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Progress Report
October 2008 — March 2009
Boomsnub/Airco Superfund Site
Hazel Dell, Washington

Prepared for

Linde, Inc.
575 Mountain Avenue
Murray Hill, New Jersey 07974

Prepared by

EA Engineering, Science, and Technology, Inc.
12011 NE 1st Street, Suite 100
Bellevue, Washington 98005

May 2009
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Project No. 14495.07

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LIST OF ACRONYMS

CAS	Columbia Analytical Services
City	City of Vancouver
EA	EA Engineering, Science, and Technology, Inc.
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
GAC	Granular Activated Carbon
IWS	In-Well Stripping
IX	Ion Exchange
lb	Pound(s)
Linde	Linde, Inc.
MDL	Method Detection Limit
MRL	Method Reporting Limit
O&M	Operation and Maintenance
OU	Operable Unit
QASP	Quality Assurance and Sampling Plan
Site	Boomsnub/Airco Superfund Site
TCE	Trichloroethene
TOPPS	Toe-of-Plume Pilot Study
$\mu g/L$	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter
VFD	Variable Frequency Drive
VOC	Volatile Organic Compounds

PROGRESS REPORT

Site Name: Boomsnub/Airco Superfund Site, Hazel Dell, Washington (Site)
Prepared By: EA Engineering, Science, and Technology, Inc. (EA)
Date: 20 May 2009
Reporting Period: October 2008 – March 2009.

A. PROGRESS MADE THIS PERIOD

Daily Operation and Maintenance (O&M) activities are discussed in Appendix A.

A.1 SYSTEM OPERATIONS AND AVAILABILITY (see appendices for further details).

Figures 1 and 2 identify Operable Units (OU)-2 and OU-3, along with project areas, and well locations. OU-2 and OU-3 system availability are discussed in the following subsections.

A.1.1 OU-2 Volatile Organic Compound (VOC) Source Area System

The in well stripping (IWS) system availability over this reporting period is shown below.

Total hours available from 1 October 2008 to 31 March 2009: 4,366.
Total hours of unscheduled IWS system downtime: 0.
Total operating hours: 4,366.
System availability: ~ 100 percent.

General O&M activities continued throughout the reporting period as specified in the O&M Manual, as modified with approval from the United States Environmental Protection Agency (EPA). Appendix B.1 provides copies of the monthly operating field forms for the OU-2 system; Appendix B.2 provides the vapor sampling results; and Appendix B.3 provides the groundwater analytical results.

A.1.2 OU-3 Sitewide Groundwater Extraction and Treatment Systems

Copies of the completed Boomsnub Bi-weekly System Monitoring Checklists are provided in Appendix C.1.

System operation tables are provided in Appendix C.2. Tables 1A through 1F summarize the groundwater flow information for October 2008 through March 2009. Tables 2A through 2F present the pumping rates for each of the active extraction wells during this period. Table 3 presents monthly system sampling analytical results.

The treated groundwater was discharged to the infiltration gallery on Linde, Inc. (Linde) property. There were no discharges made to the sanitary sewer during the reporting period. The treatment system operated for 4,181 hours, approximately 96 percent of the reporting period, exceeding the requirements of the Consent Decree.

From 1 October 2008 to 31 March 2009, 38,137,972 gallons of groundwater were treated, removing 7.3 pounds (lb) of trichloroethene (TCE) and 23.4 lb of total chromium from the groundwater. Appendix C.3 provides mass removal tables and figures.

Monthly flow reports for billing purposes were sent to the City of Vancouver (City) and copies are included in Appendix C.4. Also included in Appendix C.4 are copies of the Quarterly Self Monitoring Reports delivered to the City for October through December 2008, and January through March 2009.

Synopsis of OU-3 System Downtime

Unscheduled system shut-downs and system maintenance shut-offs for periods longer than one hour are discussed below. Other system shut-downs and shut-offs are discussed in the Daily Operation and Maintenance Summary in Appendix A.

October 2008

In October the system had no unscheduled shut-downs or system maintenance shut-offs lasting longer than one hour.

November 2008

In November there was one unscheduled system shut-down and two system maintenance shut-offs.

Unscheduled system shut-down lasting longer than one hour:

- On 12 November the system shutdown due to a well field fault in containment vault CV-9. The system was down for 3 hours and 49 minutes.

December 2008

In December the system had one unscheduled system shut-down and one scheduled shut-off.

Unscheduled system shut-down lasting longer than one hour:

- The system shut-down on 22 December due to a well field fault and could not be re-started remotely. Several other faults occurred while the system was off. It was determined that melting snow tripped several sump pumps and filled the influent tank

EA Engineering, Science, and Technology

12011 NE 1st Street, Building C, Suite 100B
Bellevue, WA 98005
Telephone: 425-451-7400
Fax: 425-451-7800
www.eaest.com

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19 May 2009
14495.07 LN1035

Ms. Claire Hong
United States Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

RE: Progress Report – October 2008 through March 2009
Boomsnub/Airco Superfund Site, Hazel Dell, Washington
Consent Decree Docket Number: C 07-5163 FDB

Dear Claire:

Enclosed is the Boomsnub/Airco Superfund Site Progress Report summarizing site activities from October 2008 through March 2009. This report has been prepared by EA Engineering, Science, and Technology, Inc. on behalf of Linde, Inc. to address reporting requirements contained in the Statement of Work for the above Consent Decree, entered by the court on 29 June 2007.

If you have any questions, please let contact me at 425-451-7400.

Sincerely,
EA ENGINEERING, SCIENCE,
AND TECHNOLOGY, INC.

Lynn Wood for

Jil Frain, P.E.
Project Manager

cc: Michael Resh, Linde
Dave Grupp, Linde
Bernie Zavala, EPA
Mohsen Kouredar, WA State Dept of Ecology

until it had a high level fault. In addition, a power outage blew a fuse to the air stripper blower. As a result, the system was down for 161 hours and 56 minutes.

Scheduled system shut-offs lasting longer than one bour:

- On 18 December the system was shut off to pump vaults. The system was down for 1 hour and 14 minutes.

January 2009

In January the system had five unscheduled shut-downs lasting a total of 12 hours and 30 minutes, and one scheduled shut-off lasting 12 minutes.

Unscheduled system shut-downs lasting longer than one hour:

- On 2 January the system shut down due to a well field fault caused by heavy rains and snow melt. All vaults were pumped out and the system restarted. The system was down for 1 hour and 8 minutes.

- On 21 January the system shut down due to an ion exchange (IX) tank low level fault. After thorough inspection of the variable frequency drive (VFD) and pump; and attempts at clearing the alarm by partially filling the tank with potable water to clear the float switch; it was determined that the transducer that reads the tank level had failed. The system was left off until a new transducer was installed. The system resumed operation on 22 January and was down for 10 hours and 3 minutes.

February 2009

In February the system had no unscheduled shut-downs and two scheduled shut-offs lasting a total of 5 hours and 9 minutes.

Scheduled system shut-off lasting longer than one hour:

- On 24 February the system was shut off to pump vaults and to install relays in containment vaults CV-3, CV-9, and CV-18 so that a single float would shut down the system and turn on the sump pumps simultaneously. The system was down for 4 hours and 54 minutes.

March 2009

In March the system had one unscheduled shut-down lasting1 hour and 46 minutes, and one scheduled shut-off lasting 23 minutes.

Unscheduled system shut-down lasting longer than one hour:

- On 21 March the system shut-down due to a well field fault in containment vault CV-3. The system was down for 1 hour and 46 minutes.

A.2 SYSTEM MODIFICATIONS AND RECOMMENDATIONS

OU-2

- Based on current groundwater concentrations, it has been determined that the IWS System has removed more than 98% of the mass of TCE in groundwater since startup, as expected, as a result f the low TCE concentrations in groundwater, the system is no longer reducing concentrations of TCE as quickly as in previous years. EA is currently pulse-pumping the system (operating extraction wells are alternated) to change groundwater circulation patterns and increase TCE removal rates.

OU-3

- As a result of development plans at the nearby Padden Parkway Development Site, modifications to the existing system may be required. Therefore, EA is working with the developer at the Padden Parkway Development to understand the impact that their development plans will have on the operating system; and will propose system modifications, as necessary, based on their final plans.

A.3 SAMPLING

OU-2

Vapor samples will continue to be collected periodically from the IWS granular activated carbon (GAC), sample port G1, to monitor emissions. Vapor samples were collected from the OU-2 system on 13 October, 17 November, 16 December 2008, and on 14 January and 12 March 2009. The vapor samples were sent to Columbia Analytical Services (CAS) in Simi Valley, California for analysis. Monitoring data from these sampling events are presented in Appendix B.2.

The quarterly OU-2 groundwater samples were collected on 21 through 23 October 2008 and 19 and 20 January 2009. The groundwater samples were sent to CAS in Kelso, Washington for analysis. Analytical data from these sampling events are presented in Appendix B.3.

OU-3

Monthly influent and effluent sampling of the OU-3 groundwater treatment system was completed in accordance with the site-specific Quality Assurance and Sampling Plan (QASP) (EA, August 2004). VOC analyses were conducted using the EPA Method 8260B, total chromium analyses using EPA Method 200.7, and pH analyses using EPA Method 150.1. Samples were sent to CAS Kelso for these analyses.

Effluent samples were collected by EA on 6 October, 6 November, 4 December 2008, and 6 January, 4 February, and 5 March 2009. Based on the analytical results of these samples, effluent water quality met both the City permit limits and the site-specific discharge limits for the reporting period. Table 3 in Appendix C.2 provides a summary of influent and effluent analytical data from April 2008 to March 2009. It also presents the City permit limits, the infiltration gallery discharge limits, the current sampling results, and results from the last year (for comparison purposes). A summary of the estimated mass removed by month is presented in Appendix C.3.

Periodic groundwater level measurements were collected from selected wells following the start of operation of the Linde infiltration gallery to monitor the impact on groundwater elevation. To date, groundwater mounding is consistent with model predictions, as shown in Appendix D.

A.4 MEETINGS

- Periodic status calls were held between EA and EPA.

A.5 MISCELLANEOUS

- Continue pursuing access easement agreements.

B. ANTICIPATED PROBLEM AREAS AND RECOMMENDED SOLUTIONS

None.

C. PROBLEMS RESOLVED

- The float configuration in vaults CV-3, CV-9 and CV-18 was modified to simplify system restart in cases where the vaults have flooded and the system shuts down. Previously each vault contained a float to control the extraction system and a separate float to control the sump pump. Now a single float controls the extraction system and the sump pump.

D. DELIVERABLES

D.1 DELIVERABLES SUBMITTED

- **10 October** – Quarterly (July – September 2008) Self Monitoring Report submitted to the City.
- 3 **October** – September monthly Flow Report submitted to the City.
- **30 October** – Progress Report, April through September 2008, submitted to EPA.

- **10 November** – October monthly Flow Report submitted to the City.
- **17 November** – QASP Addendum for the January 2009 Quarterly Sampling Event submitted to EPA.
- **3 December** – November monthly Flow Report submitted to the City.
- **9 December** – Tentative Sampling Schedule for 2009 submitted to EPA.
- **2 January** – January 2009 sampling notification letters sent to property owners.
- **7 January** – December monthly Flow Report submitted to the City.
- **9 January** – Quarterly (October – December 2008) Self Monitoring Report submitted to the City.
- **6 February** – January monthly Flow Report submitted to the City.
- **9 February** – Revised Operating Discharge Standards submitted to EPA.
- **25 February** – Fall 2008 Semiannual Report submitted to EPA.
- **25 February** – Carbon Dangerous Waste Report submitted to Washington State Department of Ecology (Ecology).
- **3 March** – QASP Addendum for the Spring 2009 Semiannual Sampling Event submitted to EPA.
- **6 March** – February monthly Flow Report submitted to the City.
- **10 March** – Letter discussing the change in due date for the Progress Report submitted to EPA.
- **25 March** – Resin Dangerous Waste Report submitted to Ecology.

D.2 ANTICIPATED SUBMITTAL DATES

Monthly Flow Reports are due to City on the 10th of every month. EA prepared a permit modification application to request changes to the reporting requirements and is awaiting approval from the City.

- **10 April** – Quarterly (January – March 2009) Self Monitoring Report to be submitted to the City.

- **10 July** – Quarterly (April – June 2009) Self Monitoring Report to be submitted to the City.
- **26 May** – QASP Addendum for the July 2009 OU-2 Quarterly Sampling Event to be submitted to EPA.
- **30 June** – Notify property owners of AMW-18 monitoring results.
- **5 August** – QASP Addendum for the Fall 2009 Semiannual Sampling Event to be submitted to EPA.
- **5 September** – Spring 2009 Semiannual Report due to EPA.

E. EVENTS

E.1 FIELD EVENTS COMPLETED

- **Periodic** – IWS GAC vapor sampling.
- **Monthly** – O&M influent and effluent sampling.
- **21 through 28 October** – Quarterly OU-2, infiltration gallery, Toe-of-Plume Pilot Study (TOPPS) and Fall 2008 semiannual sampling.
- **19 and 20 January** – Quarterly OU-2 sampling event.

E.2 UPCOMING EVENTS

- **Monthly** – IWS, GAC air sampling.
- **Monthly** – O&M influent and effluent sampling.
- **4 through 8 May** – Quarterly OU-2, infiltration gallery, TOPPS and Spring 2009 semiannual sampling.
- **27 through 29 July 2009** – Quarterly OU-2 sampling.

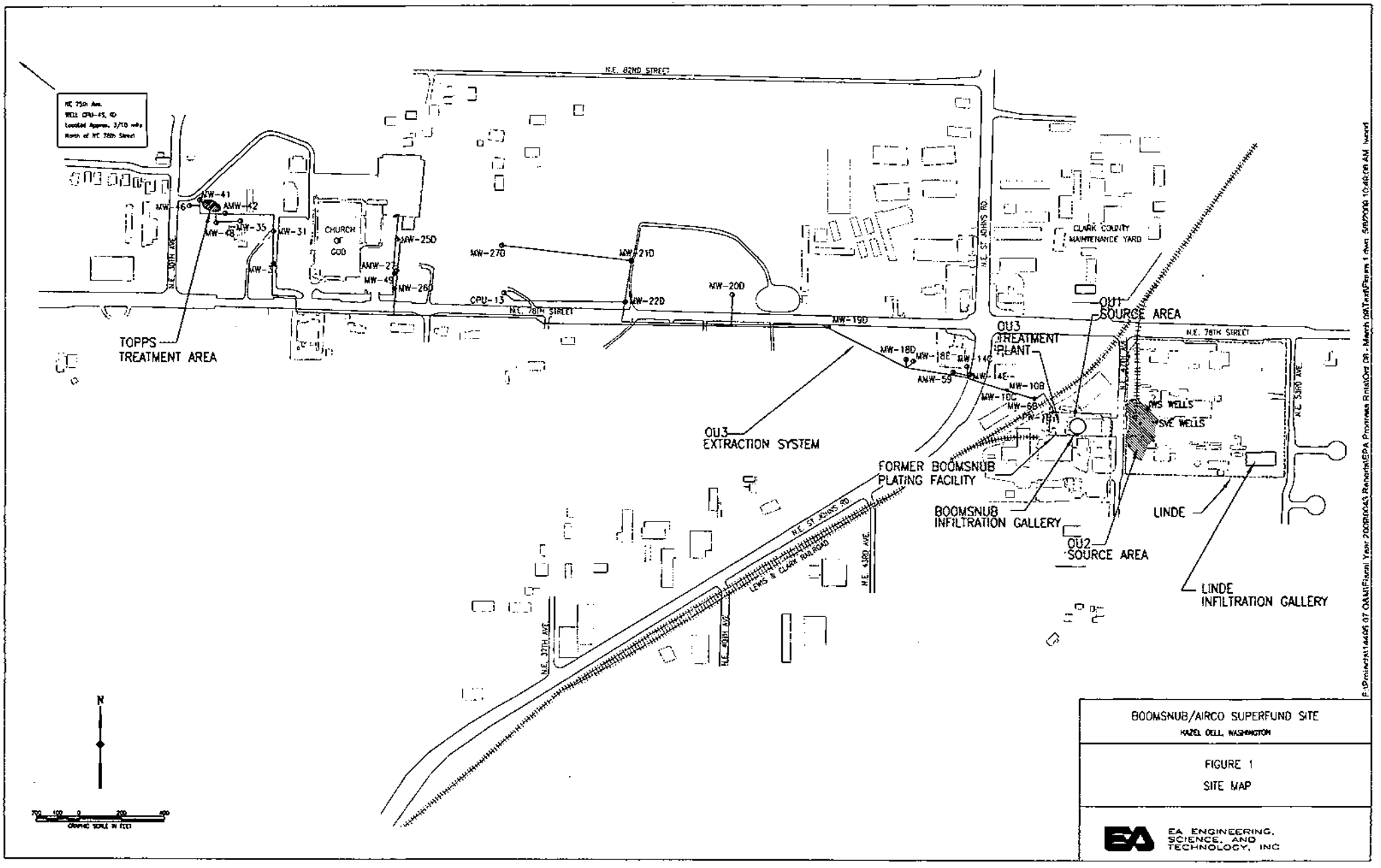
F. DATA QUALITY

The monthly OU-3 influent/effluent data for the reporting period were reviewed in accordance with the standards established in the 2004 EA QASP.

Temperature blanks and cooler temperatures were within the acceptable range, except for September and November data. The temperature blank for September was slightly warm at 7.5 degrees Celsius, but the cooler temperature remained within the acceptable range required by the QASP. For the November data the cooler temperature was cold at 1.3 degrees Celsius and the temperature blank slightly warm at 6.4 degrees Celsius. The warm temperature blanks are not expected to impact the data and were most likely due to the short travel time to the lab.

The field duplicate result for TCE concentrations indicated a relative percent difference of 40 percent between samples collected in November. The TCE concentration for the November data should be considered an estimate.

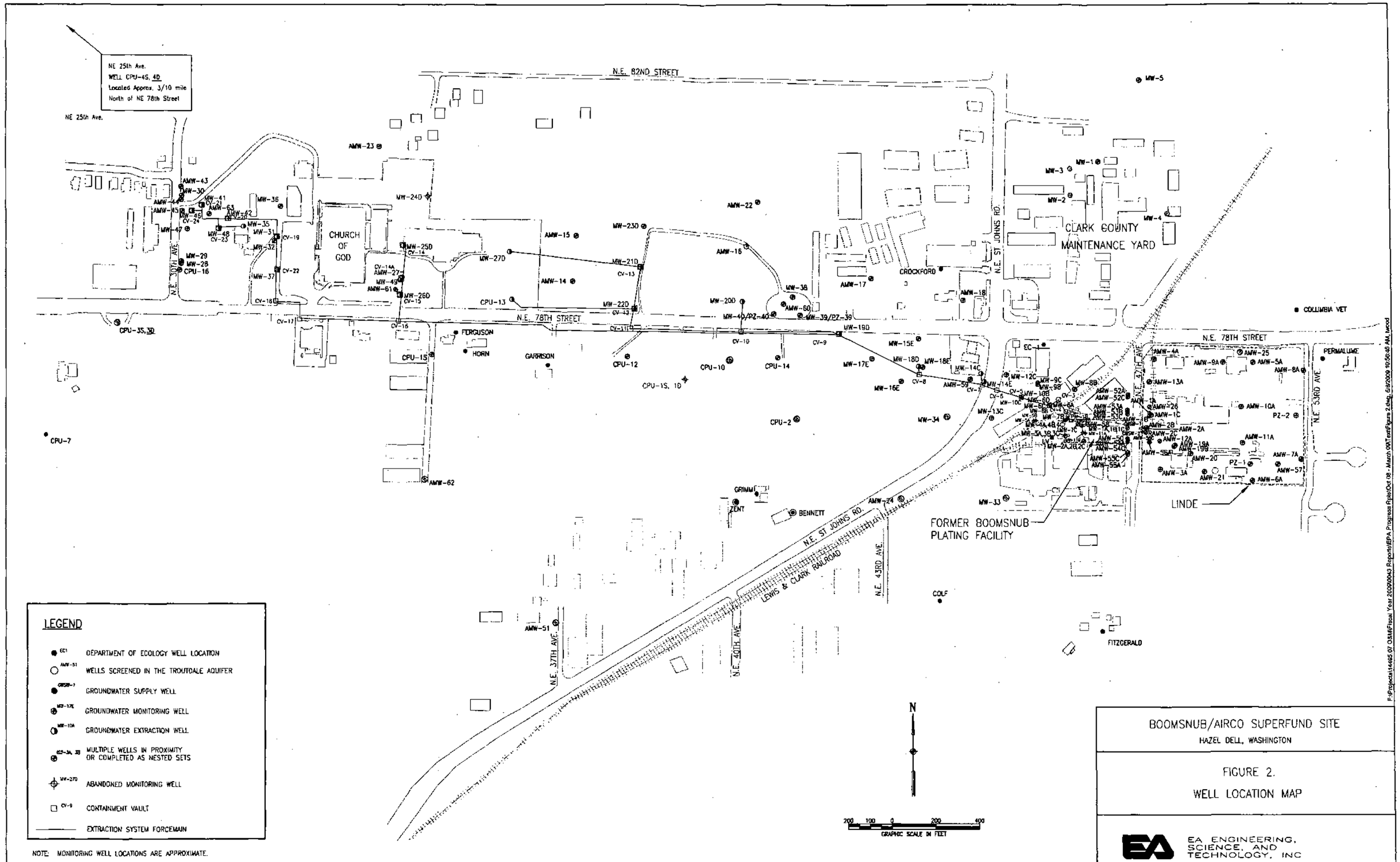
Figures



BOOMSNUB/AIRCO SUPERFUND SITE
HAZEL DELL, WASHINGTON

FIGURE 1
SITE MAP

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC



LEGEND

- EC1 — DEPARTMENT OF ECOLOGY WELL LOCATION
- AMW-51 — WELLS SCREENED IN THE TROUTDALE AQUIFER
- GRIMM-1 — GROUNDWATER SUPPLY WELL
- MW-17E — GROUNDWATER MONITORING WELL
- MW-10A — GROUNDWATER EXTRACTION WELL
- 4S3-3A, 3D — MULTIPLE WELLS IN PROXIMITY OR COMPLETED AS NESTED SETS
- MW-27D — ABANDONED MONITORING WELL
- CV-9 — CONTAINMENT VAULT
- EXTRACTION SYSTEM FORCEMAIN

NOTE: MONITORING WELL LOCATIONS ARE APPROXIMATE.

BOOMSNUB/AIRCO SUPERFUND SITE
HAZEL DELL, WASHINGTON

FIGURE 2.
WELL LOCATION MAP

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC

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Appendix A
Daily Operation & Maintenance Summary

Appendix A

Daily Operation and Maintenance Summary

APPENDIX A
DAILY OPERATION AND MAINTENANCE SUMMARY

The Site System Operator performs routine tasks on the OU-2 VOC source area systems and OU-3 sitewide groundwater treatment system. Routine and other site activities are recorded in this section.

Synopsis of the Activities:

October 2008

October 1. Downloaded and tabulated data.

October 6. Collected treatment system influent and effluent samples.

October 10. Conducted the bi-weekly system inspection.

October 14. Collected an air sample from the OU-2 IWS system. Conducted routine maintenance and monitoring.

October 15. Worked on replacing the vault at MW-20D.

October 16. Finished replacing the vault at MW-20D. Installed bollards around MW-20D and MW-21D.

October 20. Assisted with semiannual sampling.

October 23. Replaced pump in MW-20D. Assisted with semiannual sampling.

October 24. Conducted the bi-weekly system inspection, re-plumbed MW-20D and installed pump controller. Restarted MW-20D.

October 28. The system shut down due to a high level IX building fault. Purge water from sampling clogged the sump filter and water backed up onto the floor and triggered the alarm float. The bag filter was replaced and the system restarted. The system was down for 21 minutes.

October 29. Shut the system off to adjust the influent tank set point in the IX feed pump VFD. The system was off for 16 minutes.

October 30. Recorded and tabulated monthly extraction well flow rates. Recorded water levels. Shut system off and pumped vaults.

November 2008

November 3. Downloaded and tabulated data.

November 6. Collected treatment system influent and effluent samples. The effluent sample was a split sample with the City of Vancouver.

November 7. Pumped all vaults. Shut the system off to pump vaults containing sump pumps. The system was down for 32 minutes.

November 12. Conducted the bi-weekly system inspection. Responded to a well field fault in containment vault CV-9.

November 14. Collected an air sample from the OU-2 IWS system. Conducted routine maintenance and monitoring.

November 20. The system was shut off to test the pump in the air stripper pad sump and was off for 33 minutes.

November 25. Conducted the bi-weekly system inspection and re-insulated some pipes near the air stripper.

November 26. Recorded and tabulated monthly extraction well flow rates.

December 2008

December 1. Downloaded and tabulated data.

December 4. Collected treatment system influent and effluent samples.

December 9. Removed old air stripper tower from pad.

December 12. Conducted bi-weekly system inspection. Responded to a well field fault in containment vault CV-9.

December 16. Collected an air sample from the OU-2 IWS system. Conducted routine maintenance and monitoring.

December 18. Pumped all vaults.

December 29. Recorded and tabulated monthly extraction well flow rates.

January 2009

January 1. Responded to a well field fault that shut-down the system. The system was down for 54 minutes.

January 2. Downloaded and tabulated data.

January 6. Collected treatment system influent and effluent samples.

January 8. Conducted the bi-weekly system inspection.

January 14. Collected an air sample from the OU-2 IWS system. Conducted routine maintenance and monitoring. Downloaded run-time data.

January 19. Gave safety training for the Linde plant to Erin Bergman. Assisted with the quarterly sampling event.

January 20. Assisted with quarterly sampling. Pumped all vaults. The system was shut off to containment pump vaults CV-23 and CV-9 and was down for 12 minutes. Later that day, the system shut down due to high water in CV-3. The system was restarted remotely and was down for 25 minutes.

January 22. Replaced transducer in the IX tank.

January 23. Conducted the bi-weekly system inspection.

January 29. Recorded and tabulated monthly extraction well flow rates.

February 2009

February 2. Downloaded and tabulated data. The system was shut off to pump containment vault CV-9 and was down for 11 minutes.

February 4. Collected treatment system influent and effluent samples.

February 11. Conducted the bi-weekly system inspection.

February 13. Conducted routine maintenance and monitoring of the IWS System. Downloaded run-time data.

February 24. Installed two-pole double-throw relays in containment vaults CV-3, CV-9, and CV-18.

February 26. Conducted the bi-weekly system inspection.

February 27. Recorded and tabulated monthly extraction well flow rates.

March 2009

March 2. Downloaded and tabulated data.

March 5. Collected treatment system influent and effluent samples.

March 11. Removed remaining packing material out of old air stripper tower and packaged in totes. Repaired well monuments.

March 12. Collected an air sample from the OU-2 IWS system. Conducted routine maintenance and monitoring.

March 13. Finished making miscellaneous repairs to wells (from the list derived from the semiannual sampling event).

March 16. Conducted the bi-weekly system inspection. Downloaded run-time data.

March 20. The system was shut off to pump containment vaults CV-23, CV-18 and CV-9 and was down for 23 minutes.

March 23. Checked vaults and inspected system components.

March 30. Recorded and tabulated monthly extraction well flow rates. Conducted the bi-weekly system inspection.

Appendix B
OU-2 VOC Source Area Systems

Appendix B

OU-2 VOC Source Area Systems

APPENDIX B
OU-2 MONITORING RESULTS

VAPOR MONITORING

EA continues to collect periodic vapor samples from the IWS GAC (sample port G1) to monitor emissions. Vapor samples were collected on 13 October, 17 November, and 16 December, 2008 and 14 January and 12 March 2009. Results are shown in the following table: (See Figure B.1 for sample location). Trichloroflouromethane (CFC-11) is the only VOC detected consistently each month. While concentrations are increasing, they do not exceed regulatory discharge limits. 1,4-dioxane was detected at a trace concentration in January only.

Constituent	IWS/GAC (G1) 10/13/08	IWS/GAC (G1) 11/17/08	IWS/GAC (G1) 12/16/08	IWS/GAC (G1) 1/14/09	IWS/GAC (G1) 3/12/09
Vinyl Chloride	<0.61	<0.61	<3.1	<0.60	<0.62
Trichlorofluoromethane	120	98	290	320	77
1,1-Dichloroethene	<0.61	<0.61<	<3.1	<0.60	<0.62
1,1-Dichloroethane	<0.61	<0.61	<3.1	<0.60	<0.62
cis-1,2-Dichloroethene	<0.61	<0.61	<3.1	<0.60	<0.62
1,1,1-Trichloroethane	<0.61	<0.61	<3.1	<0.60	<0.62
Trichloroethene	<0.61	<0.61	<3.1	<0.60	<0.62
1,4-Dioxane	<0.61	<0.61	<3.1	0.88	<0.62
Tetrachloroethene	<0.61	<0.61	<3.1	<0.60	<0.62
Sample ID	**101308-G1**	**111708-G1**	**121608-G1**	**011408-G1**	**031209-G1**

NOTE: GAC = Granular-activated carbon.
IWS = In Well Stripping.
All results reported in micrograms per cubic meter ($\mu g/m^3$).

The vapor samples were sent to CAS in Simi Valley, California and, as required by the QASP, samples were analyzed for the nine primary chemicals of concern in the vapor at the site. Summary data sheets from the analytical laboratory can be found in Appendix B.2. The complete data package is available for review at EA's office in Bellevue, Washington.

GROUNDWATER SAMPLING

The quarterly OU-2 groundwater samples were collected in October 2008 and January 2009. Recent and historic analytical results are presented on Table B. Figure B.2 shows the Source Area monitoring wells. The groundwater samples were sent to CAS in Kelso, Washington for analysis. Sampling results are provided in Appendix B.3. During the reporting period TCE concentrations from four wells show levels exceeding the cleanup level of 5 micrograms per Liter (µg/L) (AMW-2A, 55 µg/L; AMW-12A, 29 µg/L; MW-1A, 13 µg/L; and AMW-53A, 8.9 µg/L). Concentrations in AMW-12A and MW-1A remain consistently above the cleanup level.

TCE groundwater concentrations appear to have stabilized across the source area with the exception of AMW-2A and AMW-53A. Concentrations in these wells continue to fluctuate above and below the cleanup level. This fluctuation in concentration has been observed in other wells and is likely due to the circulation patterns established around the IWS treatment wells. TCE concentrations in AMW-2A were above the cleanup level for the reporting period, and AMW-53 concentrations were above the cleanup level for the October sampling round only.

Since starting IWS operations in February 2004, TCE concentrations have decreased significantly in all monitoring wells across the VOC source area and in the downgradient monitoring well network. Quarterly groundwater monitoring has been used to track the performance of the IWS operations using TCE concentrations in the groundwater. Figure B.3 shows how groundwater concentrations have changed over time, as measured by well groupings. The wells are grouped by areas to evaluate changes in TCE concentrations in groundwater over representative areas of the plume. These areas of well groupings are the "Center of Plume", "Sidegradient" and "Downgradient Wells". The grouping of downgradient wells represents a significant array of multi-level monitoring points positioned throughout the cross-section of the alluvial aquifer (see Figure B.2). This grouping of downgradient wells has been used in the performance monitoring to evaluate the off site flux of TCE in the groundwater. Since system startup, TCE concentrations have decreased 95% in center of plume wells, 87% in sidegradient wells, and 98% in downgradient monitoring wells. The average concentration of TCE in each of the well groups is currently less than the cleanup level, but concentrations in four individual wells, identified above, remain above the cleanup level.

PARTIAL IWS SYSTEM SHUTDOWN

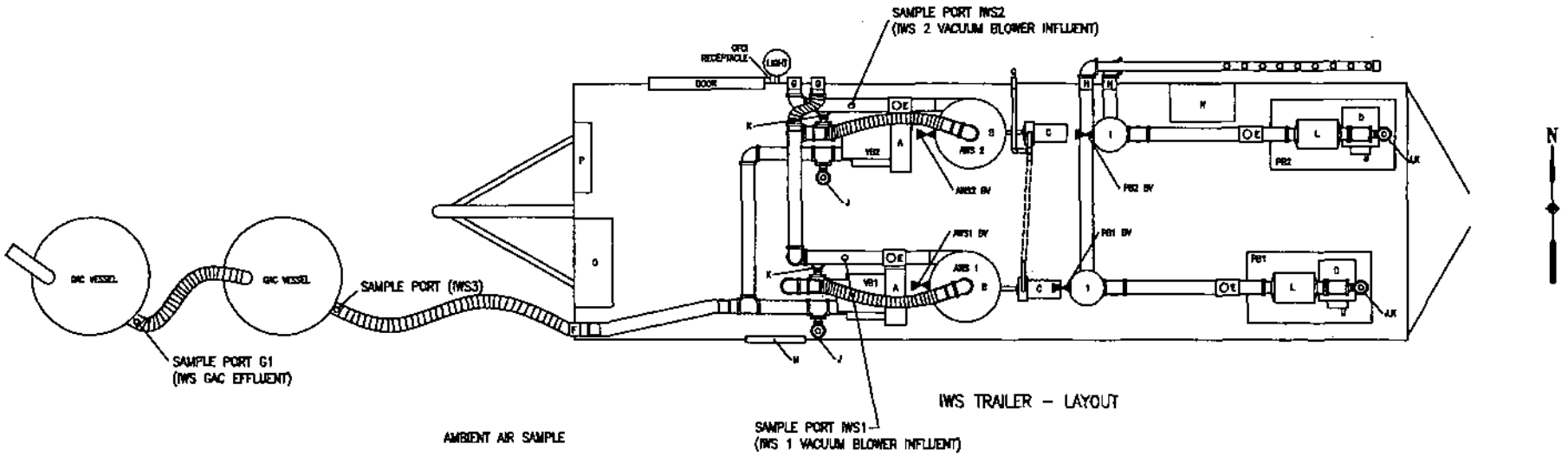
The groundwater concentration of TCE in individual wells generally has not changed significantly over the past two years (see Table B). The IWS system has been in the shutdown process since the Fall of 2006 because the system is no longer removing substantial TCE mass from the source area groundwater. During the reporting period four of the nine IWS wells were operating. Given these conditions, and with EPA approval, system operations were modified to alter the groundwater circulation patterns, to potentially improve VOC removal and to provide the data necessary to evaluate the practicability of continued operations.

The IWS wells were operating during this reporting period as follows: from October through January, IWS-3, IWS-4, IWS-5 and IWS-6 were operating. After the January event, wells IWS-4 and IWS-6 were operating.

TABLE B CONCENTRATIONS OF TRICHLOROETHENE IN GROUNDWATER

Well ID	Baseline*	May 2004	August 2004	October 2004	January 2005	May 2005	July 2005	October 2005	February 2006	May 2006	July 2006	October 2006	February 2007	May 2007	July 2007	October 2007	January 2008	May 2008	July 2008	October 2008	January 2009
Center of Plume Wells																					
AMW-1A	**220 D**	1.8	**69**	**66 D**	**120 D**	**68**	**31**	**49**	0.35 J	0.21J	0.32 J	0.47 J	0.19 J	0.34 J	1.3	**6.1**	1.6	0.26 J	0.30 J	0.39 J	0.37
AMW-1B	0.73	0.55	0.58	0.53	0.45 J	0.54	0.38 J	0.51	0.48 J	0.33 J	0.33 J	0.30 J	0.35 J	0.30 J	0.34 J	0.30 J	0.37 J	0.41 J	0.39 J	0.50	0.50
AMW-1C	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	0.50 U	NS
AMW-2A	**1,000 D**	**600 D**	**550 D**	**530 D**	**490 D**	**810 D**	**150 D**	**390 D**	**140 D**	**13**	**5.6**	3.7	1.6	1.4	3.6	**6.8**	**15**	1.1	4.5	**18**	**55**
AMW-2B	0.40 J	0.58	0.58	0.57	0.56	0.64	0.45 J	0.46 J	0.54	0.41 J	0.32 J	0.29 J	0.22 J	0.21 J	0.15 J	0.18 J	0.59	0.64	0.67	0.61	0.69
RAMW-2C	0.17 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U	0.50 U	0.18 J	0.50 U	0.50 U	0.50 U	NS	NS	0.27 J	NS
AMW-12A	**1,200 D**	**530 D**	**350 D**	**260 D**	**150 D**	**97 D**	**76**	**67**	**35**	**36**	**21**	**27**	**20**	**25**	**24**	**31**	**33**	**27**	**26**	**26**	**29**
AMW-19A	**290 D**	**370 D**	**260 D**	**120 D**	**34**	**27**	**11**	**6.8**	5	2.8	2.8	2.6	1.8	1.7	1.6	2.3	1.6	1.6	1.9	1.9	1.5
AMW-19B	NA	0.37 J	0.19 J	0.2 J	0.16 J	0.17 J	0.16 J	0.17 J	0.50 U	0.50 U	0.50 U	0.14 J	NS	NS	NS	0.77	0.66	NS	NS	0.72	NS
AMW-56A	**610 D**	**250 D**	**67**	**28**	**14**	**12**	**9.2**	**6.7**	**14**	0.83	1.1	0.76	0.47 J	0.47 J	0.38 J	1.7	0.90	0.75	1.2	0.97	NS
AMW-56C	0.19 J	0.19 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.29 J	0.30 J	0.33 J	0.39 J	0.83
Sidegradient Wells																					
AMW-3A	**8**	**11**	**5.9**	4.2	4.4	3.3	1.6	1.3	1.3	0.44 J	0.30 J	0.16 J	0.30 J	0.38 J	0.39 J	0.48 J	0.66	0.52	0.52	0.48 J	0.54
AMW-13A	2.7	2.8	2	4	**5.5**	**7.7**	**5.2**	5	5	2.4	0.50 U	0.52	0.43 J	0.50 U	0.50 U	0.50 U	1.6	0.08 J	0.50 U	0.21 J	0.80
Downgradient Wells																					
AMW-52A	0.53	0.42 J	0.20 J	0.22 J	0.7	2	0.52	1.4	**29**	0.2 J	0.50 U	0.19 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.10 J	0.50 U	0.07 J	0.10 J
AMW-52C	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	NS	0.50 U	NS	NS	NS	0.50 U	NS
AMW-53A	**240 D**	**14**	**10**	**19**	**120 D**	**130 D**	**77 D**	**41**	**140 D**	**9.5**	**5.3**	**6**	**5.3**	1.2	4.5	**7.6**	**13**	4.4	**5.9**	**8.9**	4.2
AMW-53B	2	2.4	2.7	2.2	2	1.8	1.5	1.5	1.6	1.1	0.74	0.88	NS	NS	NS	0.43 J	NS	NS	NS	0.53	NS
AMW-53C	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	NS	0.50 U	NS	NS	NS	0.50 U	NS
AMW-54A	**120 D**	**77 D**	**150 D**	**190 D**	**140 D**	**86 D**	**96 D**	**56**	4.3	0.94	1.3	3.6	0.82	0.7	0.53	1.4	0.96	0.84	1.0	1.9	2.5
AMW-54C	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	NS	0.50 U	NS	NS	NS	0.26 J	NS
AMW-55A	**22**	**39**	**39**	NS	NS	NS	NS	NS	**18**	4.8	1.8	1	0.86	0.45 J	0.40 J	0.43 J	1.2	0.72	0.48 J	0.65	0.95
AMW-55C	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	NS	0.50 U	NS	NS	NS	0.23 J	NS
MW-1A	**880 D**	**1,300 D**	**1,100 D**	**870 D**	**780 D**	**620 D**	**310 D**	**210 D**	**23**	**36**	**45**	**54**	**24**	**15**	**12**	**12**	**12**	**7.6**	**7.4**	**13**	**9.3**
MW-1B	0.14 J	0.50 U	0.50 U	0.50 U	0.50 U	0.44 J	0.50 U	0.16 J	0.50 U	0.50 U	0.50 U	0.29 J	NS	NS	NS	0.50 U	NS	NS	NS	0.50 U	0.83
MW-1C	0.50 U	0.50 U	0.50 U	0.14 J	0.50 U	0.14 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NS	NS	NS	0.50 U	NS	NS	NS	0.50 U	0.44 J

NOTES:
All results reported in µg/L
Bold results are above the cleanup level of 5 µg/L
D = The reported result is from a sample dilution.
NA = Not applicable.
J = The result is an estimated concentration that is less than the method reporting limit, but greater than or equal to the method detection limit.
U = The compound was analyzed for, but not was not detected at or above, the method reporting limit or the method detection limit.
NS = No sample collected.
* = Baseline samples for wells installed as part of the removal action were collected in December 2003. Baseline data from existing wells was collected during the 2003 semi-annual sampling event.



A VACUUM BLOWER
B AIR/WATER SEPARATOR
C AIR/WATER SEPARATOR PUMP
D SUTORBILT PRESSURE BLOWER
E 4" INLINE FLOW METER
F VAPOR OUTLET
G VAPOR INLET
H PRESSURE BLOWER OUTLET
I PRESSURE BLOWER INLET FILTER
J PRESSURE RELIEF VALVE
K VACUUM RELIEF VALVE
L SILENCER
M COOLING AIR INLET
N COOLING FAN
O CONTROL PANEL
P BREAKER PANEL
Q CONDENSATE OUTLET

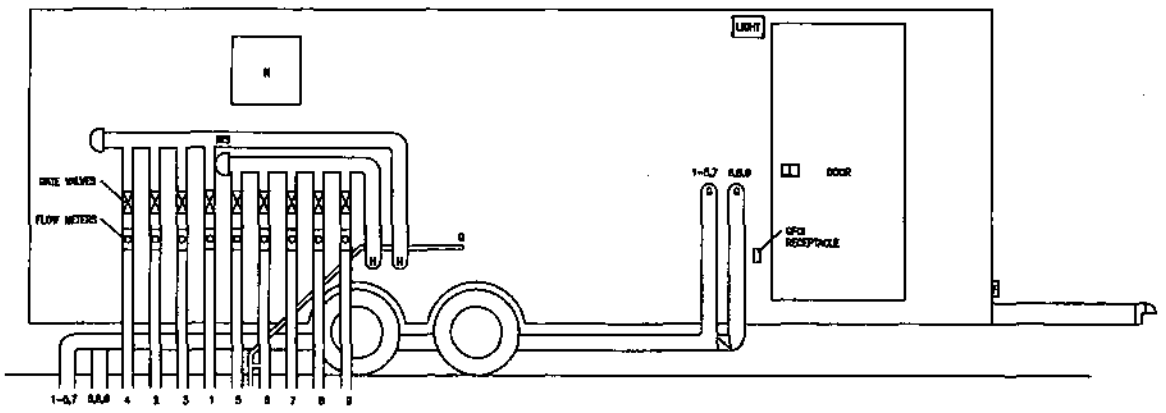


FIGURE B-1. IWS EQUIPMENT TRAILER LAYOUT

F:\Projects\114495.07 O&M\Fiscal Year 2008\0043 Reports\EPA Progress Rpt\Oct 08 - March 09\B OU-2\Fig B1 & B2.dwg, 11/24/2008 12:04:43 PM, lwood

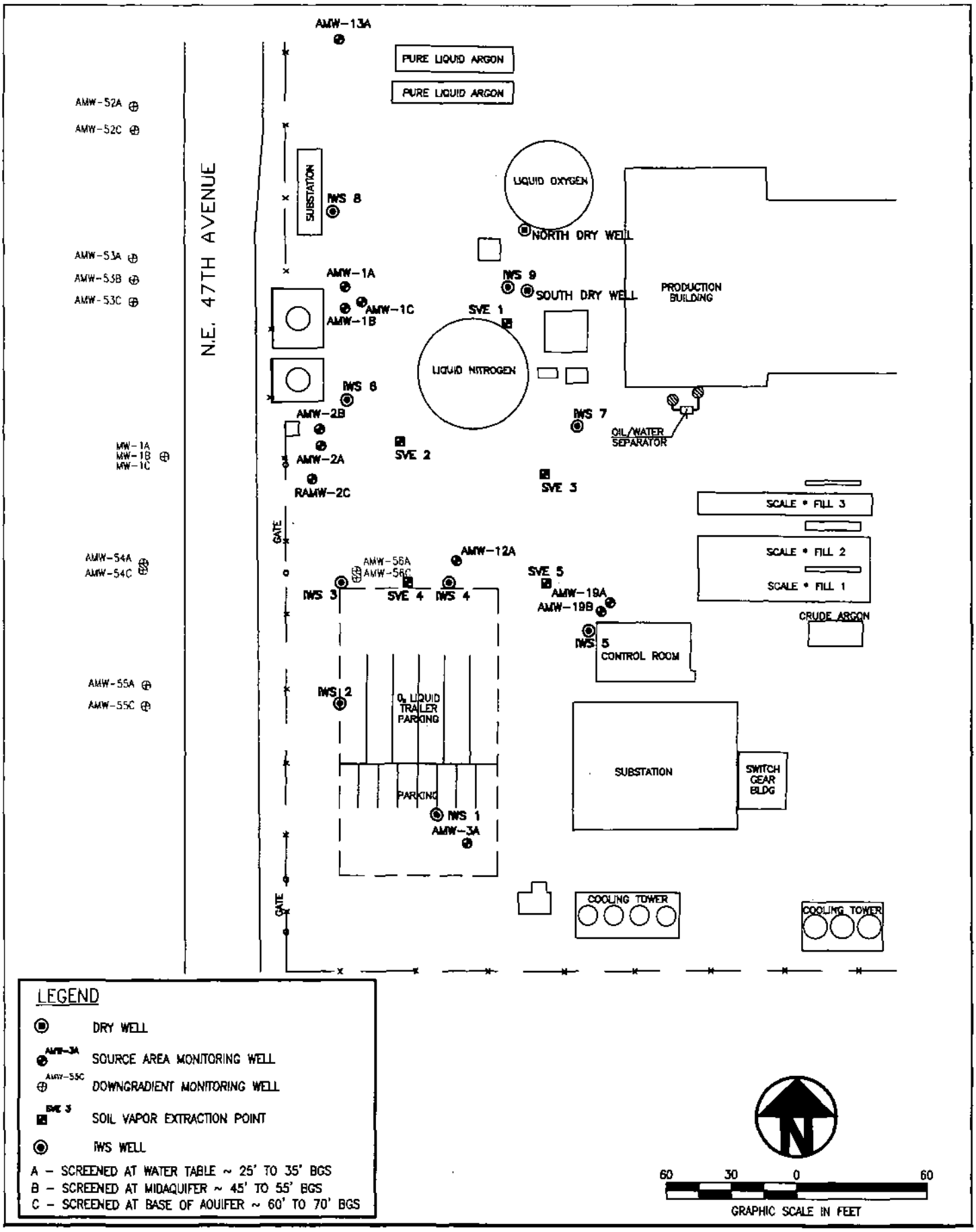
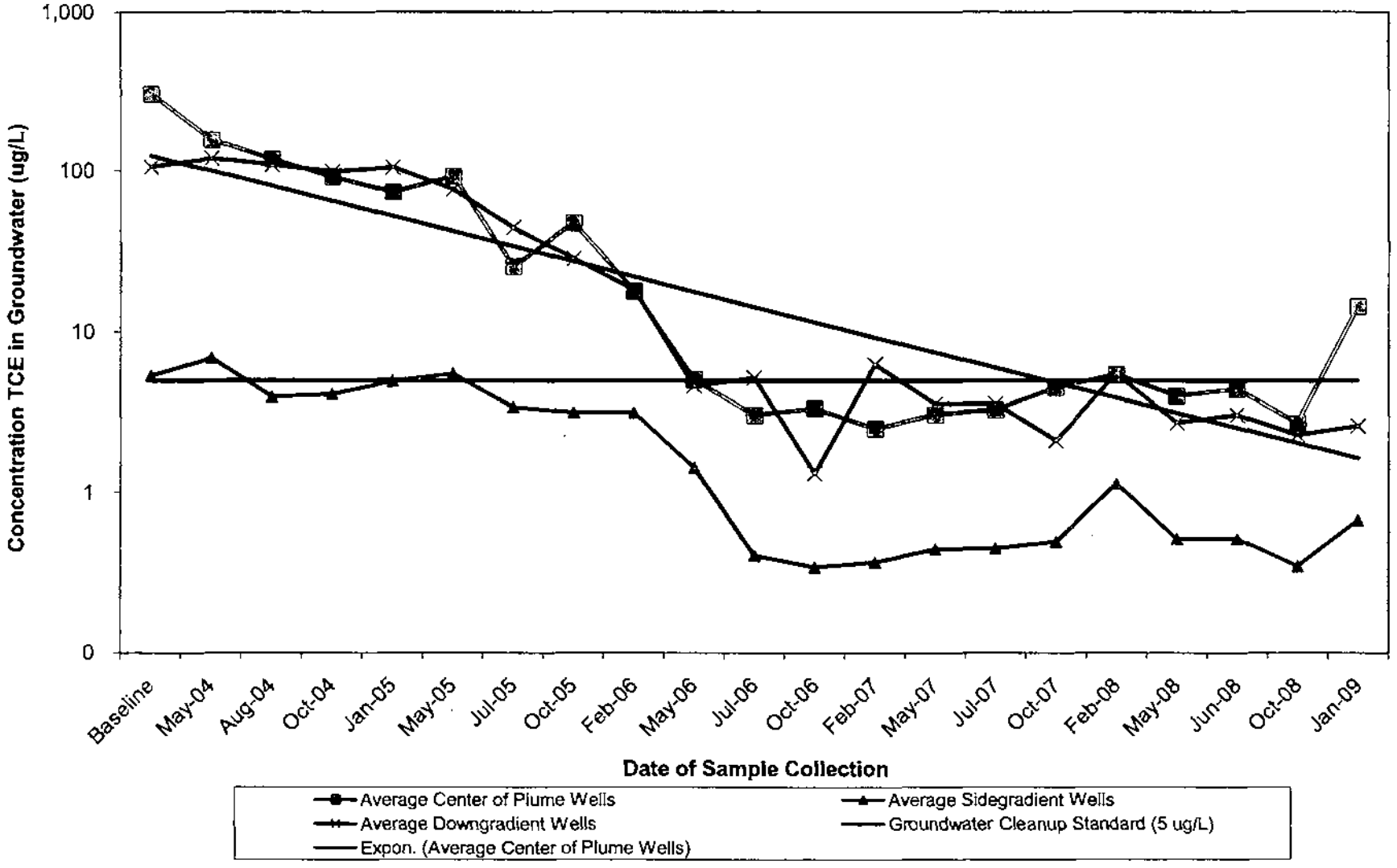


Figure B–2. Source area monitoring wells.

FIGURE B.3. OU-2 SOURCE AREA REMOVAL ACTION: GROUNDWATER SAMPLING RESULTS



Appendix B.1
OU-2 Monthly Operating
Field Forms

Appendix B.1

OU-2 Monthly Operating Field Forms

Richard Read

Date: 10/13/2008

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	157
Vacuum Blower Inlet Vacuum	in H_2O	off	-40
Vacuum Blower Outlet Pressure	in H_2O	off	31
Pressure Blower Outlet Temperature	deg F	off	165
Operating Hz	%	off	100
Secondary GAC Outlet Temperature	deg F	off	118

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	26.06
IWS-2	Off	27.47
IWS-3	40	27.26
IWS-4	40	26.78
IWS-5	40	26.20
IWS-6	40	26.98
IWS-7	off	26.88
IWS-8	Off	27.26
IWS-9	off	26.77

Comments on IWS System

Turned IWS-3 back on October 1.

Soil Vapor Extraction System

Operating Parameters

Total System Flow	scfm	
Blower Inlet Vacuum	in H_2O	
Blower Outlet Pressure	in H_2O	
Blower Outlet Temperature	deg F	
Operating Hz	%	
Secondary GAC Outlet Temperature	deg F	

Individual Well Measurements

	Flow (scfm)	Vacuum (in H_2O)	S/D?
SVE-1			D
SVE-2			D
SVE-3			D
SVE-4			D
SVE-5			D

S/D?

Comments on SVE System

SVE System shut down on 3/3/08.

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of primary GAC)	1	
SVE System (Effluent of primary GAC)		

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples collected this month? Yes ☒ No ☐

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
IWS Lead GAC Offgas	101308-G1	Vapor	Summa	1	
Vacuum Blower Effluent (SVE)				ND	
DUPLICATE:				ND	
SVE Lead GAC Offgas				ND	
Ambient Air				ND	

Name: Richard Read

Date: 11/17/2008

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	157
Vacuum Blower Inlet Vacuum	in H_2O	off	-40
Vacuum Blower Outlet Pressure	in H_2O	off	31
Pressure Blower Outlet Temperature	deg F	off	165
Operating Hz	%	off	100
Secondary GAC Outlet Temperature	deg F	off	116

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	26.03
IWS-2	Off	27.45
IWS-3	40	27.24
IWS-4	40	26.76
IWS-5	40	26.18
IWS-6	40	26.96
IWS-7	off	26.85
IWS-8	Off	27.24
IWS-9	off	26.75

Comments on IWS System

Soil Vapor Extraction System

Operating Parameters

Total System Flow	scfm	
Blower Inlet Vacuum	in H_2O	
Blower Outlet Pressure	in H_2O	
Blower Outlet Temperature	deg F	
Operating Hz	%	
Secondary GAC Outlet Temperature	deg F	

Individual Well Measurements

	Flow (scfm)	Vacuum (in H_2O)	S/D?
SVE-1			D
SVE-2			D
SVE-3			D
SVE-4			D
SVE-5			D

S/D?

Comments on SVE System

SVE System shut down on 3/3/08.

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of primary GAC)	1	
SVE System (Effluent of primary GAC)		

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples collected this month? Yes ☒ No ☐

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
IWS Lead GAC Offgas	111708-G1	Vapor	Summa	1	
Vacuum Blower Effluent (SVE)				ND	
DUPLICATE:				ND	
SVE Lead GAC Offgas				ND	
Ambient Air				ND	

Name: Richard Read

Date: 12/16/2008

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	157
Vacuum Blower Inlet Va	in H_2O	off	-40
Vacuum Blower Outlet I	in H_2O	off	31
Pressure Blower Outlet	deg F	off	165
Operating Hz	%	off	100
Secondary GAC Outlet	deg F	off	116

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	25.97
IWS-2	Off	27.39
IWS-3	40	27.18
IWS-4	40	26.70
IWS-5	40	26.12
IWS-6	40	26.90
IWS-7	off	26.79
IWS-8	Off	27.18
IWS-9	off	26.69

Comments on IWS System

Soil Vapor Extraction System

Operating Parameters

Total System Flow	scfm	
Blower Inlet Vacuum	in H_2O	
Blower Outlet Pressure	in H_2O	
Blower Outlet Tempera	deg F	
Operating Hz	%	
Secondary GAC Outlet	deg F	

Individual Well Measurements

	Flow (scfm)	Vacuum (in H_2O)	S/D?
SVE-1			O
SVE-2			O
SVE-3			D
SVE-4			D
SVE-5			D

S/D?

Comments on SVE System

SVE System shut down on 3/3/08.

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of	1	
SVE System (Effluent of primary GAC)		

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples collected Yes ☒ No ☐

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
IWS Lead GAC Offgas	121608-G1	Vapor	Summa	1	
				ND	
				ND	
				ND	
				ND	

Name: Richard Read

Date: 1/14/2009

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	157
Vacuum Blower Inl	in H_2O	off	-40
Vacuum Blower Ou	in H_2O	off	32
Pressure Blower O	deg F	off	168
Operating Hz	%	off	100
Secondary GAC Ou	deg F	off	115

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	24.62
IWS-2	Off	25.60
IWS-3	40	25.44
IWS-4	40	25.01
IWS-5	40	24.60
IWS-6	40	25.20
IWS-7	Off	25.74
IWS-8	Off	25.42
IWS-9	Off	25.41

Comments on IWS System

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of primary GAC)	1	

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples coll Yes ☒ No ☐

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
IWS Primary	011409-G1	Vapor	Summa		

Pulse Pumping Schedule for IWS System

Wells Pumping after January 2009Sar IWS-4, IWS-6
Wells Pumping after May 2009 sampli IWS-3, IWS-5, IWS-6
Wells Pumping after August 2009 San IWS-3, IW5-6
Wells Pumping after October 2009 Sa IWS-5, IWS-6

Name: Richard Read

Date: 2/13/2009

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	158
Vacuum Blower In	in H_2O	off	-40
Vacuum Blower Ou	in H_2O	off	32
Pressure Blower O	deg F	off	172
Operating Hz	%	off	100
Secondary GAC Ou	deg F	off	120

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	25.13
IWS-2	Off	26.11
IWS-3	Off	25.95
IWS-4	40	25.52
IWS-5	Off	25.11
IWS-6	40	25.71
IWS-7	Off	26.25
IWS-8	Off	25.93
IWS-9	Off	25.92

Comments on IWS System

Turned Off IWS-3 and IWS-5 on 1/21/09.

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of primary GAC)	<1	
SVE System (Effluent of primary GAC)	Off	

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples coll Yes ☐ No ☒

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
		Vapor	Summa		

Pulse Pumping Schedule for IWS System

Wells Pumping after January 2009Sar IW5-4, IWS-6
Wells Pumping after May 2009 sampli IWS-3, IWS-5, IW5-6
Wells Pumping after August 2009 San IW5-3, IWS-6
Wells Pumping after October 2009 Sa IWS-5, IWS-6

Name: Richard Read

Date: 3/12/2009

In Well Stripping System

Operating Parameters

		System 1 (South Side)	System 2 (North Side)
Total System Flow	scfm	off	158
Vacuum Blower Inl	in H_2O	off	-40
Vacuum Blower Ou	in H_2O	off	32
Pressure Blower O	deg F	off	172
Operating Hz	%	off	100
Secondary GAC Ou	deg F	off	120

Individual Well Measurements

	Flow (scfm)	Depth to Water (ft btc)
IWS-1	Off	26.15
IWS-2	Off	27.13
IWS-3	Off	26.97
IWS-4	40	26.54
IWS-5	Off	26.13
IWS-6	40	26.73
IWS-7	Off	27.27
IWS-8	Off	26.95
IWS-9	Off	26.94

Comments on IWS System

Off Gas Treatment System

PID Measurement

	PPM	> 5 ?
IWS System (Effluent of primary GAC)	<1	
SVE System (Effluent of primary GAC)		

If > 5 ppm, contact carbon service for carbon disposal and replacement

Samples Collected

Were samples coll Yes ☒ No ☐

Sample Location	ID	Type	Container?	PID Reading (if collected)	units
IWS Primary GAC	031209-G1	Vapor	Summa		
IWS Secondary GAC	031209-G3	Vapor	Summa		

Pulse Pumping Schedule for IWS System

Wells Pumping after January 2009Sar IWS-4, IWS-6
Wells Pumping after May 2009 sampli IWS-3, IWS-5, IWS-6
Wells Pumping after August 2009 San IWS-3, IWS-6
Wells Pumping after October 2009 Sa IWS-5, IWS-6

Appendix B.2
OU-2 Vapor Monitoring
Results

Appendix B.2

OU-2 Vapor Monitoring Results

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**
Client Sample ID: **101308-G1** — CAS Project ID: P0803379
Client Project ID: **Linde - OU2 Removal / 14495.07.2008.0040-002** — CAS Sample ID: P0803379-001

Test Code: EPA TO-15 — Date Collected: 10/13/08
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 — Date Received: 10/14/08
Analyst: Elsa Moctezuma — Date Analyzed: 10/20/08
Sampling Media: 6.0 L Summa Canister — Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: SC00579

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.61	ND	0.24	
75-69-4	Trichlorofluoromethane	**120**	0.61	**22**	0.11	
75-35-4	1,1-Dichloroethene	ND	0.61	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.61	ND	0.15	
156-59-2	cis-1,2-Dichloroethene	ND	0.61	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.61	ND	0.11	
79-01-6	Trichloroethene	ND	0.61	ND	0.11	
123-91-1	1,4-Dioxane	ND	0.61	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.61	ND	0.090	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By:_____ Date:_____

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**
Client Sample ID: **111708-G1** — CAS Project ID: P0803846
Client Project ID: **Linde - OU2 Removal / 14495.07.2008.0040-02** — CAS Sample ID: P0803846-001

Test Code: EPA TO-15 — Date Collected: 11/17/08
Instrument ID: Tekmar AUTOCAN/HP5973/HP6890/MS3 — Date Received: 11/18/08
Analyst: Li Li — Date Analyzed: 11/19/08
Sampling Media: 6.0 L Summa Canister — Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: SC00249

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.61	ND	0.24	
75-69-4	**Trichlorofluoromethane**	**98**	0.61	**17**	0.11	
75-35-4	1,1-Dichloroethene	ND	0.61	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.61	ND	0.15	
156-59-2	cis-1,2-Dichloroethene	ND	0.61	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.61	ND	0.11	
79-01-6	Trichloroethene	ND	0.61	ND	0.11	
123-91-1	1,4-Dioxane	ND	0.61	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.61	ND	0.090	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RL Date: 12/4/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**
Client Sample ID: **121608-G1** — CAS Project ID: P0804246
Client Project ID: **Linde - OU2 Removal / 14495.07.2008.0040-02** — CAS Sample ID: P0804246-001

Test Code: EPA TO-15 — Date Collected: 12/16/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 — Date Received: 12/17/08
Analyst: Rusty Bravo — Date Analyzed: 12/19/08
Sampling Media: 6.0 L Summa Canister — Volume(s) Analyzed: 0.20 Liter(s)
Test Notes:
Container ID: SC00063

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	3.1	ND	1.2	
75-69-4	**Trichlorofluoromethane**	**290**	3.1	**51**	0.54	
75-35-4	1,1-Dichloroethene	ND	3.1	ND	0.77	
75-34-3	1,1-Dichloroethane	ND	3.1	ND	0.75	
156-59-2	cis-1,2-Dichloroethene	ND	3.1	ND	0.77	
71-55-6	1,1,1-Trichloroethane	ND	3.1	ND	0.56	
79-01-6	Trichloroethene	ND	3.1	ND	0.57	
123-91-1	1,4-Dioxane	ND	3.1	ND	0.85	
127-18-4	Tetrachloroethene	ND	3.1	ND	0.45	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Re Date: 1/6/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**
Client Sample ID: **011409-G1** — CAS Project ID: P0900148
Client Project ID: **Linde - OU2 Removal / 14495.07.2009.040-02** — CAS Sample ID: P0900148-001

Test Code: EPA TO-15 — Date Collected: 1/14/09
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 — Date Received: 1/15/09
Analyst: Wida Ang — Date Analyzed: 1/20/09 & 1/26/09
Sampling Media: 6.0 L Summa Canister — Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: — 0.10 Liter(s)
Container ID: SC00293

Initial Pressure (psig): 0.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.20

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.60	ND	0.23	
75-69-4	**Trichlorofluoromethane**	**320**	0.60	**57**	0.11	
75-35-4	1,1-Dichloroethene	ND	0.60	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.60	ND	0.15	
156-59-2	cis-1,2-Dichloroethene	ND	0.60	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.60	ND	0.11	
79-01-6	Trichloroethene	ND	0.60	ND	0.11	
123-91-1	**1,4-Dioxane**	**0.88**	0.60	**0.24**	0.17	
127-18-4	Tetrachloroethene	ND	0.60	ND	0.089	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: LO Date: 1/28/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**

Client Sample ID: **031209-G1** — CAS Project ID: P0900907

Client Project ID: **Linde-OU2 Removal / 14495.07.2008.0040-02** — CAS Sample ID: P0900907-001

Test Code: EPA TO-15 — Date Collected: 3/12/09

Instrument ID: Tekmar AUTOCAN/HP5973/HP6890/MS3 — Date Received: 3/13/09

Analyst: Li Li — Date Analyzed: 3/17/09

Sampling Media: 6.0 L Summa Canister — Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: SC01000

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.62	ND	0.24	
75-69-4	**Trichlorofluoromethane**	77	0.62	14	0.11	
75-35-4	1,1-Dichloroethene	ND	0.62	ND	0.16	
75-34-3	1,1-Dichloroethane	ND	0.62	ND	0.15	
156-59-2	cis-1,2-Dichloroethene	ND	0.62	ND	0.16	
71-55-6	1,1,1-Trichloroethane	ND	0.62	ND	0.11	
79-01-6	Trichloroethene	ND	0.62	ND	0.12	
123-91-1	1,4-Dioxane	ND	0.62	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.62	ND	0.091	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ru Date: 3/26/09

Appendix B.3
OU-2 Groundwater
Analytical Results

Appendix B.3

OU-2 Groundwater Analytical Results

October 20, 21 and 23, 2008
OU-2 Groundwater Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Company	**Service Request No.:**	K0810360
Project:	Boomsnub	**Date Received:**	10/22/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty two water samples were received for analysis at Columbia Analytical Services on 10/22/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1030F003.D and J:\MS18\1030F039.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS13\1030F002.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard was analyzed at 0.5ppb; the MRL is 2.0ppb. This standard did not meet the response criteria. All samples associated with the CCV in question were reanalyzed (past the recommended holding time) to confirm the original undetected result. The original results were reported with the supporting data provided.

Approved by _____ **Date** 12/1/08

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Trichlorofluoromethane for sample 0843002 was outside control criterion. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

The duplicate matrix spike recoveries of Vinyl Chloride, Trichlorofluoromethane, 1,1-Dichloroethene, trans-1,2-Dichloroethene and Tetrachloroethene (PCE) for sample 0843002 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0811687-1: 1,2-Dichloroethane (EDC). The analyte in question was not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ **Date** 12/1/08

Columbia Analytical Services
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CHAIN OF CUSTODY

Cooler 2

SR#: K0K10360

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PAGE 2 OF 2 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.05 0017
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@ebst.com
PHONE #: 425 451 7400 FAX#: 425 451 7800
SAMPLER'S SIGNATURE: J. M. J.

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below) 200.7	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
084020	10/21/08	1440	20	W	3		X											
084021	10/21	1520	21		3		X											
084022	10/21	1520	22		3		X											
084023	10/21	1535	23		3		X											
084024	10/21	1550	24		3		X											
084025	10/21	1555	25		3		X											
084026	10/21	1605	26		3		X											
084027	10/21	1625	27		3		X											
~~084028~~	10/20	—	28		2		X											

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 14495.05 0017
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

provide pdf

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: J. M. J. Date/Time: 10/22/08 9:30	Signature: [illegible] Date/Time: 10/22/08 1415	Signature: Date/Time:	Signature: Date/Time:
Printed Name: J. Frain Firm: EA	Printed Name: [illegible] Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

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Columbia Analytical Services
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Coder 2

SR#: K0810360

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PAGE 1 OF 2 COC #

PROJECT NAME: BoomSnub
PROJECT NUMBER: 14495.05 0017
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451 7400 FAX#: 425 451 7800
SAMPLER'S SIGNATURE: Jil Mf

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260X 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals: Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
0843010	10/21/08	0850	10	W	3			X																			
0843011		0920	11		3			X																			
0843012		0935	12		3			X																			
0843013		0950	13		3			X																			
0843014		1015	14		3			X																			
0843015		1030	15		3			X																			
0843016		1047	16		3			X																			
0843017		1100	17		3			X																			
0843018		1410	18		3			X																			
0843019		1425	19		3			X																			

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 14495.05 0017
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
provide pdf

[redacted]

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
Signature: Jil Mf	Date/Time: 10/22/08 9:30	Signature: [illegible]	Date/Time: 10/22/08 1415	Signature	Date/Time	Signature	Date/Time
Printed Name: Jil Frain	Firm: EA	Printed Name: [illegible]	Firm: CAS	Printed Name	Firm	Printed Name	Firm

11

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-52A

Sample Name:	0843010	**Units:**	ug/L
Lab Code:	K0810360-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	**0.11**	J	0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Trichloroethene (TCE)	**0.070**	J	0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	**0.16**	J	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	75-120	10/31/08	Acceptable
Toluene-d8	105	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	98	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-52C

Sample Name:	0843011	**Units:**	ug/L
Lab Code:	K0810360-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Trichloroethene (TCE)	ND	U	0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	75-120	10/31/08	Acceptable
Toluene-d8	106	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	96	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW - 53A

Sample Name:	0843012	**Units:**	ug/L
Lab Code:	K0810360-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	**1.8**		0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	**0.17**	J	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	**0.71**		0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Trichloroethene (TCE)	**8.9**		0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	**0.34**	J	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	75-120	10/31/08	Acceptable
Toluene-d8	102	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	99	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-53B

Sample Name:	0843013	**Units:**	ug/L
Lab Code:	K0810360-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Tricbloroethene (TCE)	**0.53**		0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	75-120	10/31/08	Acceptable
Toluene-d8	105	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	95	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-53C

Sample Name:	0843014	**Units:**	ug/L
Lab Code:	K0810360-014	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Trichloroethene (TCE)	ND	U	0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	10/31/08	Acceptable
Toluene-d8	102	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	94	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-54A

Sample Name:	0843015	**Units:**	ug/L
Lab Code:	K0810360-015	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811687	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811687	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811687	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811687	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811687	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811687	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811687	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811687	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811687	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811687	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811687	*
Trichloroethene (TCE)	**1.9**		0.50	0.061	1	10/31/08	10/31/08	KWG0811687	
Tetrachloroethene (PCE)	**0.19**	J	0.50	0.077	1	10/31/08	10/31/08	KWG0811687	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811687	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811687	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811687	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	75-120	10/31/08	Acceptable
Toluene-d8	104	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	94	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-54C

Sample Name:	0843016	**Units:**	ug/L
Lab Code:	K0810360-016	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**0.26**	J	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	75-120	11/04/08	Acceptable
Toluene-d8	102	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	98	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-55A

Sample Name:	0843017	**Units:**	ug/L
Lab Code:	K0810360-017	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**0.65**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	75-120	11/04/08	Acceptable
Toluene-d8	103	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-55C

Sample Name:	0843018	**Units:**	ug/L
Lab Code:	K0810360-018	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**0.23**	J	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

MW-1B

Sample Name:	0843019	**Units:**	ug/L
Lab Code:	K0810360-019	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	98	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

MW-1C

Sample Name:	0843020	**Units:**	ug/L
Lab Code:	K0810360-020	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	98	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-56A

Sample Name:	0843021	**Units:**	ug/L
Lab Code:	K0810360-021	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**0.90**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	75-120	11/04/08	Acceptable
Toluene-d8	102	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	97	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

AMW-56A Dup

Volatile Organic Compounds

Sample Name:	0843022	**Units:**	ug/L
Lab Code:	K0810360-022	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**0.97**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	**0.18**	J	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-56C

Sample Name:	0843023	**Units:**	ug/L
Lab Code:	K0810360-023	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	0.39	J	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	11/04/08	Acceptable
Toluene-d8	102	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

AMW-12A

Volatile Organic Compounds

Sample Name:	0843024	**Units:**	ug/L
Lab Code:	K0810360-024	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	**0.37**	J	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	**0.20**	J	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	**0.14**	J	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**25**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	**0.48**	J	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	75-120	11/04/08	Acceptable
Toluene-d8	102	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	100	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-12A Dup

Sample Name:	0843025	**Units:**	ug/L
Lab Code:	K0810360-025	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	**0.41**	J	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	**0.19**	J	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	**0.11**	J	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**26**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	**0.46**	J	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/04/08	Acceptable
Toluene-d8	102	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	95	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-19A

Sample Name:	0843026	**Units:**	ug/L
Lab Code:	K0810360-026	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	**1.9**		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	**0.50**		0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	11/04/08	Acceptable
Toluene-d8	103	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-19B

Sample Name:	0843027	**Units:**	ug/L
Lab Code:	K0810360-027	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Tricbloroethene (TCE)	0.72		0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	96	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0810454
Project:	Boomsnub	**Date Received:**	10/24/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty one water samples were received for analysis at Columbia Analytical Services on 10/24/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The upper control criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) J:\MS18\1104F003.D and J:\MS18\1104F034.D: Trichlorofluoromethane. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1104F003.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

Approved by _____ **Date** 11/25/08

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1104F034.D: 1,2-Dibromo-3-chloropropane and Bromoform. In accordance with CAS standard operating procedures, an MRL check standard containing the analytes of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analytes at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compounds in question, and the field samples analyzed in this sequence did not contain the analytes in question, the data quality has not been significantly affected. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recoveries of Trichloroethene (TCE) for sample 0843085 are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Elevated Method Reporting Limits:
The sample 0843085 required dilutions due to the presence of elevated levels of target analytes. The reporting limits are adjusted to reflect the dilutions.

Approved by _____ **Date** 11/22/02

Cooler #1

CHAIN OF CUSTODY

SR#: K0810454

Columbia Analytical Services
An Employee-Owned Company
1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 3 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.05 0017
PROJECT MANAGER: Glenn Hayman / J. / Grain
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451 7400 FAX#: 425 451 7800
SAMPLER'S SIGNATURE: JMZ

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260 X	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals (Total or Dissolved) (See list below) Cr	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
0843029	10/22	1050		W	3			✓																	
0843030	10/22	1110		W	3			✓																	
0843076	10/22	1135		W	3			✓																	
0843077	10/22	1140		W	3			✓																	
0843078	10/22	1220		W	3			✓																	
0843079	10/22	1400		W	3			✓																	
0843080	10/22	1415		W	3			✓																	
0843081	10/22	1450		W	3			✓																	
~~0843082~~	10/22	1505		W	3			✓																	
0843083	10/22	1515		W	3			✓																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 14495.05 0017
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

provide pdf

Temperature blank included

[redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Kristine Beaver — Date/Time: 10/24/08 11:00	Signature: Karla Smith — Date/Time: 10/24/08 1400	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Kristine Beaver — Firm: EA	Printed Name: Karla Smith — Firm: CAS KD	Printed Name: — Firm:	Printed Name: — Firm:

Cooler #1

CHAIN OF CUSTODY

SR#: K0810454

PAGE 2 OF 3 COC #

Columbia Analytical Services
An Employee-Owned Company
1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PROJECT NAME: Boomsnub
PROJECT NUMBER: 1449505 0017
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE: 425 451 7400 FAX: 425 451 7800
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	8021☐ BTEX☐ ☐ Fuel Fingerprint (FIQ)	☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals: Total & Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	200.7					REMARKS
~~0843084~~	10/22	1540		W	3			✓																		
~~0843085~~	10/22	1615		W	3			✓																		
~~0843086~~	10/22	1625		W	3			✓																		
~~0843087~~	10/22	—		W	2			✓																		
~~0843088~~	10/23	0945		W	4			✓								✓										
~~0843088 MS~~	10/23	0945		W	4			✓								✓										
~~0843088 MSD~~	10/23	0945		W	4			✓								✓										
~~0843089~~	10/23	1111		W	4			✓								✓										
~~0843090~~	10/23	1219		W	4			✓								✓										
0843091	10/23	1415		W	3			✓																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 14495.05.0017
Bill To: EA
Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
provide pdf
temp blank provided

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Kristin Beaulieu	Signature: Karla Smith	Signature	Signature
Date/Time: 10/24/08 11:00	Date/Time: 10/24/08 1400	Date/Time	Date/Time
Printed Name: Kristin Beaulieu	Printed Name: Karla Smith	Printed Name	Printed Name
Firm: EA	Firm: CAS	Firm	Firm

10

HCOC #1 10/03

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810454
Project No.:	14495.05 0017	**Date Collected:**	10/23/2008
Project Name:	Boomsnub	**Date Received:**	10/24/2008
Matrix:	WATER	**Units:**	ug/L
	MW-1A	**Basis:**	N/A

Sample Name: 0843091 (1549) **Lab Code:** K0810454-019

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/15/08	11/20/08	12.5		

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-2A

Sample Name:	0843029	**Units:**	ug/L
Lab Code:	K0810454-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	**0.84**		0.50	0.086	1	11/05/08	11/05/08	KWG0811896	
1,1-Dichloroethene	**0.15**	J	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	**0.57**		0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	**1.1**		0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	**0.31**	J	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**18**		0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	**0.35**	J	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	79	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-2B

Sample Name:	0843030	**Units:**	ug/L
Lab Code:	K0810454-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**0.61**		0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

RAMW-2C

Sample Name:	0843076	**Units:**	ug/L
Lab Code:	K0810454-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**0.27**	J	0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/04/08	Acceptable
Toluene-d8	98	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

RAHW-2C Dup

Sample Name:	0843077	**Units:**	ug/L
Lab Code:	K0810454-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**0.26**	J	0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	79	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.05 0017
Sample Matrix: Water

Service Request: K0810454
Date Collected: 10/22/2008
Date Received: 10/24/2008

Volatile Organic Compounds

AMW-3A

Sample Name: 0843078
Lab Code: K0810454-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**0.48**	J	0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	**0.43**	J	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	79	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-1A

Sample Name:	0843079	**Units:**	ug/L
Lab Code:	K0810454-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	**0.090**	**J**	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	*
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	**2.2**		0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	**0.73**		0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	**0.39**	**J**	0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-1B

Sample Name:	0843080	**Units:**	ug/L
Lab Code:	K0810454-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811827	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811827	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/04/08	KWG0811827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811827	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811827	
Trichloroethene (TCE)	0.50		0.50	0.061	1	11/04/08	11/04/08	KWG0811827	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811827	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811827	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.05 0017
Sample Matrix: Water

Service Request: K0810454
Date Collected: 10/22/2008
Date Received: 10/24/2008

Volatile Organic Compounds

AMW-1C

Sample Name: 0843081
Lab Code: K0810454-008

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811837	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811837	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811837	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811837	
Bromodichloromethane	**0.13**	J	0.50	0.036	1	11/04/08	11/04/08	KWG0811837	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811837	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811837	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811837	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811837	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811837	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811837	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/04/08	11/04/08	KWG0811837	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/04/08	KWG0811837	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811837	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811837	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811837	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	11/04/08	Acceptable
Toluene-d8	101	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	95	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-13A

Sample Name:	0843083	**Units:**	ug/L
Lab Code:	K0810454-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/04/08	KWG0811837	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/04/08	KWG0811837	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/04/08	KWG0811837	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/04/08	KWG0811837	
Bromodichloromethane	**0.86**		0.50	0.036	1	11/04/08	11/04/08	KWG0811837	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/04/08	KWG0811837	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/04/08	KWG0811837	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/04/08	KWG0811837	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/04/08	KWG0811837	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/04/08	KWG0811837	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/04/08	KWG0811837	
Trichloroethene (TCE)	**0.21**	J	0.50	0.061	1	11/04/08	11/04/08	KWG0811837	
Tetrachloroethene (PCE)	**0.080**	J	0.50	0.077	1	11/04/08	11/04/08	KWG0811837	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/04/08	KWG0811837	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/04/08	KWG0811837	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/04/08	KWG0811837	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	11/04/08	Acceptable
Toluene-d8	99	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	95	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/23/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

MW-1A

Sample Name:	0843091 (1415)	**Units:**	ug/L
Lab Code:	K0810454-018	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/05/08	11/05/08	KWG0811881	
Trichlorofluoromethane	**0.21**	J	0.50	0.086	1	11/05/08	11/05/08	KWG0811881	*
1,1-Dichloroethene	**0.15**	J	0.50	0.10	1	11/05/08	11/05/08	KWG0811881	
Methylene Chloride	ND	U	2.0	0.23	1	11/05/08	11/05/08	KWG0811881	
Bromodichloromethane	ND	U	0.50	0.036	1	11/05/08	11/05/08	KWG0811881	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/05/08	11/05/08	KWG0811881	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/05/08	11/05/08	KWG0811881	
1,1,1-Trichloroethane (TCA)	**0.41**	J	0.50	0.050	1	11/05/08	11/05/08	KWG0811881	
Dibromochloromethane	ND	U	0.50	0.057	1	11/05/08	11/05/08	KWG0811881	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/05/08	11/05/08	KWG0811881	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/05/08	11/05/08	KWG0811881	
Trichloroethene (TCE)	**13**		0.50	0.061	1	11/05/08	11/05/08	KWG0811881	
Tetrachloroethene (PCE)	**1.1**		0.50	0.077	1	11/05/08	11/05/08	KWG0811881	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/05/08	11/05/08	KWG0811881	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/05/08	11/05/08	KWG0811881	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/05/08	11/05/08	KWG0811881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/05/08	Acceptable
Toluene-d8	100	80-128	11/05/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/05/08	Acceptable

Comments:

January 19 and 20, 2009
OU-2 Groundwater Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0900523
Project:	Linde	**Date Received:**	1/20/2009
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty one water samples were received for analysis at Columbia Analytical Services on 1/20/2009. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260B

Continuing Calibration Verification Exceptions:
The upper control criterion was exceeded for the following analyte in Continuing Calibration Verification (CCV) J:\MS13\0128F003.D: 1,2-Dichoroethane (EDC). The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of 1,2-Dichloroethane (EDC) for sample 0903009 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Approved by _____ **Date** 2/6/09

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: KW900523

PAGE 1 OF 3 COC #

PROJECT NAME: Linde
PROJECT NUMBER: 14495.05 0070
PROJECT MANAGER: Glenn Havinan
COMPANY/ADDRESS: 12011 NE 1st St. Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451 7400 FAX #: 425 451 7800
SAMPLER'S SIGNATURE: J. Bjorna

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
0903001	1/19/09			W	3		X												
0903002	1/19/09	1115					X												
0903003		1135					X												
0903004		1150					X												
0903005		1207					X												
0903006		1340					X												
~~0903007~~		1351					X												
~~0903008~~		1605					X												
0903009	1/20/09	0840		W			X												
~~0903010~~	1/20/09	0755		W			X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 14495.05 0070
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
___ Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
provide pdf

[redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Krishna Bendi — Date/Time: 1/20/09 3:30	Signature: [illegible] — Date/Time: 1/20/09 3:30	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Krishna Bendi — Firm: EA	Printed Name: Brad Dubin — Firm: CAS	Printed Name: — Firm:	Printed Name: — Firm:

ACOC#1 06/08

Columbia Analytical Services™

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SR#: K0900523

PAGE 2 OF 3 COC #

PROJECT NAME: Linde
PROJECT NUMBER: 14495.05 ~~0017~~ 0070
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425-451-7400 FAX #: 425-451-7800
SAMPLER'S SIGNATURE: Kristin Beaulieu

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
0903011	1/20/09	0905		W	3		X												
0903012		0920			3		X												
0903013		0932			3		X												
0903014		0950			3		X												
0903015		1015					X												
0903016		1020					X												
0903017		1030					X												
0903018		1050					X												
0903019	↓	1055					X												
0903020	1/20/09	1104		↓	↓		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 14495.05 0070
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Provide PDF

[redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Kristin Beaulieu	Signature: [illegible]	Signature	Signature
Date/Time: 1/20/09 3:30	Date/Time: 1/20/09 3:30	Date/Time	Date/Time
Printed Name: Kristin Beaulieu	Printed Name: [illegible]	Printed Name	Printed Name
Firm: EA	Firm: CAS	Firm	Firm

RCOC #1 06/08

6

Columbia Analytical Services

CHAIN OF CUSTODY

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SR#: 1009100523

PAGE 3 OF 3 COC #

PROJECT NAME: Linde
PROJECT NUMBER: 14495.05 0070
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St. Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jtrain@eaest.com
PHONE #: 425-451-7400 FAX #: 425-451-7800
SAMPLER'S SIGNATURE: G. Bzman

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
0903021	1/20/09	1125		W	3			X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 14495.05 0070
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
provide pdf

[redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Kristina Beaulin Date/Time: 1/20/09 3:30	Signature: [illegible] Date/Time: 1/20/09 3:30	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Kristina Beaulin Firm: EA	Printed Name: Brad Tibn Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/19/2009
Date Received: 01/20/2009

Volatile Organic Compounds

Sample Name: Trip Blank 0903001
Lab Code: K0900523-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	ND	U	0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	ND	U	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	75-120	01/26/09	Acceptable
Toluene-d8	95	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	85	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

AHW-1A

Sample Name:	0903011	**Units:**	ug/L
Lab Code:	K0900523-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	**2.1**		0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	**0.12**	J	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.37**	J	0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	75-120	01/28/09	Acceptable
Toluene-d8	97	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	94	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AMW-1B 0903012	**Units:**	ug/L
Lab Code:	K0900523-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.50**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	75-120	01/28/09	Acceptable
Toluene-d8	98	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AMW-2A 0903013	**Units:**	ug/L
Lab Code:	K0900523-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	**3.6**		0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	**0.39**	J	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	**0.77**		0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	**0.10**	J	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	**2.3**		0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	**0.45**	J	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**55**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.59**		0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	75-120	01/28/09	Acceptable
Toluene-d8	98	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/20/2009
Date Received: 01/20/2009

Volatile Organic Compounds

AMW-2B

Sample Name: 0903014
Lab Code: K0900523-014

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.69**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	75-120	01/28/09	Acceptable
Toluene-d8	98	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	94	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

AMW-12A

Sample Name:	0903018	**Units:**	ug/L
Lab Code:	K0900523-018	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	**0.20**	J	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	**0.59**		0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	**0.24**	J	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethene (TCA)	**0.13**	J	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**29**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.53**		0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	75-120	01/28/09	Acceptable
Toluene-d8	99	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

AHW-12A Dup

Sample Name:	0903019	**Units:**	ug/L
Lab Code:	K0900523-019	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	**0.20**	J	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	**0.57**		0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	**0.22**	J	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	**0.12**	J	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**28**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.56**		0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	75-120	01/28/09	Acceptable
Toluene-d8	99	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	90	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/20/2009
Date Received: 01/20/2009

Volatile Organic Compounds

AHW-19A

Sample Name: 0903020
Lab Code: K0900523-020

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**1.5**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.39**	J	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	75-120	01/28/09	Acceptable
Toluene-d8	99	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/20/2009
Date Received: 01/20/2009

Volatile Organic Compounds

AHW-3A

Sample Name: 0903021
Lab Code: K0900523-021

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/29/09	01/29/09	KWG0900827	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/29/09	01/29/09	KWG0900827	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/29/09	01/29/09	KWG0900827	
Methylene Chloride	ND	U	2.0	0.23	1	01/29/09	01/29/09	KWG0900827	
Bromodichloromethane	ND	U	0.50	0.036	1	01/29/09	01/29/09	KWG0900827	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/29/09	01/29/09	KWG0900827	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/29/09	01/29/09	KWG0900827	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/29/09	01/29/09	KWG0900827	
Dibromochloromethane	ND	U	0.50	0.057	1	01/29/09	01/29/09	KWG0900827	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/29/09	01/29/09	KWG0900827	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/29/09	01/29/09	KWG0900827	
Trichloroethene (TCE)	**0.54**		0.50	0.061	1	01/29/09	01/29/09	KWG0900827	
Tetrachloroethene (PCE)	**0.43**	J	0.50	0.077	1	01/29/09	01/29/09	KWG0900827	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/29/09	01/29/09	KWG0900827	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/29/09	01/29/09	KWG0900827	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/29/09	01/29/09	KWG0900827	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	75-120	01/29/09	Acceptable
Toluene-d8	96	80-128	01/29/09	Acceptable
4-Bromofluorobenzene	85	75-117	01/29/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AMW-13A 0903009	**Units:**	ug/L
Lab Code:	K0900523-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	**2.7**		0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	**0.13**	J	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.80**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.19**	J	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	75-120	01/28/09	Acceptable
Toluene-d8	98	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	94	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/19/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AHW-52A 0903002	**Units:**	ug/L
Lab Code:	K0900523-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	**0.12**	J	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	**0.060**	J	0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	ND	U	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	**0.10**	J	0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	**0.19**	J	0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	75-120	01/26/09	Acceptable
Toluene-d8	94	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	87	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/19/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AHW-53A 0903003	**Units:**	ug/L
Lab Code:	K0900523-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	**0.33**	J	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	**1.5**		0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	**0.12**	J	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	**0.12**	J	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	**4.2**		0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	**0.36**	J	0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	75-120	01/26/09	Acceptable
Toluene-d8	94	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	85	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/19/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AMW-54A 0903004	**Units:**	ug/L
Lab Code:	K0900523-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	ND	U	0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	**0.060**	J	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	ND	U	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	**2.5**		0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	**0.44**	J	0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	75-120	01/26/09	Acceptable
Toluene-d8	95	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	87	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/19/2009
Date Received: 01/20/2009

Volatile Organic Compounds

AWO-55A
Sample Name: 0903005
Lab Code: K0900523-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	ND	U	0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	ND	U	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	**0.95**		0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	**0.32**	J	0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	75-120	01/26/09	Acceptable
Toluene-d8	95	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	86	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/19/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	MW-1A 0903006	**Units:**	ug/L
Lab Code:	K0900523-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/26/09	01/26/09	KWG0900699	
Trichlorofluoromethane	**0.10**	J	0.50	0.086	1	01/26/09	01/26/09	KWG0900699	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/26/09	01/26/09	KWG0900699	
Methylene Chloride	ND	U	2.0	0.23	1	01/26/09	01/26/09	KWG0900699	
Bromodichloromethane	ND	U	0.50	0.036	1	01/26/09	01/26/09	KWG0900699	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/26/09	01/26/09	KWG0900699	
cis-1,2-Dichloroethene	**0.060**	J	0.50	0.045	1	01/26/09	01/26/09	KWG0900699	
1,1,1-Trichloroethane (TCA)	**0.15**	J	0.50	0.050	1	01/26/09	01/26/09	KWG0900699	
Dibromochloromethane	ND	U	0.50	0.057	1	01/26/09	01/26/09	KWG0900699	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/26/09	01/26/09	KWG0900699	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/26/09	01/26/09	KWG0900699	
Trichloroethene (TCE)	**9.3**		0.50	0.061	1	01/26/09	01/26/09	KWG0900699	
Tetrachloroethene (PCE)	**1.3**		0.50	0.077	1	01/26/09	01/26/09	KWG0900699	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/26/09	01/26/09	KWG0900699	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/26/09	01/26/09	KWG0900699	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/26/09	01/26/09	KWG0900699	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	75-120	01/26/09	Acceptable
Toluene-d8	94	80-128	01/26/09	Acceptable
4-Bromofluorobenzene	87	75-117	01/26/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

Sample Name:	AMW-56A 0903015	**Units:**	ug/L
Lab Code:	K0900523-015	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	0.76		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.18**	J	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	75-120	01/28/09	Acceptable
Toluene-d8	99	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Linde/14495.05 0070
Sample Matrix: Water

Service Request: K0900523
Date Collected: 01/20/2009
Date Received: 01/20/2009

Volatile Organic Compounds

AMW-56A Dup

Sample Name: 0903016
Lab Code: K0900523-016

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.83**		0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	**0.25**	J	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	75-120	01/28/09	Acceptable
Toluene-d8	99	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	93	75-117	01/28/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900523
Project:	Linde/14495.05 0070	**Date Collected:**	01/20/2009
Sample Matrix:	Water	**Date Received:**	01/20/2009

Volatile Organic Compounds

AMW - 56C

Sample Name:	0903017	**Units:**	ug/L
Lab Code:	K0900523-017	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/28/09	01/28/09	KWG0900779	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/28/09	01/28/09	KWG0900779	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/28/09	01/28/09	KWG0900779	
Methylene Chloride	ND	U	2.0	0.23	1	01/28/09	01/28/09	KWG0900779	
Bromodichloromethane	ND	U	0.50	0.036	1	01/28/09	01/28/09	KWG0900779	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/28/09	01/28/09	KWG0900779	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/28/09	01/28/09	KWG0900779	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/28/09	01/28/09	KWG0900779	
Dibromochloromethane	ND	U	0.50	0.057	1	01/28/09	01/28/09	KWG0900779	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/28/09	01/28/09	KWG0900779	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/28/09	01/28/09	KWG0900779	
Trichloroethene (TCE)	**0.44**	J	0.50	0.061	1	01/28/09	01/28/09	KWG0900779	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/28/09	01/28/09	KWG0900779	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/28/09	01/28/09	KWG0900779	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/28/09	01/28/09	KWG0900779	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/28/09	01/28/09	KWG0900779	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	75-120	01/28/09	Acceptable
Toluene-d8	98	80-128	01/28/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/28/09	Acceptable

Comments:

Appendix C
OU-3 Sitewide Groundwater Extraction System

Appendix C

OU-3 Sitewide Groundwater Extraction System

Appendix C.1
OU-3 Bi-weekly System
Monitoring Checklists

Appendix C.1

OU-3 Bi-weekly System Monitoring Checklists

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read **Date:** 10/10/08

Groundwater Treatment

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	NA
Canister 2	0.060
Canister 3	ND
Final Discharge	0.02

System pH Measurements:

Initial Calibration 7.01, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.56
Pre-IX	5.58
IX Effluent	6.00
Final Discharge	7.05

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	151	1961099	14:47
IX Influent Flow Meter	151	63669938.5	14:40
AS Influent Flow Meter	151	27827874	14:44
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	62
Pre-Carbon Air Temperature (F°)	82

Maintenance

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory

		Quantity
Gloves		18 Boxes
Drums	Empty 55-gal	12
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	16
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes
INF-100608	CAS	10/6/08	8260B, T. Cr, Ph
EFF-100608	CAS	10/6/08	8260B, T. Cr, Ph
EFFD-100608	CAS	10/6/08	8260B, T. Cr, Ph
TB-100608	CAS	10/6/08	8260B

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read **Date:** 10/24/08

Groundwater Treatment

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	NA
Canister 2	0.065
Canister 3	ND
Final Discharge	0.02

System pH Measurements:

Initial Calibration 6.99, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.57
Pre-IX	5.58
IX Effluent	6.02
Final Discharge	7.10

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	151	4912980	14:47
IX Influent Flow Meter	151	63971885	14:40
AS Influent Flow Meter	151	28175568	14:44
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	58
Pre-Carbon Air Temperature (F°)	78

Maintenance

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		18 Boxes
Drums	Empty 55-gal	12
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	16
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read **Date:** 11/14/08

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	ND
Canister 2	NA
Canister 3	0.03
Final Discharge	ND

System pH Measurements:

Initial Calibration 6.99, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.58
Pre-IX	5.59
IX Effluent	6.02
Final Discharge	7.12

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	151	9308115	16:16
IX Influent Flow Meter	151	64420945	16:13
AS Influent Flow Meter	151	28705912	16:14
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	52
Pre-Carbon Air Temperature (F°)	72

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		18 Boxes
Drums	Empty 55-gal	12
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	16
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes
INF-110608	CAS	11/6/08	8260b, T.Cr, Ph
EFF-110608	CAS	11/6/08	8260b, T.Cr, Ph
EFFD-110608	CAS	11/6/08	8260b, T.Cr, Ph
TB-110608	CAS	11/6/08	8260b

Comments:

Changed Resin Canisters to 3 Primary and 1 Polish on 11/7/08.

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read **Date:** 11/25/08

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	ND
Canister 2	NA
Canister 3	0.03
Final Discharge	ND

System pH Measurements:

Initial Calibration 7.00, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.56
Pre-IX	5.58
IX Effluent	6.00
Final Discharge	7.90

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	153	11667650	15:57
IX Influent Flow Meter	153	64661510	15:54
AS Influent Flow Meter	153	28994715	15:52
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	50
Pre-Carbon Air Temperature (F°)	68

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		18 Boxes
Drums	Empty 55-gal	12
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	16
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read **Date:** 12/12/08

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	ND
Canister 2	NA
Canister 3	0.03
Final Discharge	ND

System pH Measurements:

Initial Calibration 7.00, 4.01 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.56
Pre-IX	5.57
IX Effluent	6.00
Final Discharge	7.89

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	153	15327490	16:14
IX Influent Flow Meter	153	65034064	16:12
AS Influent Flow Meter	153	2952440	16:11
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	50
Pre-Carbon Air Temperature (F°)	70

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		18 Boxes
Drums	Empty 55-gal	12
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	16
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes
INF-120408	CAS	11/6/08	8260b, T.Cr, Ph
EFF-120408	CAS	11/6/08	8260b, T.Cr, Ph
EFFD-120408	CAS	11/6/08	8260b, T.Cr, Ph
TB-120408	CAS	11/6/08	8260b

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read Date: 01/08/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)
Well Field Influent	0.09
Canister 1	ND
Canister 2	NA
Canister 3	0.025
Final Discharge	ND

System pH Measurements:

Initial Calibration 6.99, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.57
Pre-IX	5.58
IX Effluent	6.02
Final Discharge	7.10

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	154	19616830	16:54
IX Influent Flow Meter	156	65469070	16:51
AS Influent Flow Meter	154	30198880	16:52
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)
Air Stripper Effluent	1
Post Primary	ND
Final Discharge	ND

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	50
Pre-Carbon Air Temperature (F°)	65

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☒	☐
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	12
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read

Date: 01/23/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)	ID#	%
Well Field Influent	0.09		
Primary	0.01	3	11%
Secondary	ND	1	
Final Discharge	ND		

System pH Measurements:

Initial Calibration 4.01, 7.0 Final Calibration 4.0, 7.0

Location:	pH
Well Field	
Pre-IX	
IX Effluent	
Final Discharge	

System Flow Rates:

Location:	GPM	Totalizer	Time
Well Field Influent	153	22558075	9:09
IX Influent Flow Meter	153	65767642	9:11
AS Influent Flow Meter	153	30683920	9:12
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)	
Air Stripper Effluent	<1	
Post Primary	ND	
Final Discharge	ND	< 5?

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	48
Pre-Carbon Air Temperature (F°)	64

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	28
10 Micron	30 inch	35
20 Micron	30 inch	12
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read

Date: 02/11/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)	ID#	%
Well Field Influent	0.09		
Primary	0.025	3	28%
Secondary	ND	1	
Final Discharge	ND		

System pH Measurements:

Location:	Initial Calibration	Final Calibration
	pH	
Well Field	5.57	
Pre-IX	5.59	
IX Effluent	6.02	
Final Discharge	7.10	

System Flow Rates:

Location:	GPM	Totalizer	Time
Total Flow from Wells	153		
Well Field Influent	153	26754400	17:20
IX Influent Flow Meter	153	66193080	17:16
AS Influent Flow Meter	153	31272310	17:15
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)	
Air Stripper Effluent	1	
Post Primary	ND	
Final Discharge	ND	< 5?

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	50
Pre-Carbon Air Temperature (F°)	70

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☒	☐
Lube Pump Motors?	☒	☐
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	14
10 Micron	30 inch	31
20 Micron	30 inch	8
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes
INF-020409	CAS	2/4/09	8260b, T.Cr, pH
EFF-020409	CAS	2/4/09	8260b, T.Cr, pH
EFFD-020409	CAS	2/4/09	8260b, T.Cr, pH
TB-020409	CAS	2/4/09	8260b

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read

Date: 02/26/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)	ID#	%
Well Field Influent	0.09		
Primary	0.025	3	28%
Secondary	ND	1	
Final Discharge	ND		

System pH Measurements:

Location:	Initial Calibration	Final Calibration
	pH	
Well Field	5.56	
Pre-IX	5.58	
IX Effluent	6.02	
Final Discharge	7.13	

System Flow Rates:

Location:	GPM	Totalizer	Time
Total Flow from Wells	153		
Well Field Influent	153	29956415	16:47
IX Influent Flow Meter	153	66518105	16:44
AS Influent Flow Meter	153	31752261	16:45
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	30
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)	
Air Stripper Effluent	1	
Post Primary	ND	
Final Discharge	ND	< 5?

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	50
Pre-Carbon Air Temperature (F°)	68

Maintenance:

	Yes	No	Leaks/Notes?
Replace Bag Filter?	☐	☒	
Drain Compressor?	☒	☐	
Replace Canister Filters?	☐	☒	
Lube Pump Motors?	☐	☒	
Inspect Infiltration Galleries?	☒	☐	

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	14
10 Micron	30 inch	31
20 Micron	30 inch	8
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Installed Relays for single float sump pump operation in CV-3, CV-9, and CV-18 on 2/24/09.

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read

Date: 03/16/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)	ID#	%
Well Field Influent	0.09		
Primary	0.025	3	28%
Secondary	ND	1	
Final Discharge	ND		

System pH Measurements:

Location:	Initial Calibration	Final Calibration
	pH	
Well Field	5.57	
Pre-IX	5.58	
IX Effluent	6.03	
Final Discharge	7.15	

System Flow Rates:

Location:	GPM	Totalizer	Time
Total Flow from Wells	153		
Well Field Influent	153	33937777	16:40
IX Influent Flow Meter	153	66916241	16:37
AS Influent Flow Meter	153	32150397	16:38
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)	
Air Stripper Effluent	1	
Post Primary	ND	
Final Discharge	ND	< 5?

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	52
Pre-Carbon Air Temperature (F°)	70

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	14
10 Micron	30 inch	31
20 Micron	30 inch	8
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes
INF-030509	CAS	3/5/09	8260B, T.Cr, pH
EFF-030509	CAS	3/5/09	8260B, T.Cr, pH
EFFD-030509	CAS	3/5/09	8260B, T.Cr, pH
TB-030509	CAS	3/5/09	8260B

Comments:

Boomsnub Biweekly System Monitoring Checklist

Name: Rick Read

Date: 03/30/09

Groundwater Treatment:

Ion Exchange System Chromium Testing:

Kit Used: DR 100 Colorimeter

Test Location:	Chromium (ppm)	ID#	%
Well Field Influent	0.09		
Primary	0.030	3	33%
Secondary	ND	1	
Final Discharge	ND		

System pH Measurements:

Initial Calibration 6.99, 4.00 Final Calibration 7.0, 4.0

Location:	pH
Well Field	5.57
Pre-IX	5.62
IX Effluent	6.04
Final Discharge	7.17

System Flow Rates:

Location:	GPM	Totalizer	Time
Total Flow from Wells	153		
Well Field Influent	153	37021011	16:30
IX Influent Flow Meter	153	67224565	16:27
AS Influent Flow Meter	153	32458721	16:28
COV Sewer Flow Meter			
Boomsnub Inf. Gal. Flow Meter			
Calculated Flow to BOC Inf. Gal.			

Air Stripper Monitoring:

Pressure Readings:

Location:	(In. H2O)
Blower	31
Air Stripper	28

TCE Concentrations:

Location:	TCE (ppm)	
Air Stripper Effluent	1	
Post Primary	ND	
Final Discharge	ND	< 5?

Capsulhelic Gauge (In. H_2O)	1
Pre-Heater Air Temperature (F°)	52
Pre-Carbon Air Temperature (F°)	70

Maintenance:

	Yes	No
Replace Bag Filter?	☐	☒
Drain Compressor?	☒	☐
Replace Canister Filters?	☐	☒
Lube Pump Motors?	☐	☒
Inspect Infiltration Galleries?	☒	☐

Leaks/Notes?

Inventory:

		Quantity
Gloves		17 Boxes
Drums	Empty 55-gal	11
Drums	Spent Resin	0
Bag Filters		13
Canister Filters		
10 Micron	29.25 inch	14
10 Micron	30 inch	31
20 Micron	30 inch	8
75 Micron	30 inch	

Sampling:

Location	Lab	Date	Analytes

Comments:

Appendix C.2
OU-3 System Operation
Tables

Appendix C.2

OU-3 System Operation Tables

APPENDIX C.2 - TABLE 1A
OU-3 OCTOBER 2008 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
10/01/08	219,005	24.00	100.00%
10/02/08	219,060	24.00	100.00%
10/03/08	219,210	24.00	100.00%
10/04/08	219,168	24.00	100.00%
10/05/08	219,153	24.00	100.00%
10/06/08	219,036	24.00	100.00%
10/07/08	219,018	24.00	100.00%
10/08/08	219,117	24.00	100.00%
10/09/08	219,251	24.00	100.00%
10/10/08	219,269	24.00	100.00%
10/11/08	219,230	24.00	100.00%
10/12/08	219,372	24.00	100.00%
10/13/08	219,160	24.00	100.00%
10/14/08	219,082	24.00	100.00%
10/15/08	215,679	24.00	100.00%
10/16/08	213,737	24.00	100.00%
10/17/08	213,673	24.00	100.00%
10/18/08	213,690	24.00	100.00%
10/19/08	213,780	24.00	100.00%
10/20/08	213,912	24.00	100.00%
10/21/08	213,888	24.00	100.00%
10/22/08	209,077	24.00	100.00%
10/23/08	213,737	24.00	100.00%
10/24/08	213,897	24.00	100.00%
10/25/08	213,652	24.00	100.00%
10/26/08	213,600	24.00	100.00%
10/27/08	213,646	24.00	100.00%
10/28/08	213,789	23.65	98.54%
10/29/08	213,988	23.73	98.89%
10/30/08	212,634	24.00	100.00%
10/31/08	214,423	24.00	100.00%
Subtotals	**6,698,931**	**743.38**	**99.92%**
Scheduled Downtime/Maintenance[3]		0.27	
Total Hours/Month		744	
Total Operating Hours/Availability %		**743.65**	**99.95%**
Daily Breakdown		**October 2008**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)		216,150	230,400
Maximum Daily Flow (gallons)		219,372	230,400
Hundreds of Cubic Feet Breakdown			
Total Flow (hundreds of cubic feet)		8956	
Average Daily Flow (hundreds of cubic feet)		289	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

APPENDIX C.2 - TABLE 1B
OU-3 NOVEMBER 2008 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
11/01/08	214,415	24.00	100.00%
11/02/08	223,284	25.00	100.00%[5]
11/03/08	214,065	24.00	100.00%
11/04/08	213,887	24.00	100.00%
11/05/08	214,481	24.00	100.00%
11/06/08	216,962	24.00	100.00%
11/07/08	216,291	23.47	97.78%
11/08/08	220,436	24.00	100.00%
11/09/08	220,659	24.00	100.00%
11/10/08	221,053	24.00	100.00%
11/11/08	219,605	24.00	100.00%
11/12/08	193,958	20.18	84.10%
11/13/08	220,900	24.00	100.00%
11/14/08	221,015	24.00	100.00%
11/15/08	221,116	24.00	100.00%
11/16/08	221,117	24.00	100.00%
11/17/08	221,086	24.00	100.00%
11/18/08	221,099	24.00	100.00%
11/19/08	220,980	24.00	100.00%
11/20/08	218,232	23.45	97.71%
11/21/08	221,530	24.00	100.00%
11/22/08	221,460	24.00	100.00%
11/23/08	221,480	24.00	100.00%
11/24/08	221,461	24.00	100.00%
11/25/08	221,481	24.00	100.00%
11/26/08	221,325	24.00	100.00%
11/27/08	221,373	24.00	100.00%
11/28/08	221,238	24.00	100.00%
11/29/08	221,092	24.00	100.00%
11/30/08	221,053	24.00	100.00%
Subtotals	**6,568,134**	**716.10**	**99.46%**
Scheduled Downtime/Maintenance[3]		1.08	
Total Hours/Month		720	
Total Operating Hours/Availability %		**717.18**	**99.61%**
Daily Breakdown		**November 2008**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)		218,938	230,400
Maximum Daily Flow (gallons)		223,284	230,400
Hundreds of Cubic Feet Breakdown			
Total Flow (hundreds of cubic feet)		8781	
Average Daily Flow (hundreds of cubic feet)		293	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

[5] Data reflects daylight savings time on November 2.

APPENDIX C.2 - TABLE 1C
OU-3 DECEMBER 2008 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
12/01/08	221,040	24.00	100.00%
12/02/08	220,878	24.00	100.00%
12/03/08	220,936	24.00	100.00%
12/04/08	220,931	24.00	100.00%
12/05/08	221,101	24.00	100.00%
12/06/08	221,036	24.00	100.00%
12/07/08	220,101	24.00	100.00%
12/08/08	220,770	24.00	100.00%
12/09/08	220,835	24.00	100.00%
12/10/08	220,736	24.00	100.00%
12/11/08	220,644	24.00	100.00%
12/12/08	220,792	24.00	100.00%
12/13/08	220,340	24.00	100.00%
12/14/08	220,923	24.00	100.00%
12/15/08	221,048	24.00	100.00%
12/16/08	220,994	24.00	100.00%
12/17/08	220,920	24.00	100.00%
12/18/08	204,695	22.75	94.79%
12/19/08	212,527	24.00	100.00%
12/20/08	220,865	24.00	100.00%
12/21/08	220,950	24.00	100.00%
12/22/08	220,918	24.00	100.00%
12/23/08	134,899	14.57	60.69%
12/24/08	0	0.00	0.00%
12/25/08	0	0.00	0.00%
12/26/08	0	0.00	0.00%
12/27/08	0	0.00	0.00%
12/28/08	0	0.00	0.00%
12/29/08	526	0.06	0.24%
12/30/08	151,989	15.43	64.31%
12/31/08	212,310	24.00	
Subtotals	**5,333,703**	**580.81**	**78.07%**

Scheduled Downtime/Maintenance[3]	1.25	
Total Hours/Month	744	
Total Operating Hours/Availability %	**582.06**	**78.23%**
Daily Breakdown	**December 2008**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)	170,713	230,400
Maximum Daily Flow (gallons)	221,101	230,400
Hundreds of Cubic Feet Breakdown		
Total Flow (hundreds of cubic feet)	7131	
Average Daily Flow (hundreds of cubic feet)	230	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

APPENDIX C.2 - TABLE 1D
OU-3 JANUARY 2009 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
01/01/09	209,444	23.10	96.25%
01/02/09	203,847	22.87	95.28%
01/03/09	215,298	24.00	100.00%
01/04/09	215,331	24.00	100.00%
01/05/09	214,691	24.00	100.00%
01/06/09	215,152	24.00	100.00%
01/07/09	215,072	24.00	100.00%
01/08/09	213,640	24.00	100.00%
01/09/09	213,388	24.00	100.00%
01/10/09	213,495	24.00	100.00%
01/11/09	215,012	24.00	100.00%
01/12/09	215,054	24.00	100.00%
01/13/09	215,027	24.00	100.00%
01/14/09	215,157	24.00	100.00%
01/15/09	215,160	24.00	100.00%
01/16/09	215,173	24.00	100.00%
01/17/09	215,155	24.00	100.00%
01/18/09	215,128	24.00	100.00%
01/19/09	215,263	24.00	100.00%
01/20/09	203,144	23.38	97.43%
01/21/09	154,661	17.60	73.33%
01/22/09	130,697	13.95	58.13%
01/23/09	221,824	24.00	100.00%
01/24/09	221,714	24.00	100.00%
01/25/09	221,448	24.00	100.00%
01/26/09	221,716	24.00	100.00%
01/27/09	221,827	24.00	100.00%
01/28/09	221,614	24.00	100.00%
01/29/09	221,670	24.00	100.00%
01/30/09	221,679	24.00	100.00%
01/31/09	221,622	24.00	100.00%
Subtotals	**6,549,104**	**724.90**	**97.43%**
Scheduled Downtime/Maintenance[3]		0.20	
Total Hours/Month		744	
Total Operating Hours/Availability %		**725.10**	**97.46%**
Daily Breakdown		**January 2009**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)		210,916	230,400
Maximum Daily Flow (gallons)		221,827	230,400
Hundreds of Cubic Feet Breakdown			
Total Flow (hundreds of cubic feet)		8755	
Average Daily Flow (hundreds of cubic feet)		282	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

APPENDIX C.2 - TABLE 1E
OU-3 FEBRUARY 2009 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
02/01/09	221,597	24.00	100.00%
02/02/09	220,912	23.82	99.24%
02/03/09	221,987	24.00	100.00%
02/04/09	222,082	24.00	100.00%
02/05/09	222,242	24.00	100.00%
02/06/09	222,147	24.00	100.00%
02/07/09	222,122	24.00	100.00%
02/08/09	222,269	24.00	100.00%
02/09/09	222,166	24.00	100.00%
02/10/09	222,148	24.00	100.00%
02/11/09	221,909	24.00	100.00%
02/12/09	222,024	24.00	100.00%
02/13/09	221,848	24.00	100.00%
02/14/09	221,857	24.00	100.00%
02/15/09	221,745	24.00	100.00%
02/16/09	221,430	24.00	100.00%
02/17/09	221,317	24.00	100.00%
02/18/09	221,247	24.00	100.00%
02/19/09	221,118	24.00	100.00%
02/20/09	220,994	24.00	100.00%
02/21/09	221,154	24.00	100.00%
02/22/09	221,023	24.00	100.00%
02/23/09	221,173	24.00	100.00%
02/24/09	176,799	19.10	79.58%
02/25/09	221,478	24.00	100.00%
02/26/09	221,562	24.00	100.00%
02/27/09	221,398	24.00	100.00%
02/28/09	221,338	24.00	100.00%
Subtotals	**6,161,087**	**666.92**	**99.24%**

Scheduled Downtime/Maintenance[3]	5.08	
Total Hours/Month	672	
Total Operating Hours/Availability %	**672.00**	**100.00%**
Daily Breakdown	**February 2009**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)	220,039	230,400
Maximum Daily Flow (gallons)	222,269	230,400
Hundreds of Cubic Feet Breakdown		
Total Flow (hundreds of cubic feet)	8237	
Average Daily Flow (hundreds of cubic feet)	294	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

APPENDIX C.2 - TABLE 1F
OU-3 MARCH 2009 GROUNDWATER EXTRACTION SUMMARY
BOOMSNUB/AIRCO SUPERFUND SITE

Date	Total Flow gpd[1]	System Operating Hours[2]	System Operating Percentage
03/01/09	221,322	24.00	100.00%
03/02/09	221,224	24.00	100.00%
03/03/09	221,328	24.00	100.00%
03/04/09	221,279	24.00	100.00%
03/05/09	221,331	24.00	100.00%
03/06/09	221,095	24.00	100.00%
03/07/09	220,987	24.00	100.00%
03/08/09	211,736	23.00	100.00%[5]
03/09/09	221,487	24.00	100.00%
03/10/09	220,870	24.00	100.00%
03/11/09	221,985	24.00	100.00%
03/12/09	221,211	24.00	100.00%
03/13/09	220,972	24.00	100.00%
03/14/09	221,178	24.00	100.00%
03/15/09	221,279	24.00	100.00%
03/16/09	221,196	24.00	100.00%
03/17/09	220,941	24.00	100.00%
03/18/09	220,800	24.00	100.00%
03/19/09	220,793	24.00	100.00%
03/20/09	217,507	23.62	98.40%
03/21/09	204,551	22.23	92.64%
03/22/09	221,150	24.00	100.00%
03/23/09	221,258	24.00	100.00%
03/24/09	221,320	24.00	100.00%
03/25/09	221,425	24.00	100.00%
03/26/09	221,287	24.00	100.00%
03/27/09	221,211	24.00	100.00%
03/28/09	221,180	24.00	100.00%
03/29/09	221,112	24.00	100.00%
03/30/09	221,045	24.00	100.00%
03/31/09	220,952	24.00	100.00%
Subtotals	**6,827,012**	**740.85**	**99.58%**
Scheduled Downtime/Maintenance[3]		0.38	
Total Hours/Month		744	
Total Operating Hours/Availability %		**741.23**	**99.63%**
Daily Breakdown		**March 2009**	**Vancouver Permit Limits[4]**
Average Daily Flow (gallons)		220,202	230,400
Maximum Daily Flow (gallons)		221,985	230,400
Hundreds of Cubic Feet Breakdown			
Total Flow (hundreds of cubic feet)		9127	
Average Daily Flow (hundreds of cubic feet)		294	

Notes:

[1] gpd = gallons per day to the infiltration gallery.

[2] Based on minutes of operation as reported by data logger.

[3] Planned shutdown periods for routine maintenance or monitoring activities - see monthly notes for details.

[4] Only applies if water is being discharged to the City of Vancouver sewer.

[5] Data reflects daylight savings time on March 8.

APPENDIX C.2 - TABLE 2A

OU-3 EXTRACTION WELL PUMPING RATES FOR OCTOBER 2008
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.4	4649260	10:18
MW-6B	7.5	9531810	10:41
MW-10B	8.0	9379410	10:54
MW-10C	9.0	6103810	10:53
CPU-13	13.3	398564	11:39
MW-14C	12.2	5917630	11:06
MW-14E	8.2	8529400	11:04
AMW-59	off		
MW-18D	7.4	8761510	11:09
MW-18E	off		
MW-19D	9.5	48088580	11:14
MW-20D	14.9	990496	11:20
MW-21D	6.8	44345	11:25
MW-22D	12.0	788686	11:31
MW-25D	11.5	2653430	11:48
MW-26D	13.0	8966240	11:50
MW-27D	3.8	1634240	11:36
AMW-27	1.0	4923240	11:46
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.5	6971770	11:44
Total	158.0		

Notes:
Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 2B

OU-3 EXTRACTION WELL PUMPING RATES FOR NOVEMBER 2008
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.4	5005380	11:40
MW-6B	7.5	9814810	11;37
MW-10B	8.0	9667870	11:34
MW-10C	9.0	6441730	11:33
CPU-13	13.1	466203	11:00
MW-14C	12.0	6377300	11:25
MW-14E	8.0	8854690	11:24
AMW-59	off		
MW-18D	7.2	9040900	11:19
MW-18E	off		
MW-19D	8.0	5118300	11:15
MW-20D	14.9	67745	10:44
MW-21D	6.8	79294	10:50
MW-22D	11.5	847760	10:53
MW-25D	11.2	3089600	11:09
MW-26D	12.4	3444710	11:04
MW-27D	3.4	181780	10:57
AMW-27	1.0	4940290	11:07
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.0	7347660	11:06
Total	153.4		

Notes:
Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 2C

OU-3 EXTRACTION WELL PUMPING RATES FOR DECEMBER 2008
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.5	5362590	14:13
MW-6B	7.5	90840	15:18
MW-10B	8.0	9959350	15:15
MW-10C	9.0	6774120	15:14
CPU-13	13.2	535024	14:33
MW-14C	12.0	6841000	15:12
MW-14E	8.0	7162100	15:10
AMW-59	off		
MW-18D	7.2	7321480	15:07
MW-18E	off		
MW-19D	8.0	5429590	15:04
MW-20D	15.0	146707	14:19
MW-21D	6.8	114909	14:27
MW-22D	11.5	907460	14:29
MW-25D	11.2	4531350	14:59
MW-26D	12.5	9928290	14:57
MW-27D	3.4	200127	14:31
AMW-27	1.0	4957540	14:54
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.0	7723640	14:56
Total	153.8		

Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 2D

OU-3 EXTRACTION WELL PUMPING RATES FOR JANUARY 2009
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.5	5756670	14:27
MW-6B	7.2	399330	15:20
MW-10B	7.2	276990	15:17
MW-10C	9.0	7139730	15:14
CPU-13	13.1	608725	14:48
MW-14C	12.0	7351640	15:13
MW-14E	8.0	7264070	15:12
AMW-59	off		
MW-18D	7.4	7634460	15:09
MW-18E	off		
MW-19D	8.0	5766550	15:04
MW-20D	15.0	231848	14:32
MW-21D	6.8	153201	14:38
MW-22D	11.5	973503	14:42
MW-25D	11.0	4608160	14:59
MW-26D	12.3	461850	14:52
MW-27D	3.7	220066	14:45
AMW-27	1.0	4976910	14:47
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.0	8154110	14:54
Total	152.7		

Notes:
Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 2E

OU-3 EXTRACTION WELL PUMPING RATES FOR FEBRUARY 2009
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.5	6134590	10:19
MW-6B	7.2	692610	11:05
MW-10B	7.3	584040	11:02
MW-10C	9.0	7498230	11:01
CPU-13	13.2	680619	10:38
MW-14C	12.0	7841020	10:57
MW-14E	8.0	7587700	10:59
AMW-59	off		
MW-18D	7.4	7933200	10:53
MW-18E	off		
MW-19D	8.0	6089160	10:49
MW-20D	15.0	314483	10:25
MW-21D	6.9	190604	10:30
MW-22D	11.5	36027	10:33
MW-25D	11.0	4871530	10:46
MW-26D	12.3	972880	10:44
MW-27D	3.7	239235	10:35
AMW-27	1.0	4995120	10:42
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.0	8556800	10:40
Total	153.0		

Notes:
Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 2F

OU-3 EXTRACTION WELL PUMPING RATES FOR MARCH 2009
BOOMSNUB/AIRCO SUPERFUND SITE

Well ID	Flow Rate (GPM)	Totalizer Reading	Time
PW-1B	9.5	6542290	15:10
MW-6B	7.2	1010310	16:05
MW-10B	8.7	917420	16:03
MW-10C	9.0	7887120	16:02
CPU-13	13.2	759174	15:38
MW-14C	12.0	8371910	16:00
MW-14E	8.0	7937870	15:59
AMW-59	off		
MW-18D	7.6	8259420	15:56
MW-18E	off		
MW-19D	8.0	6437140	15:51
MW-20D	16.4	404824	15:22
MW-21D	6.9	230938	15:27
MW-22D	11.9	104583	15:31
MW-25D	11.3	4975290	15:47
MW-26D	12.8	1527110	15:41
MW-27D	3.7	260307	15:35
AMW-27	1.0	5014662	15:45
MW-31	off		
MW-35	off		
MW-37	off		
MW-41	off		
AMW-42	off		
MW-46	off		
MW-48	off		
MW-49	10.0	8990280	15:43
Total	157.2		

Notes:
Pumps in MW- 18E, 31, 35, 37, 41, 46, 48, AMW-42 and AMW-59 were off during the reporting period.

APPENDIX C.2 - TABLE 3
APRIL 2008 THROUGH MARCH 2009
OU-3 MONTHLY SYSTEM SAMPLING ANALYTICAL RESULTS
BOOMSNUB/AIRCO SUPERFUND SITE

Location	Sample Number	Sampling Date	TCE (µg/L)	PCE (µg/L)	Total Chromium (µg/L)	pH
Discharge Permit #2004-04 Discharge Limits			**710**		**1,700**	**5.5 to 9.0**
Infiltration Gallery Discharge Limits			**3**		**24**	
New Infiltration Gallery Discharge Limits (As of March 2009)			**1.9**		**19**	
April 2008						
Influent	INF-040308	4/3/2008	30	2.1	83.4	6.58
Effluent	EFF-040308	4/3/2008	0.69	0.5U	2.8B	8
Effluent Duplicate	EFFD-040308	4/3/2008	0.72	0.5U	2.7B	8.01
Trip Blank	TB-040308	4/3/2008	0.5U	0.5U	NA	NA
May 2008						
Influent	INF-050708	5/7/2008	25	1.9	82.2	6.67
Effluent	EFF-050708	5/7/2008	0.61	0.5U	5U	7.98
Effluent Duplicate	EFFD-050708	5/7/2008	0.57	0.5U	5U	7.99
Trip Blank	TB-050708	5/7/2008	0.5U	0.5U	NA	NA
June 2008						
Influent	INF-060608	6/8/2008	25	1.7	81	6.62
Effluent	EFF-060608	6/8/2008	0.60	0.5U	5U	7.96
Effluent Duplicate	EFFD-060608	6/8/2008	0.53	0.5U	3B	7.99
Trip Blank	TB-060608	6/8/2008	0.5U	0.5U	NA	NA
July 2008						
Influent	INF-070208	7/2/2008	27	2	78	6.47
Effluent	EFF-070208	7/2/2008	0.59	0.5U	5U	7.90
Effluent Duplicate	EFFD-070208	7/2/2008	0.59	0.5U	5U	7.94
Trip Blank	TB-070208	7/2/2008	0.5U	0.5U	NA	NA
August 2008						
Influent	INF-080708	8/7/2008	26	1.9	81.8	6.55
Effluent	EFF-080708	8/7/2008	0.49J	0.5U	4.9B	7.93
Effluent Duplicate	EFFD-080708	8/7/2008	0.45J	0.5U	2.9B	8.04
Trip Blank	TB-080708	8/7/2008	0.5U	0.5U	NA	NA
September 2008						
Influent	INF-090408	9/4/2008	26	1.9	75.8	7.04
Effluent	EFF-090408	9/4/2008	0.52	0.5U	5U	8.03
Effluent Duplicate	EFFD-090408	9/4/2008	0.52	0.5U	2.1B	8.05
Trip Blank	TB-090408	9/4/2008	0.5U	0.5U	NA	NA
October 2008						
Influent	INF-100608	10/6/2008	26	1.8	73.6	6.76
Effluent	EFF-100608	10/6/2008	0.52	0.5U	2B	7.62
Effluent Duplicate	EFFD-100608	10/6/2008	0.49J	0.5U	3B	7.96
Trip Blank	TB-100608	10/6/2008	0.5U	0.5U	NA	NA
November 2008						
Influent	INF-050708	11/6/2008	20	1.6	75	6.93
Effluent	EFF-050708	11/6/2008	0.54	0.5U	3B	7.98
Effluent Duplicate	EFFD-050708	11/6/2008	0.36J	0.5U	5U	7.98
Trip Blank	TB-050708	11/6/2008	0.5U	0.5U	NA	NA
December 2008						
Influent	INF-060608	12/4/2008	23	1.7	70.6	6.55
Effluent	EFF-060608	12/4/2008	0.55	0.5U	5U	7.86
Effluent Duplicate	EFFD-060608	12/4/2008	0.53	0.5U	5U	7.89
Trip Blank	TB-060608	12/4/2008	0.5U	0.5U	NA	NA
January 2009						
Influent	INF-070208	1/6/2009	21	1.6	76.3	6.94
Effluent	EFF-070208	1/6/2009	0.44J	0.5U	5U	8.03
Effluent Duplicate	EFFD-070208	1/6/2009	0.44J	0.5U	5U	8.14
Trip Blank	TB-070208	1/6/2009	0.5U	0.5U	NA	NA
February 2009						
Influent	INF-080708	2/4/2009	23	1.7	73.4	6.75
Effluent	EFF-080708	2/4/2009	0.6	0.5U	5U	7.91
Effluent Duplicate	EFFD-080708	2/4/2009	0.53	0.5U	5U	7.92
Trip Blank	TB-080708	2/4/2009	0.5U	0.5U	NA	NA
March 2009						
Influent	INF-090408	3/5/2009	24	1.6	71.6	6.59
Effluent	EFF-090408	3/5/2009	0.63	0.5U	5U	7.82
Effluent Duplicate	EFFD-090408	3/5/2009	0.53	0.5U	2B	7.83
Trip Blank	TB-090408	3/5/2009	0.5U	0.5U	NA	NA

D - associated value is derived from analysis of a diluted sample
B/J - result is an estimated concentration that is less then the MRL but greater than or equal to the MDL
µg/L - micrograms per liter
NA - not analyzed
PCE - tetrachloroethene
TCE - trichloroethene
U - analyte not detected above specified reporting limit

Appendix C.3
OU-3 Mass Removal
Tables & Charts

Appendix C.3

OU-3 Mass Removal Tables and Charts

APPENDIX C.3 - TABLE 1
OU-3 CHROMIUM AND TCE MASS REMOVAL ESTIMATION
BOOMSNUB/AIRCO SUPERFUND SITE

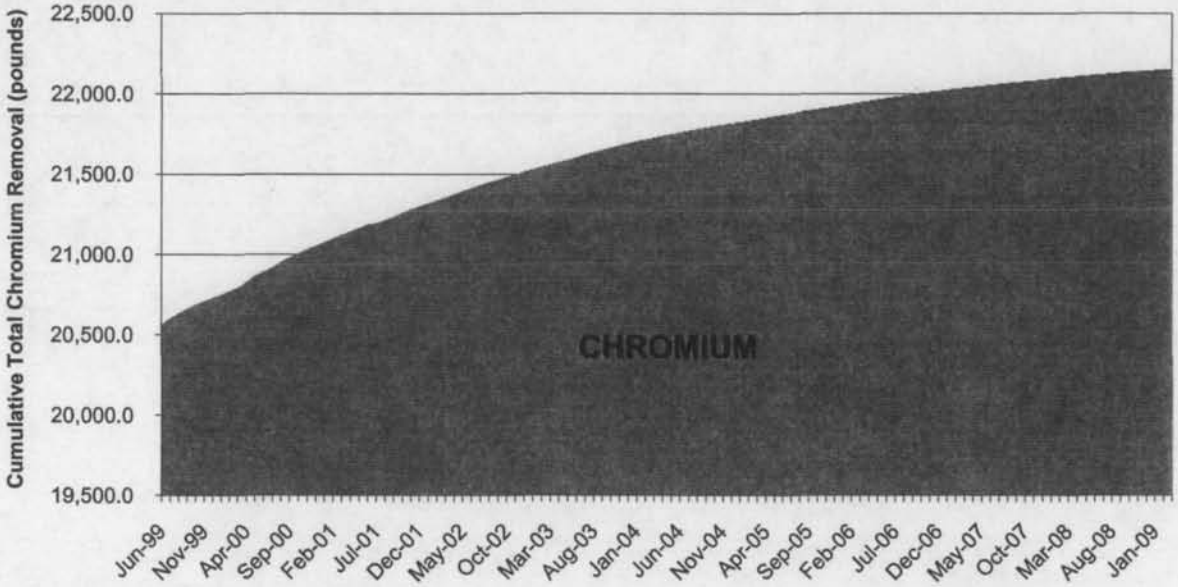
Date	Monthly Flow (Gallons)	Influent Chromium (ug/L)	Influent TCE (ug/L)	Monthly Chromium Removal (lbs)	Monthly TCE Removal (lbs)	Cumulative Chromium Removed (lbs)	Cumulative TCE Removed (lbs)
1990 to 1995[1]						13,751.0	
1995 to May 1999[1]						6,787.0	
1990 to 1999[1]							1,645.7
Ave. Jun-Dec 1999	5,303,734	634	161	27.9	7.2	20,733.6	1,696.3
Ave. for 2000	5,429,513	593	198	27.0	8.9	21,057.0	1,803.6
Ave. for 2001	5,482,077	451	139	20.7	6.4	21,305.7	1,879.9
Ave. for 2002	5,587,227	379	102	17.7	4.8	21,518.0	1,937.3
Ave. for 2003	6,279,889	282	75	106.4	3.9	21,694.7	1,984.1
Ave. for 2004	6,463,796	194	60	10.5	3.2	21,820.2	2,022.8
Ave. for 2005	6,213,535	166	55	8.6	2.8	21,923.2	2,056.8
Ave. for 2006	6,409,175	154	56	8.2	3.0	22,022.0	2,092.2
Jan-07	6,198,101	138	43	7.1	2.2	22,029.1	2,094.4
Feb-07	5,206,224	133	83	5.8	3.6	22,034.9	2,098.0
Mar-07	6,168,307	128	42	6.6	2.2	22,041.5	2,100.2
Apr-07	6,375,422	111	36	5.9	1.9	22,047.4	2,102.1
May-07	6,677,892	102	36	5.7	2.0	22,053.1	2,104.1
Jun-07	6,545,252	107	39	5.8	2.1	22,059.0	2,106.3
Jul-07	6,453,803	107	31	5.8	1.7	22,064.7	2,107.9
Aug-07	6,540,171	103	37	5.6	2.0	22,070.4	2,109.9
Sep-07	6,301,205	92.3	37	4.9	1.9	22,075.2	2,111.9
Oct-07	6,516,049	95.9	32	5.2	1.7	22,080.4	2,113.6
Nov-07	6,559,628	95.3	33	5.2	1.8	22,085.6	2,115.4
Dec-07	6,857,327	91.1	32	5.2	1.8	22,090.9	2,117.3
Jan-08	6,833,169	119	32	6.8	1.8	22,097.7	2,119.1
Feb-08	6,002,172	92	28	4.6	1.4	22,102.3	2,120.5
Mar-08	6,687,676	98	28	5.5	1.6	22,107.7	2,122.1
Apr-08	6,750,916	83.4	30	4.7	1.7	22,112.4	2,123.8
May-08	6,939,545	82.2	25	4.8	1.4	22,117.2	2,125.2
Jun-08	6,663,172	81	25	4.5	1.4	22,121.7	2,126.6
Jul-08	6,805,123	78	27	4.4	1.5	22,126.1	2,128.1
Aug-08	6,735,334	81.8	26	4.6	1.5	22,130.7	2,129.6
Sep-08	6,556,666	75.8	26	4.1	1.4	22,134.9	2,131.0
Oct-08	6,698,931	73.6	26	4.1	1.5	22,139.0	2,132.5
Nov-08	6,568,134	75	20	4.1	1.1	22,143.1	2,133.6
Dec-08	5,333,703	70.6	23	3.1	1.0	22,146.3	2,134.6
Jan-09	6,549,104	76.3	21	4.2	1.1	22,150.4	2,135.7
Feb-09	6,161,087	73.4	23	3.8	1.2	22,154.2	2,136.9
Mar-09	6,827,012	71.6	24	4.1	1.4	22,158.3	2,138.3

[1] - Provided by ICF Kaiser

Note:

June 1999 through March 2002 data provided by URS

FIGURE C.3.1. OU-3 CUMULATIVE TOTAL REMOVAL OVER TIME



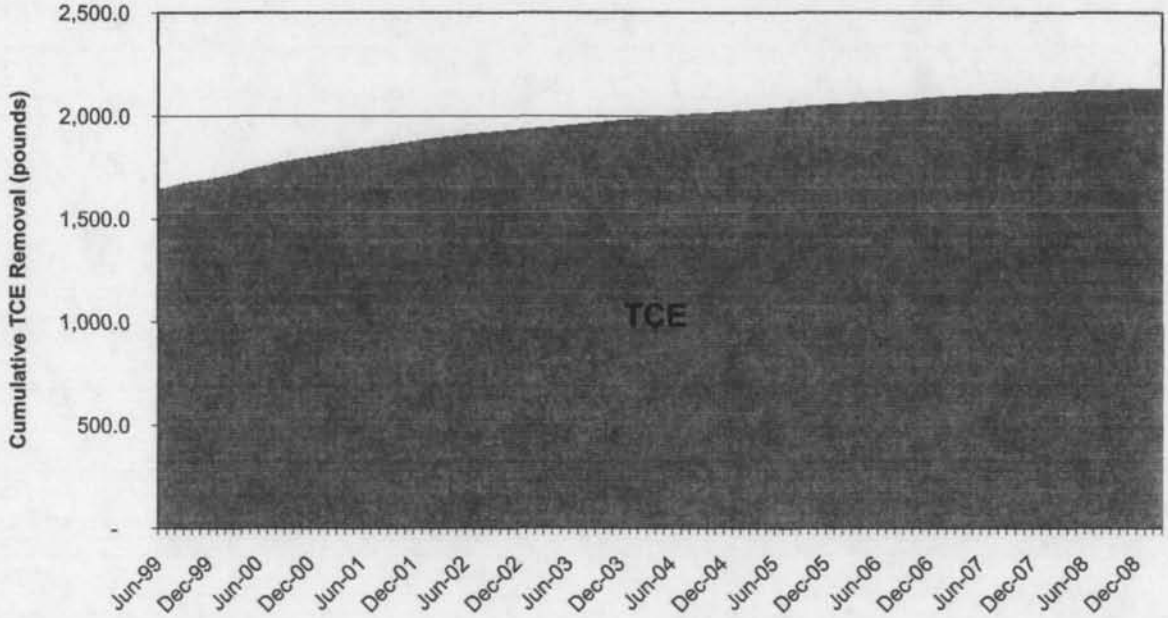
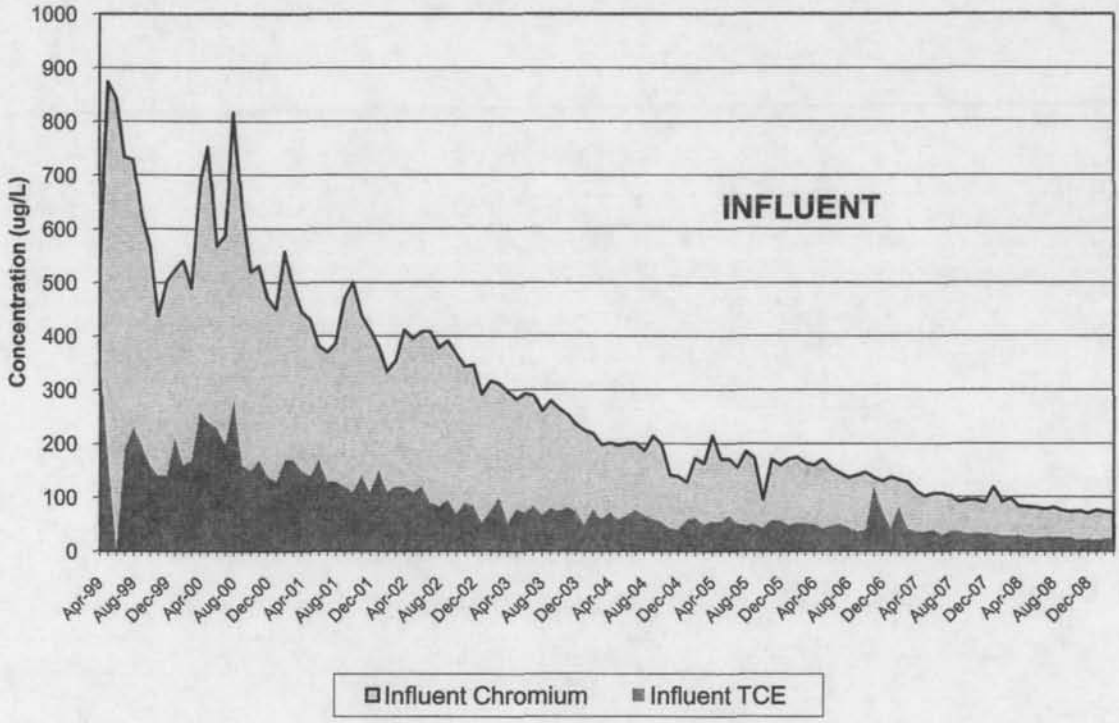


FIGURE C.3.2. OU-3 INFLUENT AND EFFLUENT CONCENTRATIONS VERSUS TIME



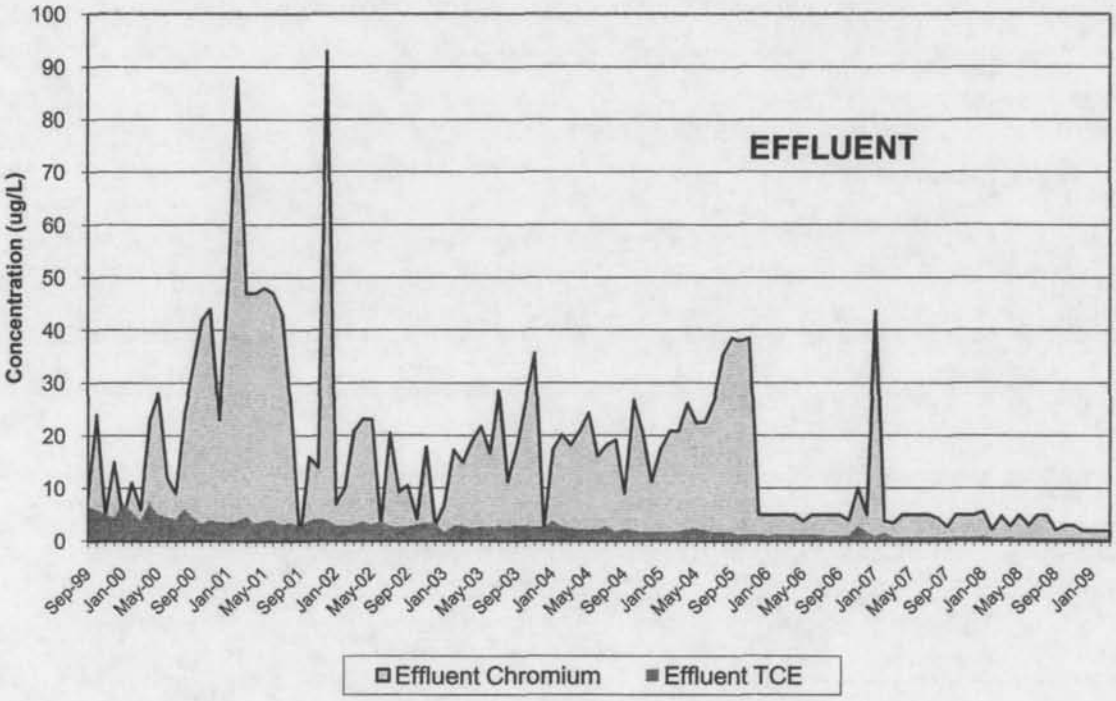
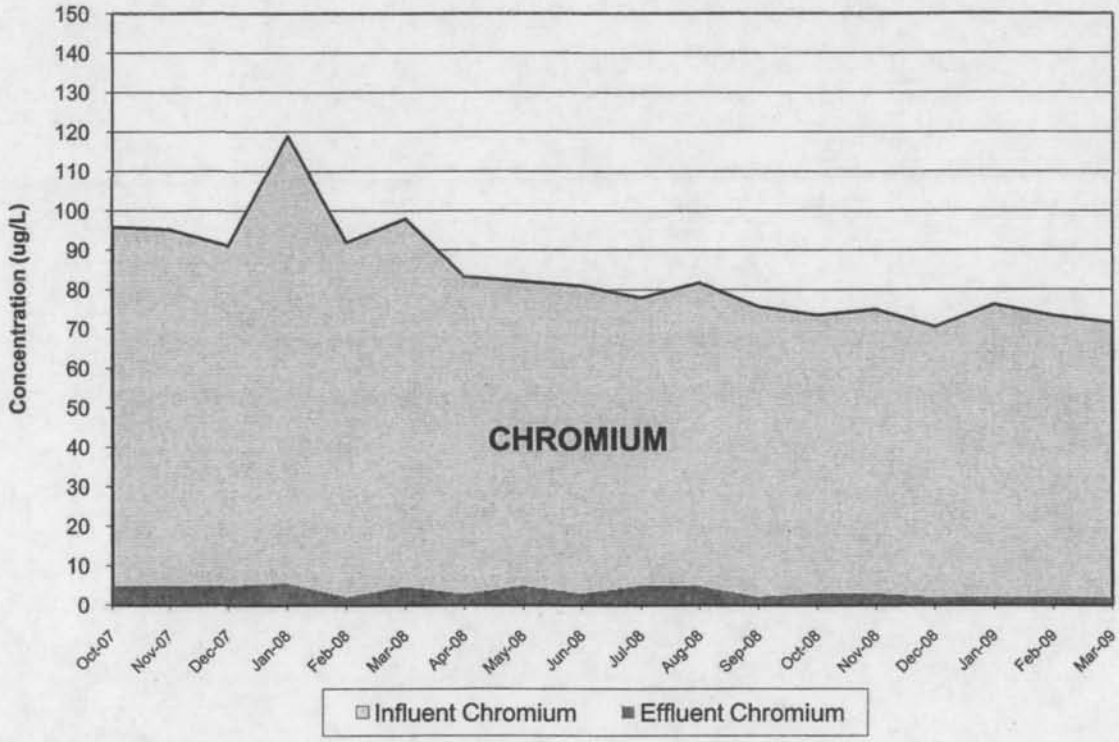


FIGURE C.3-3. OU-3 INFLUENT AND EFFLUENT CONCENTRATIONS OVER 1 YEAR



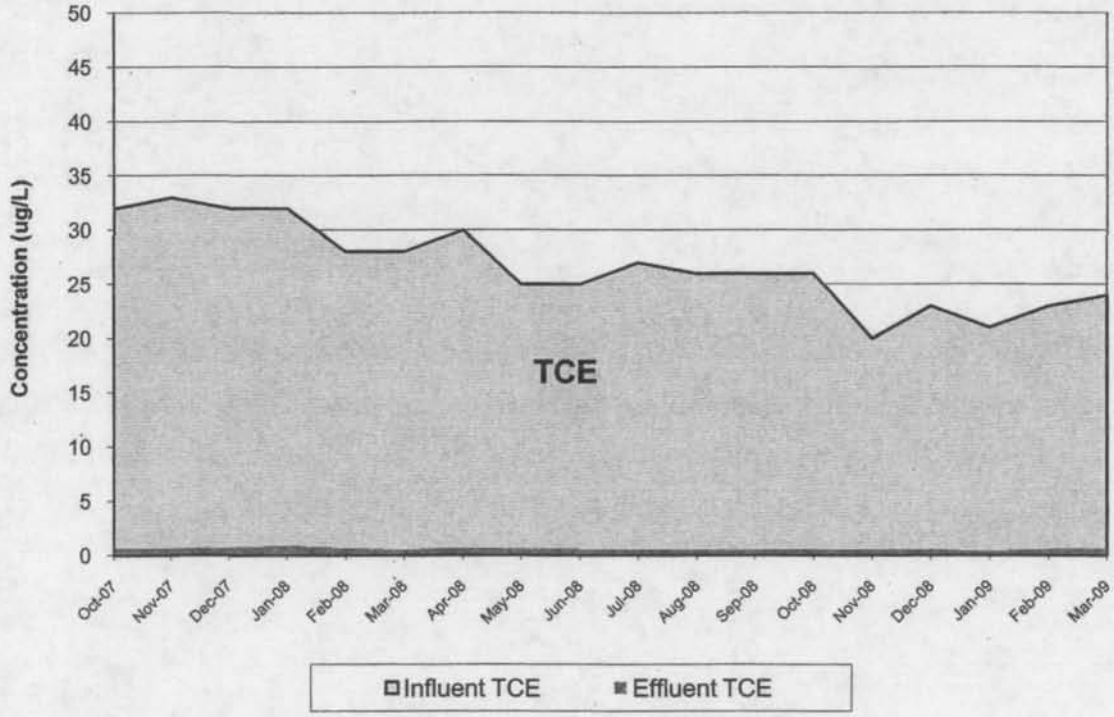
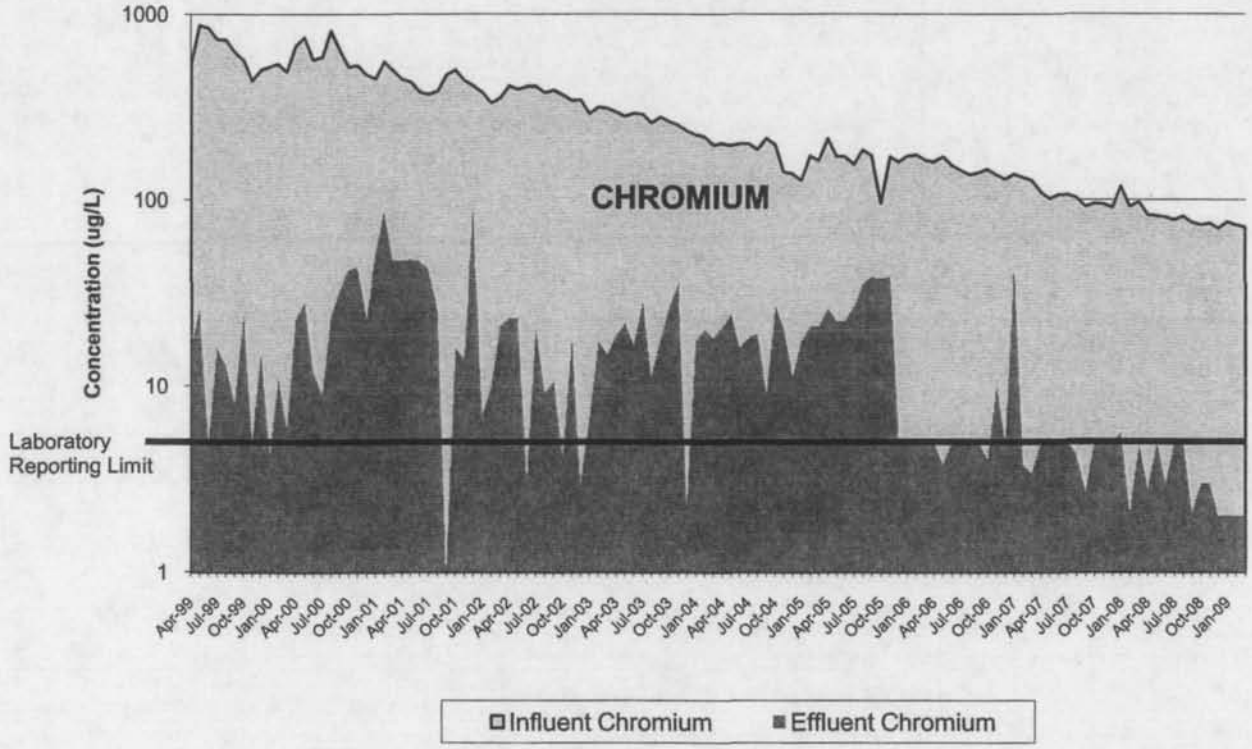
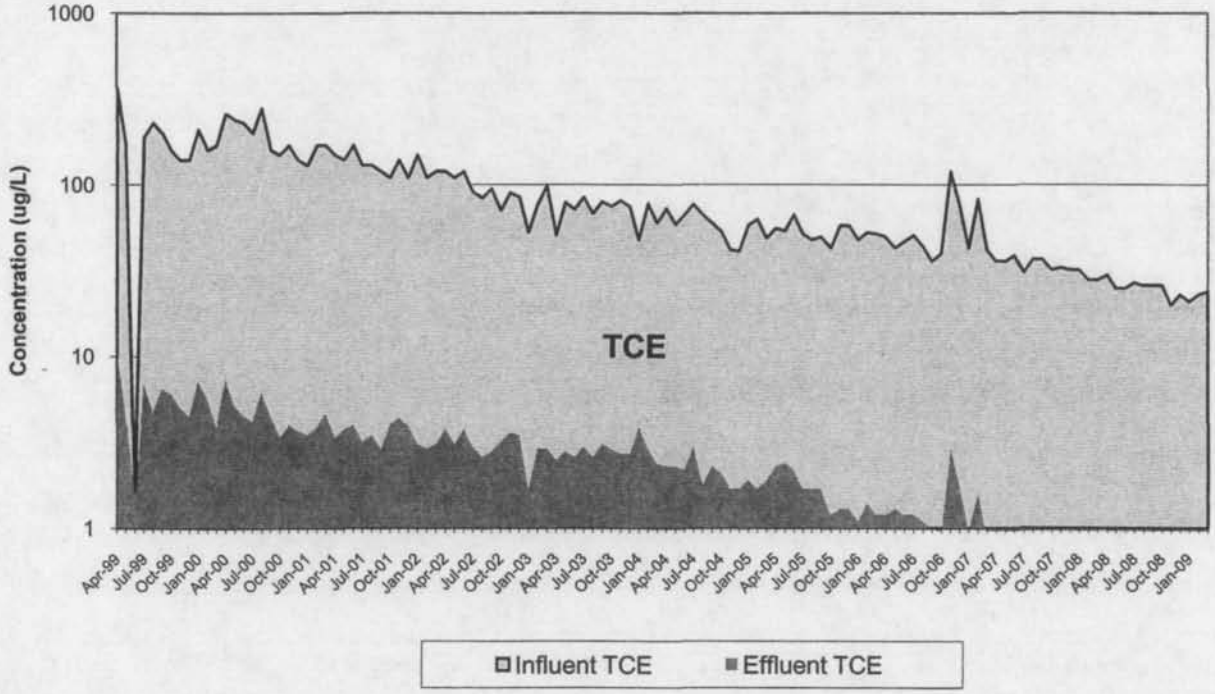


FIGURE C.3-4. OU-3 INFLUENT AND EFFLUENT CONCENTRATIONS VERSUS TIME - LOGARITHMIC SCALE





Appendix C.4
OU-3 City of Vancouver
Reports/Flow Data

Appendix C.4

OU-3 Reports to the City of Vancouver
And
Supporting Flow Data

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

www.ci.vancouver.wa.us

City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date November 10, 2008 (for October 2008)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in October 2008.

Signature: JIM Z Date: 11/10/08

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

www.ci.vancouver.wa.us

City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date December 3, 2008 (for November 2008)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in November 2008.

Signature: Date: 12/3/08

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

www.ci.vancouver.wa.us

City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date January 7, 2009 (for December 2008)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in December 2008.

Signature: Jil Frain Date: 1/7/09

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

www.ci.vancouver.wa.us

City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date February 6, 2009 (for January 2009)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in January 2009.

Signature: Jil M Frain Date: 2/6/09

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

www.ci.vancouver.wa.us

City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date March 6, 2009 (for February 2009)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in February 2009.

Signature: Jil M2 Date: 3/6/09

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

P.O. Box 1995
Vancouver, WA 98668-1995

City of VANCOUVER WASHINGTON

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City of Vancouver
Industrial Sewer Billing Form

For: BOC Gases – Permit No. 2004-04

Contact: Jil Frain Phone: 425-451-7400

Report Date April 10, 2009 (for March 2009)	Measured Discharge	
	Gallons	Hundreds of Cubic Feet
Total	0	0
Average per day	0	0

Note: The infiltration gallery was put into operation in February 2006.
Water flowed to the sewer 0 days in March 2009.

Signature: Date: 4/10/09

Deliver Form to the City by the 10th of each month.

Mailing Address: City of Vancouver - Industrial Pretreatment
Marine Park Engineering
PO Box 1995
Vancouver, WA 98668
Attn: Johnny Leuthold

Or Fax: 360-487-7139

EA Engineering, Science, and Technology

12011 NE 1st Street, Building C, Suite 100B
Bellevue, WA 98005
Telephone: 425-451-7400
Fax: 425-451-7800
www.eaest.com

9 January 2009
14495.07 LN0915

Mr. Johnny Leuthold
City of Vancouver
Marine Park Engineering Building
4500 Southeast Columbia Way
Vancouver, Washington 98668

Subject: Quarterly Self-Monitoring Report – 31 December 2008 Report
Boomsnub/Airco Superfund Site
Hazel Dell, Washington

Dear Mr. Leuthold:

Attached is the Quarterly Self-Monitoring Report for the Boomsnub/Airco Superfund Site prepared in accordance with the City of Vancouver Water Discharge Permit 2004-04. The time period covered includes October through December 2008. Flow data is being reported from the flow meter on the air stripper. All discharges were made to the Linde infiltration gallery. There were no discharges to the sanitary sewer during the reporting period.

Effluent samples were collected by EA on October 6, November 6, and December 4, 2008. Columbia Analytical Services, located in Kelso, Washington is our analytical laboratory. The analytical data for each monthly sampling event is included, along with the Chain-of-Custody and the case narrative.

Sincerely,

Jil Frain, PE
Site Engineer

Glenn Hayman, LHG
Project Coordinator

cc: Mike Resh, Linde

Enclosures: City of Vancouver Quarterly Self-Monitoring Report
Analytical Results from October, November and December 2008

Boomsnub Airco Superfund Site
Quarterly Self-Monitoring Report

Permit No. 2004-04
Report Due Date (circle one): March 31, June 30, September 30, **December 31**
Lab Contracted for Analysis: Columbia Analytical Services
Attach: Chain of Custody, Laboratory Results, Lab Report Narrative

Parameter	Result	Permit Limit	Sample Type*	Sample Date/ Collected by:
Month 1 - October				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.003 B	1.7 mg/L	G	October 6, 2008-EA
Trichloroethene** – mg/L	0.00052	0.71 mg/L	G	October 6, 2008-EA
pH (high/low) – SU	7.96/7.62	9.0/5.5 SU	G	October 6, 2008-EA
Month 2 - November				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.003 B	1.7 mg/L	G	November 6, 2008-EA
Trichloroethene** – mg/L	0.00054	0.71 mg/L	G	November 6, 2008-EA
pH (high/low) - SU	7.98/7.98	9.0/5.5 SU	G	November 6, 2008-EA
Month 3 - December				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.002 U	1.7 mg/L	G	December 4, 2008-EA
Trichloroethene** – mg/L	0.00055	0.71 mg/L	G	December 4, 2008-EA
pH (high/low) - SU	7.89/7.86	9.0/5.5 SU	G	December 4, 2008-EA

Parameter	Value – mg/L[1]	Limit	No. Samples
Quarterly Average - Chrome	0.0018	0.572 mg/L	6

[1] Non detect values were incorporated in the average, alternating the value between zero and the detection limit.

* Sample Type: *Cont*-Continuous; *G* – Grab; *Comp* - Composite

** If more than one sample analyzed, report the highest concentration for the month.

General Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Program Manager Title	1/9/09 Date

EA Engineering, Science, and Technology

12011 NE 1st Street, Building C, Suite 100B
Bellevue, WA 98005
Telephone: 425-451-7400
Fax: 425-451-7800
www.eaest.com

10 April 2009
14495.07 LN1026

Mr. Johnny Leuthold
City of Vancouver
Marine Park Engineering Building
4500 Southeast Columbia Way
Vancouver, Washington 98668

Subject: Quarterly Self-Monitoring Report – 31 March 2009 Report
Boomsnub/Airco Superfund Site
Hazel Dell, Washington

Dear Mr. Leuthold:

Attached is the Quarterly Self-Monitoring Report for the Boomsnub/Airco Superfund Site prepared in accordance with the City of Vancouver Water Discharge Permit 2004-04. The time period covered includes January through March 2009. Flow data is being reported from the flow meter on the air stripper. All discharges were made to the Linde infiltration gallery. There were no discharges to the sanitary sewer during the reporting period.

Effluent samples were collected by EA on January 6, February 4, and March 5, 2009. Columbia Analytical Services, located in Kelso, Washington is our analytical laboratory. The analytical data for each monthly sampling event is included, along with the Chain-of-Custody and the case narrative.

Sincerely,

Jil Frain, PE
Site Engineer

cc: Mike Resh, Linde

Enclosures: City of Vancouver Quarterly Self-Monitoring Report
Analytical Results from January, February and March 2009

Boomsnub Airco Superfund Site
Quarterly Self-Monitoring Report

Permit No. 2004-04
Report Due Date (circle one): **March 31**, June 30, September 30, December 31
Lab Contracted for Analysis: Columbia Analytical Services
Attach: Chain of Custody, Laboratory Results, Lab Report Narrative

Parameter	Result	Permit Limit	Sample Type*	Sample Date/ Collected by:
Month 1 - January				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.002 U	1.7 mg/L	G	January 6, 2008-EA
Trichloroethene** – mg/L	0.00044 J	0.71 mg/L	G	January 6, 2008-EA
pH (high/low) – SU	8.14/8.03	9.0/5.5 SU	G	January 6, 2008-EA
Month 2 - February				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.002 U	1.7 mg/L	G	February 4, 2008-EA
Trichloroethene** – mg/L	0.0006	0.71 mg/L	G	February 4, 2008-EA
pH (high/low) - SU	7.92/7.91	9.0/5.5 SU	G	February 4, 2008-EA
Month 3 - March				
Peak Flow – gpd	0	230,400 gpd	NA	NA
Peak Chrome** – mg/L	0.002 B	1.7 mg/L	G	March 5, 2009-EA
Trichloroethene** – mg/L	0.00063	0.71 mg/L	G	March 5, 2009-EA
pH (high/low) - SU	7.83/7.82	9.0/5.5 SU	G	March 5, 2009-EA

Parameter	Value – mg/L[1]	Limit	No. Samples
Quarterly Average - Chrome	0.00142	0.572 mg/L	6

[1] Non detect values were incorporated in the average by using one half of the non-detected value.

* Sample Type: *Cont*-Continuous; *G* – Grab; *Comp* - Composite

** If more than one sample analyzed, report the highest concentration for the month.

General Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Title	Date
[signature]	HEAD OF ENVIRONMENT	4/3/09

October 6, 2008
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Company	**Service Request No.:**	K0809754
Project:	Boomsnub	**Date Received:**	10/6/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three water samples and a Trip Blank were received for analysis at Columbia Analytical Services on 10/6/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Continuing Calibration Verification Exceptions:
The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS13\1014F002.D: 1,2-Dibromo-3-Chloropropane and Bromoform. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following analytes in Matrix Spike (MS) KWG0810971-3 and Matrix Spike Duplicate (MSD) KWG0810971-4: Vinyl Chloride and trans-1,2-Dichloroethene. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for the following analytes in Laboratory Control Sample (LCS) KWG0810971-1: Vinyl Chloride and trans-1,2-Dichloroethene. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ **Date** 11/3/08

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: KD809754

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.07.2008.0040-03
PROJECT MANAGER: J. Frain
COMPANY/ADDRESS: EA ENGINEERING
12011 NE 1st Street Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: (425) 451-7400 FAX #: (425) 451-7800
SAMPLER'S SIGNATURE: Rick R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260X 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals (Total or Dissolved) (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
INF-100608	10/6/08	8:05		H_2O	5		X						X		X				
EFF-100608	↓	8:10		↓	5		X						X		X				
EFFD-100608	↓	8:15		↓	5		X						X		X				
TB-100608	↓	NA		↓	2		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
VOC - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Rick R. Read	Signature: [illegible]	Signature:	Signature: [illegible]
Date/Time: 10/6/08 8:30	Date/Time: 10/6/08 830	Date/Time:	Date/Time: 10-6-8 1720
Printed Name: RICK READ	Printed Name: [illegible]	Printed Name:	Printed Name: [illegible]
Firm:	Firm: CAS	Firm:	Firm: CAS

RCOC #1 06/08

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0809754
Project Name :	Boomsnub	**Date Collected :**	10/06/08
Project Number :	14495.07.2008.0040-03	**Date Received :**	10/06/08
Sample Matrix :	WATER		

pH

Analysis Method : SM 4500-H+ B

Units : pH Units

Basis : NA

Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-100608	K0809754-001	-	-	1	10/06/08 16:51	6.76	
EFF-100608	K0809754-002	-	-	1	10/06/08 16:52	7.62	
EFFD-100608	K0809754-003	-	-	1	10/06/08 16:53	7.96	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0809754
Project No.:	14495.07.2008.0040-03	**Date Collected:**	10/06/08
Project Name:	Boomsnub	**Date Received:**	10/06/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-100608 **Lab Code:** K0809754-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	10/21/08	10/22/08	73.6		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0809754
Project No.:	14495.07.2008.0040-03	**Date Collected:**	10/06/08
Project Name:	Boomsnub	**Date Received:**	10/06/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFF-100608 **Lab Code:** K0809754-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	10/21/08	10/22/08	2.0	B	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0809754
Project No.:	14495.07.2008.0040-03	**Date Collected:**	10/06/08
Project Name:	Boomsnub	**Date Received:**	10/06/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A .

Sample Name: EFFD-100608 **Lab Code:** K0809754-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	10/21/08	10/22/08	3.0	B	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0809754
Project:	Boomsnub/14495.07.2008.0040-03	**Date Collected:**	10/06/2008
Sample Matrix:	Water	**Date Received:**	10/06/2008

Volatile Organic Compounds

Sample Name:	INF-100608	**Units:**	ug/L
Lab Code:	K0809754-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/14/08	10/14/08	KWG0810971	*
Trichlorofluoromethane	**2.1**		0.50	0.086	1	10/14/08	10/14/08	KWG0810971	
1,1-Dichloroethene	**1.0**		0.50	0.10	1	10/14/08	10/14/08	KWG0810971	
Methylene Chloride	ND	U	2.0	0.23	1	10/14/08	10/14/08	KWG0810971	
Bromodichloromethane	ND	U	0.50	0.036	1	10/14/08	10/14/08	KWG0810971	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/14/08	10/14/08	KWG0810971	*
cis-1,2-Dichloroethene	**0.48**	J	0.50	0.045	1	10/14/08	10/14/08	KWG0810971	
1,1,1-Trichloroethane (TCA)	**0.28**	J	0.50	0.050	1	10/14/08	10/14/08	KWG0810971	
Dibromochloromethane	ND	U	0.50	0.057	1	10/14/08	10/14/08	KWG0810971	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/14/08	10/14/08	KWG0810971	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/14/08	10/14/08	KWG0810971	
Trichloroethene (TCE)	**26**		0.50	0.061	1	10/14/08	10/14/08	KWG0810971	
Tetrachloroethene (PCE)	**1.8**		0.50	0.077	1	10/14/08	10/14/08	KWG0810971	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/14/08	10/14/08	KWG0810971	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/14/08	10/14/08	KWG0810971	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/14/08	10/14/08	KWG0810971	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	75-120	10/14/08	Acceptable
Toluene-d8	102	80-128	10/14/08	Acceptable
4-Bromofluorobenzene	96	75-117	10/14/08	Acceptable

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.07.2008.0040-03
Sample Matrix: Water

Service Request: K0809754
Date Collected: 10/06/2008
Date Received: 10/06/2008

Volatile Organic Compounds

Sample Name: EFF-100608
Lab Code: K0809754-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/14/08	10/15/08	KWG0810971	*
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/14/08	10/15/08	KWG0810971	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/14/08	10/15/08	KWG0810971	
Methylene Chloride	ND	U	2.0	0.23	1	10/14/08	10/15/08	KWG0810971	
Bromodichloromethane	ND	U	0.50	0.036	1	10/14/08	10/15/08	KWG0810971	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/14/08	10/15/08	KWG0810971	*
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/14/08	10/15/08	KWG0810971	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/14/08	10/15/08	KWG0810971	
Dibromochloromethane	ND	U	0.50	0.057	1	10/14/08	10/15/08	KWG0810971	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/14/08	10/15/08	KWG0810971	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/14/08	10/15/08	KWG0810971	
Trichloroethene (TCE)	**0.52**		0.50	0.061	1	10/14/08	10/15/08	KWG0810971	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/14/08	10/15/08	KWG0810971	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/14/08	10/15/08	KWG0810971	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/14/08	10/15/08	KWG0810971	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/14/08	10/15/08	KWG0810971	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	75-120	10/15/08	Acceptable
Toluene-d8	104	80-128	10/15/08	Acceptable
4-Bromofluorobenzene	97	75-117	10/15/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0809754
Project:	Boomsnub/14495.07.2008.0040-03	**Date Collected:**	10/06/2008
Sample Matrix:	Water	**Date Received:**	10/06/2008

Volatile Organic Compounds

Sample Name:	EFFD-100608	**Units:**	ug/L
Lab Code:	K0809754-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/14/08	10/15/08	KWG0810971	*
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/14/08	10/15/08	KWG0810971	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/14/08	10/15/08	KWG0810971	
Methylene Chloride	ND	U	2.0	0.23	1	10/14/08	10/15/08	KWG0810971	
Bromodichloromethane	ND	U	0.50	0.036	1	10/14/08	10/15/08	KWG0810971	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/14/08	10/15/08	KWG0810971	*
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/14/08	10/15/08	KWG0810971	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/14/08	10/15/08	KWG0810971	
Dibromochloromethane	ND	U	0.50	0.057	1	10/14/08	10/15/08	KWG0810971	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/14/08	10/15/08	KWG0810971	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/14/08	10/15/08	KWG0810971	
Trichloroethene (TCE)	**0.49**	J	0.50	0.061	1	10/14/08	10/15/08	KWG0810971	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/14/08	10/15/08	KWG0810971	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/14/08	10/15/08	KWG0810971	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/14/08	10/15/08	KWG0810971	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/14/08	10/15/08	KWG0810971	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	75-120	10/15/08	Acceptable
Toluene-d8	101	80-128	10/15/08	Acceptable
4-Bromofluorobenzene	95	75-117	10/15/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0809754
Project:	Boomsnub/14495.07.2008.0040-03	**Date Collected:**	10/06/2008
Sample Matrix:	Water	**Date Received:**	10/06/2008

Volatile Organic Compounds

Sample Name:	TB-100608	**Units:**	ug/L
Lab Code:	K0809754-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/14/08	10/14/08	KWG0810971	*
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/14/08	10/14/08	KWG0810971	
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/14/08	10/14/08	KWG0810971	
Methylene Chloride	ND	U	2.0	0.23	1	10/14/08	10/14/08	KWG0810971	
Bromodichloromethane	ND	U	0.50	0.036	1	10/14/08	10/14/08	KWG0810971	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/14/08	10/14/08	KWG0810971	*
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/14/08	10/14/08	KWG0810971	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/14/08	10/14/08	KWG0810971	
Dibromochloromethane	ND	U	0.50	0.057	1	10/14/08	10/14/08	KWG0810971	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/14/08	10/14/08	KWG0810971	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/14/08	10/14/08	KWG0810971	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	10/14/08	10/14/08	KWG0810971	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/14/08	10/14/08	KWG0810971	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/14/08	10/14/08	KWG0810971	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/14/08	10/14/08	KWG0810971	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/14/08	10/14/08	KWG0810971	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	75-120	10/14/08	Acceptable
Toluene-d8	102	80-128	10/14/08	Acceptable
4-Bromofluorobenzene	97	75-117	10/14/08	Acceptable

Comments:

November 6, 2008
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0810858
Project:	Boomsnub	**Date Received:**	11/6/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples were received for analysis at Columbia Analytical Services on 11/6/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Holding Time Exceptions:
The analysis for sample EFF-110608 was initially performed within the holding time, however the QC criteria for Hexachlorobutadiene was not met. The sample was reanalyzed for this compound past the recommended holding time and the reanalysis met criteria. The results from the reanalysis are reported.

Continuing Calibration Verifications Exceptions:
The upper control criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) J:\MS13\11117F005.D: Trichlorofluoromethane and 1,2-Dichloroethane (EDC). The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The upper control criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) J:\MS13\11118F005.D: Trichlorofluoromethane. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The lower control criterion was exceeded for the following analyte in Continuing Calibration Verification (CCV) J:\MS13\11117F005.D: Hexachlorobutadiene. The field samples analyzed in this sequence were reanalyzed for this compound.

Matrix Spike Recovery Exceptions:
The matrix spike recoveries of Trichlorofluoromethane, and Hexachlorobutadiene for sample EFFD-110608 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential low/high bias in this matrix. No further corrective action was appropriate.

Approved by _____ **Date** 12/11/08

Lab Control Sample Exceptions:
The advisory criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0812366-3: 1,2-Dichloroethane (EDC), and Hexachlorobutadiene. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.
The advisory criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0812479-3: Trichlorofluoromethane. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

Approved by _____ **Date** 12/1/06

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K0818858

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.07.2008.0040-03
PROJECT MANAGER: J.J Frain
COMPANY/ADDRESS: EA Engineering
12011 NE 1st St. Suite 100
CITY/STATE/ZIP: Bellevue, WA. 98005
E-MAIL ADDRESS: JFrain@eaest.Com
PHONE #: (425) 451-7400 FAX #: (425) 451-7800
SAMPLER'S SIGNATURE: Richard R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	(Circle) Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
INF-100608	10/6/08	10:45		H_2O	5		X						X		X										
EFF-100608		10:32			5		X						X		X										
EFFD-100608		10:37			5		X						X		X										
TB-100608		NA	39169		2		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOCs - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Richard R. Read	Signature:	Signature:	Signature:
Date/Time: 10/6/08 10:55	Date/Time: 11-6-8 1415	Date/Time:	Date/Time:
Printed Name: RICK READ	Printed Name: CMARTIN	Printed Name:	Printed Name:
Firm: EA	Firm: CAS	Firm:	Firm:

RCOC #1 06/08

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : EA Engineering, Science, and Technology
Project Name : Boomsunb
Project Number : 14495.07.2008.0040-03
Sample Matrix : WATER

Service Request : K0810858
Date Collected : 11/06/08
Date Received : 11/06/08

pH

Units : pH Units
Basis : NA

Analysis Method : SM 4500-H+ B
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-110608	K0810858-001	-	-	1	11/06/08 04:40	6.93	
EFF-110608	K0810858-002	-	-	1	11/06/08 04:40	7.98	
EFFD-110608	K0810858-003	-	-	1	11/06/08 04:40	7.98	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0810858
Project Name :	Boomsunb	**Date Collected :**	11/6/2008
Project Number :	14495.07.2008.0040-03	**Date Received :**	11/6/2008
Sample Matrix :	WATER	**Date Prepared :**	NA
		Date Analyzed :	11/06/08

Duplicate Summary
Inorganic Parameters

Sample Name : EFFD-110608
Lab Code : K0810858-003DUP
Test Notes :

Units : pH Units
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
pH	SM 4500-H+ B	-	7.98	8.02	8.00	<1	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810858
Project No.:	14495.07.2008.0040-03	**Date Collected:**	11/06/08
Project Name:	Boomsunb	**Date Received:**	11/06/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-110608 **Lab Code:** K0810858-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/24/08	11/28/08	75.0		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810858
Project No.:	14495.07.2008.0040-03	**Date Collected:**	11/06/08
Project Name:	Boomsunb	**Date Received:**	11/06/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFF-110608 **Lab Code:** K0810858-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/24/08	11/28/08	3.0	B	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	Service Request:	K0810858
Project No.:	14495.07.2008.0040-03	Date Collected:	11/06/08
Project Name:	Boomsunb	Date Received:	11/06/08
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

Sample Name: EFFD-110608 Lab Code: K0810858-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/24/08	11/28/08	2.0	U	

% Solids: 0.0

Comments:

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsunb/14495.07.2008.0040-03
Sample Matrix: Water

Service Request: K0810858
Date Collected: 11/06/2008
Date Received: 11/06/2008

Volatile Organic Compounds

Sample Name: INF-110608
Lab Code: K0810858-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/19/08	11/19/08	KWG0812489	
Trichlorofluoromethane	**1.3**		0.50	0.086	1	11/19/08	11/19/08	KWG0812489	
1,1-Dichloroethene	**0.91**		0.50	0.10	1	11/19/08	11/19/08	KWG0812489	
Methylene Chloride	ND	U	2.0	0.23	1	11/19/08	11/19/08	KWG0812489	
Bromodichloromethane	ND	U	0.50	0.036	1	11/19/08	11/19/08	KWG0812489	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/19/08	11/19/08	KWG0812489	
cis-1,2-Dichloroethene	**0.32**	J	0.50	0.045	1	11/19/08	11/19/08	KWG0812489	
1,1,1-Trichloroethane (TCA)	**0.25**	J	0.50	0.050	1	11/19/08	11/19/08	KWG0812489	
Dibromochloromethane	ND	U	0.50	0.057	1	11/19/08	11/19/08	KWG0812489	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/19/08	11/19/08	KWG0812489	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/19/08	11/19/08	KWG0812489	
Trichloroethene (TCE)	**20**		0.50	0.061	1	11/19/08	11/19/08	KWG0812489	
Tetrachloroethene (PCE)	**1.6**		0.50	0.077	1	11/19/08	11/19/08	KWG0812489	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/19/08	11/19/08	KWG0812489	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/19/08	11/19/08	KWG0812489	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/19/08	11/19/08	KWG0812489	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	75-120	11/19/08	Acceptable
Toluene-d8	100	80-128	11/19/08	Acceptable
4-Bromofluorobenzene	94	75-117	11/19/08	Acceptable

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsunb/14495.07.2008.0040-03
Sample Matrix: Water

Service Request: K0810858
Date Collected: 11/06/2008
Date Received: 11/06/2008

Volatile Organic Compounds

Sample Name: EFF-110608
Lab Code: K0810858-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/17/08	11/18/08	KWG0812366	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/17/08	11/18/08	KWG0812366	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/17/08	11/18/08	KWG0812366	
Methylene Chloride	ND	U	2.0	0.23	1	11/17/08	11/18/08	KWG0812366	
Bromodichloromethane	ND	U	0.50	0.036	1	11/17/08	11/18/08	KWG0812366	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/17/08	11/18/08	KWG0812366	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/17/08	11/18/08	KWG0812366	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/17/08	11/18/08	KWG0812366	
Dibromochloromethane	ND	U	0.50	0.057	1	11/17/08	11/18/08	KWG0812366	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/17/08	11/18/08	KWG0812366	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/17/08	11/18/08	KWG0812366	*
Trichloroethene (TCE)	**0.54**		0.50	0.061	1	11/17/08	11/18/08	KWG0812366	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/17/08	11/18/08	KWG0812366	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/17/08	11/18/08	KWG0812366	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/17/08	11/18/08	KWG0812366	
Hexachlorobutadiene	ND	U	2.0	0.19	1	12/06/08	12/06/08	KWG0813112	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	75-120	11/18/08	Acceptable
Toluene-d8	98	80-128	11/18/08	Acceptable
4-Bromofluorobenzene	100	75-117	11/18/08	Acceptable

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsunb/14495.07.2008.0040-03
Sample Matrix: Water

Service Request: K0810858
Date Collected: 11/06/2008
Date Received: 11/06/2008

Volatile Organic Compounds

Sample Name: EFFD-110608
Lab Code: K0810858-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/18/08	11/18/08	KWG0812479	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/18/08	11/18/08	KWG0812479	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/18/08	11/18/08	KWG0812479	
Methylene Chloride	ND	U	2.0	0.23	1	11/18/08	11/18/08	KWG0812479	
Bromodichloromethane	ND	U	0.50	0.036	1	11/18/08	11/18/08	KWG0812479	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/18/08	11/18/08	KWG0812479	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/18/08	11/18/08	KWG0812479	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/18/08	11/18/08	KWG0812479	
Dibromochloromethane	ND	U	0.50	0.057	1	11/18/08	11/18/08	KWG0812479	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/18/08	11/18/08	KWG0812479	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/18/08	11/18/08	KWG0812479	
Trichloroethene (TCE)	**0.36**	J	0.50	0.061	1	11/18/08	11/18/08	KWG0812479	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/18/08	11/18/08	KWG0812479	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/18/08	11/18/08	KWG0812479	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/18/08	11/18/08	KWG0812479	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/18/08	11/18/08	KWG0812479	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	75-120	11/18/08	Acceptable
Toluene-d8	99	80-128	11/18/08	Acceptable
4-Bromofluorobenzene	98	75-117	11/18/08	Acceptable

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsunb/14495.07.2008.0040-03
Sample Matrix: Water

Service Request: K0810858
Date Collected: 11/06/2008
Date Received: 11/06/2008

Volatile Organic Compounds

Sample Name: TB-110608
Lab Code: K0810858-004

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/18/08	11/18/08	KWG0812479	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/18/08	11/18/08	KWG0812479	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/18/08	11/18/08	KWG0812479	
Methylene Chloride	ND	U	2.0	0.23	1	11/18/08	11/18/08	KWG0812479	
Bromodichloromethane	ND	U	0.50	0.036	1	11/18/08	11/18/08	KWG0812479	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/18/08	11/18/08	KWG0812479	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/18/08	11/18/08	KWG0812479	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/18/08	11/18/08	KWG0812479	
Dibromochloromethane	ND	U	0.50	0.057	1	11/18/08	11/18/08	KWG0812479	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/18/08	11/18/08	KWG0812479	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/18/08	11/18/08	KWG0812479	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/18/08	11/18/08	KWG0812479	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/18/08	11/18/08	KWG0812479	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/18/08	11/18/08	KWG0812479	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/18/08	11/18/08	KWG0812479	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/18/08	11/18/08	KWG0812479	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	75-120	11/18/08	Acceptable
Toluene-d8	100	80-128	11/18/08	Acceptable
4-Bromofluorobenzene	98	75-117	11/18/08	Acceptable

Comments:

December 4, 2008
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering, Science and Technology	**Service Request No.:**	K0811773
Project:	Boomsnub	**Date Received:**	12/04/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples were received for analysis at Columbia Analytical Services on 12/04/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Matrix Spike Recovery Exceptions:
The matrix spike recovery of 1,1-Dichloroethene for sample INF-120408 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by BF Date 12/29/08

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K081773

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14445.07.2008.0040-03
PROJECT MANAGER: Jil Frain
COMPANY/ADDRESS: EA Engineering
12201 NE 1st Street Suite 100
CITY/STATE/ZIP: Bellevue, WA. 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: (425) 451-7400 FAX #: (425) 451-7800
SAMPLER'S SIGNATURE: Richard R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260B☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals (Total or Dissolved) (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
INF-120408	12/4/08	7:55		H_2O	5		X							X		X								
EFF-120408	↓	8:00		↓	5		X							X		X								
EFFD-120408	↓	8:05		↓	5		X							X		X								
TB-120408	↓	NA	39339	↓	2		X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
X V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
12/22/08
Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
VOCs - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Richard Read — Date/Time: 12/4/08 / 8:30	Signature: [illegible] — Date/Time: 12/4/08 1330	Signature — Date/Time	Signature — Date/Time
Printed Name: RICK READ — Firm: EA	Printed Name: [illegible] — Firm: CAS	Printed Name — Firm	Printed Name — Firm

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0811773
Project Name :	Boomsnub	**Date Collected :**	12/04/08
Project Number :	14495.07.2008.0040.03	**Date Received :**	12/04/08
Sample Matrix :	WATER		

pH

Analysis Method : SM 4500-H+ B

Units : pH Units

Basis : NA

Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-120408	K0811773-001	-	-	1	12/04/08 17:14	6.55	
EFF-120408	K0811773-002	-	-	1	12/04/08 17:15	7.86	
EFFD-120408	K0811773-003	-	-	1	12/04/08 17:16	7.89	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0811773
Project Name :	Boomsnub	**Date Collected :**	12/4/2008
Project Number :	14495.07.2008.0040.03	**Date Received :**	12/4/2008
Sample Matrix :	WATER	**Date Prepared :**	NA
		Date Analyzed :	12/04/08

Duplicate Summary
Inorganic Parameters

Sample Name : INF-120408
Lab Code : K0811773-001DUP
Test Notes :

Units : pH Units
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
pH	SM 4500-H+ B	-	6.55	6.57	6.56	<1	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0811773
Project No.:	14495.07.2008.0040.03	**Date Collected:**	12/04/08
Project Name:	Boomsnub	**Date Received:**	12/04/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-120408 **Lab Code:** K0811773-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	12/10/08	12/16/08	70.6		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0811773
Project No.:	14495.07.2008.0040.03	**Date Collected:**	12/04/08
Project Name:	Boomsnub	**Date Received:**	12/04/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFF-120408 **Lab Code:** K0811773-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	12/10/08	12/16/08	2.0	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0811773
Project No.:	14495.07.2008.0040.03	**Date Collected:**	12/04/08
Project Name:	Boomsnub	**Date Received:**	12/04/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFFD-120408 **Lab Code:** K0811773-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	12/10/08	12/16/08	2.0	U	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0811773
Project:	Boomsnub/14495.07.2008.0040.03	**Date Collected:**	12/04/2008
Sample Matrix:	Water	**Date Received:**	12/04/2008

Volatile Organic Compounds

Sample Name:	INF-120408	**Units:**	ug/L
Lab Code:	K0811773-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	12/16/08	12/16/08	KWG0813430	
Trichlorofluoromethane	**1.3**		0.50	0.086	1	12/16/08	12/16/08	KWG0813430	
1,1-Dichloroethene	**1.2**		0.50	0.10	1	12/16/08	12/16/08	KWG0813430	
Methylene Chloride	ND	U	2.0	0.23	1	12/16/08	12/16/08	KWG0813430	
Bromodichloromethane	ND	U	0.50	0.036	1	12/16/08	12/16/08	KWG0813430	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	12/16/08	12/16/08	KWG0813430	
cis-1,2-Dichloroethene	**0.45**	J	0.50	0.045	1	12/16/08	12/16/08	KWG0813430	
1,1,1-Trichloroethane (TCA)	**0.22**	J	0.50	0.050	1	12/16/08	12/16/08	KWG0813430	
Dibromochloromethane	ND	U	0.50	0.057	1	12/16/08	12/16/08	KWG0813430	
Carbon Tetrachloride	ND	U	0.50	0.068	1	12/16/08	12/16/08	KWG0813430	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	12/16/08	12/16/08	KWG0813430	
Trichloroethene (TCE)	**23**		0.50	0.061	1	12/16/08	12/16/08	KWG0813430	
Tetrachloroethene (PCE)	**1.7**		0.50	0.077	1	12/16/08	12/16/08	KWG0813430	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/16/08	12/16/08	KWG0813430	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	12/16/08	12/16/08	KWG0813430	
Hexachlorobutadiene	ND	U	2.0	0.19	1	12/16/08	12/16/08	KWG0813430	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	75-120	12/16/08	Acceptable
Toluene-d8	97	80-128	12/16/08	Acceptable
4-Bromofluorobenzene	94	75-117	12/16/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0811773
Project:	Boomsnub/14495.07.2008.0040.03	**Date Collected:**	12/04/2008
Sample Matrix:	Water	**Date Received:**	12/04/2008

Volatile Organic Compounds

Sample Name:	EFF-120408	**Units:**	ug/L
Lab Code:	K0811773-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	12/16/08	12/16/08	KWG0813430	
Trichlorofluoromethane	ND	U	0.50	0.086	1	12/16/08	12/16/08	KWG0813430	
1,1-Dichloroethene	ND	U	0.50	0.10	1	12/16/08	12/16/08	KWG0813430	
Methylene Chloride	ND	U	2.0	0.23	1	12/16/08	12/16/08	KWG0813430	
Bromodichloromethane	ND	U	0.50	0.036	1	12/16/08	12/16/08	KWG0813430	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	12/16/08	12/16/08	KWG0813430	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	12/16/08	12/16/08	KWG0813430	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	12/16/08	12/16/08	KWG0813430	
Dibromochloromethane	ND	U	0.50	0.057	1	12/16/08	12/16/08	KWG0813430	
Carbon Tetrachloride	ND	U	0.50	0.068	1	12/16/08	12/16/08	KWG0813430	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	12/16/08	12/16/08	KWG0813430	
Trichloroethene (TCE)	**0.55**		0.50	0.061	1	12/16/08	12/16/08	KWG0813430	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	12/16/08	12/16/08	KWG0813430	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/16/08	12/16/08	KWG0813430	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	12/16/08	12/16/08	KWG0813430	
Hexachlorobutadiene	ND	U	2.0	0.19	1	12/16/08	12/16/08	KWG0813430	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	75-120	12/16/08	Acceptable
Toluene-d8	98	80-128	12/16/08	Acceptable
4-Bromofluorobenzene	92	75-117	12/16/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0811773
Project:	Boomsnub/14495.07.2008.0040.03	**Date Collected:**	12/04/2008
Sample Matrix:	Water	**Date Received:**	12/04/2008

Volatile Organic Compounds

Sample Name:	EFFD-120408	**Units:**	ug/L
Lab Code:	K0811773-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	12/16/08	12/16/08	KWG0813430	
Trichlorofluoromethane	ND	U	0.50	0.086	1	12/16/08	12/16/08	KWG0813430	
1,1-Dichloroethene	ND	U	0.50	0.10	1	12/16/08	12/16/08	KWG0813430	
Methylene Chloride	ND	U	2.0	0.23	1	12/16/08	12/16/08	KWG0813430	
Bromodichloromethane	ND	U	0.50	0.036	1	12/16/08	12/16/08	KWG0813430	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	12/16/08	12/16/08	KWG0813430	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	12/16/08	12/16/08	KWG0813430	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	12/16/08	12/16/08	KWG0813430	
Dibromochloromethane	ND	U	0.50	0.057	1	12/16/08	12/16/08	KWG0813430	
Carbon Tetrachloride	ND	U	0.50	0.068	1	12/16/08	12/16/08	KWG0813430	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	12/16/08	12/16/08	KWG0813430	
Trichloroethene (TCE)	**0.53**		0.50	0.061	1	12/16/08	12/16/08	KWG0813430	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	12/16/08	12/16/08	KWG0813430	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/16/08	12/16/08	KWG0813430	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	12/16/08	12/16/08	KWG0813430	
Hexachlorobutadiene	ND	U	2.0	0.19	1	12/16/08	12/16/08	KWG0813430	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	75-120	12/16/08	Acceptable
Toluene-d8	98	80-128	12/16/08	Acceptable
4-Bromofluorobenzene	93	75-117	12/16/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0811773
Project:	Boomsnub/14495.07.2008.0040.03	**Date Collected:**	12/04/2008
Sample Matrix:	Water	**Date Received:**	12/04/2008

Volatile Organic Compounds

Sample Name:	TB-120408	**Units:**	ug/L
Lab Code:	K0811773-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	12/16/08	12/16/08	KWG0813430	
Trichlorofluoromethane	ND	U	0.50	0.086	1	12/16/08	12/16/08	KWG0813430	
1,1-Dichloroethene	ND	U	0.50	0.10	1	12/16/08	12/16/08	KWG0813430	
Methylene Chloride	ND	U	2.0	0.23	1	12/16/08	12/16/08	KWG0813430	
Bromodichloromethane	ND	U	0.50	0.036	1	12/16/08	12/16/08	KWG0813430	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	12/16/08	12/16/08	KWG0813430	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	12/16/08	12/16/08	KWG0813430	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	12/16/08	12/16/08	KWG0813430	
Dibromochloromethane	ND	U	0.50	0.057	1	12/16/08	12/16/08	KWG0813430	
Carbon Tetrachloride	ND	U	0.50	0.068	1	12/16/08	12/16/08	KWG0813430	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	12/16/08	12/16/08	KWG0813430	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	12/16/08	12/16/08	KWG0813430	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	12/16/08	12/16/08	KWG0813430	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/16/08	12/16/08	KWG0813430	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	12/16/08	12/16/08	KWG0813430	
Hexachlorobutadiene	ND	U	2.0	0.19	1	12/16/08	12/16/08	KWG0813430	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	75-120	12/16/08	Acceptable
Toluene-d8	98	80-128	12/16/08	Acceptable
4-Bromofluorobenzene	95	75-117	12/16/08	Acceptable

Comments:

January 6, 2009
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science & Technology	**Service Request No.:**	K0900099
Project:	Boomsnub	**Date Received:**	1/6/2009
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples were received for analysis at Columbia Analytical Services on 1/6/2009. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

No anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 1/22/09

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: L0910691

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.07.2009.0040-03
PROJECT MANAGER: Jil Frain
COMPANY/ADDRESS: EA Engineering
12011 NE 1st Street Suite 100
CITY/STATE/ZIP: Bellevue, WA. 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425-451-7400 FAX #: 425-451-7800
SAMPLER'S SIGNATURE: Richard R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐	Hydrocarbons (*see below) Gas☐ 8021☐ BTEX☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
INF-010609	1/6/09	8:05		H_2O	5			X								X		X							
EFF-010609	↓	8:16		↓	5			X								X		X							
EFFD-010609	↓	8:15		↓	5			X								X		X							
TB-010609	↓	NA	39477	↓	2			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
X V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
1-21-09
Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOCs - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Richard Read Date/Time: 1/6/09 8:30	Signature: Date/Time: 1/6/09 1430	Signature: Date/Time:	Signature: Date/Time:
Printed Name: RICHARD READ Firm: EA	Printed Name: Anderson Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : EA Engineering, Science, and Technology
Project Name : Boomsnub
Project Number : 14495.07.2009.0040-03
Sample Matrix : WATER

Service Request : K0900099
Date Collected : 01/06/09
Date Received : 01/06/09

pH

Units : pH Units
Basis : NA

Analysis Method SM 4500-H+ B
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-010609	K0900099-001	-	-	1	01/06/09 18:25	6.94	
EFF-010609	K0900099-002	-	-	1	01/06/09 18:27	8.03	
EFFD-010609	K0900099-003	-	-	1	01/06/09 18:32	8.14	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Report By: MKANALY

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900099
Project No.:	14495.07.2009.0040-03	**Date Collected:**	1/6/2009
Project Name:	Boomsnub	**Date Received:**	1/6/2009
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-010609 **Lab Code:** K0900099-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	01/08/09	01/12/09	76.3		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900099
Project No.:	14495.07.2009.0040-03	**Date Collected:**	1/6/2009
Project Name:	Boomsnub	**Date Received:**	1/6/2009
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFF-010609 **Lab Code:** K0900099-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	01/08/09	01/12/09	2.0	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900099
Project No.:	14495.07.2009.0040-03	**Date Collected:**	1/6/2009
Project Name:	Boomsnub	**Date Received:**	1/6/2009
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFFD-010609 **Lab Code:** K0900099-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	01/08/09	01/12/09	2.0	U	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900099
Project:	Boomsnub/14495.07.2009.0040-03	**Date Collected:**	01/06/2009
Sample Matrix:	Water	**Date Received:**	01/06/2009

Volatile Organic Compounds

Sample Name:	INF-010609	**Units:**	ug/L
Lab Code:	K0900099-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/15/09	01/15/09	KWG0900435	
Trichlorofluoromethane	**1.3**		0.50	0.086	1	01/15/09	01/15/09	KWG0900435	
1,1-Dichloroethene	**1.0**		0.50	0.10	1	01/15/09	01/15/09	KWG0900435	
Methylene Chloride	ND	U	2.0	0.23	1	01/15/09	01/15/09	KWG0900435	
Bromodichloromethane	ND	U	0.50	0.036	1	01/15/09	01/15/09	KWG0900435	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/15/09	01/15/09	KWG0900435	
cis-1,2-Dichloroethene	**0.29**	J	0.50	0.045	1	01/15/09	01/15/09	KWG0900435	
1,1,1-Trichloroethane (TCA)	**0.23**	J	0.50	0.050	1	01/15/09	01/15/09	KWG0900435	
Dibromochloromethane	ND	U	0.50	0.057	1	01/15/09	01/15/09	KWG0900435	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/15/09	01/15/09	KWG0900435	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/15/09	01/15/09	KWG0900435	
Trichloroethene (TCE)	**21**		0.50	0.061	1	01/15/09	01/15/09	KWG0900435	
Tetrachloroethene (PCE)	**1.6**		0.50	0.077	1	01/15/09	01/15/09	KWG0900435	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/15/09	01/15/09	KWG0900435	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/15/09	01/15/09	KWG0900435	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/15/09	01/15/09	KWG0900435	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	75-120	01/15/09	Acceptable
Toluene-d8	94	80-128	01/15/09	Acceptable
4-Bromofluorobenzene	89	75-117	01/15/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.07.2009.0040-03
Sample Matrix: Water

Service Request: K0900099
Date Collected: 01/06/2009
Date Received: 01/06/2009

Volatile Organic Compounds

Sample Name: EFF-010609
Lab Code: K0900099-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/15/09	01/15/09	KWG0900435	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/15/09	01/15/09	KWG0900435	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/15/09	01/15/09	KWG0900435	
Methylene Chloride	ND	U	2.0	0.23	1	01/15/09	01/15/09	KWG0900435	
Bromodichloromethane	ND	U	0.50	0.036	1	01/15/09	01/15/09	KWG0900435	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/15/09	01/15/09	KWG0900435	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/15/09	01/15/09	KWG0900435	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/15/09	01/15/09	KWG0900435	
Dibromochloromethane	ND	U	0.50	0.057	1	01/15/09	01/15/09	KWG0900435	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/15/09	01/15/09	KWG0900435	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/15/09	01/15/09	KWG0900435	
Trichloroethene (TCE)	**0.44**	**J**	0.50	0.061	1	01/15/09	01/15/09	KWG0900435	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/15/09	01/15/09	KWG0900435	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/15/09	01/15/09	KWG0900435	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/15/09	01/15/09	KWG0900435	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/15/09	01/15/09	KWG0900435	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	75-120	01/15/09	Acceptable
Toluene-d8	94	80-128	01/15/09	Acceptable
4-Bromofluorobenzene	92	75-117	01/15/09	Acceptable

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.07.2009.0040-03
Sample Matrix: Water

Service Request: K0900099
Date Collected: 01/06/2009
Date Received: 01/06/2009

Volatile Organic Compounds

Sample Name: EFFD-010609
Lab Code: K0900099-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/15/09	01/15/09	KWG0900435	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/15/09	01/15/09	KWG0900435	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/15/09	01/15/09	KWG0900435	
Methylene Chloride	ND	U	2.0	0.23	1	01/15/09	01/15/09	KWG0900435	
Bromodichloromethane	ND	U	0.50	0.036	1	01/15/09	01/15/09	KWG0900435	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/15/09	01/15/09	KWG0900435	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/15/09	01/15/09	KWG0900435	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/15/09	01/15/09	KWG0900435	
Dibromochloromethane	ND	U	0.50	0.057	1	01/15/09	01/15/09	KWG0900435	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/15/09	01/15/09	KWG0900435	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/15/09	01/15/09	KWG0900435	
Trichloroethene (TCE)	**0.44**	J	0.50	0.061	1	01/15/09	01/15/09	KWG0900435	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/15/09	01/15/09	KWG0900435	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/15/09	01/15/09	KWG0900435	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/15/09	01/15/09	KWG0900435	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/15/09	01/15/09	KWG0900435	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	75-120	01/15/09	Acceptable
Toluene-d8	93	80-128	01/15/09	Acceptable
4-Bromofluorobenzene	91	75-117	01/15/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.07.2009.0040-03
Sample Matrix: Water

Service Request: K0900099
Date Collected: 01/06/2009
Date Received: 01/06/2009

Volatile Organic Compounds

Sample Name: TB-010609
Lab Code: K0900099-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	01/15/09	01/15/09	KWG0900435	
Trichlorofluoromethane	ND	U	0.50	0.086	1	01/15/09	01/15/09	KWG0900435	
1,1-Dichloroethene	ND	U	0.50	0.10	1	01/15/09	01/15/09	KWG0900435	
Methylene Chloride	ND	U	2.0	0.23	1	01/15/09	01/15/09	KWG0900435	
Bromodichloromethane	ND	U	0.50	0.036	1	01/15/09	01/15/09	KWG0900435	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	01/15/09	01/15/09	KWG0900435	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	01/15/09	01/15/09	KWG0900435	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	01/15/09	01/15/09	KWG0900435	
Dibromochloromethane	ND	U	0.50	0.057	1	01/15/09	01/15/09	KWG0900435	
Carbon Tetrachloride	ND	U	0.50	0.068	1	01/15/09	01/15/09	KWG0900435	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	01/15/09	01/15/09	KWG0900435	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	01/15/09	01/15/09	KWG0900435	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	01/15/09	01/15/09	KWG0900435	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	01/15/09	01/15/09	KWG0900435	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	01/15/09	01/15/09	KWG0900435	
Hexachlorobutadiene	ND	U	2.0	0.19	1	01/15/09	01/15/09	KWG0900435	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	01/15/09	Acceptable
Toluene-d8	93	80-128	01/15/09	Acceptable
4-Bromofluorobenzene	90	75-117	01/15/09	Acceptable

Comments:

February 4, 2009
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0900926
Project:	Boomsnub	**Date Received:**	2/4/2009
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three water samples and a Trip Blank were received for analysis at Columbia Analytical Services on 2/4/2009. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

No anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 2/23/09

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K0900426

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.07.2009.0040-03
PROJECT MANAGER: Jil Frain
COMPANY/ADDRESS: EA Engineering
12011 NE 1st Street Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451-7400 FAX #: 425 451-7800
SAMPLER'S SIGNATURE: Richard R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FiQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH Cond. Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
INF-020409	2/4/09	8:00		H_2O	5		X								X		X								
EFF-020409	↓	8:05		↓	5		X								X		X								
EFFD-020409	↓	8:10		↓	5		X								X		X								
TB-020409	↓	NA		↓	2		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOCs - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Richard Read	Signature: [signature]	Signature: [signature]	Signature: [signature]
Date/Time: 2/4/09 8:00	Date/Time: 2-4-09 8:00	Date/Time: 2-4-09 10:30	Date/Time: 2/4/09 1030
Printed Name: RICK READ	Printed Name: [signature]	Printed Name: [signature]	Printed Name: [signature]
Firm: EA	Firm: CAS	Firm: CAS	Firm: CAS

RCOC #1 06/08

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0900926
Project Name :	Boomsnub	**Date Collected :**	02/04/09
Project Number :	14495.07.2009.0040.03	**Date Received :**	02/04/09
Sample Matrix :	WATER		

pH

Units : pH Units
Basis : NA

Analysis Method SM 4500-H+ B
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-020409	K0900926-001	-	-	1	02/04/09 19:34	6.75	
EFF-020409	K0900926-002	-	-	1	02/04/09 19:35	7.91	
EFFD-020409	K0900926-003	-	-	1	02/04/09 19:36	7.92	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Report By: MKANALY

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900926
Project No.:	14495.07.2009.0040.03	**Date Collected:**	02/04/09
Project Name:	Boomsnub	**Date Received:**	02/04/09
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-020409 **Lab Code:** K0900926-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	02/10/09	02/11/09	73.4		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900926
Project No.:	14495.07.2009.0040.03	**Date Collected:**	02/04/09
Project Name:	Boomsnub	**Date Received:**	02/04/09
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFF-020409 **Lab Code:** K0900926-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	02/10/09	02/11/09	2.0	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0900926
Project No.:	14495.07.2009.0040.03	**Date Collected:**	02/04/09
Project Name:	Boomsnub	**Date Received:**	02/04/09
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: EFFD-020409 **Lab Code:** K0900926-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	02/10/09	02/11/09	2.0	U	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900926
Project:	Boomsnub/14495.07.2009.0040.03	**Date Collected:**	02/04/2009
Sample Matrix:	Water	**Date Received:**	02/04/2009

Volatile Organic Compounds

Sample Name:	INF-020409	**Units:**	ug/L
Lab Code:	K0900926-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	02/10/09	02/10/09	KWG0901129	
Trichlorofluoromethane	**1.3**		0.50	0.086	1	02/10/09	02/10/09	KWG0901129	
1,1-Dichloroethene	**1.1**		0.50	0.10	1	02/10/09	02/10/09	KWG0901129	
Methylene Chloride	ND	U	2.0	0.23	1	02/10/09	02/10/09	KWG0901129	
Bromodichloromethane	**0.040**	J	0.50	0.036	1	02/10/09	02/10/09	KWG0901129	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	02/10/09	02/10/09	KWG0901129	
cis-1,2-Dichloroethene	**0.43**	J	0.50	0.045	1	02/10/09	02/10/09	KWG0901129	
1,1,1-Trichloroethane (TCA)	**0.19**	J	0.50	0.050	1	02/10/09	02/10/09	KWG0901129	
Dibromochloromethane	ND	U	0.50	0.057	1	02/10/09	02/10/09	KWG0901129	
Carbon Tetrachloride	ND	U	0.50	0.068	1	02/10/09	02/10/09	KWG0901129	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	02/10/09	02/10/09	KWG0901129	
Trichloroethene (TCE)	**23**		0.50	0.061	1	02/10/09	02/10/09	KWG0901129	
Tetrachloroethene (PCE)	**1.7**		0.50	0.077	1	02/10/09	02/10/09	KWG0901129	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	02/10/09	02/10/09	KWG0901129	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	02/10/09	02/10/09	KWG0901129	
Hexachlorobutadiene	ND	U	2.0	0.19	1	02/10/09	02/10/09	KWG0901129	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	75-120	02/10/09	Acceptable
Toluene-d8	96	80-128	02/10/09	Acceptable
4-Bromofluorobenzene	87	75-117	02/10/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900926
Project:	Boomsnub/14495.07.2009.0040.03	**Date Collected:**	02/04/2009
Sample Matrix:	Water	**Date Received:**	02/04/2009

Volatile Organic Compounds

Sample Name:	EFF-020409	**Units:**	ug/L
Lab Code:	K0900926-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	02/10/09	02/10/09	KWG0901129	
Trichlorofluoromethane	ND	U	0.50	0.086	1	02/10/09	02/10/09	KWG0901129	
1,1-Dichloroethene	ND	U	0.50	0.10	1	02/10/09	02/10/09	KWG0901129	
Methylene Chloride	ND	U	2.0	0.23	1	02/10/09	02/10/09	KWG0901129	
Bromodichloromethane	ND	U	0.50	0.036	1	02/10/09	02/10/09	KWG0901129	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	02/10/09	02/10/09	KWG0901129	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	02/10/09	02/10/09	KWG0901129	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	02/10/09	02/10/09	KWG0901129	
Dibromochloromethane	ND	U	0.50	0.057	1	02/10/09	02/10/09	KWG0901129	
Carbon Tetrachloride	ND	U	0.50	0.068	1	02/10/09	02/10/09	KWG0901129	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	02/10/09	02/10/09	KWG0901129	
Trichloroethene (TCE)	**0.60**		0.50	0.061	1	02/10/09	02/10/09	KWG0901129	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	02/10/09	02/10/09	KWG0901129	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	02/10/09	02/10/09	KWG0901129	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	02/10/09	02/10/09	KWG0901129	
Hexachlorobutadiene	ND	U	2.0	0.19	1	02/10/09	02/10/09	KWG0901129	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	75-120	02/10/09	Acceptable
Toluene-d8	95	80-128	02/10/09	Acceptable
4-Bromofluorobenzene	87	75-117	02/10/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0900926
Project:	Boomsnub/14495.07.2009.0040.03	**Date Collected:**	02/04/2009
Sample Matrix:	Water	**Date Received:**	02/04/2009

Volatile Organic Compounds

Sample Name:	EFFD-020409	**Units:**	ug/L
Lab Code:	K0900926-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	02/10/09	02/10/09	KWG0901129	
Trichlorofluoromethane	ND	U	0.50	0.086	1	02/10/09	02/10/09	KWG0901129	
1,1-Dichloroethene	ND	U	0.50	0.10	1	02/10/09	02/10/09	KWG0901129	
Methylene Chloride	ND	U	2.0	0.23	1	02/10/09	02/10/09	KWG0901129	
Bromodichloromethane	ND	U	0.50	0.036	1	02/10/09	02/10/09	KWG0901129	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	02/10/09	02/10/09	KWG0901129	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	02/10/09	02/10/09	KWG0901129	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	02/10/09	02/10/09	KWG0901129	
Dibromochloromethane	ND	U	0.50	0.057	1	02/10/09	02/10/09	KWG0901129	
Carbon Tetrachloride	ND	U	0.50	0.068	1	02/10/09	02/10/09	KWG0901129	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	02/10/09	02/10/09	KWG0901129	
Trichloroethene (TCE)	**0.53**		0.50	0.061	1	02/10/09	02/10/09	KWG0901129	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	02/10/09	02/10/09	KWG0901129	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	02/10/09	02/10/09	KWG0901129	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	02/10/09	02/10/09	KWG0901129	
Hexachlorobutadiene	ND	U	2.0	0.19	1	02/10/09	02/10/09	KWG0901129	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	75-120	02/10/09	Acceptable
Toluene-d8	97	80-128	02/10/09	Acceptable
4-Bromofluorobenzene	86	75-117	02/10/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.07.2009.0040.03
Sample Matrix: Water

Service Request: K0900926
Date Collected: 02/04/2009
Date Received: 02/04/2009

Volatile Organic Compounds

Sample Name: TB-020409
Lab Code: K0900926-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	02/10/09	02/10/09	KWG0901129	
Trichlorofluoromethane	ND	U	0.50	0.086	1	02/10/09	02/10/09	KWG0901129	
1,1-Dichloroethene	ND	U	0.50	0.10	1	02/10/09	02/10/09	KWG0901129	
Methylene Chloride	ND	U	2.0	0.23	1	02/10/09	02/10/09	KWG0901129	
Bromodichloromethane	ND	U	0.50	0.036	1	02/10/09	02/10/09	KWG0901129	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	02/10/09	02/10/09	KWG0901129	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	02/10/09	02/10/09	KWG0901129	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	02/10/09	02/10/09	KWG0901129	
Dibromochloromethane	ND	U	0.50	0.057	1	02/10/09	02/10/09	KWG0901129	
Carbon Tetrachloride	ND	U	0.50	0.068	1	02/10/09	02/10/09	KWG0901129	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	02/10/09	02/10/09	KWG0901129	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	02/10/09	02/10/09	KWG0901129	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	02/10/09	02/10/09	KWG0901129	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	02/10/09	02/10/09	KWG0901129	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	02/10/09	02/10/09	KWG0901129	
Hexachlorobutadiene	ND	U	2.0	0.19	1	02/10/09	02/10/09	KWG0901129	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	75-120	02/10/09	Acceptable
Toluene-d8	96	80-128	02/10/09	Acceptable
4-Bromofluorobenzene	89	75-117	02/10/09	Acceptable

Comments:

March 5, 2009
OU-3 Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering, Science and Technology	**Service Request No.:**	K0901893
Project:	Boomsnub	**Date Received:**	03/05/2009
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three field samples and one trip blank were received for analysis at Columbia Analytical Services on 03/05/2009. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID 8328: Trichlorofluoromethane, 1,1,1-Trichloroethane, Carbon Tetrachloride, Bromoform and 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 11.0%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

No anomalies associated with the analysis of these samples were observed.

03/23/09

Approved by_____**Date**_____

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: 10901893

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.007.2009.0040-03
PROJECT MANAGER: Jill Frain
COMPANY/ADDRESS: EA ENGINEERING
12110 NE 1st Street Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451-7400 FAX #: 425 451-7800
SAMPLER'S SIGNATURE: Richard R. Read

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIO) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total & Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
INF-030509	3/5/09	9:00		H_2O	5		X						X		X									
EFF-030509	↓	9:05		↓	5		X						X		X									
EFFD-030509	↓	9:10		↓	5		X						X		X									
TB-030509	↓	NA	39769	↓	2		X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOCs - 8260B
Total Metals - Cr
pH

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Richard Read Date/Time: 3/5/09 10:00	Signature: Date/Time: 3/5/09 1400	Signature: Date/Time:	Signature: Date/Time:
Printed Name: RICK READ Firm: EA	Printed Name: Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 06/08

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : EA Engineering, Science, and Technology
Project Name : Boomsnub
Project Number : 14495.007.2009.0040-03
Sample Matrix : WATER

Service Request : K0901893
Date Collected : 03/05/09
Date Received : 03/05/09

pH

Analysis Method SM 4500-H+ B
Test Notes :

Units : pH Units
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date/Time Analyzed	Result	Result Notes
INF-030509	K0901893-001	-	-	1	03/05/09 19:14	6.59	
EFF-030509	K0901893-002	-	-	1	03/05/09 19:15	7.82	
EFFD-030509	K0901893-003	-	-	1	03/05/09 19:16	7.83	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0901893
Project No.:	14495.007.2009.0040-03	**Date Collected:**	03/05/09
Project Name:	Boomsnub	**Date Received:**	03/05/09
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: INF-030509 **Lab Code:** K0901893-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	03/09/09	03/10/09	71.6		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	Service Request:	K0901893
Project No.:	14495.007.2009.0040-03	Date Collected:	03/05/09
Project Name:	Boomsnub	Date Received:	03/05/09
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

Sample Name: EFF-030509 Lab Code: K0901893-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	03/09/09	03/10/09	2.0	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	Service Request:	K0901893
Project No.:	14495.007.2009.0040-03	Date Collected:	03/05/09
Project Name:	Boomsnub	Date Received:	03/05/09
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

Sample Name: EFFD-030509 Lab Code: K0901893-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	03/09/09	03/10/09	2.0	B	

% Solids: 0.0

Comments:

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.007.2009.0040-03
Sample Matrix: Water

Service Request: K0901893
Date Collected: 03/05/2009
Date Received: 03/05/2009

Volatile Organic Compounds

Sample Name: INF-030509
Lab Code: K0901893-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	03/17/09	03/17/09	KWG0902232	
Trichlorofluoromethane	**1.3**		0.50	0.086	1	03/17/09	03/17/09	KWG0902232	
1,1-Dichloroethene	**1.1**		0.50	0.10	1	03/17/09	03/17/09	KWG0902232	
Methylene Chloride	ND	U	2.0	0.23	1	03/17/09	03/17/09	KWG0902232	
Bromodichloromethane	ND	U	0.50	0.036	1	03/17/09	03/17/09	KWG0902232	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	03/17/09	03/17/09	KWG0902232	
cis-1,2-Dichloroethene	**0.39**	J	0.50	0.045	1	03/17/09	03/17/09	KWG0902232	
1,1,1-Trichloroethane (TCA)	**0.23**	J	0.50	0.050	1	03/17/09	03/17/09	KWG0902232	
Dibromochloromethane	ND	U	0.50	0.057	1	03/17/09	03/17/09	KWG0902232	
Carbon Tetrachloride	ND	U	0.50	0.068	1	03/17/09	03/17/09	KWG0902232	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	03/17/09	03/17/09	KWG0902232	
Trichloroethene (TCE)	**24**		0.50	0.061	1	03/17/09	03/17/09	KWG0902232	
Tetrachloroethene (PCE)	**1.6**		0.50	0.077	1	03/17/09	03/17/09	KWG0902232	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	03/17/09	03/17/09	KWG0902232	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	03/17/09	03/17/09	KWG0902232	
Hexachlorobutadiene	ND	U	2.0	0.19	1	03/17/09	03/17/09	KWG0902232	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	75-120	03/17/09	Acceptable
Toluene-d8	96	80-128	03/17/09	Acceptable
4-Bromofluorobenzene	80	75-117	03/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0901893
Project:	Boomsnub/14495.007.2009.0040-03	**Date Collected:**	03/05/2009
Sample Matrix:	Water	**Date Received:**	03/05/2009

Volatile Organic Compounds

Sample Name:	EFF-030509	**Units:**	ug/L
Lab Code:	K0901893-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	03/17/09	03/17/09	KWG0902232	
Trichlorofluoromethane	ND	U	0.50	0.086	1	03/17/09	03/17/09	KWG0902232	
1,1-Dichloroethene	ND	U	0.50	0.10	1	03/17/09	03/17/09	KWG0902232	
Methylene Chloride	ND	U	2.0	0.23	1	03/17/09	03/17/09	KWG0902232	
Bromodichloromethane	ND	U	0.50	0.036	1	03/17/09	03/17/09	KWG0902232	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	03/17/09	03/17/09	KWG0902232	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	03/17/09	03/17/09	KWG0902232	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	03/17/09	03/17/09	KWG0902232	
Dibromochloromethane	ND	U	0.50	0.057	1	03/17/09	03/17/09	KWG0902232	
Carbon Tetrachloride	ND	U	0.50	0.068	1	03/17/09	03/17/09	KWG0902232	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	03/17/09	03/17/09	KWG0902232	
Trichloroethene (TCE)	**0.63**		0.50	0.061	1	03/17/09	03/17/09	KWG0902232	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	03/17/09	03/17/09	KWG0902232	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	03/17/09	03/17/09	KWG0902232	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	03/17/09	03/17/09	KWG0902232	
Hexachlorobutadiene	ND	U	2.0	0.19	1	03/17/09	03/17/09	KWG0902232	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	75-120	03/17/09	Acceptable
Toluene-d8	94	80-128	03/17/09	Acceptable
4-Bromofluorobenzene	80	75-117	03/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0901893
Project:	Boomsnub/14495.007.2009.0040-03	**Date Collected:**	03/05/2009
Sample Matrix:	Water	**Date Received:**	03/05/2009

Volatile Organic Compounds

Sample Name:	EFFD-030509	**Units:**	ug/L
Lab Code:	K0901893-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	03/17/09	03/17/09	KWG0902232	
Trichlorofluoromethane	ND	U	0.50	0.086	1	03/17/09	03/17/09	KWG0902232	
1,1-Dichloroethene	ND	U	0.50	0.10	1	03/17/09	03/17/09	KWG0902232	
Methylene Chloride	ND	U	2.0	0.23	1	03/17/09	03/17/09	KWG0902232	
Bromodichloromethane	ND	U	0.50	0.036	1	03/17/09	03/17/09	KWG0902232	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	03/17/09	03/17/09	KWG0902232	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	03/17/09	03/17/09	KWG0902232	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	03/17/09	03/17/09	KWG0902232	
Dibromochloromethane	ND	U	0.50	0.057	1	03/17/09	03/17/09	KWG0902232	
Carbon Tetrachloride	ND	U	0.50	0.068	1	03/17/09	03/17/09	KWG0902232	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	03/17/09	03/17/09	KWG0902232	
Trichloroethene (TCE)	**0.53**		0.50	0.061	1	03/17/09	03/17/09	KWG0902232	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	03/17/09	03/17/09	KWG0902232	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	03/17/09	03/17/09	KWG0902232	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	03/17/09	03/17/09	KWG0902232	
Hexachlorobutadiene	ND	U	2.0	0.19	1	03/17/09	03/17/09	KWG0902232	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	75-120	03/17/09	Acceptable
Toluene-d8	95	80-128	03/17/09	Acceptable
4-Bromofluorobenzene	80	75-117	03/17/09	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.007.2009.0040-03
Sample Matrix: Water

Service Request: K0901893
Date Collected: 03/05/2009
Date Received: 03/05/2009

Volatile Organic Compounds

Sample Name: TB-030509
Lab Code: K0901893-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	03/17/09	03/17/09	KWG0902232	
Trichlorofluoromethane	ND	U	0.50	0.086	1	03/17/09	03/17/09	KWG0902232	
1,1-Dichloroethene	ND	U	0.50	0.10	1	03/17/09	03/17/09	KWG0902232	
Methylene Chloride	ND	U	2.0	0.23	1	03/17/09	03/17/09	KWG0902232	
Bromodichloromethane	ND	U	0.50	0.036	1	03/17/09	03/17/09	KWG0902232	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	03/17/09	03/17/09	KWG0902232	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	03/17/09	03/17/09	KWG0902232	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	03/17/09	03/17/09	KWG0902232	
Dibromochloromethane	ND	U	0.50	0.057	1	03/17/09	03/17/09	KWG0902232	
Carbon Tetrachloride	ND	U	0.50	0.068	1	03/17/09	03/17/09	KWG0902232	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	03/17/09	03/17/09	KWG0902232	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	03/17/09	03/17/09	KWG0902232	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	03/17/09	03/17/09	KWG0902232	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	03/17/09	03/17/09	KWG0902232	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	03/17/09	03/17/09	KWG0902232	
Hexachlorobutadiene	ND	U	2.0	0.19	1	03/17/09	03/17/09	KWG0902232	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	75-120	03/17/09	Acceptable
Toluene-d8	95	80-128	03/17/09	Acceptable
4-Bromofluorobenzene	82	75-117	03/17/09	Acceptable

Comments:

Appendix D
Linde Infiltration Gallery

Appendix D

Linde Infiltration Gallery

APPENDIX D
LINDE INFILTRATION GALLERY

The infiltration gallery was constructed on the Linde property in Fall 2005 to discharge treated groundwater from the OU-3 treatment system back into the alluvial aquifer. In February 2006, the Linde infiltration gallery became operational and discharges to the City sanitary sewer were discontinued.

Groundwater samples are currently being collected on a semiannual basis from four monitoring wells which are part of the infiltration gallery monitoring program: AMW-6A, AMW-7A, AMW-10A, and AMW-11A. Baseline sampling of these wells was conducted in October 2005, prior to the startup of the infiltration gallery. Samples were analyzed for VOCs and chromium. TCE and chromium were detected at concentrations well below the cleanup levels of 5 µg/L and 80 µg/L respectively. The monitoring results for the reporting period, compared to baseline concentrations, are provided in the following tables.

Concentration of TCE in Groundwater

	AMW-6A (µg/L)	AMW-7A (µg/L)	AMW-10A (µg/L)	AMW-11A (µg/L)
October 2005 (Baseline)	0.5 U	0.5 U	NS	0.5 U
October 2008	0.51	0.46 J	0.42 J	0.46

NOTES:
U = Not detected at or above the method reporting limit.
NS = Not Sampled.
µg/L =Micrograms per liter

Concentration of Chromium in Groundwater

	AMW-6A (µg/L)	AMW-7A (µg/L)	AMW-10A (µg/L)	AMW-11A (µg/L)
October 2005 (Baseline)	4.8*	4.7*	NS	5
October 2008	5.2	4 B	5.9	5.9

NOTES:
B = The result is an estimated concentration that is less than the Method Reporting Limit (MRL) but greater than or equal to the Method Detection Limit (MDL).
NS = Not Sampled.
* = Sampled December 2005; October 2005 data rejected and well was re-sampled.
µg/L = Micrograms per liter.

As discussed in previous Progress Reports, an expanded effluent monitoring program was established during the installation of the treatment system upgrades to monitor effluent quality and continued through August 2007. Currently the effluent is monitored on a monthly basis. The site groundwater treatment system continues to meet the discharge criteria established by EPA. Effluent discharged to the Linde infiltration gallery has concentrations below the

infiltration gallery initial discharge standards of 3 µg/L for TCE and 24 µg/L for total chromium. As of February 2009 the discharge standards have been revised to reflect a new resin cycle (EA letter report to EPA; LN0954, 9 February 2009). The revised maximum allowable effluent concentrations have been established as 1.9 µg /L for TCE and 19.2 µg /L for chromium. Results of this monitoring program obtained during the reporting period are summarized in the following table.

Results of Effluent Monitoring Program
TCE and Chromium

Date	Influent TCE Concentrations (µg/L)	Effluent TCE Concentrations (µg/L)	Influent Cr Concentrations (µg/L)	Effluent Cr Concentrations (µg/L)
6 October 2008	26	0.52	73.6	3 B
6 November 2008	20	0.54	75	3 B
4 December 2008	23	0.55	70.6	5 U
6 January 2009	21	0.44 J	76.3	5 U
4 February 2009	23	0.60	73.4	5 U
5 March 2009	24	0.63	71.6	2 B

NOTES:
Influent sampling conducted as part of general site O&M. Effluent sampling conducted as part of general site O&M and as part of startup and testing of upgraded treatment system. Data can be found in Appendix C.4.
* The elevated chromium effluent concentration on December 20, 2006 may be the result of work on the IX canisters.
B Result is an estimated concentration that is less than the MRL but greater the MDL.
U Analyte not detected above specified reporting limit.

Since startup of the infiltration gallery, groundwater elevations have been monitored periodically to assess the impact on the water table near the gallery. The following table shows water elevations of the infiltration gallery monitoring wells during the last two reporting periods.

Water Level Measurements

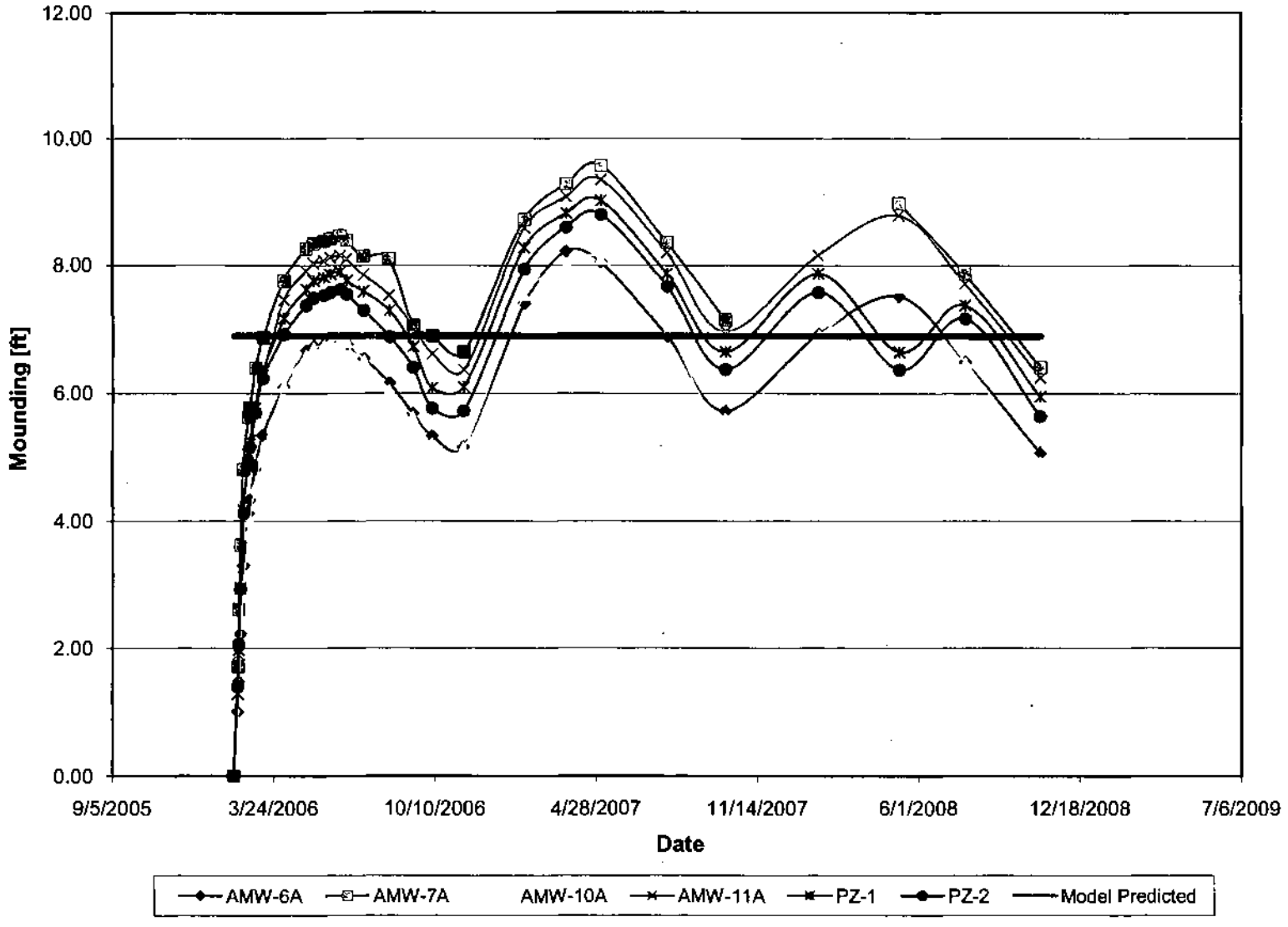
Date	AMW-6A	AMW-7A	AMW-10A	AMW-11A	PZ-1	PZ-2
8 May 2008	21.96	20.49	21.82	19.83	22.41	24.78
29 July 2008	22.99	21.60	23.01	20.90	21.68	23.98
30 October 2008	24.41	23.06	24.56	22.37	23.11	25.51

NOTE:
Water levels are measured as depth to water from the top of well casing in feet.

Figure D sbows the water table fluctuations in the infiltration gallery area since startup in February 2006 compared to the maximum mounding predicted during the design of the infiltration gallery using the groundwater model developed for the Site. The difference between the actual and predicted change in water levels can be attributed to seasonal fluctuations in the water table. During the last reporting period water level data for May and July 2008 had inconsistent fluctuations. The water level data for October 2008 appears to be more consistent.

No changes to the infiltration gallery were made during the reporting period.

Figure D. Linde Infiltration Gallery Groundwater Mounding Data



October 22, 2008
Linde Infiltration Gallery
Laboratory Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0810454
Project:	Boomsnub	**Date Received:**	10/24/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty one water samples were received for analysis at Columbia Analytical Services on 10/24/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The upper control criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) J:\MS18\1104F003.D and J:\MS18\1104F034.D: Trichlorofluoromethane. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1104F003.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

Approved by _____ **Date** 11/25/08

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1104F034.D: 1,2-Dibromo-3-chloropropane and Bromoform. In accordance with CAS standard operating procedures, an MRL check standard containing the analytes of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analytes at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compounds in question, and the field samples analyzed in this sequence did not contain the analytes in question, the data quality has not been significantly affected. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recoveries of Trichloroethene (TCE) for sample 0843085 are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Elevated Method Reporting Limits:
The sample 0843085 required dilutions due to the presence of elevated levels of target analytes. The reporting limits are adjusted to reflect the dilutions.

Approved by_____ **Date** 11/05/08

Columbia Analytical Services INC.
An Employee - Owned Company

Cooler #2

CHAIN OF CUSTODY

SR#: K0810454

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.05 0017
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 1st St Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE: 425 451 7400 FAX: 425 451 7800
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
~~0843054~~	10/22	0958		W	4		3						1					
~~0843055~~	10/22	1040		W	4		3						1					
0843056	10/22	1218		W	4		3						1					
~~0843057~~	10/22	—		W	2		2											
0843058	10/22	1441		W	4		3						1					
0843059	10/22	1515		W	4		3						1					
~~0843060~~	10/22	1605		W	4		3						1					
0843061	10/22	1653		W	4		3						1					

8260.7

12

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 1449505 0017
Bill To: EA Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Provide PDF
Temperature Blank Provided [redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Kristine Beaulieu (Signature) 10/24/08 11:00 (Date/Time)	Karla Smith (Signature) 10/24/08 1400 (Date/Time)	Signature / Date/Time	Signature / Date/Time
Kristina Beaulieu (Printed Name) EA (Firm)	Karla Smith (Printed Name) CAS (Firm)	Printed Name / Firm	Printed Name / Firm

RCOC #1 06/03

Metals

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810454
Project No.:	14495.05 0017	**Date Collected:**	10/22/2008
Project Name:	Boomsnub	**Date Received:**	10/24/2008
Matrix:	WATER	**Units:**	ug/L
	AMW-6A	**Basis:**	N/A

Sample Name: 0843056 **Lab Code:** K0810454-026

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/15/08	11/20/08	5.2		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810454
Project No.:	14495.05 0017	**Date Collected:**	10/22/2008
Project Name:	Boomsnub	**Date Received:**	10/24/2008
Matrix:	WATER	**Units:**	ug/L
	AMW-7A	**Basis:**	N/A

Sample Name: 0843061 **Lab Code:** K0810454-031

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/15/08	11/20/08	4.0	B	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: EA Engineering, Science, and Tec
Service Request: K0810454
Project No.: 14495.05 0017
Date Collected: 10/22/2008
Project Name: Boomsnub
Date Received: 10/24/2008
Matrix: WATER
Units: ug/L
Basis: N/A

AMW-10A

Sample Name: 0843059
Lab Code: K0810454-029

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/15/08	11/20/08	5.9		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810454
Project No.:	14495.05 0017	**Date Collected:**	10/22/2008
Project Name:	Boomsnub	**Date Received:**	10/24/2008
Matrix:	WATER	**Units:**	ug/L
	AMW-11A	**Basis:**	N/A

Sample Name: 0843058 **Lab Code:** K0810454-028

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/15/08	11/20/08	5.9		

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-6A

Sample Name:	0843056	**Units:**	ug/L
Lab Code:	K0810454-026	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/05/08	11/05/08	KWG0811881	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/05/08	11/05/08	KWG0811881	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/05/08	11/05/08	KWG0811881	
Methylene Chloride	ND	U	2.0	0.23	1	11/05/08	11/05/08	KWG0811881	
Bromodichloromethane	ND	U	0.50	0.036	1	11/05/08	11/05/08	KWG0811881	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/05/08	11/05/08	KWG0811881	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/05/08	11/05/08	KWG0811881	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/05/08	11/05/08	KWG0811881	
Dibromochloromethane	ND	U	0.50	0.057	1	11/05/08	11/05/08	KWG0811881	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/05/08	11/05/08	KWG0811881	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/05/08	11/05/08	KWG0811881	
Trichloroethene (TCE)	0.51		0.50	0.061	1	11/05/08	11/05/08	KWG0811881	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/05/08	11/05/08	KWG0811881	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/05/08	11/05/08	KWG0811881	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/05/08	11/05/08	KWG0811881	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/05/08	11/05/08	KWG0811881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	75-120	11/05/08	Acceptable
Toluene-d8	100	80-128	11/05/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/05/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-11A

Sample Name:	0843058	**Units:**	ug/L
Lab Code:	K0810454-028	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/05/08	11/05/08	KWG0811881	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/05/08	11/05/08	KWG0811881	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/05/08	11/05/08	KWG0811881	
Methylene Chloride	ND	U	2.0	0.23	1	11/05/08	11/05/08	KWG0811881	
Bromodichloromethane	ND	U	0.50	0.036	1	11/05/08	11/05/08	KWG0811881	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/05/08	11/05/08	KWG0811881	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/05/08	11/05/08	KWG0811881	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/05/08	11/05/08	KWG0811881	
Dibromochloromethane	ND	U	0.50	0.057	1	11/05/08	11/05/08	KWG0811881	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/05/08	11/05/08	KWG0811881	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/05/08	11/05/08	KWG0811881	
Trichloroethene (TCE)	**0.46**	J	0.50	0.061	1	11/05/08	11/05/08	KWG0811881	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/05/08	11/05/08	KWG0811881	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/05/08	11/05/08	KWG0811881	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/05/08	11/05/08	KWG0811881	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/05/08	11/05/08	KWG0811881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/05/08	Acceptable
Toluene-d8	99	80-128	11/05/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/05/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.05 0017
Sample Matrix: Water

Service Request: K0810454
Date Collected: 10/22/2008
Date Received: 10/24/2008

Volatile Organic Compounds

AMW-10A

Sample Name: 0843059
Lab Code: K0810454-029

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/05/08	11/05/08	KWG0811881	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/05/08	11/05/08	KWG0811881	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/05/08	11/05/08	KWG0811881	
Methylene Chloride	ND	U	2.0	0.23	1	11/05/08	11/05/08	KWG0811881	
Bromodichloromethane	ND	U	0.50	0.036	1	11/05/08	11/05/08	KWG0811881	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/05/08	11/05/08	KWG0811881	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/05/08	11/05/08	KWG0811881	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/05/08	11/05/08	KWG0811881	
Dibromochloromethane	ND	U	0.50	0.057	1	11/05/08	11/05/08	KWG0811881	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/05/08	11/05/08	KWG0811881	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/05/08	11/05/08	KWG0811881	
Trichloroethene (TCE)	**0.42**	J	0.50	0.061	1	11/05/08	11/05/08	KWG0811881	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/05/08	11/05/08	KWG0811881	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/05/08	11/05/08	KWG0811881	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/05/08	11/05/08	KWG0811881	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/05/08	11/05/08	KWG0811881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	75-120	11/05/08	Acceptable
Toluene-d8	99	80-128	11/05/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/05/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810454
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/22/2008
Sample Matrix:	Water	**Date Received:**	10/24/2008

Volatile Organic Compounds

AMW-7A

Sample Name:	0843061	**Units:**	ug/L
Lab Code:	K0810454-031	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/04/08	11/05/08	KWG0811881	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/04/08	11/05/08	KWG0811881	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/04/08	11/05/08	KWG0811881	
Methylene Chloride	ND	U	2.0	0.23	1	11/04/08	11/05/08	KWG0811881	
Bromodichloromethane	ND	U	0.50	0.036	1	11/04/08	11/05/08	KWG0811881	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/04/08	11/05/08	KWG0811881	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/04/08	11/05/08	KWG0811881	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/04/08	11/05/08	KWG0811881	
Dibromochloromethane	ND	U	0.50	0.057	1	11/04/08	11/05/08	KWG0811881	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/04/08	11/05/08	KWG0811881	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/04/08	11/05/08	KWG0811881	
Trichloroethene (TCE)	**0.46**	J	0.50	0.061	1	11/04/08	11/05/08	KWG0811881	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/04/08	11/05/08	KWG0811881	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/04/08	11/05/08	KWG0811881	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/04/08	11/05/08	KWG0811881	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/04/08	11/05/08	KWG0811881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	75-120	11/05/08	Acceptable
Toluene-d8	98	80-128	11/05/08	Acceptable
4-Bromofluorobenzene	78	75-117	11/05/08	Acceptable

Comments:

Appendix E
Toe-of-Plume Pilot Study

Appendix E

Toe-of-Plume Pilot Study

APPENDIX E
TOE-OF-PLUME PILOT STUDY
(TOPPS)

Since 1995, the groundwater extraction and treatment system at the Site has made significant progress in reducing plume size and contaminant concentrations in the groundwater. As of 2006, contamination in the toe-of-plume area had been reduced to a single "hot spot" immediately upgradient of extraction well MW-41. The hot spot area is believed to be located in the silt layer at a depth of approximately 80 to 90 feet below ground surface. Experience with other extraction wells at the Site (i.e. AMW-27) has demonstrated that contaminants in the silt layer are not effectively removed by pumping.

The TOPPS was designed as an *in-situ* treatment to remediate the toe-of-plume hot spot by injecting EHC-M™ into the aquifer. Since the *in-situ* treatment was implemented, chromium and TCE have not been detected above the analytical method reporting limits in MW-41. As a result, the sampling requirements for TOPPS wells have been modified with EPA approval. During the 2008 semiannual sampling events, samples were collected from seven Toe-of-Plume wells (AMW-43, AMW-44, AMW-45, AMW-63, MW-30, MW-41, and MW-46) and analyzed for total chromium and VOCs. Samples were not analyzed for sulfate or sulfide. Samples from wells AMW-63 and MW-41 were also analyzed for dissolved iron (EPA Method 6010B), total organic carbon (EPA Method 415.1), ferrous iron (field test using a Hach Test Kit), and ethane and ethane (RSK 175). The following field parameters were collected from each monitoring well as part of the sampling process:

- Ferrous iron
- pH
- Temperature
- Conductivity
- Dissolved oxygen
- Oxidation-reduction potential
- Turbidity.

The first round of groundwater sampling for the TOPPS was conducted in January 2007 during the quarterly sampling event. The TCE and chromium analytical data indicate that since the injection of EHC-M™ into the aquifer, concentrations of TCE and chromium in groundwater have been reduced to below cleanup levels. The results of the monitoring program including pre and post injection data are summarized in the following tables.

Concentration of TCE in TOPPS Groundwater Monitoring Wells (µg/L)

	AMW-43	AMW-44	AMW-45	AMW-63*	MW-30	MW-41	MW-46
April 2006[1]	0.5 U	0.5 U	0.5 U	--*	0.5 U	6.2	0.5 U
October 2006[2]	0.5 U	0.5 U	0.5 U	--*	0.5 U	0.5 U	0.5 U
January 2007	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
May 2007	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U
July 2007	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
October 2007	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
May 2008	0.5 U	0.5 U	0.5 U	0.08 J	0.5 U	0.5 U	0.5 U
October 2008	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

NOTE:
* New well installed in November 2006.
[1] Pre-injection data.
[2] Post-injection data.
J Estimated concentration less than the Method Reporting Limit (MRL) but greater than or equal to the method detection limit (MDL).
U Not detected above the MRL or MDL.
µg/L microgram per liter

Concentration of Chromium in TOPPS Groundwater Wells (µg/L)

	AMW-43	AMW-44	AMW-45	AMW-63*	MW-30	MW-41	MW-46
April 2006[1]	5.5 UJ	5.8 UJ	8.8 UJ	--*	5.0 U	165	11.8 UJ
October 2006[2]	5.0 U	5.0 U	7.3	--*	5.0 U	10.8 UJ	6.7 UJ
January 2007	2.8 B	3.1 B	3.9 B	9.5	5.0 U	5.0 U	8.5
May 2007	5.0 U	5.0 U	5.0 U	9.5	5.0	5.0 U	5.0 U
July 2007	5.0 U	5.0 U	5.0 U	10.6	5.0 U	5.0 U	3.8 B
October 2007	3.3 B	5.0 U	7.0	6.3	3.1 B	5.0 U	5.0 U
May 2008	6.8	5.0 U	8.0	19.5**	3.0 B	4.4 B	3.5 B
October 2008	19.7 B	4.9 B	9.8	8.2	5.0 U	0.9 U	5.2

NOTE:
* New well installed in November 2006.
** The total chromium result of 19.5 µg/L for AMW-63 may be a false positive due to contamination of the associated rinsate blank.
[1] Pre-injection data (April 26, 2006).
[2] Post-injection data (October 4, 2006).
U Not detected above the MRL or MDL.
UJ The analylte was not detected, but the associated limit of quantitation is estimated due to discrepancies in quality control criteria.
B Estimated concentration less than the MRL but greater than or equal to the MDL.
µg/L microgram per liter

Concentration of Dissolved Oxygen in TOPPS Groundwater Wells (µg/L)

	AMW-43	AMW-44	AMW-45	AMW-63*	MW-30	MW-41	MW-46
April 2006[1]	5.67	3.46	1.92	--*	6.44	3.38	4.08
October 2006[2]	5.71	4.80	1.89	--*	5.06	3.62	3.86
January 2007	5.67	2.53	4.27	0.81	5.71	0.09	3.46
May 2007	5.71	1.56	6.00	4.07	2.74	0.10	0.09
July 2007	5.09	0.79	4.99	1.60	2.80	0.24	0.58
October 2007	4.58	0.11	6.03	0.85	2.96	0.08	0.21
May 2008	5.6	0.17	5.81	2.9	3.52	0.1	0.15
October 2008	4.45	3.53	6.21	1.42	0.06	0	0.95

NOTE:
* New well installed in November 2006.
[1] Pre-injection data (April 26, 2006).
[2] Post-injection data (October 4, 2006).
µg/L microgram per liter

Dissolved oxygen decreased in the hot spot area wells (MW-41 and AMW-63) through October 2008. This general trend is an indication that the EHC-M™ is working as expected. Results from the eight post-treatment quarterly sampling events indicate that the treatment is reducing chromium and TCE concentrations.

Concentration of Dissolved Iron and TOC in TOPPS Groundwater Wells

	Dissolved Iron (µg/L)		TOC (µg/L)	
	AMW-63*	MW-41	AMW-63*	MW-41
September 2006[1]	--*	3.6 B	--*	0.47 J
January 2007	56.3	1150	0.49 J	1.5
May 2007	46.8	491	0.37 J	0.6
July 2007	111	1820	0.35 J	0.6
October 2007	13.2 B	842	0.5	1.3
May 2008	64.4	282	0.32	0.7
October 2008	19.7 B	206	0.6	0.8

NOTE:
* New well installed in November 2006.
[1] Pre-injection data.
B Estimated concentration that is less than the MRL but greater than or equal to the MDL
J The result is an estimated concentration less than the MRL but greater than or equal to the MDL.
µg/L microgram per liter

The presence of iron suggests that well MW-41 is under the influence of the EHC-M™ injections. As the zero-valent iron (a component of EHC-M™) reacts, Fe(II) is released. The dissolved iron moves with the water and is further oxidized to Fe(III) when reaching areas of more toxic conditions.

October 21, 27, 28 and 29, 2008
OU-2 Groundwater Analytical Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0810354
Project:	Boomsnub	**Date Received:**	10/22/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Nineteen water samples were received for analysis at Columbia Analytical Services on 10/22/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1029F013.D, J:\MS18\1030F003.D and J:\MS18\1031F003.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis.. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS13\1030F002.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard was analyzed at 0.5ppb; the MRL is 2.0ppb. This standard did not meet the response criteria. All samples associated with the CCV in question were reanalyzed (past the recommended holding time) to confirm the original undetected result. The original results were reported with the supporting data provided.

Approved by _____ **Date** 12/1/08

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1031F003.D: Bromoform. This compound is not in the list of analytes reported in the associated samples but is required by the method to meet response factor criteria which it does. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following analyte in Matrix Spike (MS) KWG0811687-3 and Matrix Spike Duplicate (MSD) KWG0811687-4: 1,2-Dichloroethane (EDC). The analyte in question was not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0811687-1: 1,2-Dichloroethane (EDC). The analyte in question was not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

The upper control criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0811703-3: Trichlorofluoromethane. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ **Date** 12/1/02

[redacted] 001 [redacted] 4 [redacted] 1 of [redacted] [redacted]

Columbia Analytical Services
An Employee - Owned Company

CHAIN OF CUSTODY

SR#: 4081635

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 2 COC #

PROJECT NAME: BOOMSNUB
PROJECT NUMBER: 14495.05.0017
PROJECT MANAGER: GLENN HAYNOW / JIL FRAIN
COMPANY/ADDRESS: EA ENGINEERING
12011 NE 1ST ST.
CITY/STATE/ZIP: BELLEVUE, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425-451-7400 FAX#: 425-451-7800
SAMPLER'S SIGNATURE: C Böhle

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total & Dissolved (See list below) Cr 200.7	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
~~0843040~~	10/21	08:41	11	W	4		X						X						
~~0843041~~	↓	08:56	12	↓	4		X						X						
~~0843042/MS/MSD~~		09:10	13		12		X						X						
~~0843043~~		09:33	14		4		X						X						
~~0843044~~		09:42	15		4		X						X						
~~0843045~~		09:55	16		4		X						X						
~~0843046~~		10:35	17		4		X						X						
0843047		14:24	18		4		X						X						
0843048	↓	15:05	19	↓	4		X						X						

10

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 14495.05.0017
Bill To: EA BELLEVUE

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Provide pdf
Temp Blank Included

[redacted]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
C Böhle	A Rynerd		
Signature	Signature	Signature	Signature
10/22/08 9:30	10/22/08 1415		
Date/Time	Date/Time	Date/Time	Date/Time
C Böhle	A Rynerd		
Printed Name	Printed Name	Printed Name	Printed Name
EA	CAS		
Firm	Firm	Firm	Firm

RCOC #1 06/03

Columbia Analytical Services INC.
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CHAIN OF CUSTODY

Cooler #1

SR#: K0810564

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PAGE 1 OF 2 COC #

PROJECT NAME: Boomsnub
PROJECT NUMBER: 14495.05 0017
PROJECT MANAGER: Glenn Hayman
COMPANY/ADDRESS: 12011 NE 16th St, Suite 100
CITY/STATE/ZIP: Bellevue, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425 451 7400 FAX #: 425 451 7800
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260B☑ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals: (Total or Dissolved) (See list below) 200.7	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	Dissolved Iron Field Filtered				REMARKS
~~0844065~~	10/27	–	1	W	2			X																
0844066	10/27	1355	2		4			X								X								
0844067	10/27	1530	3		6			X								X			X		X			
~~0844068~~	10/27	1607	4		4			X								X								
0844069	10/28	0930	5		6			X								X			X		X			
~~0844070~~	10/28	1035	6		4			X								X								
~~0844071~~	10/28	1123	7		4			X								X								
~~0844072~~	10/28	1200	8		4			X								X								
~~0844073~~	10/28	1202	9	↓	4			X								X								

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 14495.05 0017
Bill To: EA
Bellevue

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu (Fe) Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Provide PDF
Temperature Blank Inclu[redacted]

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
Signature: [signature]	Date/Time: 10/29/08	Signature: [signature]	Date/Time: 10/29/08 1330	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: C Böhlke	Firm: EA	Printed Name: [signature]	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client :	EA Engineering, Science, and Technology	**Service Request :**	K0810564
Project Name :	Boomsnub	**Date Collected :**	10/27,28/08
Project Number :	14495.05 0017	**Date Received :**	10/29/08
Sample Matrix :	WATER		

Carbon, Total Organic

Units : mg/L
Analysis Method : SM 5310 C
Basis : NA
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
844067 MW-41	K0810564-003	0.5	0.07	1	11/03/08	0.8	
844069 A MW-63	K0810564-005	0.5	0.07	1	11/03/08	0.6	
Method Blank	K0810564-MB	0.5	0.07	1	11/03/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810564
Project No.:	14495.05 0017	**Date Collected:**	10/27/08
Project Name:	Boomsnub	**Date Received:**	10/29/08
Matrix:	WATER	**Units:**	ug/L
	MW-46	**Basis:**	N/A

Sample Name: 0844066 **Lab Code:** K0810564-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	0.9	1.0	11/20/08	11/21/08	5.2		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810354
Project No.:	14495.05.0017	**Date Collected:**	10/21/08
Project Name:	Boomsnub	**Date Received:**	10/22/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

AMW-45

Sample Name: 0843047 **Lab Code:** K0810354-018

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/20/08	11/21/08	9.8		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: EA Engineering, Science, and Tec
Service Request: K0810354
Project No.: 14495.05.0017
Date Collected: 10/21/08
Project Name: Boomsnub
Date Received: 10/22/08
Matrix: WATER
Units: ug/L
Basis: N/A

AMW-44

Sample Name: 0843048
Lab Code: K0810354-019

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	2.0	1.0	11/20/08	11/21/08	4.9	B	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: EA Engineering, Science, and Technology
Project: Boomsnub/14495.05.0017
Sample Matrix: Water

Service Request: K0810354
Date Collected: 10/21/2008
Date Received: 10/22/2008

Volatile Organic Compounds

AHW-45

Sample Name: 0843047
Lab Code: K0810354-018

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811703	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811703	*
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811703	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811703	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811703	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811703	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811703	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811703	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811703	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811703	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811703	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	10/31/08	10/31/08	KWG0811703	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/31/08	10/31/08	KWG0811703	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811703	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811703	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811703	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	92	75-120	10/31/08	Acceptable
Toluene-d8	99	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	81	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810354
Project:	Boomsnub/14495.05.0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

AMW-44

Volatile Organic Compounds

Sample Name:	0843048	**Units:**	ug/L
Lab Code:	K0810354-019	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	10/31/08	10/31/08	KWG0811703	
Trichlorofluoromethane	ND	U	0.50	0.086	1	10/31/08	10/31/08	KWG0811703	*
1,1-Dichloroethene	ND	U	0.50	0.10	1	10/31/08	10/31/08	KWG0811703	
Methylene Chloride	ND	U	2.0	0.23	1	10/31/08	10/31/08	KWG0811703	
Bromodichloromethane	ND	U	0.50	0.036	1	10/31/08	10/31/08	KWG0811703	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	10/31/08	10/31/08	KWG0811703	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	10/31/08	10/31/08	KWG0811703	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	10/31/08	10/31/08	KWG0811703	
Dibromochloromethane	ND	U	0.50	0.057	1	10/31/08	10/31/08	KWG0811703	
Carbon Tetrachloride	ND	U	0.50	0.068	1	10/31/08	10/31/08	KWG0811703	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	10/31/08	10/31/08	KWG0811703	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	10/31/08	10/31/08	KWG0811703	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	10/31/08	10/31/08	KWG0811703	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	10/31/08	10/31/08	KWG0811703	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	10/31/08	10/31/08	KWG0811703	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	10/31/08	10/31/08	KWG0811703	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	92	75-120	10/31/08	Acceptable
Toluene-d8	101	80-128	10/31/08	Acceptable
4-Bromofluorobenzene	81	75-117	10/31/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Company	**Service Request No.:**	K0810360
Project:	Boomsnub	**Date Received:**	10/22/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty two water samples were received for analysis at Columbia Analytical Services on 10/22/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1030F003.D and J:\MS18\1030F039.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS13\1030F002.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard was analyzed at 0.5ppb; the MRL is 2.0ppb. This standard did not meet the response criteria. All samples associated with the CCV in question were reanalyzed (past the recommended holding time) to confirm the original undetected result. The original results were reported with the supporting data provided.

Approved by LAA **Date** 12/1/08

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Trichlorofluoromethane for sample 0843002 was outside control criterion. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

The duplicate matrix spike recoveries of Vinyl Chloride, Trichlorofluoromethane, 1,1-Dichloroethene, trans-1,2-Dichloroethene and Tetrachloroethene (PCE) for sample 0843002 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0811687-1: 1,2-Dichloroethane (EDC). The analyte in question was not detected in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ **Date** 12/1/08

Columbia Analytical Services
An Employee - Owned Company

CHAIN OF CUSTODY

Cooler #4 p 2 of 2

SR#: 1608 10360

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 2 OF 2 COC #

PROJECT NAME: BOONSNUB
PROJECT NUMBER: 14495.05.0017
PROJECT MANAGER: GLENN HAYMAN / JIL FRAIN
COMPANY/ADDRESS: EA ENGINEERING, 12011 NE 1 ST ST.
CITY/STATE/ZIP: BELLEVUE, WA 98005
E-MAIL ADDRESS: jfrain@eaest.com
PHONE #: 425-451-7400 FAX#: 425-451-7800
SAMPLER'S SIGNATURE: C Böhle

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below) Cr 200.7	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
0843049	10/21	15:42	29	W	4		X							X				
0843050	10/21	16:17	30	W	4		X							X				
~~0843051~~	10/21	16:53	31	W	4		X							X				
~~0843053~~	10/21	08:00	32	W	2		X							X				

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 14495.05.0017
Bill To: EA BELLEVUE

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co (Cr) Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Provide pdf

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
C Böhle	[signature]		
Signature: C Böhle	Signature: [signature]	Signature:	Signature:
Date/Time: 10/22/08 9:30	Date/Time: 10/22/08 1415	Date/Time:	Date/Time:
Printed Name: C Böhle	Printed Name: [signature]	Printed Name:	Printed Name:
Firm: EA	Firm: CTS	Firm:	Firm:

13

RCOC #1 06/03

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810360
Project No.:	14495.05 0017	**Date Collected:**	10/21/08
Project Name:	Boomsnub	**Date Received:**	10/22/08
Matrix:	WATER	**Units:**	ug/L
	MW-30	**Basis:**	N/A

Sample Name: 0843049 **Lab Code:** K0810360-029

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	0.9	1.0	11/20/08	11/21/08	0.9	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: EA Engineering, Science, and Tec
Service Request: K0810360
Project No.: 14495.05 0017
Date Collected: 10/21/08
Project Name: Boomsnub
Date Received: 10/22/08
Matrix: WATER
Units: ug/L
Basis: N/A

AMW-43

Sample Name: 0843050
Lab Code: K0810360-030

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	0.9	1.0	11/20/08	11/21/08	3.7	B	

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

MW-30

Sample Name:	0843049	**Units:**	ug/L
Lab Code:	K0810360-029	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/04/08	Acceptable
Toluene-d8	101	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	93	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810360
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/21/2008
Sample Matrix:	Water	**Date Received:**	10/22/2008

Volatile Organic Compounds

AMW-43

Sample Name:	0843050	**Units:**	ug/L
Lab Code:	K0810360-030	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/03/08	11/04/08	KWG0811805	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/03/08	11/04/08	KWG0811805	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/03/08	11/04/08	KWG0811805	
Methylene Chloride	ND	U	2.0	0.23	1	11/03/08	11/04/08	KWG0811805	
Bromodichloromethane	ND	U	0.50	0.036	1	11/03/08	11/04/08	KWG0811805	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/03/08	11/04/08	KWG0811805	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/03/08	11/04/08	KWG0811805	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/03/08	11/04/08	KWG0811805	
Dibromochloromethane	ND	U	0.50	0.057	1	11/03/08	11/04/08	KWG0811805	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/03/08	11/04/08	KWG0811805	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/03/08	11/04/08	KWG0811805	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/03/08	11/04/08	KWG0811805	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/03/08	11/04/08	KWG0811805	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/03/08	11/04/08	KWG0811805	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/03/08	11/04/08	KWG0811805	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/03/08	11/04/08	KWG0811805	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	75-120	11/04/08	Acceptable
Toluene-d8	100	80-128	11/04/08	Acceptable
4-Bromofluorobenzene	94	75-117	11/04/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EA Engineering Science and Technology	**Service Request No.:**	K0810564
Project:	Boomsnub	**Date Received:**	10/29/2008
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eleven water samples were received for analysis at Columbia Analytical Services on 10/29/2008. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total and Dissolved Metals

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analyte in Initial Calibration (ICAL) ID 7782: Trichlorofluoromethane. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Continuing Calibration Verification Exceptions:
The upper control criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) J:\MS18\1106F007.D: Trichlorofluoromethane. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The CAS control criterion for the following analytes was not met in Continuing Calibration Verification (CCV) J:\MS18\1106F007.D: 1,2-Dibromo-3-chloropropane. In accordance with CAS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question, and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been significantly affected. No further corrective action was feasible.

Approved by _____ **Date** 12/10/08

The CAS control criterion for the following analyte was not met in Continuing Calibration Verification (CCV) J:\MS18\1106F007.D: Bromoform. This compound is not in the list of analytes reported in the associated samples but is required by the method to meet response factor criteria which it does. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
The matrix spike recoveries of Vinyl Chloride, Trichlorofluoromethane and Tetrachloroethene (PCE) for sample Batch QC were outside control criteria. Recovery in the Laboratory Control Sample (LCS) and Duplicate Laboratory Control Sample (DLCS) were acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

Approved by_____ **Date** 12/10/05

Metals

- I -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	Service Request:	K0810564
Project No.:	14495.05 0017	Date Collected:	10/27/08
Project Name:	Boomsnub	Date Received:	10/29/08
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

MW-41

Sample Name: 0844067 Lab Code: K0810564-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	0.9	1.0	11/20/08	11/21/08	0.9	U	

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810564
Project No.:	14495.05 0017	**Date Collected:**	10/27/08
Project Name:	Boomsnub	**Date Received:**	10/29/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

MW-41

Sample Name: 0844067 **Lab Code:** K0810564-003 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	200.7	20.0	4.0	1.0	11/20/08	11/21/08	206		

% Solids: 0.0

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810564
Project No.:	14495.05 0017	**Date Collected:**	10/28/08
Project Name:	Boomsnub	**Date Received:**	10/29/08
Matrix:	WATER	**Units:**	ug/L
	AMW-63	**Basis:**	N/A

Sample Name: 0844069 **Lab Code:** K0810564-005 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	200.7	20.0	4.0	1.0	11/20/08	11/21/08	19.7	B	

% Solids: 0.0

Comments:

Metals

-1-

INORGANIC ANALYSIS DATA PACKAGE

Client:	EA Engineering, Science, and Tec	**Service Request:**	K0810564
Project No.:	14495.05 0017	**Date Collected:**	10/28/08
Project Name:	Boomsnub	**Date Received:**	10/29/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

AMW-63

Sample Name: 0844069 **Lab Code:** K0810564-005

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Chromium	200.7	5.0	0.9	1.0	11/20/08	11/21/08	8.2		

% Solids: 0.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810564
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/27/2008
Sample Matrix:	Water	**Date Received:**	10/29/2008

Volatile Organic Compounds

MW-46

Sample Name:	0844066	**Units:**	ug/L
Lab Code:	K0810564-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/06/08	11/06/08	KWG0811956	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/06/08	11/06/08	KWG0811956	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/06/08	11/06/08	KWG0811956	
Methylene Chloride	ND	U	2.0	0.23	1	11/06/08	11/06/08	KWG0811956	
Bromodichloromethane	ND	U	0.50	0.036	1	11/06/08	11/06/08	KWG0811956	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/06/08	11/06/08	KWG0811956	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/06/08	11/06/08	KWG0811956	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/06/08	11/06/08	KWG0811956	
Dibromochloromethane	ND	U	0.50	0.057	1	11/06/08	11/06/08	KWG0811956	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/06/08	11/06/08	KWG0811956	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/06/08	11/06/08	KWG0811956	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/06/08	11/06/08	KWG0811956	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/06/08	11/06/08	KWG0811956	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/06/08	11/06/08	KWG0811956	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/06/08	11/06/08	KWG0811956	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/06/08	11/06/08	KWG0811956	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	75-120	11/06/08	Acceptable
Toluene-d8	101	80-128	11/06/08	Acceptable
4-Bromofluorobenzene	80	75-117	11/06/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810564
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/27/2008
Sample Matrix:	Water	**Date Received:**	10/29/2008

Volatile Organic Compounds

MW-41

Sample Name:	0844067	**Units:**	ug/L
Lab Code:	K0810564-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/06/08	11/06/08	KWG0811956	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/06/08	11/06/08	KWG0811956	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/06/08	11/06/08	KWG0811956	
Methylene Chloride	ND	U	2.0	0.23	1	11/06/08	11/06/08	KWG0811956	
Bromodichloromethane	ND	U	0.50	0.036	1	11/06/08	11/06/08	KWG0811956	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/06/08	11/06/08	KWG0811956	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/06/08	11/06/08	KWG0811956	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/06/08	11/06/08	KWG0811956	
Dibromochloromethane	ND	U	0.50	0.057	1	11/06/08	11/06/08	KWG0811956	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/06/08	11/06/08	KWG0811956	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/06/08	11/06/08	KWG0811956	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/06/08	11/06/08	KWG0811956	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/06/08	11/06/08	KWG0811956	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/06/08	11/06/08	KWG0811956	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/06/08	11/06/08	KWG0811956	*
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/06/08	11/06/08	KWG0811956	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	75-120	11/06/08	Acceptable
Toluene-d8	99	80-128	11/06/08	Acceptable
4-Bromofluorobenzene	80	75-117	11/06/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K0810564
Project:	Boomsnub/14495.05 0017	**Date Collected:**	10/28/2008
Sample Matrix:	Water	**Date Received:**	10/29/2008

Volatile Organic Compounds

AMW-63

Sample Name:	0844069	**Units:**	ug/L
Lab Code:	K0810564-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Vinyl Chloride	ND	U	0.50	0.071	1	11/06/08	11/07/08	KWG0811989	
Trichlorofluoromethane	ND	U	0.50	0.086	1	11/06/08	11/07/08	KWG0811989	
1,1-Dichloroethene	ND	U	0.50	0.10	1	11/06/08	11/07/08	KWG0811989	
Methylene Chloride	ND	U	2.0	0.23	1	11/06/08	11/07/08	KWG0811989	
Bromodichloromethane	ND	U	0.50	0.036	1	11/06/08	11/07/08	KWG0811989	
trans-1,2-Dichloroethene	ND	U	0.50	0.048	1	11/06/08	11/07/08	KWG0811989	
cis-1,2-Dichloroethene	ND	U	0.50	0.045	1	11/06/08	11/07/08	KWG0811989	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.050	1	11/06/08	11/07/08	KWG0811989	
Dibromochloromethane	ND	U	0.50	0.057	1	11/06/08	11/07/08	KWG0811989	
Carbon Tetrachloride	ND	U	0.50	0.068	1	11/06/08	11/07/08	KWG0811989	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.073	1	11/06/08	11/07/08	KWG0811989	
Trichloroethene (TCE)	ND	U	0.50	0.061	1	11/06/08	11/07/08	KWG0811989	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	11/06/08	11/07/08	KWG0811989	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	11/06/08	11/07/08	KWG0811989	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	1	11/06/08	11/07/08	KWG0811989	
Hexachlorobutadiene	ND	U	2.0	0.19	1	11/06/08	11/07/08	KWG0811989	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	75-120	11/07/08	Acceptable
Toluene-d8	99	80-128	11/07/08	Acceptable
4-Bromofluorobenzene	94	75-117	11/07/08	Acceptable

Comments:

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC
An Employee - Owned Company

LABORATORY REPORT

November 13, 2008

Jil Frain
EA Engineering, Science, and Technology
12011 NE 1st St. Suite 100
Bellevue, WA 98005

RE: Boomsnub / 14495.05 0017

Dear Jil:

Enclosed are the results of the sample(s) submitted to our laboratory on 10/30/08. For your reference, these analyses have been assigned our service request number K0810635.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains _____ pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kate Aguilera

Kate Aguilera
Project Manager

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC
An Employee - Owned Company

Client: EA Engineering, Science, and Technology CAS Project No: K0810635
Project: Boomsnub / 14495.05 0017

CASE NARRATIVE

The sample(s) were received intact under chain of custody on 10/30/08 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample(s) at the time of sample receipt.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 360-577-7222 • FAX 360-636-1068

CAS Contact: Lynda Huckestein

Project Name: Boomsnub
Project Number: 14495.05 0017
Project Manager: Glenn Hayman
Company: EA Engineering, Science and Technology

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	GASES RSK-175
K0810635-010	0844085	3	Water	10/29/08	1745	10/30/08	SIMIVALLEY	V

1053

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	____RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 ✓ STANDARD Requested FAX Date: _____ Requested Report Date: 11/17/08	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ✓ IV. Data Validation Report with Raw Data PQL/MDL/J N EDD Y	PO# K0810635 Bill to

Relinquished By: [illegible] CAS 11/3/08 1330 Received By: [illegible] 11/5/08 0923 Airbill Number: _____

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **EA Engineering, Science and Technology**
Client Sample ID: **0844085** AMW-63
Client Project ID: **Boomsnub / 14495.05 0017**

CAS Project ID: K0810635
CAS Sample ID: K0810635-010

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton/Chris Cornett
Matrix: Water
Test Notes:

Date Collected: 10/29/08
Date Received: 10/30/08
Date Analyzed: 11/6/08
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	MRL µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	ND	0.50	0.30	
74-85-1	Ethene	ND	1.5	0.19	
74-84-0	Ethane	ND	0.50	0.11	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Re Date: 11/11/08