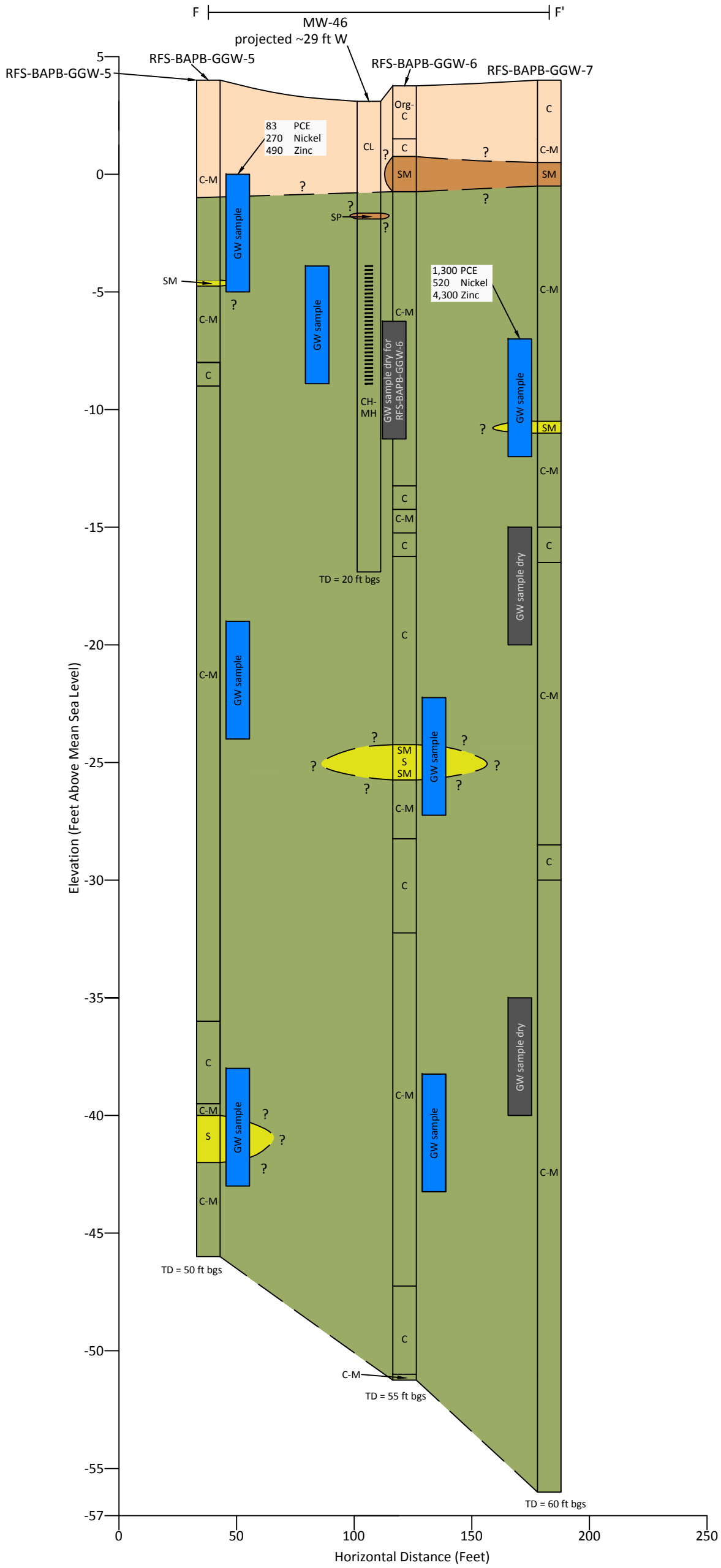
PROJECT: UC BAPB Investigation

PROJECT NUMBER: 0009.002.007

Cross Section E-E'

Figure 10

J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by: KW ; Checked by: AMR



Legend

- Sandy fill material
- Silty fill material
- Sand, silty sand
- Silt/Silty clay/Clay
- Gravels
- Peat and/or organic-rich clay
- Groundwater sample interval
- Groundwater sample interval that was dry and therefore not sampled
- Well screen interval
- ? Extents are approximate

Concentration in µg/L

83 PCE
270 Nickel
490 Zinc

Analyte above applicable site specific screening

Note: The data box is not illustrated if constituents analyzed do not exceed an applicable screening criteria.

Acronyms

bgs	below ground surface
ft	feet
GW	groundwater
PCE	tetrachloroethylene
SW	southwest
TCE	trichloroethylene
TD	total depth
VOC	volatile organic compound

Notes

1. Approximate intervals of fill materials based on excavation and BAPB construction information provided in the "Implementation Report for Upland Remediation Subunit 1 and Subunit 2A" (LFR 2003) and the "Implementation Report, Phase 2-Subunit 2A & 2B" (URS 2004).

0' 25' 50' 100'
Approximate Horizontal Scale in Feet

0' 2.5' 5' 10'
Approximate Vertical Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: Zeneca Inc.

PROJECT: UC BAPB Investigation

PROJECT NUMBER: 0009.002.007

Cross Section F-F'

Figure 11

J:\CADD FILES\0009 Zeneca\002 Campus Bay\BAPB Investigation\Cross Sections.dwg Drawn by: KW ; Checked by: AMR