**Billing Information:**
Name GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

**Samples Collected From Which State?** AZ ___ CA X NV ___ WA ___ ID ___ OR ___ OTHER ___

24136

Page # 1 of 1

Client Name DOUD CONNER
Address 3990 OLD TOWN AVE, C-205
City, State, Zip SAN DIEGO, CA 92110
P.O. # 218013
EMail Address
Phone # 619-726-7311
Job # 6005862
Fax #

Required QC Level? I II III IV

EDD / EDF? YES ___ NO ___

Global ID # _____

| Time Sampled | Date Sampled | Matrix* See Key Below | Sampled by / Lab ID Number (Office Use Only) | Report Attention / Sample Description | TAT | Field Filtered | Total and type of containers ** See below | VOC (524.2) | TOTAL Cr (600.0) | CHOL (314.0) | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0825 | 02/09/09 | AQ | BMI09021004-01 | MW-23-4 | | | 1 | | X | | | | | | |
| 0858 | | | -02 | MW-23-3 | | | 10 | X | X | X | | | | | MS/MSD |
| 0959 | | | -03 | MW-23-2 | | | 5 | X | X | X | | | | | |
| 1041 | | | -04 | MW-23-1 | | | 5 | X | X | X | | | | | |
| 1020 | | | -05 | EB-11-02/09/09 | | | 5 | X | X | X | | | | | EQUIPMENT BLANK |
| — | | | -06 | TB-11-02/09/09 | | | 1 | X | | | | | | | TRIP BLANK |
| 1025 | | | -07 | SB-01-1209 | | | 5 | X | X | X | | | | | SOURCE BLANK |

**ADDITIONAL INSTRUCTIONS:**

| Signature | Print Name | Company | Date | Time |
|---|---|---|---|---|
| Relinquished by | CHASE BROWN | INNOVATIVE | 02/09/09 | 1230 |
| Received by Elizabeth Adcox | Elizabeth Adcox | Alpha | 2/10/09 | 1106 |
| Relinquished by | | | | |
| Received by | | | | |
| Relinquished by | | | | |
| Received by | | | | |

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**NOTE:** Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *19-Feb-09*

David Conner
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(619) 574-4827

## CASE NARRATIVE

**Project:** G005862/JPL Groundwater Monitoring
**Work Order:** BMI09021103 **Cooler Temp:** 4 °C

| Alpha's Sample ID | Client's Sample ID | Matrix |
|---|---|---|
| 09021103-01A | MW-7 | Aqueous |
| 09021103-02A | MW-16 | Aqueous |
| 09021103-03A | DUPE-06-1Q09 | Aqueous |
| 09021103-04A | TB-12-02/10/09 | Aqueous |

**Manually Integrated Analytes**

| Alpha's Sample ID | Test Reference | Analyte |
|---|---|---|
| 09021103-01A | EPA Method 314.0 | Perchlorate |
| 09021103-02A | EPA Method 314.0 | Perchlorate |
| 09021103-03A | EPA Method 314.0 | Perchlorate |

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/11/09

Job#: G005862/JPL Groundwater Monitoring

Anions by IC
EPA Method 300.0 / 9056

| | Parameter | Concentration | Reporting Limit | Date / Time Sampled | Date / Time Analyzed |
|---|---|---|---|---|---|
| Client ID : **MW-7** | Nitrite (NO2) - N | ND | 0.25 mg/L | 02/10/09 09:55 | 02/11/09 13:37 |
| Lab ID : BMI09021103-01A | Nitrate (NO3) - N | 1.1 | 0.25 mg/L | 02/10/09 09:55 | 02/11/09 13:37 |
| | Phosphate, ortho - P | ND | 0.25 mg/L | 02/10/09 09:55 | 02/11/09 13:37 |
| Client ID : **MW-16** | Nitrite (NO2) - N | ND | 0.25 mg/L | 02/10/09 12:20 | 02/11/09 13:55 |
| Lab ID : BMI09021103-02A | Nitrate (NO3) - N | 1.3 | 0.25 mg/L | 02/10/09 12:20 | 02/11/09 13:55 |
| | Phosphate, ortho - P | ND | 0.25 mg/L | 02/10/09 12:20 | 02/11/09 13:55 |
| Client ID : **DUPE-06-1Q09** | Nitrite (NO2) - N | ND | 0.25 mg/L | 02/10/09 00:00 | 02/11/09 14:51 |
| Lab ID : BMI09021103-03A | Nitrate (NO3) - N | 1.1 | 0.25 mg/L | 02/10/09 00:00 | 02/11/09 14:51 |
| | Phosphate, ortho - P | ND | 0.25 mg/L | 02/10/09 00:00 | 02/11/09 14:51 |

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**2/24/09**
**Report Date**

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/11/09

Job#: G005862/JPL Groundwater Monitoring

Anions by IC
EPA Method 300.0 / 9056

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-7** | | | | | |
| Lab ID : | BMI09021103-01A | Chloride | 72 | 0.50 mg/L | 02/10/09 | 02/11/09 |
| | | Sulfate (SO4) | 48 | 0.50 mg/L | 02/10/09 | 02/11/09 |
| Client ID : | **MW-16** | | | | | |
| Lab ID : | BMI09021103-02A | Chloride | 82 | 0.50 mg/L | 02/10/09 | 02/11/09 |
| | | Sulfate (SO4) | 48 | 0.50 mg/L | 02/10/09 | 02/11/09 |
| Client ID : | **DUPE-06-1Q09** | | | | | |
| Lab ID : | BMI09021103-03A | Chloride | 73 | 0.50 mg/L | 02/10/09 | 02/11/09 |
| | | Sulfate (SO4) | 48 | 0.50 mg/L | 02/10/09 | 02/11/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

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## ANALYTICAL REPORT

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Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/11/09

Job#: G005862/JPL Groundwater Monitoring

Perchlorate by Ion Chromatography
EPA Method 314.0

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-7** | | | | | |
| Lab ID : | BMI09021103-01A | Perchlorate | 1.69 | 1.00 µg/L | 02/10/09 | 02/12/09 |
| Client ID : | **MW-16** | | | | | |
| Lab ID : | BMI09021103-02A | Perchlorate | 18.0 | 1.00 µg/L | 02/10/09 | 02/12/09 |
| Client ID : | **DUPE-06-1Q09** | | | | | |
| Lab ID : | BMI09021103-03A | Perchlorate | 1.65 | 1.00 µg/L | 02/10/09 | 02/12/09 |

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## ANALYTICAL REPORT

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Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/11/09

Job#: G005862/JPL Groundwater Monitoring

Metals by ICPMS
EPA Method 200.8

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-7** | | | | | |
| Lab ID : | BMI09021103-01A | Chromium (Cr) | ND | 0.0050 mg/L | 02/10/09 | 02/14/09 |
| Client ID : | **MW-16** | | | | | |
| Lab ID : | BMI09021103-02A | Chromium (Cr) | ND | 0.0050 mg/L | 02/10/09 | 02/14/09 |
| Client ID : | **DUPE-06-1Q09** | | | | | |
| Lab ID : | BMI09021103-03A | Chromium (Cr) | ND | 0.0050 mg/L | 02/10/09 | 02/14/09 |

ND = Not Detected

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2/24/09
**Report Date**

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

### Tentatively Identified Compounds - Volatile Organics by GC/MS

| | | Parameter | Estimated Concentration | Estimated Reporting Limit | Date Received | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Client ID : | **MW-7** | | | | | | |
| Lab ID : | BMI09021103-01A | * * * None Found * * * | ND | 2.0 µg/L | 02/11/09 | 02/10/09 | 02/13/09 |
| Client ID : | **MW-16** | | | | | | |
| Lab ID : | BMI09021103-02A | * * * None Found * * * | ND | 2.0 µg/L | 02/11/09 | 02/10/09 | 02/13/09 |
| Client ID : | **DUPE-06-1Q09** | | | | | | |
| Lab ID : | BMI09021103-03A | * * * None Found * * * | ND | 2.0 µg/L | 02/11/09 | 02/10/09 | 02/13/09 |
| Client ID : | **TB-12-02/10/09** | | | | | | |
| Lab ID : | BMI09021103-04A | * * * None Found * * * | ND | 2.0 µg/L | 02/11/09 | 02/10/09 | 02/13/09 |

Note: Analysis conducted using EPA Method 524.2 criteria.
ND = Not Detected

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**2/24/09**
**Report Date**

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021103-01A
Client I.D. Number: MW-7

Sampled: 02/10/09
Received: 02/11/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | 1.0 | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 107 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 102 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 96 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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2/24/09

**Report Date**

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021103-02A
Client I.D. Number: MW-16

Sampled: 02/10/09
Received: 02/11/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | 2.6 | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | 3.6 | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | 5.9 | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 105 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 100 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 97 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | 5.0 | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


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2/24/09
**Report Date**

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255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021103-03A
Client I.D. Number: DUPE-06-1Q09

Sampled: 02/10/09
Received: 02/11/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | 0.99 | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 107 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 100 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 95 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

2/24/09

**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021103-04A
Client I.D. Number: TB-12-02/10/09

Sampled: 02/10/09
Received: 02/11/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | ND | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 105 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 101 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 97 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

2/24/09

**Report Date**

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## VOC Sample Preservation Report

**Work Order:** BMI09021103 **Project:** G005862/JPL Groundwater Monitoring

| Alpha's Sample ID | Client's Sample ID | Matrix | pH |
|---|---|---|---|
| 09021103-01A | MW-7 | Aqueous | 2 |
| 09021103-02A | MW-16 | Aqueous | 2 |
| 09021103-03A | DUPE-06-1Q09 | Aqueous | 2 |
| 09021103-04A | TB-12-02/10/09 | Aqueous | 2 |

**2/24/09**

**Report Date**

# *Alpha Analytical, Inc.*

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**Date:** *16-Feb-09*

## QC Summary Report

**Work Order:** 09021103

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **16** Batch ID: **21497A** Analysis Date: **02/11/2009 12:41**

Sample ID: **MB-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | ND | 0.25 | | | | | | | | |
| Nitrate (NO3) - N | ND | 0.25 | | | | | | | | |
| Phosphate, ortho - P | ND | 0.25 | | | | | | | | |

### Laboratory Fortified Blank Duplicate

Type **LFBD** Test Code: **EPA Method 300.0 / 9056**

File ID: **32** Batch ID: **21497A** Analysis Date: **02/12/2009 16:33**

Sample ID: **LFBD-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.36 | 0.25 | 1.25 | | 109 | 90 | 110 | 1.246 | 8.6(10) | |
| Nitrate (NO3) - N | 1.38 | 0.25 | 1.25 | | 110 | 90 | 110 | 1.291 | 6.4(10) | |
| Phosphate, ortho - P | 1.2 | 0.25 | 1.25 | | 96 | 90 | 110 | 0.5216 | 78.6(10) | R5 |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **21** Batch ID: **21497A** Analysis Date: **02/11/2009 14:14**

Sample ID: **09021103-02ALFM** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.3 | 0.25 | 1.25 | 0 | 104 | 80 | 120 | | | |
| Nitrate (NO3) - N | 2.57 | 0.25 | 1.25 | 1.282 | 103 | 80 | 120 | | | |
| Phosphate, ortho - P | 1.21 | 0.25 | 1.25 | 0 | 97 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21497A** Analysis Date: **02/11/2009 14:32**

Sample ID: **09021103-02ALFMD** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.31 | 0.25 | 1.25 | 0 | 105 | 80 | 120 | 1.304 | 0.3(10) | |
| Nitrate (NO3) - N | 2.54 | 0.25 | 1.25 | 1.282 | 101 | 80 | 120 | 2.569 | 1.1(10) | |
| Phosphate, ortho - P | 1.24 | 0.25 | 1.25 | 0 | 99 | 80 | 120 | 1.208 | 2.6(10) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

R5 = MS/MSD RPD exceeded the laboratory control limit. Recovery met acceptance criteria.

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**Date:** *16-Feb-09*

## QC Summary Report

**Work Order:** 09021103

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **16** Batch ID: **21497B** Analysis Date: **02/11/2009 12:41**

Sample ID: **MB-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | ND | 0.5 | | | | | | | | |

### Laboratory Fortified Blank Duplicate

Type **LFBD** Test Code: **EPA Method 300.0 / 9056**

File ID: **32** Batch ID: **21497B** Analysis Date: **02/12/2009 16:33**

Sample ID: **LFBD-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 10.7 | 0.5 | 10 | | 107 | 90 | 110 | 9.945 | 7.0(10) | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **21** Batch ID: **21497B** Analysis Date: **02/11/2009 14:14**

Sample ID: **09021103-02ALFM** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 57.9 | 0.5 | 10 | 47.86 | 99.9 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21497B** Analysis Date: **02/11/2009 14:32**

Sample ID: **09021103-02ALFMD** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 57.9 | 0.5 | 10 | 47.86 | 100 | 80 | 120 | 57.86 | 0.1(10) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *16-Feb-09*

## QC Summary Report

**Work Order:** 09021103

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **16** Batch ID: **21497C** Analysis Date: **02/11/2009 12:41**

Sample ID: **MB-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.5 | | | | | | | | |

### Laboratory Fortified Blank Duplicate

Type **LFBD** Test Code: **EPA Method 300.0 / 9056**

File ID: **32** Batch ID: **21497C** Analysis Date: **02/12/2009 16:33**

Sample ID: **LFBD-21497** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.84 | 0.5 | 5 | | 97 | 90 | 110 | 4.501 | 7.3(10) | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **21** Batch ID: **21497C** Analysis Date: **02/11/2009 14:14**

Sample ID: **09021103-02ALFM** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 87.3 | 0.5 | 5 | 82.16 | 102 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21497C** Analysis Date: **02/11/2009 14:32**

Sample ID: **09021103-02ALFMD** Units : **mg/L** Run ID: **IC_1_090211A** Prep Date: **02/11/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 87.3 | 0.5 | 5 | 82.16 | 102 | 80 | 120 | 87.27 | 0.0(10) | |

**Comments:**

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**Date:** *17-Feb-09*

## QC Summary Report

**Work Order:** 09021103

### Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **21508** Analysis Date: **02/12/2009 13:29**

Sample ID: **MB-21508** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | ND | 1 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **21508** Analysis Date: **02/12/2009 13:47**

Sample ID: **LFB-21508** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.7 | 2 | 25 | | 99 | 85 | 115 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **22** Batch ID: **21508** Analysis Date: **02/12/2009 15:56**

Sample ID: **09021103-02ALFM** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 41.6 | 2 | 25 | 18.04 | 94 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **23** Batch ID: **21508** Analysis Date: **02/12/2009 16:14**

Sample ID: **09021103-02ALFMD** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 43.4 | 2 | 25 | 18.04 | 102 | 80 | 120 | 41.62 | 4.2(15) | |

**Comments:**

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**Date:** *19-Feb-09*

## QC Summary Report

**Work Order:** 09021103

### Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **021309.B\136SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:39**

Sample ID: **MB-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | ND | 0.005 | | | | | | | | |

### Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **021309.B\138_LCS.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:51**

Sample ID: **LCS-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0494 | 0.005 | 0.05 | | 99 | 80 | 120 | | | |

### Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **021309.B\142SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:14**

Sample ID: **09021004-02AMS** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0504 | 0.005 | 0.05 | 0 | 101 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **021309.B\143SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:19**

Sample ID: **09021004-02AMSD** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0518 | 0.005 | 0.05 | 0 | 104 | 80 | 120 | 0.05035 | 2.9(20) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# Alpha Analytical, Inc.

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**Date:** 19-Feb-09

## QC Summary Report

**Work Order:** 09021103

**Method Blank** Type **MBLK** Test Code: _____

File ID: **09021310.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 14:14**

Sample ID: **MBLK MS15W0213M** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 0.5 | | | | | | | | |
| Chloromethane | ND | 1 | | | | | | | | |
| Vinyl chloride | ND | 0.5 | | | | | | | | |
| Chloroethane | ND | 0.5 | | | | | | | | |
| Bromomethane | ND | 1 | | | | | | | | |
| Trichlorofluoromethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethene | ND | 0.5 | | | | | | | | |
| Dichloromethane | ND | 1 | | | | | | | | |
| Freon-113 | ND | 0.5 | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethane | ND | 0.5 | | | | | | | | |
| 2-Butanone (MEK) | ND | 10 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Bromochloromethane | ND | 0.5 | | | | | | | | |
| Chloroform | ND | 0.5 | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloroethane | ND | 0.5 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloropropene | ND | 0.5 | | | | | | | | |
| Carbon tetrachloride | ND | 0.5 | | | | | | | | |
| Benzene | ND | 0.5 | | | | | | | | |
| Dibromomethane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| Trichloroethene | ND | 0.5 | | | | | | | | |
| Bromodichloromethane | ND | 0.5 | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.5 | | | | | | | | |
| Toluene | ND | 0.5 | | | | | | | | |
| 1,3-Dichloropropane | ND | 0.5 | | | | | | | | |
| Dibromochloromethane | ND | 0.5 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1 | | | | | | | | |
| Tetrachloroethene | ND | 0.5 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| Chlorobenzene | ND | 0.5 | | | | | | | | |
| Ethylbenzene | ND | 0.5 | | | | | | | | |
| m,p-Xylene | ND | 0.5 | | | | | | | | |
| Bromoform | ND | 0.5 | | | | | | | | |
| Styrene | ND | 0.5 | | | | | | | | |
| o-Xylene | ND | 0.5 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1 | | | | | | | | |
| Isopropylbenzene | ND | 0.5 | | | | | | | | |
| Bromobenzene | ND | 0.5 | | | | | | | | |
| n-Propylbenzene | ND | 0.5 | | | | | | | | |
| 4-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 2-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| tert-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| sec-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 4-Isopropyltoluene | ND | 0.5 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| n-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1 | | | | | | | | |
| Naphthalene | ND | 1 | | | | | | | | |
| Hexachlorobutadiene | ND | 1 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10.5 | | 10 | | 105 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |

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**Date:** 19-Feb-09

## QC Summary Report

**Work Order:** 09021103

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 9.56 | | 10 | | 96 | 70 | 130 | | |

**Laboratory Control Spike** Type **LCS** Test Code: _____

File ID: **09021308.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 13:13**

Sample ID: **LCS MS15W0213M** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 12.1 | 1 | 10 | | 121 | 70 | 130 | | | |
| Chloromethane | 8.85 | 2 | 10 | | 89 | 70 | 130 | | | |
| Vinyl chloride | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Chloroethane | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| Bromomethane | 11 | 2 | 10 | | 110 | 70 | 130 | | | |
| Trichlorofluoromethane | 12.6 | 1 | 10 | | 126 | 70 | 130 | | | |
| 1,1-Dichloroethene | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Dichloromethane | 9.57 | 2 | 10 | | 96 | 70 | 130 | | | |
| trans-1,2-Dichloroethene | 10.7 | 1 | 10 | | 107 | 70 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 9.58 | 0.5 | 10 | | 96 | 62 | 136 | | | |
| 1,1-Dichloroethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| cis-1,2-Dichloroethene | 10.4 | 1 | 10 | | 104 | 70 | 130 | | | |
| Bromochloromethane | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Chloroform | 9.82 | 1 | 10 | | 98 | 70 | 130 | | | |
| 2,2-Dichloropropane | 9.26 | 1 | 10 | | 93 | 70 | 130 | | | |
| 1,2-Dichloroethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| 1,1,1-Trichloroethane | 10.9 | 1 | 10 | | 109 | 70 | 130 | | | |
| 1,1-Dichloropropene | 10.9 | 1 | 10 | | 109 | 70 | 130 | | | |
| Carbon tetrachloride | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Benzene | 9.49 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| Dibromomethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| 1,2-Dichloropropane | 9.67 | 1 | 10 | | 97 | 70 | 130 | | | |
| Trichloroethene | 11.1 | 1 | 10 | | 111 | 70 | 130 | | | |
| Bromodichloromethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| cis-1,3-Dichloropropene | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| trans-1,3-Dichloropropene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| 1,1,2-Trichloroethane | 9.37 | 1 | 10 | | 94 | 70 | 130 | | | |
| Toluene | 9.52 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichloropropane | 8.88 | 1 | 10 | | 89 | 70 | 130 | | | |
| Dibromochloromethane | 10.3 | 1 | 10 | | 103 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 18.7 | 2 | 20 | | 94 | 70 | 130 | | | |
| Tetrachloroethene | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| 1,1,1,2-Tetrachloroethane | 9.89 | 1 | 10 | | 99 | 70 | 130 | | | |
| Chlorobenzene | 9.43 | 1 | 10 | | 94 | 70 | 130 | | | |
| Ethylbenzene | 9.73 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| m,p-Xylene | 9.97 | 0.5 | 10 | | 99.7 | 70 | 130 | | | |
| Bromoform | 9.16 | 1 | 10 | | 92 | 70 | 130 | | | |
| Styrene | 9.64 | 1 | 10 | | 96 | 70 | 130 | | | |
| o-Xylene | 9.64 | 0.5 | 10 | | 96 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 8.27 | 1 | 10 | | 83 | 70 | 130 | | | |
| 1,2,3-Trichloropropane | 17.4 | 2 | 20 | | 87 | 70 | 130 | | | |
| Isopropylbenzene | 9.72 | 1 | 10 | | 97 | 70 | 130 | | | |
| Bromobenzene | 9.41 | 1 | 10 | | 94 | 70 | 130 | | | |
| n-Propylbenzene | 9.92 | 1 | 10 | | 99 | 70 | 130 | | | |
| 4-Chlorotoluene | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 2-Chlorotoluene | 9.8 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 9.6 | 1 | 10 | | 96 | 70 | 130 | | | |
| tert-Butylbenzene | 9.42 | 1 | 10 | | 94 | 70 | 130 | | | |
| 1,2,4-Trimethylbenzene | 9.85 | 1 | 10 | | 99 | 70 | 130 | | | |
| sec-Butylbenzene | 9.53 | 1 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichlorobenzene | 9.53 | 1 | 10 | | 95 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 9.13 | 1 | 10 | | 91 | 70 | 130 | | | |
| 4-Isopropyltoluene | 9.78 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,2-Dichlorobenzene | 9.09 | 1 | 10 | | 91 | 70 | 130 | | | |
| n-Butylbenzene | 9.84 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 43 | 3 | 50 | | 86 | 70 | 130 | | | |
| 1,2,4-Trichlorobenzene | 9.98 | 2 | 10 | | 99.8 | 70 | 130 | | | |
| Naphthalene | 8.12 | 2 | 10 | | 81 | 70 | 130 | | | |
| Hexachlorobutadiene | 19.7 | 2 | 20 | | 98 | 70 | 130 | | | |
| 1,2,3-Trichlorobenzene | 9.35 | 2 | 10 | | 94 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.73 | | 10 | | 97 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.75 | | 10 | | 98 | 70 | 130 | | | |

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**Date:** 19-Feb-09

## QC Summary Report

**Work Order:** 09021103

**Sample Matrix Spike** Type **MS** Test Code: _____

File ID: **09021315.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 16:06**

Sample ID: **09021203-02AMS** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 52.9 | 2.5 | 50 | 0 | 106 | 13 | 167 | | | |
| Chloromethane | 43.4 | 10 | 50 | 0 | 87 | 28 | 145 | | | |
| Vinyl chloride | 51.5 | 2.5 | 50 | 0 | 103 | 43 | 134 | | | |
| Chloroethane | 48.6 | 2.5 | 50 | 0 | 97 | 39 | 154 | | | |
| Bromomethane | 55 | 10 | 50 | 0 | 110 | 19 | 176 | | | |
| Trichlorofluoromethane | 59.1 | 2.5 | 50 | 1.53 | 115 | 34 | 160 | | | |
| 1,1-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.7 | 60 | 130 | | | |
| Dichloromethane | 46.4 | 10 | 50 | 0 | 93 | 68 | 130 | | | |
| trans-1,2-Dichloroethene | 51.7 | 2.5 | 50 | 0 | 103 | 63 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 46.5 | 1.3 | 50 | 0 | 93 | 56 | 141 | | | |
| 1,1-Dichloroethane | 49.7 | 2.5 | 50 | 0 | 99 | 61 | 130 | | | |
| cis-1,2-Dichloroethene | 50.4 | 2.5 | 50 | 0 | 101 | 70 | 130 | | | |
| Bromochloromethane | 51 | 2.5 | 50 | 0 | 102 | 70 | 130 | | | |
| Chloroform | 47.3 | 2.5 | 50 | 0 | 95 | 67 | 130 | | | |
| 2,2-Dichloropropane | 43.7 | 2.5 | 50 | 0 | 87 | 30 | 152 | | | |
| 1,2-Dichloroethane | 48.4 | 2.5 | 50 | 0 | 97 | 60 | 135 | | | |
| 1,1,1-Trichloroethane | 51.3 | 2.5 | 50 | 0 | 103 | 59 | 137 | | | |
| 1,1-Dichloropropene | 51.6 | 2.5 | 50 | 0 | 103 | 63 | 130 | | | |
| Carbon tetrachloride | 50.4 | 2.5 | 50 | 0 | 101 | 50 | 147 | | | |
| Benzene | 45.8 | 1.3 | 50 | 0 | 92 | 67 | 130 | | | |
| Dibromomethane | 50.6 | 2.5 | 50 | 0 | 101 | 69 | 133 | | | |
| 1,2-Dichloropropane | 46.8 | 2.5 | 50 | 0 | 94 | 69 | 130 | | | |
| Trichloroethene | 52.2 | 2.5 | 50 | 0 | 104 | 69 | 130 | | | |
| Bromodichloromethane | 50.1 | 2.5 | 50 | 0 | 100 | 66 | 134 | | | |
| cis-1,3-Dichloropropene | 47.5 | 2.5 | 50 | 0 | 95 | 63 | 130 | | | |
| trans-1,3-Dichloropropene | 47.7 | 2.5 | 50 | 0 | 95 | 66 | 131 | | | |
| 1,1,2-Trichloroethane | 44.3 | 2.5 | 50 | 0 | 89 | 68 | 130 | | | |
| Toluene | 47.9 | 1.3 | 50 | 1.37 | 93 | 66 | 130 | | | |
| 1,3-Dichloropropane | 42.9 | 2.5 | 50 | 0 | 86 | 70 | 130 | | | |
| Dibromochloromethane | 49 | 2.5 | 50 | 0 | 98 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 88.9 | 10 | 100 | 0 | 89 | 70 | 130 | | | |
| Tetrachloroethene | 49.4 | 2.5 | 50 | 0 | 99 | 61 | 134 | | | |
| 1,1,1,2-Tetrachloroethane | 47.1 | 2.5 | 50 | 0 | 94 | 70 | 130 | | | |
| Chlorobenzene | 45.7 | 2.5 | 50 | 0 | 91 | 70 | 130 | | | |
| Ethylbenzene | 47 | 1.3 | 50 | 0 | 94 | 68 | 130 | | | |
| m,p-Xylene | 48.5 | 1.3 | 50 | 0 | 97 | 64 | 130 | | | |
| Bromoform | 45.8 | 2.5 | 50 | 0 | 92 | 64 | 138 | | | |
| Styrene | 46 | 2.5 | 50 | 0 | 92 | 69 | 130 | | | |
| o-Xylene | 46.7 | 1.3 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 39.4 | 2.5 | 50 | 0 | 79 | 65 | 131 | | | |
| 1,2,3-Trichloropropane | 83.7 | 10 | 100 | 0 | 84 | 70 | 130 | | | |
| Isopropylbenzene | 47.9 | 2.5 | 50 | 0 | 96 | 64 | 138 | | | |
| Bromobenzene | 46.7 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| n-Propylbenzene | 48.7 | 2.5 | 50 | 0 | 97 | 66 | 132 | | | |
| 4-Chlorotoluene | 48.9 | 2.5 | 50 | 0 | 98 | 70 | 130 | | | |
| 2-Chlorotoluene | 48.5 | 2.5 | 50 | 0 | 97 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 47.2 | 2.5 | 50 | 0 | 94 | 66 | 136 | | | |
| tert-Butylbenzene | 46.2 | 2.5 | 50 | 0 | 92 | 65 | 137 | | | |
| 1,2,4-Trimethylbenzene | 49.2 | 2.5 | 50 | 0 | 98 | 65 | 137 | | | |
| sec-Butylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 134 | | | |
| 1,3-Dichlorobenzene | 46.6 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 45.1 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| 4-Isopropyltoluene | 47.7 | 2.5 | 50 | 0 | 95 | 66 | 137 | | | |
| 1,2-Dichlorobenzene | 44.8 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| n-Butylbenzene | 47.5 | 2.5 | 50 | 0 | 95 | 60 | 142 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 212 | 15 | 250 | 0 | 85 | 67 | 130 | | | |
| 1,2,4-Trichlorobenzene | 49.7 | 10 | 50 | 0 | 99 | 61 | 137 | | | |
| Naphthalene | 41.2 | 10 | 50 | 0 | 82 | 40 | 167 | | | |
| Hexachlorobutadiene | 95.4 | 10 | 100 | 0 | 95 | 61 | 130 | | | |
| 1,2,3-Trichlorobenzene | 48.6 | 10 | 50 | 0 | 97 | 51 | 144 | | | |
| Surr: 1,2-Dichloroethane-d4 | 47.2 | | 50 | | 94 | 70 | 130 | | | |
| Surr: Toluene-d8 | 50.5 | | 50 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 50.4 | | 50 | | 101 | 70 | 130 | | | |

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**Date:** 19-Feb-09

## QC Summary Report

**Work Order:** 09021103

**Sample Matrix Spike Duplicate** Type **MSD** Test Code: _____

File ID: **09021316.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 16:29**

Sample ID: **09021203-02AMSD** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 51.6 | 2.5 | 50 | 0 | 103 | 13 | 167 | 52.87 | 2.5(20) | |
| Chloromethane | 42.9 | 10 | 50 | 0 | 86 | 28 | 145 | 43.41 | 1.1(20) | |
| Vinyl chloride | 50.2 | 2.5 | 50 | 0 | 100 | 43 | 134 | 51.46 | 2.5(20) | |
| Chloroethane | 47.8 | 2.5 | 50 | 0 | 96 | 39 | 154 | 48.55 | 1.7(20) | |
| Bromomethane | 55.4 | 10 | 50 | 0 | 111 | 19 | 176 | 54.97 | 0.7(20) | |
| Trichlorofluoromethane | 58.7 | 2.5 | 50 | 1.53 | 114 | 34 | 160 | 59.12 | 0.6(20) | |
| 1,1-Dichloroethene | 48.1 | 2.5 | 50 | 0 | 96 | 60 | 130 | 49.85 | 3.7(20) | |
| Dichloromethane | 45.7 | 10 | 50 | 0 | 91 | 68 | 130 | 46.43 | 1.5(20) | |
| trans-1,2-Dichloroethene | 50.3 | 2.5 | 50 | 0 | 101 | 63 | 130 | 51.65 | 2.7(20) | |
| Methyl tert-butyl ether (MTBE) | 47.6 | 1.3 | 50 | 0 | 95 | 56 | 141 | 46.53 | 2.2(20) | |
| 1,1-Dichloroethane | 48.2 | 2.5 | 50 | 0 | 96 | 61 | 130 | 49.72 | 3.1(20) | |
| cis-1,2-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.8 | 70 | 130 | 50.4 | 1.0(20) | |
| Bromochloromethane | 50.8 | 2.5 | 50 | 0 | 102 | 70 | 130 | 51.01 | 0.4(20) | |
| Chloroform | 46.2 | 2.5 | 50 | 0 | 92 | 67 | 130 | 47.27 | 2.3(20) | |
| 2,2-Dichloropropane | 42.5 | 2.5 | 50 | 0 | 85 | 30 | 152 | 43.71 | 2.9(20) | |
| 1,2-Dichloroethane | 48 | 2.5 | 50 | 0 | 96 | 60 | 135 | 48.38 | 0.7(20) | |
| 1,1,1-Trichloroethane | 50.6 | 2.5 | 50 | 0 | 101 | 59 | 137 | 51.25 | 1.3(20) | |
| 1,1-Dichloropropene | 50 | 2.5 | 50 | 0 | 100 | 63 | 130 | 51.56 | 3.0(20) | |
| Carbon tetrachloride | 49.4 | 2.5 | 50 | 0 | 99 | 50 | 147 | 50.38 | 1.9(20) | |
| Benzene | 44.7 | 1.3 | 50 | 0 | 89 | 67 | 130 | 45.84 | 2.4(20) | |
| Dibromomethane | 51.2 | 2.5 | 50 | 0 | 102 | 69 | 133 | 50.64 | 1.1(20) | |
| 1,2-Dichloropropane | 45.8 | 2.5 | 50 | 0 | 92 | 69 | 130 | 46.75 | 2.1(20) | |
| Trichloroethene | 51.2 | 2.5 | 50 | 0 | 102 | 69 | 130 | 52.16 | 1.8(20) | |
| Bromodichloromethane | 50.3 | 2.5 | 50 | 0 | 101 | 66 | 134 | 50.13 | 0.3(20) | |
| cis-1,3-Dichloropropene | 46.9 | 2.5 | 50 | 0 | 94 | 63 | 130 | 47.45 | 1.2(20) | |
| trans-1,3-Dichloropropene | 47.4 | 2.5 | 50 | 0 | 95 | 66 | 131 | 47.66 | 0.5(20) | |
| 1,1,2-Trichloroethane | 44.3 | 2.5 | 50 | 0 | 89 | 68 | 130 | 44.31 | 0.0(20) | |
| Toluene | 44.9 | 1.3 | 50 | 1.37 | 87 | 66 | 130 | 47.85 | 6.3(20) | |
| 1,3-Dichloropropane | 42.4 | 2.5 | 50 | 0 | 85 | 70 | 130 | 42.94 | 1.3(20) | |
| Dibromochloromethane | 48.3 | 2.5 | 50 | 0 | 97 | 70 | 130 | 49 | 1.5(20) | |
| 1,2-Dibromoethane (EDB) | 89.5 | 10 | 100 | 0 | 89 | 70 | 130 | 88.89 | 0.6(20) | |
| Tetrachloroethene | 47.4 | 2.5 | 50 | 0 | 95 | 61 | 134 | 49.44 | 4.1(20) | |
| 1,1,1,2-Tetrachloroethane | 46 | 2.5 | 50 | 0 | 92 | 70 | 130 | 47.12 | 2.4(20) | |
| Chlorobenzene | 44 | 2.5 | 50 | 0 | 88 | 70 | 130 | 45.7 | 3.8(20) | |
| Ethylbenzene | 44.6 | 1.3 | 50 | 0 | 89 | 68 | 130 | 47.02 | 5.2(20) | |
| m,p-Xylene | 45.2 | 1.3 | 50 | 0 | 90 | 64 | 130 | 48.51 | 7.0(20) | |
| Bromoform | 45.2 | 2.5 | 50 | 0 | 90 | 64 | 138 | 45.77 | 1.4(20) | |
| Styrene | 44.5 | 2.5 | 50 | 0 | 89 | 69 | 130 | 45.99 | 3.4(20) | |
| o-Xylene | 44.8 | 1.3 | 50 | 0 | 90 | 70 | 130 | 46.72 | 4.1(20) | |
| 1,1,2,2-Tetrachloroethane | 39.9 | 2.5 | 50 | 0 | 80 | 65 | 131 | 39.39 | 1.3(20) | |
| 1,2,3-Trichloropropane | 83.7 | 10 | 100 | 0 | 84 | 70 | 130 | 83.74 | 0.0(20) | |
| Isopropylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 64 | 138 | 47.9 | 3.3(20) | |
| Bromobenzene | 45.7 | 2.5 | 50 | 0 | 91 | 70 | 130 | 46.73 | 2.2(20) | |
| n-Propylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 132 | 48.72 | 4.2(20) | |
| 4-Chlorotoluene | 47.8 | 2.5 | 50 | 0 | 96 | 70 | 130 | 48.94 | 2.4(20) | |
| 2-Chlorotoluene | 47.4 | 2.5 | 50 | 0 | 95 | 70 | 130 | 48.47 | 2.3(20) | |
| 1,3,5-Trimethylbenzene | 46 | 2.5 | 50 | 0 | 92 | 66 | 136 | 47.16 | 2.4(20) | |
| tert-Butylbenzene | 45.5 | 2.5 | 50 | 0 | 91 | 65 | 137 | 46.18 | 1.6(20) | |
| 1,2,4-Trimethylbenzene | 46.6 | 2.5 | 50 | 0 | 93 | 65 | 137 | 49.19 | 5.5(20) | |
| sec-Butylbenzene | 45.1 | 2.5 | 50 | 0 | 90 | 66 | 134 | 46.72 | 3.5(20) | |
| 1,3-Dichlorobenzene | 46.5 | 2.5 | 50 | 0 | 93 | 70 | 130 | 46.59 | 0.1(20) | |
| 1,4-Dichlorobenzene | 44.2 | 2.5 | 50 | 0 | 88 | 70 | 130 | 45.14 | 2.2(20) | |
| 4-Isopropyltoluene | 46.6 | 2.5 | 50 | 0 | 93 | 66 | 137 | 47.66 | 2.4(20) | |
| 1,2-Dichlorobenzene | 44.3 | 2.5 | 50 | 0 | 89 | 70 | 130 | 44.77 | 1.1(20) | |
| n-Butylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 60 | 142 | 47.53 | 2.7(20) | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 207 | 15 | 250 | 0 | 83 | 67 | 130 | 212.3 | 2.7(20) | |
| 1,2,4-Trichlorobenzene | 50 | 10 | 50 | 0 | 100 | 61 | 137 | 49.69 | 0.6(20) | |
| Naphthalene | 40.8 | 10 | 50 | 0 | 82 | 40 | 167 | 41.17 | 1.0(20) | |
| Hexachlorobutadiene | 96.3 | 10 | 100 | 0 | 96 | 61 | 130 | 95.4 | 0.9(20) | |
| 1,2,3-Trichlorobenzene | 48 | 10 | 50 | 0 | 96 | 51 | 144 | 48.57 | 1.1(20) | |
| Surr: 1,2-Dichloroethane-d4 | 46.8 | | 50 | | 94 | 70 | 130 | | | |
| Surr: Toluene-d8 | 49.6 | | 50 | | 99 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 49.1 | | 50 | | 98 | 70 | 130 | | | |

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *19-Feb-09*

## QC Summary Report

**Work Order:** 09021103

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# CHAIN-OF-CUSTODY RECORD

CA AMENDED

**Billing Information :**
Battelle
505 King Avenue

Columbus, OH 43201

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

**WorkOrder : BMI09021103**

**Report Due By : 5:00 PM On : 25-Feb-09**

**Client:**
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

| Report Attention | Phone Number | EMail Address |
|---|---|---|
| David Conner | (619) 574-4827 x | connerd@battelle.org |
| Betsy Cutie | (614) 424-4899 x | cutiee@batelle.org |
| Shane Walton | (614) 424-4117 x | waltons@battelle.org |

EDD Required : **Yes**

Sampled by : Client

PO : 218013

Client's COC # : 026063 Job : G005862/JPL Groundwater Monitoring

| Cooler Temp | Samples Received | Date Printed |
|---|---|---|
| 4 °C | 11-Feb-09 | 13-Feb-09 |

QC Level : S4 = Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

| Alpha Sample ID | Client Sample ID | Matrix | Collection Date | No. of Bottles Alpha | Sub | TAT | Requested Tests 300_0(A)_W | 300_0(B)_W | 300_0(C)_W | 314_W | METALS_D W | VOC_TIC_W | VOC_W | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BMI09021103-01A | MW-7 | AQ | 02/10/09 09:55 | 5 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | |
| BMI09021103-02A | MW-16 | AQ | 02/10/09 12:20 | 10 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | MS/MSD |
| BMI09021103-03A | DUPE-06-1Q09 | AQ | 02/10/09 00:00 | 5 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | |
| BMI09021103-04A | TB-12-02/10/09 | AQ | 02/10/09 00:00 | 1 | 0 | 10 | | | | | | VOC by 524 Criteria | VOC by 524 Criteria | | Reno Trip Blank 1/6/09 |

**Comments:** No security seals. Frozen ice. Temp Blank #7634 received @ 4°. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. Perchlorate RL of 1.0 ug/L. Amended 2/13/09 @ 9:05 to change sample ID for -03A to DUPE-06-1Q09 : per email from David Conner. LE

| | Signature | Print Name | Company | Date/Time |
|---|---|---|---|---|
| **Logged in by:** | Patricia Edrosa | Patricia Edrosa | Alpha Analytical, Inc. | 2/13/09 9:05 |

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

# CHAIN-OF-CUSTODY RECORD

CA

**Billing Information :**
Battelle
505 King Avenue

Columbus, OH 43201

**Client:**
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

| Report Attention | Phone Number | EMail Address |
|---|---|---|
| David Conner | (619) 574-4827 x | connerd@battelle.org |
| Betsy Cutie | (614) 424-4899 x | cutiee@batelle.org |
| Shane Walton | (614) 424-4117 x | waltons@battelle.org |

**WorkOrder : BMI09021103**

**Report Due By : 5:00 PM On : 25-Feb-2009**

EDD Required : **Yes**

Sampled by : Client

PO : 218013

Client's COC # : 026063 Job : G005862/JPL Groundwater Monitoring

| Cooler Temp | Samples Received | Date Printed |
|---|---|---|
| 4 °C | 11-Feb-2009 | **11-Feb-2009** |

QC Level : S4 = Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

| Alpha Sample ID | Client Sample ID | Matrix | Collection Date | No. of Bottles Alpha | Sub | TAT | Requested Tests 300_0(A)_W | 300_0(B)_W | 300_0(C)_W | 314_W | METALS_DW | VOC_TIC_W | VOC_W | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BMI09021103-01A | MW-7 | AQ | 02/10/09 09:55 | 5 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | |
| BMI09021103-02A | MW-16 | AQ | 02/10/09 12:20 | 10 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | MS/MSD |
| BMI09021103-03A | DUPE-05-1Q09 | AQ | 02/10/09 00:00 | 5 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | |
| BMI09021103-04A | TB-12-02/10/09 | AQ | 02/10/09 00:00 | 1 | 0 | 10 | | | | | | VOC by 524 Criteria | VOC by 524 Criteria | | Reno Trip Blank 1/6/09 |

**Comments:** No security seals. Frozen ice. Temp Blank #7634 received @ 4°. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. Perchlorate RL of 1.0 ug/L. :

| | Signature | Print Name | Company | Date/Time |
|---|---|---|---|---|
| **Logged in by:** | Elizabeth Adcox | Elizabeth Adcox | **Alpha Analytical, Inc.** | 2-11-09 |

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**Billing Information:**
Name GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

**Samples Collected From Which State?**
AZ ___ CA X NV ___ WA ___
ID ___ OR ___ OTHER ___

026063
Page # 1 of 1

| Client Name | P.O. # | Job # |
|---|---|---|
| DAVID CONNER | 218013 | G005862 |
| Address: 3990 OLD TOWN AVE, C-205 | EMail Address: | |
| City, State, Zip: SAN DIEGO, CA 92110 | Phone # 619-726-7311 | Fax # |

Analyses Required: VOC (524.2); TOTAL Cr (200.8); Cl⁻, SO₄²⁻, NO₃⁻, PO₄³⁻ (300.0); Cl⁻ (314.0)

Required QC Level? I II (III) IV

EDD / EDF? YES ___ NO ___

Global ID # _____

| Time Sampled | Date Sampled | Matrix* See Key Below | Sampled by / Lab ID Number (Office Use Only) | Sample Description | TAT | Field Filtered | Total and type of containers ** See below | VOC | TOTAL Cr | Cl⁻, SO₄²⁻, NO₃⁻, PO₄³⁻ | Cl⁻ | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0955 | 2/10/09 | AQ | BMT0902110 3-01 | MW-7 | | | 5 | X | X | X | X | |
| 1220 | " | " | -02 | MW-16 | | | 10 | X | X | X | X | MS/MSD |
| " | " | " | -03 | DUPE-05-1209 | | | 5 | X | X | X | X | DUPLICATE |
| " | " | " | -04 | TB-12-02/10/09 | | | 1 | X | | | | TRIP BLANK |

**ADDITIONAL INSTRUCTIONS:**

| | Signature | Print Name | Company | Date | Time |
|---|---|---|---|---|---|
| Relinquished by | | Lance Brogdon | INSIGHT | 02/10/09 | 1330 |
| Received by | Elizabeth Adcox | Elizabeth Adcox | Alpha | 2/11/09 | 1021 |
| Relinquished by | | | | | |
| Received by | | | | | |
| Relinquished by | | | | | |
| Received by | | | | | |

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**NOTE:** Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *22-Feb-09*

David Conner
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(619) 574-4827

## CASE NARRATIVE

**Project:** G005862/JPL Groundwater Monitoring
**Work Order:** BMI09021203 **Cooler Temp:** 4 °C

| Alpha's Sample ID | Client's Sample ID | Matrix |
|---|---|---|
| 09021203-01A | MW-13 | Aqueous |
| 09021203-02A | MW-8 | Aqueous |
| 09021203-03A | TB-13-02/11/09 | Aqueous |

**Manually Integrated Analytes**

| Alpha's Sample ID | Test Reference | Analyte |
|---|---|---|
| 09021203-01A | EPA Method 314.0 | Perchlorate |
| 09021203-02A | EPA Method 314.0 | Perchlorate |

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/12/09

Job#: G005862/JPL Groundwater Monitoring

Anions by IC
EPA Method 300.0 / 9056

| | Parameter | Concentration | Reporting Limit | Date / Time Sampled | Date / Time Analyzed |
|---|---|---|---|---|---|
| Client ID : **MW-13** | Nitrite (NO2) - N | ND | 0.25 mg/L | 02/11/09 09:01 | 02/12/09 12:51 |
| Lab ID : BMI09021203-01A | Nitrate (NO3) - N | 6.6 | 0.25 mg/L | 02/11/09 09:01 | 02/12/09 12:51 |
| | Phosphate, ortho - P | ND | 0.25 mg/L | 02/11/09 09:01 | 02/12/09 12:51 |
| Client ID : **MW-8** | Nitrite (NO2) - N | ND | 0.25 mg/L | 02/11/09 11:09 | 02/12/09 13:10 |
| Lab ID : BMI09021203-02A | Nitrate (NO3) - N | 4.1 | 0.25 mg/L | 02/11/09 11:09 | 02/12/09 13:10 |
| | Phosphate, ortho - P | ND | 0.25 mg/L | 02/11/09 11:09 | 02/12/09 13:10 |

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**2/25/09**
**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/12/09

Job#: G005862/JPL Groundwater Monitoring

Anions by IC
EPA Method 300.0 / 9056

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-13** | | | | | |
| Lab ID : | BMI09021203-01A | Chloride | 80 | 0.50 mg/L | 02/11/09 | 02/12/09 |
| | | Sulfate (SO4) | 77 | 0.50 mg/L | 02/11/09 | 02/12/09 |
| Client ID : | **MW-8** | | | | | |
| Lab ID : | BMI09021203-02A | Chloride | 41 | 0.50 mg/L | 02/11/09 | 02/12/09 |
| | | Sulfate (SO4) | 78 | 0.50 mg/L | 02/11/09 | 02/12/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

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**2/25/09**
**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/12/09

Job#: G005862/JPL Groundwater Monitoring

Perchlorate by Ion Chromatography
EPA Method 314.0

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-13** | | | | | |
| Lab ID : | BMI09021203-01A | Perchlorate | 13.9 | 1.00 µg/L | 02/11/09 | 02/12/09 |
| Client ID : | **MW-8** | | | | | |
| Lab ID : | BMI09021203-02A | Perchlorate | 171 | 10.0 µg/L | 02/11/09 | 02/13/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

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**2/25/09**
**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/12/09

Job#: G005862/JPL Groundwater Monitoring

Metals by ICPMS
EPA Method 200.8

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-13** | | | | | |
| Lab ID : | BMI09021203-01A | Chromium (Cr) | 0.031 | 0.0050 mg/L | 02/11/09 | 02/14/09 |
| Client ID : | **MW-8** | | | | | |
| Lab ID : | BMI09021203-02A | Chromium (Cr) | 0.0062 | 0.0050 mg/L | 02/11/09 | 02/14/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

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**2/25/09**
**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

### Tentatively Identified Compounds - Volatile Organics by GC/MS

| | | Parameter | Estimated Concentration | Estimated Reporting Limit | Date Received | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Client ID : | **MW-13** | | | | | | |
| Lab ID : | BMI09021203-01A | * * * None Found * * * | ND | 2.0 µg/L | 02/12/09 | 02/11/09 | 02/13/09 |
| Client ID : | **MW-8** | | | | | | |
| Lab ID : | BMI09021203-02A | * * * None Found * * * | ND | 2.0 µg/L | 02/12/09 | 02/11/09 | 02/13/09 |
| Client ID : | **TB-13-02/11/09** | | | | | | |
| Lab ID : | BMI09021203-03A | * * * None Found * * * | ND | 2.0 µg/L | 02/12/09 | 02/11/09 | 02/13/09 |

Note: Analysis conducted using EPA Method 524.2 criteria.
ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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**2/25/09**
**Report Date**

Page 1 of 1

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021203-01A
Client I.D. Number: MW-13

Sampled: 02/11/09
Received: 02/12/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | |
|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | |
| 2 | Chloromethane | ND | 1.0 | µg/L | |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | |
| 4 | Chloroethane | ND | 0.50 | µg/L | |
| 5 | Bromomethane | ND | 1.0 | µg/L | |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | |
| 8 | Dichloromethane | ND | 1.0 | µg/L | |
| 9 | Freon-113 | ND | 0.50 | µg/L | |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | |
| 12 | 1,1-Dichloroethane | 0.96 | 0.50 | µg/L | |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | |
| 16 | Chloroform | ND | 0.50 | µg/L | |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | |
| 22 | Benzene | ND | 0.50 | µg/L | |
| 23 | Dibromomethane | ND | 0.50 | µg/L | |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | |
| 25 | Trichloroethene | ND | 0.50 | µg/L | |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | |
| 31 | Toluene | 1.0 | 0.50 | µg/L | |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | |
| 35 | Tetrachloroethene | 1.6 | 0.50 | µg/L | |
| 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 37 | Chlorobenzene | ND | 0.50 | µg/L | |
| 38 | Ethylbenzene | ND | 0.50 | µg/L | |
| 39 | m,p-Xylene | ND | 0.50 | µg/L | |
| 40 | Bromoform | ND | 0.50 | µg/L | |
| 41 | Styrene | ND | 0.50 | µg/L | |
| 42 | o-Xylene | ND | 0.50 | µg/L | |
| 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L | |
| 45 | Isopropylbenzene | ND | 0.50 | µg/L | |
| 46 | Bromobenzene | ND | 0.50 | µg/L | |
| 47 | n-Propylbenzene | ND | 0.50 | µg/L | |
| 48 | 4-Chlorotoluene | ND | 0.50 | µg/L | |
| 49 | 2-Chlorotoluene | ND | 0.50 | µg/L | |
| 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L | |
| 51 | tert-Butylbenzene | ND | 0.50 | µg/L | |
| 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L | |
| 53 | sec-Butylbenzene | ND | 0.50 | µg/L | |
| 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L | |
| 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L | |
| 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L | |
| 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L | |
| 58 | n-Butylbenzene | ND | 0.50 | µg/L | |
| 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L | |
| 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L | |
| 61 | Naphthalene | ND | 1.0 | µg/L | |
| 62 | Hexachlorobutadiene | ND | 1.0 | µg/L | |
| 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L | |
| 64 | Surr: 1,2-Dichloroethane-d4 | 106 | (70-130) | %REC | |
| 65 | Surr: Toluene-d8 | 102 | (70-130) | %REC | |
| 66 | Surr: 4-Bromofluorobenzene | 95 | (70-130) | %REC | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com




2/25/09

**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021203-02A
Client I.D. Number: MW-8

Sampled: 02/11/09
Received: 02/12/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | |
|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | |
| 2 | Chloromethane | ND | 1.0 | µg/L | |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | |
| 4 | Chloroethane | ND | 0.50 | µg/L | |
| 5 | Bromomethane | ND | 1.0 | µg/L | |
| 6 | Trichlorofluoromethane | 1.5 | 0.50 | µg/L | |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | |
| 8 | Dichloromethane | ND | 1.0 | µg/L | |
| 9 | Freon-113 | ND | 0.50 | µg/L | |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | |
| 16 | Chloroform | ND | 0.50 | µg/L | |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | |
| 22 | Benzene | ND | 0.50 | µg/L | |
| 23 | Dibromomethane | ND | 0.50 | µg/L | |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | |
| 25 | Trichloroethene | ND | 0.50 | µg/L | |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | |
| 31 | Toluene | 1.4 | 0.50 | µg/L | |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | |
| 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 37 | Chlorobenzene | ND | 0.50 | µg/L | |
| 38 | Ethylbenzene | ND | 0.50 | µg/L | |
| 39 | m,p-Xylene | ND | 0.50 | µg/L | |
| 40 | Bromoform | ND | 0.50 | µg/L | |
| 41 | Styrene | ND | 0.50 | µg/L | |
| 42 | o-Xylene | ND | 0.50 | µg/L | |
| 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L | |
| 45 | Isopropylbenzene | ND | 0.50 | µg/L | |
| 46 | Bromobenzene | ND | 0.50 | µg/L | |
| 47 | n-Propylbenzene | ND | 0.50 | µg/L | |
| 48 | 4-Chlorotoluene | ND | 0.50 | µg/L | |
| 49 | 2-Chlorotoluene | ND | 0.50 | µg/L | |
| 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L | |
| 51 | tert-Butylbenzene | ND | 0.50 | µg/L | |
| 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L | |
| 53 | sec-Butylbenzene | ND | 0.50 | µg/L | |
| 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L | |
| 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L | |
| 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L | |
| 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L | |
| 58 | n-Butylbenzene | ND | 0.50 | µg/L | |
| 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L | |
| 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L | |
| 61 | Naphthalene | ND | 1.0 | µg/L | |
| 62 | Hexachlorobutadiene | ND | 1.0 | µg/L | |
| 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L | |
| 64 | Surr: 1,2-Dichloroethane-d4 | 107 | (70-130) | %REC | |
| 65 | Surr: Toluene-d8 | 102 | (70-130) | %REC | |
| 66 | Surr: 4-Bromofluorobenzene | 95 | (70-130) | %REC | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

2/25/09

**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021203-03A
Client I.D. Number: TB-13-02/11/09

Sampled: 02/11/09
Received: 02/12/09
Analyzed: 02/13/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | ND | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 103 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 102 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 95 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**2/25/09**

**Report Date**

# *Alpha Analytical, Inc.*

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# VOC Sample Preservation Report

**Work Order:** BMI09021203 **Project:** G005862/JPL Groundwater Monitoring

| Alpha's Sample ID | Client's Sample ID | Matrix | pH |
|---|---|---|---|
| 09021203-01A | MW-13 | Aqueous | 2 |
| 09021203-02A | MW-8 | Aqueous | 2 |
| 09021203-03A | TB-13-02/11/09 | Aqueous | 2 |

**2/25/09**

**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *20-Feb-09*

## QC Summary Report

**Work Order:** 09021203

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **21506A** Analysis Date: **02/12/2009 11:56**

Sample ID: **MB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | ND | 0.25 | | | | | | | | |
| Nitrate (NO3) - N | ND | 0.25 | | | | | | | | |
| Phosphate, ortho - P | ND | 0.25 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **21506A** Analysis Date: **02/12/2009 12:14**

Sample ID: **LFB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.32 | 0.25 | 1.25 | | 106 | 90 | 110 | | | |
| Nitrate (NO3) - N | 1.32 | 0.25 | 1.25 | | 105 | 90 | 110 | | | |
| Phosphate, ortho - P | 1.21 | 0.25 | 1.25 | | 97 | 90 | 110 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21506A** Analysis Date: **02/12/2009 13:28**

Sample ID: **09021203-02ALFM** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.29 | 0.25 | 1.25 | 0 | 103 | 80 | 120 | | | |
| Nitrate (NO3) - N | 5.38 | 0.25 | 1.25 | 4.098 | 103 | 80 | 120 | | | |
| Phosphate, ortho - P | 1.23 | 0.25 | 1.25 | 0 | 99 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **23** Batch ID: **21506A** Analysis Date: **02/12/2009 13:47**

Sample ID: **09021203-02ALFMD** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrite (NO2) - N | 1.34 | 0.25 | 1.25 | 0 | 107 | 80 | 120 | 1.291 | 3.4(10) | |
| Nitrate (NO3) - N | 5.35 | 0.25 | 1.25 | 4.098 | 100 | 80 | 120 | 5.384 | 0.6(10) | |
| Phosphate, ortho - P | 1.19 | 0.25 | 1.25 | 0 | 96 | 80 | 120 | 1.232 | 3.1(10) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *20-Feb-09*

## QC Summary Report

**Work Order:** 09021203

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **21506B** Analysis Date: **02/12/2009 11:56**

Sample ID: **MB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | ND | 0.5 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **21506B** Analysis Date: **02/12/2009 12:14**

Sample ID: **LFB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 10.2 | 0.5 | 10 | | 102 | 90 | 110 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21506B** Analysis Date: **02/12/2009 13:28**

Sample ID: **09021203-02ALFM** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 88.6 | 0.5 | 10 | 78.27 | 103 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **23** Batch ID: **21506B** Analysis Date: **02/12/2009 13:47**

Sample ID: **09021203-02ALFMD** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate (SO4) | 88.7 | 0.5 | 10 | 78.27 | 104 | 80 | 120 | 88.58 | 0.1(10) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# *Alpha Analytical, Inc.*

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**Date:** *20-Feb-09*

## QC Summary Report

**Work Order:** 09021203

### Method Blank

Type **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **21506C** Analysis Date: **02/12/2009 11:56**

Sample ID: **MB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.5 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **21506C** Analysis Date: **02/12/2009 12:14**

Sample ID: **LFB-21506** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.54 | 0.5 | 5 | | 91 | 90 | 110 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **21506C** Analysis Date: **02/12/2009 13:28**

Sample ID: **09021203-02ALFM** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 45.9 | 0.5 | 5 | 40.7 | 105 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **23** Batch ID: **21506C** Analysis Date: **02/12/2009 13:47**

Sample ID: **09021203-02ALFMD** Units : **mg/L** Run ID: **IC_1_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 46 | 0.5 | 5 | 40.7 | 106 | 80 | 120 | 45.93 | 0.2(10) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *22-Feb-09*

## QC Summary Report

**Work Order:** 09021203

### Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **21508** Analysis Date: **02/12/2009 13:29**

Sample ID: **MB-21508** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | ND | 1 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **21508** Analysis Date: **02/12/2009 13:47**

Sample ID: **LFB-21508** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.7 | 2 | 25 | | 99 | 85 | 115 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **22** Batch ID: **21508** Analysis Date: **02/12/2009 15:56**

Sample ID: **09021103-02ALFM** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 41.6 | 2 | 25 | 18.04 | 94 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **23** Batch ID: **21508** Analysis Date: **02/12/2009 16:14**

Sample ID: **09021103-02ALFMD** Units : **µg/L** Run ID: **IC_3_090212A** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 43.4 | 2 | 25 | 18.04 | 102 | 80 | 120 | 41.62 | 4.2(15) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *20-Feb-09*

## QC Summary Report

**Work Order:** 09021203

### Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **021309.B\136SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:39**

Sample ID: **MB-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | ND | 0.005 | | | | | | | | |

### Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **021309.B\138_LCS.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:51**

Sample ID: **LCS-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0494 | 0.005 | 0.05 | | 99 | 80 | 120 | | | |

### Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **021309.B\142SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:14**

Sample ID: **09021004-02AMS** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0504 | 0.005 | 0.05 | 0 | 101 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **021309.B\143SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:19**

Sample ID: **09021004-02AMSD** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0518 | 0.005 | 0.05 | 0 | 104 | 80 | 120 | 0.05035 | 2.9(20) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** 20-Feb-09

## QC Summary Report

**Work Order:** 09021203

**Method Blank** Type **MBLK** Test Code: _____

File ID: **09021310.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 14:14**

Sample ID: **MBLK MS15W0213M** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 0.5 | | | | | | | | |
| Chloromethane | ND | 1 | | | | | | | | |
| Vinyl chloride | ND | 0.5 | | | | | | | | |
| Chloroethane | ND | 0.5 | | | | | | | | |
| Bromomethane | ND | 1 | | | | | | | | |
| Trichlorofluoromethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethene | ND | 0.5 | | | | | | | | |
| Dichloromethane | ND | 1 | | | | | | | | |
| Freon-113 | ND | 0.5 | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethane | ND | 0.5 | | | | | | | | |
| 2-Butanone (MEK) | ND | 10 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Bromochloromethane | ND | 0.5 | | | | | | | | |
| Chloroform | ND | 0.5 | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloroethane | ND | 0.5 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloropropene | ND | 0.5 | | | | | | | | |
| Carbon tetrachloride | ND | 0.5 | | | | | | | | |
| Benzene | ND | 0.5 | | | | | | | | |
| Dibromomethane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| Trichloroethene | ND | 0.5 | | | | | | | | |
| Bromodichloromethane | ND | 0.5 | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.5 | | | | | | | | |
| Toluene | ND | 0.5 | | | | | | | | |
| 1,3-Dichloropropane | ND | 0.5 | | | | | | | | |
| Dibromochloromethane | ND | 0.5 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1 | | | | | | | | |
| Tetrachloroethene | ND | 0.5 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| Chlorobenzene | ND | 0.5 | | | | | | | | |
| Ethylbenzene | ND | 0.5 | | | | | | | | |
| m,p-Xylene | ND | 0.5 | | | | | | | | |
| Bromoform | ND | 0.5 | | | | | | | | |
| Styrene | ND | 0.5 | | | | | | | | |
| o-Xylene | ND | 0.5 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1 | | | | | | | | |
| Isopropylbenzene | ND | 0.5 | | | | | | | | |
| Bromobenzene | ND | 0.5 | | | | | | | | |
| n-Propylbenzene | ND | 0.5 | | | | | | | | |
| 4-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 2-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| tert-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| sec-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 4-Isopropyltoluene | ND | 0.5 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| n-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1 | | | | | | | | |
| Naphthalene | ND | 1 | | | | | | | | |
| Hexachlorobutadiene | ND | 1 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10.5 | | 10 | | 105 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |

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**Date:** 20-Feb-09

## QC Summary Report

**Work Order:** 09021203

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 9.56 | | | 10 | | 96 | 70 | 130 | | |

**Laboratory Control Spike** Type **LCS** Test Code: _____

File ID: **09021308.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 13:13**

Sample ID: **LCS MS15W0213M** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 12.1 | 1 | 10 | | 121 | 70 | 130 | | | |
| Chloromethane | 8.85 | 2 | 10 | | 89 | 70 | 130 | | | |
| Vinyl chloride | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Chloroethane | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| Bromomethane | 11 | 2 | 10 | | 110 | 70 | 130 | | | |
| Trichlorofluoromethane | 12.6 | 1 | 10 | | 126 | 70 | 130 | | | |
| 1,1-Dichloroethene | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Dichloromethane | 9.57 | 2 | 10 | | 96 | 70 | 130 | | | |
| trans-1,2-Dichloroethene | 10.7 | 1 | 10 | | 107 | 70 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 9.58 | 0.5 | 10 | | 96 | 62 | 136 | | | |
| 1,1-Dichloroethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| cis-1,2-Dichloroethene | 10.4 | 1 | 10 | | 104 | 70 | 130 | | | |
| Bromochloromethane | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Chloroform | 9.82 | 1 | 10 | | 98 | 70 | 130 | | | |
| 2,2-Dichloropropane | 9.26 | 1 | 10 | | 93 | 70 | 130 | | | |
| 1,2-Dichloroethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| 1,1,1-Trichloroethane | 10.9 | 1 | 10 | | 109 | 70 | 130 | | | |
| 1,1-Dichloropropene | 10.9 | 1 | 10 | | 109 | 70 | 130 | | | |
| Carbon tetrachloride | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Benzene | 9.49 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| Dibromomethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| 1,2-Dichloropropane | 9.67 | 1 | 10 | | 97 | 70 | 130 | | | |
| Trichloroethene | 11.1 | 1 | 10 | | 111 | 70 | 130 | | | |
| Bromodichloromethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| cis-1,3-Dichloropropene | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| trans-1,3-Dichloropropene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| 1,1,2-Trichloroethane | 9.37 | 1 | 10 | | 94 | 70 | 130 | | | |
| Toluene | 9.52 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichloropropane | 8.88 | 1 | 10 | | 89 | 70 | 130 | | | |
| Dibromochloromethane | 10.3 | 1 | 10 | | 103 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 18.7 | 2 | 20 | | 94 | 70 | 130 | | | |
| Tetrachloroethene | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| 1,1,1,2-Tetrachloroethane | 9.89 | 1 | 10 | | 99 | 70 | 130 | | | |
| Chlorobenzene | 9.43 | 1 | 10 | | 94 | 70 | 130 | | | |
| Ethylbenzene | 9.73 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| m,p-Xylene | 9.97 | 0.5 | 10 | | 99.7 | 70 | 130 | | | |
| Bromoform | 9.16 | 1 | 10 | | 92 | 70 | 130 | | | |
| Styrene | 9.64 | 1 | 10 | | 96 | 70 | 130 | | | |
| o-Xylene | 9.64 | 0.5 | 10 | | 96 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 8.27 | 1 | 10 | | 83 | 70 | 130 | | | |
| 1,2,3-Trichloropropane | 17.4 | 2 | 20 | | 87 | 70 | 130 | | | |
| Isopropylbenzene | 9.72 | 1 | 10 | | 97 | 70 | 130 | | | |
| Bromobenzene | 9.41 | 1 | 10 | | 94 | 70 | 130 | | | |
| n-Propylbenzene | 9.92 | 1 | 10 | | 99 | 70 | 130 | | | |
| 4-Chlorotoluene | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 2-Chlorotoluene | 9.8 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 9.6 | 1 | 10 | | 96 | 70 | 130 | | | |
| tert-Butylbenzene | 9.42 | 1 | 10 | | 94 | 70 | 130 | | | |
| 1,2,4-Trimethylbenzene | 9.85 | 1 | 10 | | 99 | 70 | 130 | | | |
| sec-Butylbenzene | 9.53 | 1 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichlorobenzene | 9.53 | 1 | 10 | | 95 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 9.13 | 1 | 10 | | 91 | 70 | 130 | | | |
| 4-Isopropyltoluene | 9.78 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,2-Dichlorobenzene | 9.09 | 1 | 10 | | 91 | 70 | 130 | | | |
| n-Butylbenzene | 9.84 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 43 | 3 | 50 | | 86 | 70 | 130 | | | |
| 1,2,4-Trichlorobenzene | 9.98 | 2 | 10 | | 99.8 | 70 | 130 | | | |
| Naphthalene | 8.12 | 2 | 10 | | 81 | 70 | 130 | | | |
| Hexachlorobutadiene | 19.7 | 2 | 20 | | 98 | 70 | 130 | | | |
| 1,2,3-Trichlorobenzene | 9.35 | 2 | 10 | | 94 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.73 | | 10 | | 97 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.75 | | 10 | | 98 | 70 | 130 | | | |

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**Date:** 20-Feb-09

## QC Summary Report

**Work Order:** 09021203

**Sample Matrix Spike** Type **MS** Test Code: _____

File ID: **09021315.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 16:06**

Sample ID: **09021203-02AMS** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 52.9 | 2.5 | 50 | 0 | 106 | 13 | 167 | | | |
| Chloromethane | 43.4 | 10 | 50 | 0 | 87 | 28 | 145 | | | |
| Vinyl chloride | 51.5 | 2.5 | 50 | 0 | 103 | 43 | 134 | | | |
| Chloroethane | 48.6 | 2.5 | 50 | 0 | 97 | 39 | 154 | | | |
| Bromomethane | 55 | 10 | 50 | 0 | 110 | 19 | 176 | | | |
| Trichlorofluoromethane | 59.1 | 2.5 | 50 | 1.53 | 115 | 34 | 160 | | | |
| 1,1-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.7 | 60 | 130 | | | |
| Dichloromethane | 46.4 | 10 | 50 | 0 | 93 | 68 | 130 | | | |
| trans-1,2-Dichloroethene | 51.7 | 2.5 | 50 | 0 | 103 | 63 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 46.5 | 1.3 | 50 | 0 | 93 | 56 | 141 | | | |
| 1,1-Dichloroethane | 49.7 | 2.5 | 50 | 0 | 99 | 61 | 130 | | | |
| cis-1,2-Dichloroethene | 50.4 | 2.5 | 50 | 0 | 101 | 70 | 130 | | | |
| Bromochloromethane | 51 | 2.5 | 50 | 0 | 102 | 70 | 130 | | | |
| Chloroform | 47.3 | 2.5 | 50 | 0 | 95 | 67 | 130 | | | |
| 2,2-Dichloropropane | 43.7 | 2.5 | 50 | 0 | 87 | 30 | 152 | | | |
| 1,2-Dichloroethane | 48.4 | 2.5 | 50 | 0 | 97 | 60 | 135 | | | |
| 1,1,1-Trichloroethane | 51.3 | 2.5 | 50 | 0 | 103 | 59 | 137 | | | |
| 1,1-Dichloropropene | 51.6 | 2.5 | 50 | 0 | 103 | 63 | 130 | | | |
| Carbon tetrachloride | 50.4 | 2.5 | 50 | 0 | 101 | 50 | 147 | | | |
| Benzene | 45.8 | 1.3 | 50 | 0 | 92 | 67 | 130 | | | |
| Dibromomethane | 50.6 | 2.5 | 50 | 0 | 101 | 69 | 133 | | | |
| 1,2-Dichloropropane | 46.8 | 2.5 | 50 | 0 | 94 | 69 | 130 | | | |
| Trichloroethene | 52.2 | 2.5 | 50 | 0 | 104 | 69 | 130 | | | |
| Bromodichloromethane | 50.1 | 2.5 | 50 | 0 | 100 | 66 | 134 | | | |
| cis-1,3-Dichloropropene | 47.5 | 2.5 | 50 | 0 | 95 | 63 | 130 | | | |
| trans-1,3-Dichloropropene | 47.7 | 2.5 | 50 | 0 | 95 | 66 | 131 | | | |
| 1,1,2-Trichloroethane | 44.3 | 2.5 | 50 | 0 | 89 | 68 | 130 | | | |
| Toluene | 47.9 | 1.3 | 50 | 1.37 | 93 | 66 | 130 | | | |
| 1,3-Dichloropropane | 42.9 | 2.5 | 50 | 0 | 86 | 70 | 130 | | | |
| Dibromochloromethane | 49 | 2.5 | 50 | 0 | 98 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 88.9 | 10 | 100 | 0 | 89 | 70 | 130 | | | |
| Tetrachloroethene | 49.4 | 2.5 | 50 | 0 | 99 | 61 | 134 | | | |
| 1,1,1,2-Tetrachloroethane | 47.1 | 2.5 | 50 | 0 | 94 | 70 | 130 | | | |
| Chlorobenzene | 45.7 | 2.5 | 50 | 0 | 91 | 70 | 130 | | | |
| Ethylbenzene | 47 | 1.3 | 50 | 0 | 94 | 68 | 130 | | | |
| m,p-Xylene | 48.5 | 1.3 | 50 | 0 | 97 | 64 | 130 | | | |
| Bromoform | 45.8 | 2.5 | 50 | 0 | 92 | 64 | 138 | | | |
| Styrene | 46 | 2.5 | 50 | 0 | 92 | 69 | 130 | | | |
| o-Xylene | 46.7 | 1.3 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 39.4 | 2.5 | 50 | 0 | 79 | 65 | 131 | | | |
| 1,2,3-Trichloropropane | 83.7 | 10 | 100 | 0 | 84 | 70 | 130 | | | |
| Isopropylbenzene | 47.9 | 2.5 | 50 | 0 | 96 | 64 | 138 | | | |
| Bromobenzene | 46.7 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| n-Propylbenzene | 48.7 | 2.5 | 50 | 0 | 97 | 66 | 132 | | | |
| 4-Chlorotoluene | 48.9 | 2.5 | 50 | 0 | 98 | 70 | 130 | | | |
| 2-Chlorotoluene | 48.5 | 2.5 | 50 | 0 | 97 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 47.2 | 2.5 | 50 | 0 | 94 | 66 | 136 | | | |
| tert-Butylbenzene | 46.2 | 2.5 | 50 | 0 | 92 | 65 | 137 | | | |
| 1,2,4-Trimethylbenzene | 49.2 | 2.5 | 50 | 0 | 98 | 65 | 137 | | | |
| sec-Butylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 134 | | | |
| 1,3-Dichlorobenzene | 46.6 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 45.1 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| 4-Isopropyltoluene | 47.7 | 2.5 | 50 | 0 | 95 | 66 | 137 | | | |
| 1,2-Dichlorobenzene | 44.8 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| n-Butylbenzene | 47.5 | 2.5 | 50 | 0 | 95 | 60 | 142 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 212 | 15 | 250 | 0 | 85 | 67 | 130 | | | |
| 1,2,4-Trichlorobenzene | 49.7 | 10 | 50 | 0 | 99 | 61 | 137 | | | |
| Naphthalene | 41.2 | 10 | 50 | 0 | 82 | 40 | 167 | | | |
| Hexachlorobutadiene | 95.4 | 10 | 100 | 0 | 95 | 61 | 130 | | | |
| 1,2,3-Trichlorobenzene | 48.6 | 10 | 50 | 0 | 97 | 51 | 144 | | | |
| Surr: 1,2-Dichloroethane-d4 | 47.2 | | 50 | | 94 | 70 | 130 | | | |
| Surr: Toluene-d8 | 50.5 | | 50 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 50.4 | | 50 | | 101 | 70 | 130 | | | |

# Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** 20-Feb-09

## QC Summary Report

**Work Order:** 09021203

**Sample Matrix Spike Duplicate** Type **MSD** Test Code: _____

File ID: **09021316.D** Batch ID: **MS15W0213M** Analysis Date: **02/13/2009 16:29**

Sample ID: **09021203-02AMSD** Units : **µg/L** Run ID: **MSD_15_090213B** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 51.6 | 2.5 | 50 | 0 | 103 | 13 | 167 | 52.87 | 2.5(20) | |
| Chloromethane | 42.9 | 10 | 50 | 0 | 86 | 28 | 145 | 43.41 | 1.1(20) | |
| Vinyl chloride | 50.2 | 2.5 | 50 | 0 | 100 | 43 | 134 | 51.46 | 2.5(20) | |
| Chloroethane | 47.8 | 2.5 | 50 | 0 | 96 | 39 | 154 | 48.55 | 1.7(20) | |
| Bromomethane | 55.4 | 10 | 50 | 0 | 111 | 19 | 176 | 54.97 | 0.7(20) | |
| Trichlorofluoromethane | 58.7 | 2.5 | 50 | 1.53 | 114 | 34 | 160 | 59.12 | 0.6(20) | |
| 1,1-Dichloroethene | 48.1 | 2.5 | 50 | 0 | 96 | 60 | 130 | 49.85 | 3.7(20) | |
| Dichloromethane | 45.7 | 10 | 50 | 0 | 91 | 68 | 130 | 46.43 | 1.5(20) | |
| trans-1,2-Dichloroethene | 50.3 | 2.5 | 50 | 0 | 101 | 63 | 130 | 51.65 | 2.7(20) | |
| Methyl tert-butyl ether (MTBE) | 47.6 | 1.3 | 50 | 0 | 95 | 56 | 141 | 46.53 | 2.2(20) | |
| 1,1-Dichloroethane | 48.2 | 2.5 | 50 | 0 | 96 | 61 | 130 | 49.72 | 3.1(20) | |
| cis-1,2-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.8 | 70 | 130 | 50.4 | 1.0(20) | |
| Bromochloromethane | 50.8 | 2.5 | 50 | 0 | 102 | 70 | 130 | 51.01 | 0.4(20) | |
| Chloroform | 46.2 | 2.5 | 50 | 0 | 92 | 67 | 130 | 47.27 | 2.3(20) | |
| 2,2-Dichloropropane | 42.5 | 2.5 | 50 | 0 | 85 | 30 | 152 | 43.71 | 2.9(20) | |
| 1,2-Dichloroethane | 48 | 2.5 | 50 | 0 | 96 | 60 | 135 | 48.38 | 0.7(20) | |
| 1,1,1-Trichloroethane | 50.6 | 2.5 | 50 | 0 | 101 | 59 | 137 | 51.25 | 1.3(20) | |
| 1,1-Dichloropropene | 50 | 2.5 | 50 | 0 | 100 | 63 | 130 | 51.56 | 3.0(20) | |
| Carbon tetrachloride | 49.4 | 2.5 | 50 | 0 | 99 | 50 | 147 | 50.38 | 1.9(20) | |
| Benzene | 44.7 | 1.3 | 50 | 0 | 89 | 67 | 130 | 45.84 | 2.4(20) | |
| Dibromomethane | 51.2 | 2.5 | 50 | 0 | 102 | 69 | 133 | 50.64 | 1.1(20) | |
| 1,2-Dichloropropane | 45.8 | 2.5 | 50 | 0 | 92 | 69 | 130 | 46.75 | 2.1(20) | |
| Trichloroethene | 51.2 | 2.5 | 50 | 0 | 102 | 69 | 130 | 52.16 | 1.8(20) | |
| Bromodichloromethane | 50.3 | 2.5 | 50 | 0 | 101 | 66 | 134 | 50.13 | 0.3(20) | |
| cis-1,3-Dichloropropene | 46.9 | 2.5 | 50 | 0 | 94 | 63 | 130 | 47.45 | 1.2(20) | |
| trans-1,3-Dichloropropene | 47.4 | 2.5 | 50 | 0 | 95 | 66 | 131 | 47.66 | 0.5(20) | |
| 1,1,2-Trichloroethane | 44.3 | 2.5 | 50 | 0 | 89 | 68 | 130 | 44.31 | 0.0(20) | |
| Toluene | 44.9 | 1.3 | 50 | 1.37 | 87 | 66 | 130 | 47.85 | 6.3(20) | |
| 1,3-Dichloropropane | 42.4 | 2.5 | 50 | 0 | 85 | 70 | 130 | 42.94 | 1.3(20) | |
| Dibromochloromethane | 48.3 | 2.5 | 50 | 0 | 97 | 70 | 130 | 49 | 1.5(20) | |
| 1,2-Dibromoethane (EDB) | 89.5 | 10 | 100 | 0 | 89 | 70 | 130 | 88.89 | 0.6(20) | |
| Tetrachloroethene | 47.4 | 2.5 | 50 | 0 | 95 | 61 | 134 | 49.44 | 4.1(20) | |
| 1,1,1,2-Tetrachloroethane | 46 | 2.5 | 50 | 0 | 92 | 70 | 130 | 47.12 | 2.4(20) | |
| Chlorobenzene | 44 | 2.5 | 50 | 0 | 88 | 70 | 130 | 45.7 | 3.8(20) | |
| Ethylbenzene | 44.6 | 1.3 | 50 | 0 | 89 | 68 | 130 | 47.02 | 5.2(20) | |
| m,p-Xylene | 45.2 | 1.3 | 50 | 0 | 90 | 64 | 130 | 48.51 | 7.0(20) | |
| Bromoform | 45.2 | 2.5 | 50 | 0 | 90 | 64 | 138 | 45.77 | 1.4(20) | |
| Styrene | 44.5 | 2.5 | 50 | 0 | 89 | 69 | 130 | 45.99 | 3.4(20) | |
| o-Xylene | 44.8 | 1.3 | 50 | 0 | 90 | 70 | 130 | 46.72 | 4.1(20) | |
| 1,1,2,2-Tetrachloroethane | 39.9 | 2.5 | 50 | 0 | 80 | 65 | 131 | 39.39 | 1.3(20) | |
| 1,2,3-Trichloropropane | 83.7 | 10 | 100 | 0 | 84 | 70 | 130 | 83.74 | 0.0(20) | |
| Isopropylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 64 | 138 | 47.9 | 3.3(20) | |
| Bromobenzene | 45.7 | 2.5 | 50 | 0 | 91 | 70 | 130 | 46.73 | 2.2(20) | |
| n-Propylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 132 | 48.72 | 4.2(20) | |
| 4-Chlorotoluene | 47.8 | 2.5 | 50 | 0 | 96 | 70 | 130 | 48.94 | 2.4(20) | |
| 2-Chlorotoluene | 47.4 | 2.5 | 50 | 0 | 95 | 70 | 130 | 48.47 | 2.3(20) | |
| 1,3,5-Trimethylbenzene | 46 | 2.5 | 50 | 0 | 92 | 66 | 136 | 47.16 | 2.4(20) | |
| tert-Butylbenzene | 45.5 | 2.5 | 50 | 0 | 91 | 65 | 137 | 46.18 | 1.6(20) | |
| 1,2,4-Trimethylbenzene | 46.6 | 2.5 | 50 | 0 | 93 | 65 | 137 | 49.19 | 5.5(20) | |
| sec-Butylbenzene | 45.1 | 2.5 | 50 | 0 | 90 | 66 | 134 | 46.72 | 3.5(20) | |
| 1,3-Dichlorobenzene | 46.5 | 2.5 | 50 | 0 | 93 | 70 | 130 | 46.59 | 0.1(20) | |
| 1,4-Dichlorobenzene | 44.2 | 2.5 | 50 | 0 | 88 | 70 | 130 | 45.14 | 2.2(20) | |
| 4-Isopropyltoluene | 46.6 | 2.5 | 50 | 0 | 93 | 66 | 137 | 47.66 | 2.4(20) | |
| 1,2-Dichlorobenzene | 44.3 | 2.5 | 50 | 0 | 89 | 70 | 130 | 44.77 | 1.1(20) | |
| n-Butylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 60 | 142 | 47.53 | 2.7(20) | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 207 | 15 | 250 | 0 | 83 | 67 | 130 | 212.3 | 2.7(20) | |
| 1,2,4-Trichlorobenzene | 50 | 10 | 50 | 0 | 100 | 61 | 137 | 49.69 | 0.6(20) | |
| Naphthalene | 40.8 | 10 | 50 | 0 | 82 | 40 | 167 | 41.17 | 1.0(20) | |
| Hexachlorobutadiene | 96.3 | 10 | 100 | 0 | 96 | 61 | 130 | 95.4 | 0.9(20) | |
| 1,2,3-Trichlorobenzene | 48 | 10 | 50 | 0 | 96 | 51 | 144 | 48.57 | 1.1(20) | |
| Surr: 1,2-Dichloroethane-d4 | 46.8 | | 50 | | 94 | 70 | 130 | | | |
| Surr: Toluene-d8 | 49.6 | | 50 | | 99 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 49.1 | | 50 | | 98 | 70 | 130 | | | |

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *20-Feb-09*

## QC Summary Report

**Work Order:** 09021203

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# CHAIN-OF-CUSTODY RECORD

CA

**Billing Information :**
Battelle
505 King Avenue

Columbus, OH 43201

**Client:**
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

| Report Attention | Phone Number | EMail Address |
|---|---|---|
| David Conner | (619) 574-4827 x | connerd@battelle.org |
| Betsy Cutie | (614) 424-4899 x | cutiee@batelle.org |
| Shane Walton | (614) 424-4117 x | waltons@battelle.org |

**WorkOrder : BMI09021203**

**Report Due By : 5:00 PM On : 26-Feb-2009**

EDD Required : **Yes**

Sampled by : Client

PO : 218013

Client's COC # : 026061 Job : G005862/JPL Groundwater Monitoring

| Cooler Temp | Samples Received | Date Printed |
|---|---|---|
| 4 °C | 12-Feb-2009 | **12-Feb-2009** |

QC Level : S4 = Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

| Alpha Sample ID | Client Sample ID | Matrix | Collection Date | No. of Bottles Alpha | Sub | TAT | Requested Tests 300_0(A)_W | 300_0(B)_W | 300_0(C)_W | 314_W | METALS_DW | VOC_TIC_W | VOC_W | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BMI09021203-01A | MW-13 | AQ | 02/11/09 09:01 | 5 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | |
| BMI09021203-02A | MW-8 | AQ | 02/11/09 11:09 | 10 | 0 | 10 | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | NO2, NO3, PO4, SO4, Cl | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | MS/MSD |
| BMI09021203-03A | TB-13-02/11/09 | AQ | 02/11/09 00:00 | 1 | 0 | 10 | | | | | | VOC by 524 Criteria | VOC by 524 Criteria | | Reno Trip Blank 1/6/09 |

**Comments:** No security seals. Frozen ice. Temp Blank #7730 received @ 4°. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. Perchlorate RL of 1.0 ug/L. :

| | Signature | Print Name | Company | Date/Time |
|---|---|---|---|---|
| **Logged in by:** | Elizabeth Adcox | Elizabeth Adcox | **Alpha Analytical, Inc.** | 2-12-09 1043 |

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**Billing Information:**
Name GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

**Samples Collected From Which State?** AZ ___ CA X NV ___ WA ___ ID ___ OR ___ OTHER ___

026061

Page # 1 of 1

| Client Name | P.O. # | Job # |
|---|---|---|
| DAVID CONNER | 218013 | G005862 |
| **Address** | **EMail Address** | |
| 3990 OLD TOWN AVE. C-205 | | |
| **City, State, Zip** | **Phone #** | **Fax #** |
| SAN DIEGO, CA 92110 | 619-726-7311 | |

Required QC Level? I II (III) IV

EDD / EDF? YES ___ NO ___

Global ID # _____

| Time Sampled | Date Sampled | Matrix* See Key Below | Sampled by / Lab ID Number (Office Use Only) | Report Attention / Sample Description | TAT | Field Filtered | Total and type of containers ** See below | VOC (524.2) | TOTAL Cr (200.8) | ClO4-(314.0) Cl-, SO4=, NO3-, NO2-, PO4-3 (300.0) | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0901 | 2/11/09 | AQ | BMI0902203-01 | MW-13 | | | 5 | X | X | X | X | | | | |
| 1109 | " | " | -02 | MW-8 | | | 10 | X | X | X | X | | | | MS/MSD |
| — | " | " | -03 | TB-13-02/11/09 | | | 1 | X | | | | | | | TRIP BLANK |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |

**ADDITIONAL INSTRUCTIONS:**

| | Signature | Print Name | Company | Date | Time |
|---|---|---|---|---|---|
| Relinquished by | | CHASE BRADSON | INSIGHT | 02/11/09 | 1300 |
| Received by | Elizabeth Adcox | Elizabeth Adcox | Alpha | 2/12/09 | 1043 |
| Relinquished by | | | | | |
| Received by | | | | | |
| Relinquished by | | | | | |
| Received by | | | | | |

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**NOTE:** Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *25-Feb-09*


David Clexton
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(760) 476-9144


## CASE NARRATIVE

**Project:** G005862/JPL Groundwater Monitoring

**Work Order:** BMI09021342 **Cooler Temp:** 4 °C

| Alpha's Sample ID | Client's Sample ID | Matrix |
|---|---|---|
| 09021342-01A | MW-10 | Aqueous |
| 09021342-02A | MW-15 | Aqueous |
| 09021342-03A | DUPE-07-1Q09 | Aqueous |
| 09021342-04A | MW-6 | Aqueous |
| 09021342-05A | TB-14-02/12/09 | Aqueous |

**Manually Integrated Analytes**

| Alpha's Sample ID | Test Reference | Analyte |
|---|---|---|
| NONE | | |

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148
Date Received : 02/13/09

Job#: G005862/JPL Groundwater Monitoring

Perchlorate by Ion Chromatography
EPA Method 314.0

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-10** | | | | | |
| Lab ID : | BMI09021342-01A | Perchlorate | 2.47 | 1.00 µg/L | 02/12/09 | 02/13/09 |
| Client ID : | **DUPE-07-1Q09** | | | | | |
| Lab ID : | BMI09021342-03A | Perchlorate | 2.36 | 1.00 µg/L | 02/12/09 | 02/13/09 |
| Client ID : | **MW-6** | | | | | |
| Lab ID : | BMI09021342-04A | Perchlorate | 2.14 | 1.00 µg/L | 02/12/09 | 02/13/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**2/26/09**
**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148
Date Received : 02/13/09

Job#: G005862/JPL Groundwater Monitoring

Metals by ICPMS
EPA Method 200.8

| | | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|
| Client ID : | **MW-10** | | | | | |
| Lab ID : | BMI09021342-01A | Chromium (Cr) | 0.015 | 0.0050 mg/L | 02/12/09 | 02/14/09 |
| Client ID : | **MW-15** | | | | | |
| Lab ID : | BMI09021342-02A | Chromium (Cr) | 0.015 | 0.0050 mg/L | 02/12/09 | 02/14/09 |
| Client ID : | **DUPE-07-1Q09** | | | | | |
| Lab ID : | BMI09021342-03A | Chromium (Cr) | 0.011 | 0.0050 mg/L | 02/12/09 | 02/14/09 |
| Client ID : | **MW-6** | | | | | |
| Lab ID : | BMI09021342-04A | Chromium (Cr) | 0.018 | 0.0050 mg/L | 02/12/09 | 02/16/09 |

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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**2/26/09**
**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148

### Tentatively Identified Compounds - Volatile Organics by GC/MS

| | | Parameter | Estimated Concentration | Estimated Reporting Limit | Date Received | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Client ID : | **MW-10** | | | | | | |
| Lab ID : | BMI09021342-01A | * * * None Found * * * | ND | 2.0 µg/L | 02/13/09 | 02/12/09 | 02/20/09 |
| Client ID : | **DUPE-07-1Q09** | | | | | | |
| Lab ID : | BMI09021342-03A | * * * None Found * * * | ND | 2.0 µg/L | 02/13/09 | 02/12/09 | 02/20/09 |
| Client ID : | **MW-6** | | | | | | |
| Lab ID : | BMI09021342-04A | * * * None Found * * * | ND | 2.0 µg/L | 02/13/09 | 02/12/09 | 02/20/09 |
| Client ID : | **TB-14-02/12/09** | | | | | | |
| Lab ID : | BMI09021342-05A | * * * None Found * * * | ND | 2.0 µg/L | 02/13/09 | 02/12/09 | 02/20/09 |

Note: Analysis conducted using EPA Method 524.2 criteria.
ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**2/26/09**
**Report Date**

Page 1 of 1

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148

Alpha Analytical Number: BMI09021342-01A
Client I.D. Number: MW-10

Sampled: 02/12/09
Received: 02/13/09
Analyzed: 02/20/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | 0.57 | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | 3.2 | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 106 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 103 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 95 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | 1.1 | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


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2/26/09
**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148

Alpha Analytical Number: BMI09021342-03A
Client I.D. Number: DUPE-07-1Q09

Sampled: 02/12/09
Received: 02/13/09
Analyzed: 02/20/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | |
|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | |
| 2 | Chloromethane | ND | 1.0 | µg/L | |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | |
| 4 | Chloroethane | ND | 0.50 | µg/L | |
| 5 | Bromomethane | ND | 1.0 | µg/L | |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | |
| 8 | Dichloromethane | ND | 1.0 | µg/L | |
| 9 | Freon-113 | ND | 0.50 | µg/L | |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | |
| 16 | Chloroform | 0.58 | 0.50 | µg/L | |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | |
| 22 | Benzene | ND | 0.50 | µg/L | |
| 23 | Dibromomethane | ND | 0.50 | µg/L | |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | |
| 25 | Trichloroethene | 3.1 | 0.50 | µg/L | |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | |
| 31 | Toluene | ND | 0.50 | µg/L | |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | |
| 35 | Tetrachloroethene | 1.2 | 0.50 | µg/L | |
| 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 37 | Chlorobenzene | ND | 0.50 | µg/L | |
| 38 | Ethylbenzene | ND | 0.50 | µg/L | |
| 39 | m,p-Xylene | ND | 0.50 | µg/L | |
| 40 | Bromoform | ND | 0.50 | µg/L | |
| 41 | Styrene | ND | 0.50 | µg/L | |
| 42 | o-Xylene | ND | 0.50 | µg/L | |
| 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L | |
| 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L | |
| 45 | Isopropylbenzene | ND | 0.50 | µg/L | |
| 46 | Bromobenzene | ND | 0.50 | µg/L | |
| 47 | n-Propylbenzene | ND | 0.50 | µg/L | |
| 48 | 4-Chlorotoluene | ND | 0.50 | µg/L | |
| 49 | 2-Chlorotoluene | ND | 0.50 | µg/L | |
| 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L | |
| 51 | tert-Butylbenzene | ND | 0.50 | µg/L | |
| 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L | |
| 53 | sec-Butylbenzene | ND | 0.50 | µg/L | |
| 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L | |
| 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L | |
| 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L | |
| 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L | |
| 58 | n-Butylbenzene | ND | 0.50 | µg/L | |
| 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L | |
| 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L | |
| 61 | Naphthalene | ND | 1.0 | µg/L | |
| 62 | Hexachlorobutadiene | ND | 1.0 | µg/L | |
| 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L | |
| 64 | Surr: 1,2-Dichloroethane-d4 | 107 | (70-130) | %REC | |
| 65 | Surr: Toluene-d8 | 103 | (70-130) | %REC | |
| 66 | Surr: 4-Bromofluorobenzene | 94 | (70-130) | %REC | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


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2/26/09
**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148

Alpha Analytical Number: BMI09021342-04A
Client I.D. Number: MW-6

Sampled: 02/12/09
Received: 02/13/09
Analyzed: 02/20/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | 0.57 | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | 3.0 | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 108 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 102 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 94 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | 1.2 | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com




2/26/09

**Report Date**

# Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Clexton
Phone: (760) 476-9144
Fax: (760) 476-9148

Alpha Analytical Number: BMI09021342-05A
Client I.D. Number: TB-14-02/12/09

Sampled: 02/12/09
Received: 02/13/09
Analyzed: 02/20/09

Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | ND | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 106 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 101 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 93 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer


Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com




2/26/09
**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## VOC Sample Preservation Report

**Work Order:** BMI09021342 **Project:** G005862/JPL Groundwater Monitoring

| Alpha's Sample ID | Client's Sample ID | Matrix | pH |
|---|---|---|---|
| 09021342-01A | MW-10 | Aqueous | 2 |
| 09021342-03A | DUPE-07-1Q09 | Aqueous | 2 |
| 09021342-04A | MW-6 | Aqueous | 2 |
| 09021342-05A | TB-14-02/12/09 | Aqueous | 2 |

**2/26/09**

**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *22-Feb-09*

## QC Summary Report

**Work Order:** 09021342

### Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **21519** Analysis Date: **02/13/2009 13:41**

Sample ID: **MB-21519** Units : **µg/L** Run ID: **IC_3_090213A** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | ND | 1 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **21519** Analysis Date: **02/13/2009 14:00**

Sample ID: **LFB-21519** Units : **µg/L** Run ID: **IC_3_090213A** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.7 | 2 | 25 | | 99 | 85 | 115 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **21519** Analysis Date: **02/13/2009 15:13**

Sample ID: **09021353-05ALFM** Units : **µg/L** Run ID: **IC_3_090213A** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.2 | 2 | 25 | 0 | 97 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **21519** Analysis Date: **02/13/2009 15:32**

Sample ID: **09021353-05ALFMD** Units : **µg/L** Run ID: **IC_3_090213A** Prep Date: **02/13/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 25.2 | 2 | 25 | 0 | 101 | 80 | 120 | 24.15 | 4.3(15) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *22-Feb-09*

## QC Summary Report

**Work Order:** 09021342

### Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **021309.B\136SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:39**

Sample ID: **MB-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | ND | 0.005 | | | | | | | | |

### Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **021309.B\138_LCS.D** Batch ID: **21512K** Analysis Date: **02/14/2009 01:51**

Sample ID: **LCS-21512** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0494 | 0.005 | 0.05 | | 99 | 80 | 120 | | | |

### Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **021309.B\142SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:14**

Sample ID: **09021004-02AMS** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0504 | 0.005 | 0.05 | 0 | 101 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **021309.B\143SMPL.D** Batch ID: **21512K** Analysis Date: **02/14/2009 02:19**

Sample ID: **09021004-02AMSD** Units : **mg/L** Run ID: **ICP/MS_090213D** Prep Date: **02/12/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0518 | 0.005 | 0.05 | 0 | 104 | 80 | 120 | 0.05035 | 2.9(20) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021342

**Method Blank** Type **MBLK** Test Code: _____

File ID: **09022007.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 09:50**

Sample ID: **MBLK MS15W0220M** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 0.5 | | | | | | | | |
| Chloromethane | ND | 1 | | | | | | | | |
| Vinyl chloride | ND | 0.5 | | | | | | | | |
| Chloroethane | ND | 0.5 | | | | | | | | |
| Bromomethane | ND | 1 | | | | | | | | |
| Trichlorofluoromethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethene | ND | 0.5 | | | | | | | | |
| Dichloromethane | ND | 1 | | | | | | | | |
| Freon-113 | ND | 0.5 | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethane | ND | 0.5 | | | | | | | | |
| 2-Butanone (MEK) | ND | 10 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Bromochloromethane | ND | 0.5 | | | | | | | | |
| Chloroform | ND | 0.5 | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloroethane | ND | 0.5 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloropropene | ND | 0.5 | | | | | | | | |
| Carbon tetrachloride | ND | 0.5 | | | | | | | | |
| Benzene | ND | 0.5 | | | | | | | | |
| Dibromomethane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| Trichloroethene | ND | 0.5 | | | | | | | | |
| Bromodichloromethane | ND | 0.5 | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.5 | | | | | | | | |
| Toluene | ND | 0.5 | | | | | | | | |
| 1,3-Dichloropropane | ND | 0.5 | | | | | | | | |
| Dibromochloromethane | ND | 0.5 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1 | | | | | | | | |
| Tetrachloroethene | ND | 0.5 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| Chlorobenzene | ND | 0.5 | | | | | | | | |
| Ethylbenzene | ND | 0.5 | | | | | | | | |
| m,p-Xylene | ND | 0.5 | | | | | | | | |
| Bromoform | ND | 0.5 | | | | | | | | |
| Styrene | ND | 0.5 | | | | | | | | |
| o-Xylene | ND | 0.5 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1 | | | | | | | | |
| Isopropylbenzene | ND | 0.5 | | | | | | | | |
| Bromobenzene | ND | 0.5 | | | | | | | | |
| n-Propylbenzene | ND | 0.5 | | | | | | | | |
| 4-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 2-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| tert-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| sec-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 4-Isopropyltoluene | ND | 0.5 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| n-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1 | | | | | | | | |
| Naphthalene | ND | 1 | | | | | | | | |
| Hexachlorobutadiene | ND | 1 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10.4 | | 10 | | 104 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021342

| | | | | | | |
|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 9.83 | | 10 | 98 | 70 | 130 |

**Laboratory Control Spike** Type **LCS** Test Code: _____

File ID: **09022005.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 08:45**

Sample ID: **LCS MS15W0220M** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 11.3 | 1 | 10 | | 113 | 70 | 130 | | | |
| Chloromethane | 8.47 | 2 | 10 | | 85 | 70 | 130 | | | |
| Vinyl chloride | 9.87 | 1 | 10 | | 99 | 70 | 130 | | | |
| Chloroethane | 9.74 | 1 | 10 | | 97 | 70 | 130 | | | |
| Bromomethane | 9.89 | 2 | 10 | | 99 | 70 | 130 | | | |
| Trichlorofluoromethane | 12.9 | 1 | 10 | | 129 | 70 | 130 | | | |
| 1,1-Dichloroethene | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Dichloromethane | 9.39 | 2 | 10 | | 94 | 70 | 130 | | | |
| trans-1,2-Dichloroethene | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 9.34 | 0.5 | 10 | | 93 | 62 | 136 | | | |
| 1,1-Dichloroethane | 10.1 | 1 | 10 | | 101 | 70 | 130 | | | |
| cis-1,2-Dichloroethene | 10.4 | 1 | 10 | | 104 | 70 | 130 | | | |
| Bromochloromethane | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Chloroform | 9.88 | 1 | 10 | | 99 | 70 | 130 | | | |
| 2,2-Dichloropropane | 9.37 | 1 | 10 | | 94 | 70 | 130 | | | |
| 1,2-Dichloroethane | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 1,1,1-Trichloroethane | 11.2 | 1 | 10 | | 112 | 70 | 130 | | | |
| 1,1-Dichloropropene | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Carbon tetrachloride | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Benzene | 9.36 | 0.5 | 10 | | 94 | 70 | 130 | | | |
| Dibromomethane | 10.3 | 1 | 10 | | 103 | 70 | 130 | | | |
| 1,2-Dichloropropane | 9.34 | 1 | 10 | | 93 | 70 | 130 | | | |
| Trichloroethene | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Bromodichloromethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| cis-1,3-Dichloropropene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| trans-1,3-Dichloropropene | 9.96 | 1 | 10 | | 99.6 | 70 | 130 | | | |
| 1,1,2-Trichloroethane | 9 | 1 | 10 | | 90 | 70 | 130 | | | |
| Toluene | 9.51 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichloropropane | 8.72 | 1 | 10 | | 87 | 70 | 130 | | | |
| Dibromochloromethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 18.3 | 2 | 20 | | 92 | 70 | 130 | | | |
| Tetrachloroethene | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| 1,1,1,2-Tetrachloroethane | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| Chlorobenzene | 9.42 | 1 | 10 | | 94 | 70 | 130 | | | |
| Ethylbenzene | 9.72 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| m,p-Xylene | 10 | 0.5 | 10 | | 100 | 70 | 130 | | | |
| Bromoform | 9.28 | 1 | 10 | | 93 | 70 | 130 | | | |
| Styrene | 9.6 | 1 | 10 | | 96 | 70 | 130 | | | |
| o-Xylene | 9.7 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 7.95 | 1 | 10 | | 80 | 70 | 130 | | | |
| 1,2,3-Trichloropropane | 17.6 | 2 | 20 | | 88 | 70 | 130 | | | |
| Isopropylbenzene | 9.88 | 1 | 10 | | 99 | 70 | 130 | | | |
| Bromobenzene | 9.31 | 1 | 10 | | 93 | 70 | 130 | | | |
| n-Propylbenzene | 9.89 | 1 | 10 | | 99 | 70 | 130 | | | |
| 4-Chlorotoluene | 9.97 | 1 | 10 | | 99.7 | 70 | 130 | | | |
| 2-Chlorotoluene | 9.73 | 1 | 10 | | 97 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 9.82 | 1 | 10 | | 98 | 70 | 130 | | | |
| tert-Butylbenzene | 9.7 | 1 | 10 | | 97 | 70 | 130 | | | |
| 1,2,4-Trimethylbenzene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| sec-Butylbenzene | 9.84 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,3-Dichlorobenzene | 9.63 | 1 | 10 | | 96 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 9.22 | 1 | 10 | | 92 | 70 | 130 | | | |
| 4-Isopropyltoluene | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 1,2-Dichlorobenzene | 9.17 | 1 | 10 | | 92 | 70 | 130 | | | |
| n-Butylbenzene | 10.1 | 1 | 10 | | 101 | 70 | 130 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 42.1 | 3 | 50 | | 84 | 70 | 130 | | | |
| 1,2,4-Trichlorobenzene | 10.6 | 2 | 10 | | 106 | 70 | 130 | | | |
| Naphthalene | 8.52 | 2 | 10 | | 85 | 70 | 130 | | | |
| Hexachlorobutadiene | 21.4 | 2 | 20 | | 107 | 70 | 130 | | | |
| 1,2,3-Trichlorobenzene | 10.4 | 2 | 10 | | 104 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.63 | | 10 | | 96 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.68 | | 10 | | 97 | 70 | 130 | | | |

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021342

**Sample Matrix Spike** Type **MS** Test Code: _____

File ID: **09022008.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 10:12**

Sample ID: **09021702-01AMS** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 43.7 | 2.5 | 50 | 0 | 87 | 13 | 167 | | | |
| Chloromethane | 38 | 10 | 50 | 0 | 76 | 28 | 145 | | | |
| Vinyl chloride | 49.3 | 2.5 | 50 | 0 | 99 | 43 | 134 | | | |
| Chloroethane | 45.3 | 2.5 | 50 | 0 | 91 | 39 | 154 | | | |
| Bromomethane | 48.8 | 10 | 50 | 0 | 98 | 19 | 176 | | | |
| Trichlorofluoromethane | 62.2 | 2.5 | 50 | 0 | 124 | 34 | 160 | | | |
| 1,1-Dichloroethene | 50.3 | 2.5 | 50 | 0 | 101 | 60 | 130 | | | |
| Dichloromethane | 46 | 10 | 50 | 0 | 92 | 68 | 130 | | | |
| trans-1,2-Dichloroethene | 50.7 | 2.5 | 50 | 0 | 101 | 63 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 46 | 1.3 | 50 | 0 | 92 | 56 | 141 | | | |
| 1,1-Dichloroethane | 48.8 | 2.5 | 50 | 0 | 98 | 61 | 130 | | | |
| cis-1,2-Dichloroethene | 49.7 | 2.5 | 50 | 0 | 99 | 70 | 130 | | | |
| Bromochloromethane | 52.5 | 2.5 | 50 | 0 | 105 | 70 | 130 | | | |
| Chloroform | 47.6 | 2.5 | 50 | 0 | 95 | 67 | 130 | | | |
| 2,2-Dichloropropane | 44.4 | 2.5 | 50 | 0 | 89 | 30 | 152 | | | |
| 1,2-Dichloroethane | 49.7 | 2.5 | 50 | 0 | 99 | 60 | 135 | | | |
| 1,1,1-Trichloroethane | 52.9 | 2.5 | 50 | 0 | 106 | 59 | 137 | | | |
| 1,1-Dichloropropene | 52.3 | 2.5 | 50 | 0 | 105 | 63 | 130 | | | |
| Carbon tetrachloride | 53.1 | 2.5 | 50 | 0 | 106 | 50 | 147 | | | |
| Benzene | 44.5 | 1.3 | 50 | 0 | 89 | 67 | 130 | | | |
| Dibromomethane | 51.3 | 2.5 | 50 | 0 | 103 | 69 | 133 | | | |
| 1,2-Dichloropropane | 44.3 | 2.5 | 50 | 0 | 89 | 69 | 130 | | | |
| Trichloroethene | 52.7 | 2.5 | 50 | 0 | 105 | 69 | 130 | | | |
| Bromodichloromethane | 50.8 | 2.5 | 50 | 0 | 102 | 66 | 134 | | | |
| cis-1,3-Dichloropropene | 47.1 | 2.5 | 50 | 0 | 94 | 63 | 130 | | | |
| trans-1,3-Dichloropropene | 49 | 2.5 | 50 | 0 | 98 | 66 | 131 | | | |
| 1,1,2-Trichloroethane | 42.8 | 2.5 | 50 | 0 | 86 | 68 | 130 | | | |
| Toluene | 44.4 | 1.3 | 50 | 0 | 89 | 66 | 130 | | | |
| 1,3-Dichloropropane | 42.3 | 2.5 | 50 | 0 | 85 | 70 | 130 | | | |
| Dibromochloromethane | 49.3 | 2.5 | 50 | 0 | 99 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 89.8 | 10 | 100 | 0 | 90 | 70 | 130 | | | |
| Tetrachloroethene | 49.5 | 2.5 | 50 | 0 | 99 | 61 | 134 | | | |
| 1,1,1,2-Tetrachloroethane | 47.7 | 2.5 | 50 | 0 | 95 | 70 | 130 | | | |
| Chlorobenzene | 44.6 | 2.5 | 50 | 0 | 89 | 70 | 130 | | | |
| Ethylbenzene | 45.7 | 1.3 | 50 | 0 | 91 | 68 | 130 | | | |
| m,p-Xylene | 46.3 | 1.3 | 50 | 0 | 93 | 64 | 130 | | | |
| Bromoform | 44.9 | 2.5 | 50 | 0 | 90 | 64 | 138 | | | |
| Styrene | 45.1 | 2.5 | 50 | 0 | 90 | 69 | 130 | | | |
| o-Xylene | 45.3 | 1.3 | 50 | 0 | 91 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 39.7 | 2.5 | 50 | 0 | 79 | 65 | 131 | | | |
| 1,2,3-Trichloropropane | 85.4 | 10 | 100 | 0 | 85 | 70 | 130 | | | |
| Isopropylbenzene | 45.7 | 2.5 | 50 | 0 | 91 | 64 | 138 | | | |
| Bromobenzene | 44.7 | 2.5 | 50 | 0 | 89 | 70 | 130 | | | |
| n-Propylbenzene | 45.3 | 2.5 | 50 | 0 | 91 | 66 | 132 | | | |
| 4-Chlorotoluene | 46.9 | 2.5 | 50 | 0 | 94 | 70 | 130 | | | |
| 2-Chlorotoluene | 46.3 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 45.6 | 2.5 | 50 | 0 | 91 | 66 | 136 | | | |
| tert-Butylbenzene | 45 | 2.5 | 50 | 0 | 90 | 65 | 137 | | | |
| 1,2,4-Trimethylbenzene | 46.1 | 2.5 | 50 | 0 | 92 | 65 | 137 | | | |
| sec-Butylbenzene | 44.9 | 2.5 | 50 | 0 | 90 | 66 | 134 | | | |
| 1,3-Dichlorobenzene | 45.2 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 43.6 | 2.5 | 50 | 0 | 87 | 70 | 130 | | | |
| 4-Isopropyltoluene | 46.4 | 2.5 | 50 | 0 | 93 | 66 | 137 | | | |
| 1,2-Dichlorobenzene | 43.2 | 2.5 | 50 | 0 | 86 | 70 | 130 | | | |
| n-Butylbenzene | 46.4 | 2.5 | 50 | 0 | 93 | 60 | 142 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 205 | 15 | 250 | 0 | 82 | 67 | 130 | | | |
| 1,2,4-Trichlorobenzene | 47.4 | 10 | 50 | 0 | 95 | 61 | 137 | | | |
| Naphthalene | 37.3 | 10 | 50 | 0 | 75 | 40 | 167 | | | |
| Hexachlorobutadiene | 95.5 | 10 | 100 | 0 | 96 | 61 | 130 | | | |
| 1,2,3-Trichlorobenzene | 45.7 | 10 | 50 | 0 | 91 | 51 | 144 | | | |
| Surr: 1,2-Dichloroethane-d4 | 49.7 | | 50 | | 99 | 70 | 130 | | | |
| Surr: Toluene-d8 | 50.1 | | 50 | | 100 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 48.8 | | 50 | | 98 | 70 | 130 | | | |

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021342

**Sample Matrix Spike Duplicate** Type **MSD** Test Code: _____

File ID: **09022009.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 10:34**

Sample ID: **09021702-01AMSD** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 41.2 | 2.5 | 50 | 0 | 82 | 13 | 167 | 43.66 | 5.8(20) | |
| Chloromethane | 37.4 | 10 | 50 | 0 | 75 | 28 | 145 | 37.98 | 1.5(20) | |
| Vinyl chloride | 47.6 | 2.5 | 50 | 0 | 95 | 43 | 134 | 49.28 | 3.4(20) | |
| Chloroethane | 45.6 | 2.5 | 50 | 0 | 91 | 39 | 154 | 45.33 | 0.5(20) | |
| Bromomethane | 52.6 | 10 | 50 | 0 | 105 | 19 | 176 | 48.81 | 7.4(20) | |
| Trichlorofluoromethane | 59.8 | 2.5 | 50 | 0 | 120 | 34 | 160 | 62.23 | 4.0(20) | |
| 1,1-Dichloroethene | 48.1 | 2.5 | 50 | 0 | 96 | 60 | 130 | 50.34 | 4.5(20) | |
| Dichloromethane | 46.2 | 10 | 50 | 0 | 92 | 68 | 130 | 46.01 | 0.4(20) | |
| trans-1,2-Dichloroethene | 49.4 | 2.5 | 50 | 0 | 99 | 63 | 130 | 50.7 | 2.7(20) | |
| Methyl tert-butyl ether (MTBE) | 47.3 | 1.3 | 50 | 0 | 95 | 56 | 141 | 45.98 | 2.9(20) | |
| 1,1-Dichloroethane | 47.8 | 2.5 | 50 | 0 | 96 | 61 | 130 | 48.75 | 2.0(20) | |
| cis-1,2-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.8 | 70 | 130 | 49.73 | 0.3(20) | |
| Bromochloromethane | 53.3 | 2.5 | 50 | 0 | 107 | 70 | 130 | 52.53 | 1.5(20) | |
| Chloroform | 47.7 | 2.5 | 50 | 0 | 95 | 67 | 130 | 47.61 | 0.3(20) | |
| 2,2-Dichloropropane | 44.3 | 2.5 | 50 | 0 | 89 | 30 | 152 | 44.4 | 0.2(20) | |
| 1,2-Dichloroethane | 50.7 | 2.5 | 50 | 0 | 101 | 60 | 135 | 49.71 | 2.0(20) | |
| 1,1,1-Trichloroethane | 51.7 | 2.5 | 50 | 0 | 103 | 59 | 137 | 52.87 | 2.3(20) | |
| 1,1-Dichloropropene | 50.2 | 2.5 | 50 | 0 | 100 | 63 | 130 | 52.26 | 4.1(20) | |
| Carbon tetrachloride | 50.4 | 2.5 | 50 | 0 | 101 | 50 | 147 | 53.08 | 5.1(20) | |
| Benzene | 44.1 | 1.3 | 50 | 0 | 88 | 67 | 130 | 44.45 | 0.8(20) | |
| Dibromomethane | 52.2 | 2.5 | 50 | 0 | 104 | 69 | 133 | 51.32 | 1.7(20) | |
| 1,2-Dichloropropane | 45.1 | 2.5 | 50 | 0 | 90 | 69 | 130 | 44.25 | 1.9(20) | |
| Trichloroethene | 51.7 | 2.5 | 50 | 0 | 103 | 69 | 130 | 52.65 | 1.8(20) | |
| Bromodichloromethane | 51.7 | 2.5 | 50 | 0 | 103 | 66 | 134 | 50.78 | 1.8(20) | |
| cis-1,3-Dichloropropene | 47.6 | 2.5 | 50 | 0 | 95 | 63 | 130 | 47.07 | 1.1(20) | |
| trans-1,3-Dichloropropene | 49.5 | 2.5 | 50 | 0 | 99 | 66 | 131 | 48.96 | 1.0(20) | |
| 1,1,2-Trichloroethane | 44.6 | 2.5 | 50 | 0 | 89 | 68 | 130 | 42.77 | 4.2(20) | |
| Toluene | 43.9 | 1.3 | 50 | 0 | 88 | 66 | 130 | 44.35 | 1.0(20) | |
| 1,3-Dichloropropane | 43.3 | 2.5 | 50 | 0 | 87 | 70 | 130 | 42.27 | 2.3(20) | |
| Dibromochloromethane | 50.3 | 2.5 | 50 | 0 | 101 | 70 | 130 | 49.28 | 2.0(20) | |
| 1,2-Dibromoethane (EDB) | 90.7 | 10 | 100 | 0 | 91 | 70 | 130 | 89.76 | 1.0(20) | |
| Tetrachloroethene | 48.2 | 2.5 | 50 | 0 | 96 | 61 | 134 | 49.54 | 2.8(20) | |
| 1,1,1,2-Tetrachloroethane | 48.1 | 2.5 | 50 | 0 | 96 | 70 | 130 | 47.7 | 0.8(20) | |
| Chlorobenzene | 44.7 | 2.5 | 50 | 0 | 89 | 70 | 130 | 44.57 | 0.4(20) | |
| Ethylbenzene | 45.1 | 1.3 | 50 | 0 | 90 | 68 | 130 | 45.7 | 1.3(20) | |
| m,p-Xylene | 45.9 | 1.3 | 50 | 0 | 92 | 64 | 130 | 46.31 | 0.8(20) | |
| Bromoform | 47.2 | 2.5 | 50 | 0 | 94 | 64 | 138 | 44.88 | 5.0(20) | |
| Styrene | 45.7 | 2.5 | 50 | 0 | 91 | 69 | 130 | 45.06 | 1.3(20) | |
| o-Xylene | 45.5 | 1.3 | 50 | 0 | 91 | 70 | 130 | 45.29 | 0.4(20) | |
| 1,1,2,2-Tetrachloroethane | 39.7 | 2.5 | 50 | 0 | 79 | 65 | 131 | 39.72 | 0.1(20) | |
| 1,2,3-Trichloropropane | 87.2 | 10 | 100 | 0 | 87 | 70 | 130 | 85.42 | 2.1(20) | |
| Isopropylbenzene | 47.1 | 2.5 | 50 | 0 | 94 | 64 | 138 | 45.66 | 3.2(20) | |
| Bromobenzene | 47.3 | 2.5 | 50 | 0 | 95 | 70 | 130 | 44.7 | 5.6(20) | |
| n-Propylbenzene | 47 | 2.5 | 50 | 0 | 94 | 66 | 132 | 45.32 | 3.6(20) | |
| 4-Chlorotoluene | 48.5 | 2.5 | 50 | 0 | 97 | 70 | 130 | 46.9 | 3.4(20) | |
| 2-Chlorotoluene | 48 | 2.5 | 50 | 0 | 96 | 70 | 130 | 46.26 | 3.6(20) | |
| 1,3,5-Trimethylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 136 | 45.56 | 2.4(20) | |
| tert-Butylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 65 | 137 | 44.95 | 3.0(20) | |
| 1,2,4-Trimethylbenzene | 47.8 | 2.5 | 50 | 0 | 96 | 65 | 137 | 46.07 | 3.8(20) | |
| sec-Butylbenzene | 46.1 | 2.5 | 50 | 0 | 92 | 66 | 134 | 44.88 | 2.6(20) | |
| 1,3-Dichlorobenzene | 47.7 | 2.5 | 50 | 0 | 95 | 70 | 130 | 45.16 | 5.6(20) | |
| 1,4-Dichlorobenzene | 46.1 | 2.5 | 50 | 0 | 92 | 70 | 130 | 43.56 | 5.6(20) | |
| 4-Isopropyltoluene | 47.4 | 2.5 | 50 | 0 | 95 | 66 | 137 | 46.36 | 2.1(20) | |
| 1,2-Dichlorobenzene | 46.3 | 2.5 | 50 | 0 | 93 | 70 | 130 | 43.17 | 7.1(20) | |
| n-Butylbenzene | 47.8 | 2.5 | 50 | 0 | 96 | 60 | 142 | 46.44 | 2.8(20) | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 219 | 15 | 250 | 0 | 88 | 67 | 130 | 204.7 | 6.7(20) | |
| 1,2,4-Trichlorobenzene | 53.4 | 10 | 50 | 0 | 107 | 61 | 137 | 47.41 | 11.9(20) | |
| Naphthalene | 41.6 | 10 | 50 | 0 | 83 | 40 | 167 | 37.32 | 10.8(20) | |
| Hexachlorobutadiene | 102 | 10 | 100 | 0 | 102 | 61 | 130 | 95.51 | 6.4(20) | |
| 1,2,3-Trichlorobenzene | 53 | 10 | 50 | 0 | 106 | 51 | 144 | 45.69 | 14.9(20) | |
| Surr: 1,2-Dichloroethane-d4 | 49 | | 50 | | 98 | 70 | 130 | | | |
| Surr: Toluene-d8 | 49.5 | | 50 | | 99 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 50.6 | | 50 | | 101 | 70 | 130 | | | |

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *25-Feb-09*

## QC Summary Report

**Work Order:** 09021342

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# CHAIN-OF-CUSTODY RECORD

CA

**Billing Information :**
Battelle
505 King Avenue

Columbus, OH 43201

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

**WorkOrder : BMI09021342**
**Report Due By : 5:00 PM On : 27-Feb-09**

**Client:**
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

| Report Attention | Phone Number | EMail Address |
|---|---|---|
| David Clexton | (760) 476-9144 x | clextond@battelle.org |
| Betsy Cutie | (614) 424-4899 x | cutiee@batelle.org |
| Shane Walton | (614) 424-4117 x | waltons@battelle.org |

EDD Required : **Yes**

Sampled by : Client

PO : 218013

Client's COC # : 026062 Job : G005862/JPL Groundwater Monitoring

| Cooler Temp | Samples Received | Date Printed |
|---|---|---|
| 4 °C | 13-Feb-09 | 13-Feb-09 |

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

| Alpha Sample ID | Client Sample ID | Matrix | Collection Date | No. of Bottles Alpha | Sub | TAT | Requested Tests 314_W | METALS_DW | VOC_TIC_W | VOC_W | | | | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BMI09021342-01A | MW-10 | AQ | 02/12/09 08:13 | 5 | 0 | 10 | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | | | | LEVEL IV QC |
| BMI09021342-02A | MW-15 | AQ | 02/12/09 11:39 | 2 | 0 | 10 | | Cr | | | | | | | MS/MSD |
| BMI09021342-03A | DUPE-07-1Q09 | AQ | 02/12/09 00:00 | 5 | 0 | 10 | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | | | | LEVEL IV QC |
| BMI09021342-04A | MW-6 | AQ | 02/12/09 10:15 | 5 | 0 | 10 | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | | | | |
| BMI09021342-05A | TB-14-02/12/09 | AQ | 02/12/09 00:00 | 1 | 0 | 10 | | | VOC by 524 Criteria | VOC by 524 Criteria | | | | | Reno Trip Blank 1/6/09 |

**Comments:** No security seals. Frozen ice. Temp Blank #6908 received @ 4°. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. Perchlorate RL of 1.0 ug/L. :

| | Signature | Print Name | Company | Date/Time |
|---|---|---|---|---|
| **Logged in by:** | Latricia Edrosa | Latricia Edrosa | Alpha Analytical, Inc. | 2/13/09 15:05 |

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**Billing Information:**
Name GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

**Samples Collected From Which State?**
AZ ___ CA X NV ___ WA ___
ID ___ OR ___ OTHER ___

026062
Page # 1 of 1

| Client Name | P.O. # | Job # |
|---|---|---|
| DAVID CONNER | 218013 | G005862 |
| Address: 3990 OLD TOWN AVE, C-205 | EMail Address | |
| City, State, Zip: SAN DIEGO, CA 92110 | Phone # 619-726-7311 | Fax # |

Analyses Required: VOC (524.2), TOTAL C (180.8), CLOX (314.0)

Required QC Level? I II III IV

EDD / EDF? YES ___ NO ___
Global ID # _____

| Time Sampled | Date Sampled | Matrix* See Key Below | Sampled by / Lab ID Number (Office Use Only) | Sample Description | TAT | Field Filtered | Total and type of containers ** See below | VOC (524.2) | TOTAL C (180.8) | CLOX (314.0) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0813 | 2/12/09 | AQ | BM10902134 2-01 | MW-10 | | | 5 | X | X | X | QC LEVEL III |
| 1139 | | | -02 | MW-15 | | | 2 | | X | | MS/MSD |
| — | | | -03 | DUPE-07-1Q09 | | | 5 | X | X | X | DUPLICATE/QC LEVEL III |
| 1015 | | | -04 | MW-6 | | | 5 | X | X | X | |
| — | | | -05 | TB-14-02/12/09 | | | 1 | X | | | TRIP BLANKS. |

**ADDITIONAL INSTRUCTIONS:**

| Signature | Print Name | Company | Date | Time |
|---|---|---|---|---|
| Relinquished by | CHASE BIZOLDON | INSIGHT ECCI | 02/12/09 | 1330 |
| Received by | Latricia Edrosa | Alpha | 2/13/09 | 15:05 |
| Relinquished by | | | | |
| Received by | | | | |
| Relinquished by | | | | |
| Received by | | | | |

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**NOTE:** Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *25-Feb-09*

David Conner
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(619) 574-4827

## CASE NARRATIVE

**Project:** G005862/JPL Groundwater Monitoring
**Work Order:** BMI09021702 **Cooler Temp:** 4 °C

| Alpha's Sample ID | Client's Sample ID | Matrix |
|---|---|---|
| 09021702-01A | MW-5 | Aqueous |
| 09021702-02A | TB-15-02/13/09 | Aqueous |

**Manually Integrated Analytes**

| Alpha's Sample ID | Test Reference | Analyte |
|---|---|---|
| 09021702-01A | EPA Method 314.0 | Perchlorate |

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/17/09

Job#: G005862/JPL Groundwater Monitoring

Perchlorate by Ion Chromatography
EPA Method 314.0

| | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|
| Client ID : **MW-5** | | | | | |
| Lab ID : BMI09021702-01A | Perchlorate | 8.28 | 1.00 µg/L | 02/13/09 | 02/20/09 |

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

**3/2/09**
**Report Date**

# Alpha Analytical, Inc.

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 02/17/09

Job#: G005862/JPL Groundwater Monitoring

Metals by ICPMS
EPA Method 200.8

| | Parameter | Concentration | Reporting Limit | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|
| Client ID : **MW-5** | | | | | |
| Lab ID : BMI09021702-01A | Chromium (Cr) | ND | 0.0050 mg/L | 02/13/09 | 02/19/09 |

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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**3/2/09**
**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

### Tentatively Identified Compounds - Volatile Organics by GC/MS

| | | Parameter | Estimated Concentration | Estimated Reporting Limit | Date Received | Date Sampled | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Client ID : | **MW-5** | | | | | | |
| Lab ID : | BMI09021702-01A | * * * None Found * * * | ND | 2.0 µg/L | 02/17/09 | 02/13/09 | 02/20/09 |
| Client ID : | **TB-15-02/13/09** | | | | | | |
| Lab ID : | BMI09021702-02A | * * * None Found * * * | ND | 2.0 µg/L | 02/17/09 | 02/13/09 | 02/20/09 |

Note: Analysis conducted using EPA Method 524.2 criteria.
ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com
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3/2/09
**Report Date**

# *Alpha Analytical, Inc.*

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## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021702-01A
Client I.D. Number: MW-5

Sampled: 02/13/09
Received: 02/17/09
Analyzed: 02/20/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | | | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L | 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L | 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L | 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L | 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L | 40 | Bromoform | ND | 0.50 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L | 41 | Styrene | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L | 42 | o-Xylene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L | 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L | 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L | 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L | 46 | Bromobenzene | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L | 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L | 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L | 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L | 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 16 | Chloroform | ND | 0.50 | µg/L | 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L | 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L | 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L | 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L | 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L | 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L | 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L | 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L | 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L | 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L | 61 | Naphthalene | ND | 1.0 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L | 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L | 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L | 64 | Surr: 1,2-Dichloroethane-d4 | 108 | (70-130) | %REC |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L | 65 | Surr: Toluene-d8 | 100 | (70-130) | %REC |
| 31 | Toluene | ND | 0.50 | µg/L | 66 | Surr: 4-Bromofluorobenzene | 93 | (70-130) | %REC |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L | | | | | |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L | | | | | |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L | | | | | |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L | | | | | |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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3/2/09

**Report Date**

# *Alpha Analytical, Inc.*

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: G005862/JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI09021702-02A
Client I.D. Number: TB-15-02/13/09

Sampled: 02/13/09
Received: 02/17/09
Analyzed: 02/20/09

### Volatile Organics by GC/MS

| | Compound | Concentration | Reporting Limit | |
|---|---|---|---|---|
| 1 | Dichlorodifluoromethane | ND | 0.50 | µg/L |
| 2 | Chloromethane | ND | 1.0 | µg/L |
| 3 | Vinyl chloride | ND | 0.50 | µg/L |
| 4 | Chloroethane | ND | 0.50 | µg/L |
| 5 | Bromomethane | ND | 1.0 | µg/L |
| 6 | Trichlorofluoromethane | ND | 0.50 | µg/L |
| 7 | 1,1-Dichloroethene | ND | 0.50 | µg/L |
| 8 | Dichloromethane | ND | 1.0 | µg/L |
| 9 | Freon-113 | ND | 0.50 | µg/L |
| 10 | trans-1,2-Dichloroethene | ND | 0.50 | µg/L |
| 11 | Methyl tert-butyl ether (MTBE) | ND | 0.50 | µg/L |
| 12 | 1,1-Dichloroethane | ND | 0.50 | µg/L |
| 13 | 2-Butanone (MEK) | ND | 10 | µg/L |
| 14 | cis-1,2-Dichloroethene | ND | 0.50 | µg/L |
| 15 | Bromochloromethane | ND | 0.50 | µg/L |
| 16 | Chloroform | ND | 0.50 | µg/L |
| 17 | 2,2-Dichloropropane | ND | 0.50 | µg/L |
| 18 | 1,2-Dichloroethane | ND | 0.50 | µg/L |
| 19 | 1,1,1-Trichloroethane | ND | 0.50 | µg/L |
| 20 | 1,1-Dichloropropene | ND | 0.50 | µg/L |
| 21 | Carbon tetrachloride | ND | 0.50 | µg/L |
| 22 | Benzene | ND | 0.50 | µg/L |
| 23 | Dibromomethane | ND | 0.50 | µg/L |
| 24 | 1,2-Dichloropropane | ND | 0.50 | µg/L |
| 25 | Trichloroethene | ND | 0.50 | µg/L |
| 26 | Bromodichloromethane | ND | 0.50 | µg/L |
| 27 | 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | µg/L |
| 28 | cis-1,3-Dichloropropene | ND | 0.50 | µg/L |
| 29 | trans-1,3-Dichloropropene | ND | 0.50 | µg/L |
| 30 | 1,1,2-Trichloroethane | ND | 0.50 | µg/L |
| 31 | Toluene | ND | 0.50 | µg/L |
| 32 | 1,3-Dichloropropane | ND | 0.50 | µg/L |
| 33 | Dibromochloromethane | ND | 0.50 | µg/L |
| 34 | 1,2-Dibromoethane (EDB) | ND | 1.0 | µg/L |
| 35 | Tetrachloroethene | ND | 0.50 | µg/L |
| 36 | 1,1,1,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 37 | Chlorobenzene | ND | 0.50 | µg/L |
| 38 | Ethylbenzene | ND | 0.50 | µg/L |
| 39 | m,p-Xylene | ND | 0.50 | µg/L |
| 40 | Bromoform | ND | 0.50 | µg/L |
| 41 | Styrene | ND | 0.50 | µg/L |
| 42 | o-Xylene | ND | 0.50 | µg/L |
| 43 | 1,1,2,2-Tetrachloroethane | ND | 0.50 | µg/L |
| 44 | 1,2,3-Trichloropropane | ND | 1.0 | µg/L |
| 45 | Isopropylbenzene | ND | 0.50 | µg/L |
| 46 | Bromobenzene | ND | 0.50 | µg/L |
| 47 | n-Propylbenzene | ND | 0.50 | µg/L |
| 48 | 4-Chlorotoluene | ND | 0.50 | µg/L |
| 49 | 2-Chlorotoluene | ND | 0.50 | µg/L |
| 50 | 1,3,5-Trimethylbenzene | ND | 0.50 | µg/L |
| 51 | tert-Butylbenzene | ND | 0.50 | µg/L |
| 52 | 1,2,4-Trimethylbenzene | ND | 0.50 | µg/L |
| 53 | sec-Butylbenzene | ND | 0.50 | µg/L |
| 54 | 1,3-Dichlorobenzene | ND | 0.50 | µg/L |
| 55 | 1,4-Dichlorobenzene | ND | 0.50 | µg/L |
| 56 | 4-Isopropyltoluene | ND | 0.50 | µg/L |
| 57 | 1,2-Dichlorobenzene | ND | 0.50 | µg/L |
| 58 | n-Butylbenzene | ND | 0.50 | µg/L |
| 59 | 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | µg/L |
| 60 | 1,2,4-Trichlorobenzene | ND | 1.0 | µg/L |
| 61 | Naphthalene | ND | 1.0 | µg/L |
| 62 | Hexachlorobutadiene | ND | 1.0 | µg/L |
| 63 | 1,2,3-Trichlorobenzene | ND | 1.0 | µg/L |
| 64 | Surr: 1,2-Dichloroethane-d4 | 105 | (70-130) | %REC |
| 65 | Surr: Toluene-d8 | 101 | (70-130) | %REC |
| 66 | Surr: 4-Bromofluorobenzene | 96 | (70-130) | %REC |

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl  Randy Gardner  Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

3/2/09

**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


## VOC Sample Preservation Report

**Work Order:** BMI09021702 **Project:** G005862/JPL Groundwater Monitoring

| Alpha's Sample ID | Client's Sample ID | Matrix | pH |
|---|---|---|---|
| 09021702-01A | MW-5 | Aqueous | 2 |
| 09021702-02A | TB-15-02/13/09 | Aqueous | 2 |

**3/2/09**

**Report Date**

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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**Date:** *25-Feb-09*

## QC Summary Report

**Work Order:** 09021702

### Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **21560** Analysis Date: **02/20/2009 13:01**

Sample ID: **MB-21560** Units : **µg/L** Run ID: **IC_3_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | ND | 1 | | | | | | | | |

### Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **21560** Analysis Date: **02/20/2009 13:19**

Sample ID: **LFB-21560** Units : **µg/L** Run ID: **IC_3_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.8 | 2 | 25 | | 99 | 85 | 115 | | | |

### Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **18** Batch ID: **21560** Analysis Date: **02/20/2009 14:14**

Sample ID: **09021702-01ALFM** Units : **µg/L** Run ID: **IC_3_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 32.8 | 2 | 25 | 8.282 | 98 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **21560** Analysis Date: **02/20/2009 14:33**

Sample ID: **09021702-01ALFMD** Units : **µg/L** Run ID: **IC_3_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Perchlorate | 33.7 | 2 | 25 | 8.282 | 102 | 80 | 120 | 32.78 | 2.9(15) | |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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**Date:** *25-Feb-09*

## QC Summary Report

**Work Order:** 09021702

### Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **021909.B\117SMPL.D** Batch ID: **21536K** Analysis Date: **02/19/2009 23:24**

Sample ID: **MB-21536** Units : **mg/L** Run ID: **ICP/MS_090219F** Prep Date: **02/17/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | ND | 0.005 | | | | | | | | |

### Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **021909.B\L536.D** Batch ID: **21536K** Analysis Date: **02/20/2009 15:25**

Sample ID: **LCS-21536** Units : **mg/L** Run ID: **ICP/MS_090219F** Prep Date: **02/17/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0532 | 0.005 | 0.05 | | 106 | 80 | 120 | | | |

### Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **021909.B\122SMPL.D** Batch ID: **21536K** Analysis Date: **02/19/2009 23:52**

Sample ID: **09021702-01AMS** Units : **mg/L** Run ID: **ICP/MS_090219F** Prep Date: **02/17/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0592 | 0.005 | 0.05 | 0 | 118 | 80 | 120 | | | |

### Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **021909.B\123SMPL.D** Batch ID: **21536K** Analysis Date: **02/19/2009 23:58**

Sample ID: **09021702-01AMSD** Units : **mg/L** Run ID: **ICP/MS_090219F** Prep Date: **02/17/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium (Cr) | 0.0626 | 0.005 | 0.05 | 0 | 125 | 80 | 120 | 0.0592 | 5.5(20) | M1 |

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

# Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021702

**Method Blank** Type **MBLK** Test Code: _____

File ID: **09022007.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 09:50**

Sample ID: **MBLK MS15W0220M** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 0.5 | | | | | | | | |
| Chloromethane | ND | 1 | | | | | | | | |
| Vinyl chloride | ND | 0.5 | | | | | | | | |
| Chloroethane | ND | 0.5 | | | | | | | | |
| Bromomethane | ND | 1 | | | | | | | | |
| Trichlorofluoromethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethene | ND | 0.5 | | | | | | | | |
| Dichloromethane | ND | 1 | | | | | | | | |
| Freon-113 | ND | 0.5 | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.5 | | | | | | | | |
| 1,1-Dichloroethane | ND | 0.5 | | | | | | | | |
| 2-Butanone (MEK) | ND | 10 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | | | | | | | | |
| Bromochloromethane | ND | 0.5 | | | | | | | | |
| Chloroform | ND | 0.5 | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloroethane | ND | 0.5 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.5 | | | | | | | | |
| 1,1-Dichloropropene | ND | 0.5 | | | | | | | | |
| Carbon tetrachloride | ND | 0.5 | | | | | | | | |
| Benzene | ND | 0.5 | | | | | | | | |
| Dibromomethane | ND | 0.5 | | | | | | | | |
| 1,2-Dichloropropane | ND | 0.5 | | | | | | | | |
| Trichloroethene | ND | 0.5 | | | | | | | | |
| Bromodichloromethane | ND | 0.5 | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | ND | 2.5 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.5 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.5 | | | | | | | | |
| Toluene | ND | 0.5 | | | | | | | | |
| 1,3-Dichloropropane | ND | 0.5 | | | | | | | | |
| Dibromochloromethane | ND | 0.5 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1 | | | | | | | | |
| Tetrachloroethene | ND | 0.5 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| Chlorobenzene | ND | 0.5 | | | | | | | | |
| Ethylbenzene | ND | 0.5 | | | | | | | | |
| m,p-Xylene | ND | 0.5 | | | | | | | | |
| Bromoform | ND | 0.5 | | | | | | | | |
| Styrene | ND | 0.5 | | | | | | | | |
| o-Xylene | ND | 0.5 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1 | | | | | | | | |
| Isopropylbenzene | ND | 0.5 | | | | | | | | |
| Bromobenzene | ND | 0.5 | | | | | | | | |
| n-Propylbenzene | ND | 0.5 | | | | | | | | |
| 4-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 2-Chlorotoluene | ND | 0.5 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| tert-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.5 | | | | | | | | |
| sec-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| 4-Isopropyltoluene | ND | 0.5 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.5 | | | | | | | | |
| n-Butylbenzene | ND | 0.5 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | ND | 2.5 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1 | | | | | | | | |
| Naphthalene | ND | 1 | | | | | | | | |
| Hexachlorobutadiene | ND | 1 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10.4 | | 10 | | 104 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021702

| | | | | | | |
|---|---|---|---|---|---|---|
| Surr: 4-Bromofluorobenzene | 9.83 | | 10 | 98 | 70 | 130 |

**Laboratory Control Spike** Type **LCS** Test Code: _____

File ID: **09022005.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 08:45**

Sample ID: **LCS MS15W0220M** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 11.3 | 1 | 10 | | 113 | 70 | 130 | | | |
| Chloromethane | 8.47 | 2 | 10 | | 85 | 70 | 130 | | | |
| Vinyl chloride | 9.87 | 1 | 10 | | 99 | 70 | 130 | | | |
| Chloroethane | 9.74 | 1 | 10 | | 97 | 70 | 130 | | | |
| Bromomethane | 9.89 | 2 | 10 | | 99 | 70 | 130 | | | |
| Trichlorofluoromethane | 12.9 | 1 | 10 | | 129 | 70 | 130 | | | |
| 1,1-Dichloroethene | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Dichloromethane | 9.39 | 2 | 10 | | 94 | 70 | 130 | | | |
| trans-1,2-Dichloroethene | 10.8 | 1 | 10 | | 108 | 70 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 9.34 | 0.5 | 10 | | 93 | 62 | 136 | | | |
| 1,1-Dichloroethane | 10.1 | 1 | 10 | | 101 | 70 | 130 | | | |
| cis-1,2-Dichloroethene | 10.4 | 1 | 10 | | 104 | 70 | 130 | | | |
| Bromochloromethane | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| Chloroform | 9.88 | 1 | 10 | | 99 | 70 | 130 | | | |
| 2,2-Dichloropropane | 9.37 | 1 | 10 | | 94 | 70 | 130 | | | |
| 1,2-Dichloroethane | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 1,1,1-Trichloroethane | 11.2 | 1 | 10 | | 112 | 70 | 130 | | | |
| 1,1-Dichloropropene | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Carbon tetrachloride | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Benzene | 9.36 | 0.5 | 10 | | 94 | 70 | 130 | | | |
| Dibromomethane | 10.3 | 1 | 10 | | 103 | 70 | 130 | | | |
| 1,2-Dichloropropane | 9.34 | 1 | 10 | | 93 | 70 | 130 | | | |
| Trichloroethene | 11 | 1 | 10 | | 110 | 70 | 130 | | | |
| Bromodichloromethane | 10.5 | 1 | 10 | | 105 | 70 | 130 | | | |
| cis-1,3-Dichloropropene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| trans-1,3-Dichloropropene | 9.96 | 1 | 10 | | 99.6 | 70 | 130 | | | |
| 1,1,2-Trichloroethane | 9 | 1 | 10 | | 90 | 70 | 130 | | | |
| Toluene | 9.51 | 0.5 | 10 | | 95 | 70 | 130 | | | |
| 1,3-Dichloropropane | 8.72 | 1 | 10 | | 87 | 70 | 130 | | | |
| Dibromochloromethane | 10.2 | 1 | 10 | | 102 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 18.3 | 2 | 20 | | 92 | 70 | 130 | | | |
| Tetrachloroethene | 10.6 | 1 | 10 | | 106 | 70 | 130 | | | |
| 1,1,1,2-Tetrachloroethane | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| Chlorobenzene | 9.42 | 1 | 10 | | 94 | 70 | 130 | | | |
| Ethylbenzene | 9.72 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| m,p-Xylene | 10 | 0.5 | 10 | | 100 | 70 | 130 | | | |
| Bromoform | 9.28 | 1 | 10 | | 93 | 70 | 130 | | | |
| Styrene | 9.6 | 1 | 10 | | 96 | 70 | 130 | | | |
| o-Xylene | 9.7 | 0.5 | 10 | | 97 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 7.95 | 1 | 10 | | 80 | 70 | 130 | | | |
| 1,2,3-Trichloropropane | 17.6 | 2 | 20 | | 88 | 70 | 130 | | | |
| Isopropylbenzene | 9.88 | 1 | 10 | | 99 | 70 | 130 | | | |
| Bromobenzene | 9.31 | 1 | 10 | | 93 | 70 | 130 | | | |
| n-Propylbenzene | 9.89 | 1 | 10 | | 99 | 70 | 130 | | | |
| 4-Chlorotoluene | 9.97 | 1 | 10 | | 99.7 | 70 | 130 | | | |
| 2-Chlorotoluene | 9.73 | 1 | 10 | | 97 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 9.82 | 1 | 10 | | 98 | 70 | 130 | | | |
| tert-Butylbenzene | 9.7 | 1 | 10 | | 97 | 70 | 130 | | | |
| 1,2,4-Trimethylbenzene | 10 | 1 | 10 | | 100 | 70 | 130 | | | |
| sec-Butylbenzene | 9.84 | 1 | 10 | | 98 | 70 | 130 | | | |
| 1,3-Dichlorobenzene | 9.63 | 1 | 10 | | 96 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 9.22 | 1 | 10 | | 92 | 70 | 130 | | | |
| 4-Isopropyltoluene | 9.98 | 1 | 10 | | 99.8 | 70 | 130 | | | |
| 1,2-Dichlorobenzene | 9.17 | 1 | 10 | | 92 | 70 | 130 | | | |
| n-Butylbenzene | 10.1 | 1 | 10 | | 101 | 70 | 130 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 42.1 | 3 | 50 | | 84 | 70 | 130 | | | |
| 1,2,4-Trichlorobenzene | 10.6 | 2 | 10 | | 106 | 70 | 130 | | | |
| Naphthalene | 8.52 | 2 | 10 | | 85 | 70 | 130 | | | |
| Hexachlorobutadiene | 21.4 | 2 | 20 | | 107 | 70 | 130 | | | |
| 1,2,3-Trichlorobenzene | 10.4 | 2 | 10 | | 104 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.63 | | 10 | | 96 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10.1 | | 10 | | 101 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.68 | | 10 | | 97 | 70 | 130 | | | |

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**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021702

**Sample Matrix Spike** Type **MS** Test Code: _____

File ID: **09022008.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 10:12**

Sample ID: **09021702-01AMS** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 43.7 | 2.5 | 50 | 0 | 87 | 13 | 167 | | | |
| Chloromethane | 38 | 10 | 50 | 0 | 76 | 28 | 145 | | | |
| Vinyl chloride | 49.3 | 2.5 | 50 | 0 | 99 | 43 | 134 | | | |
| Chloroethane | 45.3 | 2.5 | 50 | 0 | 91 | 39 | 154 | | | |
| Bromomethane | 48.8 | 10 | 50 | 0 | 98 | 19 | 176 | | | |
| Trichlorofluoromethane | 62.2 | 2.5 | 50 | 0 | 124 | 34 | 160 | | | |
| 1,1-Dichloroethene | 50.3 | 2.5 | 50 | 0 | 101 | 60 | 130 | | | |
| Dichloromethane | 46 | 10 | 50 | 0 | 92 | 68 | 130 | | | |
| trans-1,2-Dichloroethene | 50.7 | 2.5 | 50 | 0 | 101 | 63 | 130 | | | |
| Methyl tert-butyl ether (MTBE) | 46 | 1.3 | 50 | 0 | 92 | 56 | 141 | | | |
| 1,1-Dichloroethane | 48.8 | 2.5 | 50 | 0 | 98 | 61 | 130 | | | |
| cis-1,2-Dichloroethene | 49.7 | 2.5 | 50 | 0 | 99 | 70 | 130 | | | |
| Bromochloromethane | 52.5 | 2.5 | 50 | 0 | 105 | 70 | 130 | | | |
| Chloroform | 47.6 | 2.5 | 50 | 0 | 95 | 67 | 130 | | | |
| 2,2-Dichloropropane | 44.4 | 2.5 | 50 | 0 | 89 | 30 | 152 | | | |
| 1,2-Dichloroethane | 49.7 | 2.5 | 50 | 0 | 99 | 60 | 135 | | | |
| 1,1,1-Trichloroethane | 52.9 | 2.5 | 50 | 0 | 106 | 59 | 137 | | | |
| 1,1-Dichloropropene | 52.3 | 2.5 | 50 | 0 | 105 | 63 | 130 | | | |
| Carbon tetrachloride | 53.1 | 2.5 | 50 | 0 | 106 | 50 | 147 | | | |
| Benzene | 44.5 | 1.3 | 50 | 0 | 89 | 67 | 130 | | | |
| Dibromomethane | 51.3 | 2.5 | 50 | 0 | 103 | 69 | 133 | | | |
| 1,2-Dichloropropane | 44.3 | 2.5 | 50 | 0 | 89 | 69 | 130 | | | |
| Trichloroethene | 52.7 | 2.5 | 50 | 0 | 105 | 69 | 130 | | | |
| Bromodichloromethane | 50.8 | 2.5 | 50 | 0 | 102 | 66 | 134 | | | |
| cis-1,3-Dichloropropene | 47.1 | 2.5 | 50 | 0 | 94 | 63 | 130 | | | |
| trans-1,3-Dichloropropene | 49 | 2.5 | 50 | 0 | 98 | 66 | 131 | | | |
| 1,1,2-Trichloroethane | 42.8 | 2.5 | 50 | 0 | 86 | 68 | 130 | | | |
| Toluene | 44.4 | 1.3 | 50 | 0 | 89 | 66 | 130 | | | |
| 1,3-Dichloropropane | 42.3 | 2.5 | 50 | 0 | 85 | 70 | 130 | | | |
| Dibromochloromethane | 49.3 | 2.5 | 50 | 0 | 99 | 70 | 130 | | | |
| 1,2-Dibromoethane (EDB) | 89.8 | 10 | 100 | 0 | 90 | 70 | 130 | | | |
| Tetrachloroethene | 49.5 | 2.5 | 50 | 0 | 99 | 61 | 134 | | | |
| 1,1,1,2-Tetrachloroethane | 47.7 | 2.5 | 50 | 0 | 95 | 70 | 130 | | | |
| Chlorobenzene | 44.6 | 2.5 | 50 | 0 | 89 | 70 | 130 | | | |
| Ethylbenzene | 45.7 | 1.3 | 50 | 0 | 91 | 68 | 130 | | | |
| m,p-Xylene | 46.3 | 1.3 | 50 | 0 | 93 | 64 | 130 | | | |
| Bromoform | 44.9 | 2.5 | 50 | 0 | 90 | 64 | 138 | | | |
| Styrene | 45.1 | 2.5 | 50 | 0 | 90 | 69 | 130 | | | |
| o-Xylene | 45.3 | 1.3 | 50 | 0 | 91 | 70 | 130 | | | |
| 1,1,2,2-Tetrachloroethane | 39.7 | 2.5 | 50 | 0 | 79 | 65 | 131 | | | |
| 1,2,3-Trichloropropane | 85.4 | 10 | 100 | 0 | 85 | 70 | 130 | | | |
| Isopropylbenzene | 45.7 | 2.5 | 50 | 0 | 91 | 64 | 138 | | | |
| Bromobenzene | 44.7 | 2.5 | 50 | 0 | 89 | 70 | 130 | | | |
| n-Propylbenzene | 45.3 | 2.5 | 50 | 0 | 91 | 66 | 132 | | | |
| 4-Chlorotoluene | 46.9 | 2.5 | 50 | 0 | 94 | 70 | 130 | | | |
| 2-Chlorotoluene | 46.3 | 2.5 | 50 | 0 | 93 | 70 | 130 | | | |
| 1,3,5-Trimethylbenzene | 45.6 | 2.5 | 50 | 0 | 91 | 66 | 136 | | | |
| tert-Butylbenzene | 45 | 2.5 | 50 | 0 | 90 | 65 | 137 | | | |
| 1,2,4-Trimethylbenzene | 46.1 | 2.5 | 50 | 0 | 92 | 65 | 137 | | | |
| sec-Butylbenzene | 44.9 | 2.5 | 50 | 0 | 90 | 66 | 134 | | | |
| 1,3-Dichlorobenzene | 45.2 | 2.5 | 50 | 0 | 90 | 70 | 130 | | | |
| 1,4-Dichlorobenzene | 43.6 | 2.5 | 50 | 0 | 87 | 70 | 130 | | | |
| 4-Isopropyltoluene | 46.4 | 2.5 | 50 | 0 | 93 | 66 | 137 | | | |
| 1,2-Dichlorobenzene | 43.2 | 2.5 | 50 | 0 | 86 | 70 | 130 | | | |
| n-Butylbenzene | 46.4 | 2.5 | 50 | 0 | 93 | 60 | 142 | | | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 205 | 15 | 250 | 0 | 82 | 67 | 130 | | | |
| 1,2,4-Trichlorobenzene | 47.4 | 10 | 50 | 0 | 95 | 61 | 137 | | | |
| Naphthalene | 37.3 | 10 | 50 | 0 | 75 | 40 | 167 | | | |
| Hexachlorobutadiene | 95.5 | 10 | 100 | 0 | 96 | 61 | 130 | | | |
| 1,2,3-Trichlorobenzene | 45.7 | 10 | 50 | 0 | 91 | 51 | 144 | | | |
| Surr: 1,2-Dichloroethane-d4 | 49.7 | | 50 | | 99 | 70 | 130 | | | |
| Surr: Toluene-d8 | 50.1 | | 50 | | 100 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 48.8 | | 50 | | 98 | 70 | 130 | | | |

# Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** 25-Feb-09

## QC Summary Report

**Work Order:** 09021702

**Sample Matrix Spike Duplicate** Type **MSD** Test Code: _____

File ID: **09022009.D** Batch ID: **MS15W0220M** Analysis Date: **02/20/2009 10:34**

Sample ID: **09021702-01AMSD** Units : **µg/L** Run ID: **MSD_15_090220A** Prep Date: **02/20/2009**

| Analyte | Result | PQL | SpkVal | SpkRefVal | %REC | LCL(ME) | UCL(ME) | RPDRefVal | %RPD(Limit) | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 41.2 | 2.5 | 50 | 0 | 82 | 13 | 167 | 43.66 | 5.8(20) | |
| Chloromethane | 37.4 | 10 | 50 | 0 | 75 | 28 | 145 | 37.98 | 1.5(20) | |
| Vinyl chloride | 47.6 | 2.5 | 50 | 0 | 95 | 43 | 134 | 49.28 | 3.4(20) | |
| Chloroethane | 45.6 | 2.5 | 50 | 0 | 91 | 39 | 154 | 45.33 | 0.5(20) | |
| Bromomethane | 52.6 | 10 | 50 | 0 | 105 | 19 | 176 | 48.81 | 7.4(20) | |
| Trichlorofluoromethane | 59.8 | 2.5 | 50 | 0 | 120 | 34 | 160 | 62.23 | 4.0(20) | |
| 1,1-Dichloroethene | 48.1 | 2.5 | 50 | 0 | 96 | 60 | 130 | 50.34 | 4.5(20) | |
| Dichloromethane | 46.2 | 10 | 50 | 0 | 92 | 68 | 130 | 46.01 | 0.4(20) | |
| trans-1,2-Dichloroethene | 49.4 | 2.5 | 50 | 0 | 99 | 63 | 130 | 50.7 | 2.7(20) | |
| Methyl tert-butyl ether (MTBE) | 47.3 | 1.3 | 50 | 0 | 95 | 56 | 141 | 45.98 | 2.9(20) | |
| 1,1-Dichloroethane | 47.8 | 2.5 | 50 | 0 | 96 | 61 | 130 | 48.75 | 2.0(20) | |
| cis-1,2-Dichloroethene | 49.9 | 2.5 | 50 | 0 | 99.8 | 70 | 130 | 49.73 | 0.3(20) | |
| Bromochloromethane | 53.3 | 2.5 | 50 | 0 | 107 | 70 | 130 | 52.53 | 1.5(20) | |
| Chloroform | 47.7 | 2.5 | 50 | 0 | 95 | 67 | 130 | 47.61 | 0.3(20) | |
| 2,2-Dichloropropane | 44.3 | 2.5 | 50 | 0 | 89 | 30 | 152 | 44.4 | 0.2(20) | |
| 1,2-Dichloroethane | 50.7 | 2.5 | 50 | 0 | 101 | 60 | 135 | 49.71 | 2.0(20) | |
| 1,1,1-Trichloroethane | 51.7 | 2.5 | 50 | 0 | 103 | 59 | 137 | 52.87 | 2.3(20) | |
| 1,1-Dichloropropene | 50.2 | 2.5 | 50 | 0 | 100 | 63 | 130 | 52.26 | 4.1(20) | |
| Carbon tetrachloride | 50.4 | 2.5 | 50 | 0 | 101 | 50 | 147 | 53.08 | 5.1(20) | |
| Benzene | 44.1 | 1.3 | 50 | 0 | 88 | 67 | 130 | 44.45 | 0.8(20) | |
| Dibromomethane | 52.2 | 2.5 | 50 | 0 | 104 | 69 | 133 | 51.32 | 1.7(20) | |
| 1,2-Dichloropropane | 45.1 | 2.5 | 50 | 0 | 90 | 69 | 130 | 44.25 | 1.9(20) | |
| Trichloroethene | 51.7 | 2.5 | 50 | 0 | 103 | 69 | 130 | 52.65 | 1.8(20) | |
| Bromodichloromethane | 51.7 | 2.5 | 50 | 0 | 103 | 66 | 134 | 50.78 | 1.8(20) | |
| cis-1,3-Dichloropropene | 47.6 | 2.5 | 50 | 0 | 95 | 63 | 130 | 47.07 | 1.1(20) | |
| trans-1,3-Dichloropropene | 49.5 | 2.5 | 50 | 0 | 99 | 66 | 131 | 48.96 | 1.0(20) | |
| 1,1,2-Trichloroethane | 44.6 | 2.5 | 50 | 0 | 89 | 68 | 130 | 42.77 | 4.2(20) | |
| Toluene | 43.9 | 1.3 | 50 | 0 | 88 | 66 | 130 | 44.35 | 1.0(20) | |
| 1,3-Dichloropropane | 43.3 | 2.5 | 50 | 0 | 87 | 70 | 130 | 42.27 | 2.3(20) | |
| Dibromochloromethane | 50.3 | 2.5 | 50 | 0 | 101 | 70 | 130 | 49.28 | 2.0(20) | |
| 1,2-Dibromoethane (EDB) | 90.7 | 10 | 100 | 0 | 91 | 70 | 130 | 89.76 | 1.0(20) | |
| Tetrachloroethene | 48.2 | 2.5 | 50 | 0 | 96 | 61 | 134 | 49.54 | 2.8(20) | |
| 1,1,1,2-Tetrachloroethane | 48.1 | 2.5 | 50 | 0 | 96 | 70 | 130 | 47.7 | 0.8(20) | |
| Chlorobenzene | 44.7 | 2.5 | 50 | 0 | 89 | 70 | 130 | 44.57 | 0.4(20) | |
| Ethylbenzene | 45.1 | 1.3 | 50 | 0 | 90 | 68 | 130 | 45.7 | 1.3(20) | |
| m,p-Xylene | 45.9 | 1.3 | 50 | 0 | 92 | 64 | 130 | 46.31 | 0.8(20) | |
| Bromoform | 47.2 | 2.5 | 50 | 0 | 94 | 64 | 138 | 44.88 | 5.0(20) | |
| Styrene | 45.7 | 2.5 | 50 | 0 | 91 | 69 | 130 | 45.06 | 1.3(20) | |
| o-Xylene | 45.5 | 1.3 | 50 | 0 | 91 | 70 | 130 | 45.29 | 0.4(20) | |
| 1,1,2,2-Tetrachloroethane | 39.7 | 2.5 | 50 | 0 | 79 | 65 | 131 | 39.72 | 0.1(20) | |
| 1,2,3-Trichloropropane | 87.2 | 10 | 100 | 0 | 87 | 70 | 130 | 85.42 | 2.1(20) | |
| Isopropylbenzene | 47.1 | 2.5 | 50 | 0 | 94 | 64 | 138 | 45.66 | 3.2(20) | |
| Bromobenzene | 47.3 | 2.5 | 50 | 0 | 95 | 70 | 130 | 44.7 | 5.6(20) | |
| n-Propylbenzene | 47 | 2.5 | 50 | 0 | 94 | 66 | 132 | 45.32 | 3.6(20) | |
| 4-Chlorotoluene | 48.5 | 2.5 | 50 | 0 | 97 | 70 | 130 | 46.9 | 3.4(20) | |
| 2-Chlorotoluene | 48 | 2.5 | 50 | 0 | 96 | 70 | 130 | 46.26 | 3.6(20) | |
| 1,3,5-Trimethylbenzene | 46.7 | 2.5 | 50 | 0 | 93 | 66 | 136 | 45.56 | 2.4(20) | |
| tert-Butylbenzene | 46.3 | 2.5 | 50 | 0 | 93 | 65 | 137 | 44.95 | 3.0(20) | |
| 1,2,4-Trimethylbenzene | 47.8 | 2.5 | 50 | 0 | 96 | 65 | 137 | 46.07 | 3.8(20) | |
| sec-Butylbenzene | 46.1 | 2.5 | 50 | 0 | 92 | 66 | 134 | 44.88 | 2.6(20) | |
| 1,3-Dichlorobenzene | 47.7 | 2.5 | 50 | 0 | 95 | 70 | 130 | 45.16 | 5.6(20) | |
| 1,4-Dichlorobenzene | 46.1 | 2.5 | 50 | 0 | 92 | 70 | 130 | 43.56 | 5.6(20) | |
| 4-Isopropyltoluene | 47.4 | 2.5 | 50 | 0 | 95 | 66 | 137 | 46.36 | 2.1(20) | |
| 1,2-Dichlorobenzene | 46.3 | 2.5 | 50 | 0 | 93 | 70 | 130 | 43.17 | 7.1(20) | |
| n-Butylbenzene | 47.8 | 2.5 | 50 | 0 | 96 | 60 | 142 | 46.44 | 2.8(20) | |
| 1,2-Dibromo-3-chloropropane (DBCP) | 219 | 15 | 250 | 0 | 88 | 67 | 130 | 204.7 | 6.7(20) | |
| 1,2,4-Trichlorobenzene | 53.4 | 10 | 50 | 0 | 107 | 61 | 137 | 47.41 | 11.9(20) | |
| Naphthalene | 41.6 | 10 | 50 | 0 | 83 | 40 | 167 | 37.32 | 10.8(20) | |
| Hexachlorobutadiene | 102 | 10 | 100 | 0 | 102 | 61 | 130 | 95.51 | 6.4(20) | |
| 1,2,3-Trichlorobenzene | 53 | 10 | 50 | 0 | 106 | 51 | 144 | 45.69 | 14.9(20) | |
| Surr: 1,2-Dichloroethane-d4 | 49 | | 50 | | 98 | 70 | 130 | | | |
| Surr: Toluene-d8 | 49.5 | | 50 | | 99 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 50.6 | | 50 | | 101 | 70 | 130 | | | |

# *Alpha Analytical, Inc.*

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183


**Date:** *25-Feb-09*

## QC Summary Report

**Work Order:** 09021702

**Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

# CHAIN-OF-CUSTODY RECORD

CA

**Billing Information :**
Battelle
505 King Avenue

Columbus, OH 43201

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

**WorkOrder : BMI09021702**

**Report Due By : 5:00 PM On : 03-Mar-2009**

**Client:**
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

| Report Attention | Phone Number | EMail Address |
|---|---|---|
| David Conner | (619) 574-4827 x | connerd@battelle.org |
| Betsy Cutie | (614) 424-4899 x | cutiee@batelle.org |
| Shane Walton | (614) 424-4117 x | waltons@battelle.org |

EDD Required : **Yes**

Sampled by : Client

PO : 218013

Client's COC # : 026060 Job : G005862/JPL Groundwater Monitoring

| Cooler Temp | Samples Received | Date Printed |
|---|---|---|
| 4 °C | 17-Feb-2009 | **17-Feb-2009** |

QC Level : S4 = Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

| Alpha Sample ID | Client Sample ID | Matrix | Collection Date | No. of Bottles Alpha | Sub | TAT | Requested Tests 314_W | METALS_DW | VOC_TIC_W | VOC_W | | | | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BMI09021702-01A | MW-5 | AQ | 02/13/09 08:16 | 10 | 0 | 10 | Perchlorate | Cr | VOC by 524 Criteria | VOC by 524 Criteria | | | | | MS/MSD. Level IV QC. |
| BMI09021702-02A | TB-15-02/13/09 | AQ | 02/13/09 00:00 | 1 | 0 | 10 | | | VOC by 524 Criteria | VOC by 524 Criteria | | | | | Reno Trip Blank 1/6/09 |

**Comments:** No security seals. Frozen ice. Temp Blank #5047 received @ 4°. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. Perchlorate RL of 1.0 ug/L. :

| | Signature | Print Name | Company | Date/Time |
|---|---|---|---|---|
| **Logged in by:** | Elizabeth Adcox | Elizabeth Adcox | **Alpha Analytical, Inc.** | 2-17-09 1029 |

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**Billing Information:**
Name GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

**Alpha Analytical, Inc.**
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

**Samples Collected From Which State?**
AZ ___ CA X NV ___ WA ___
ID ___ OR ___ OTHER ___

026060
Page # 1 of 1

| Client Name | P.O. # | Job # |
|---|---|---|
| DAVID CONNER | 218013 | 6005862 |
| Address: 3990 OLD TOWN AVE, C-205 | EMail Address | |
| City, State, Zip: SAN DIEGO, CA 92110 | Phone #: 619-726-7311 | Fax # |

Required QC Level? I II (III) IV
EDD / EDF? YES ___ NO ___
Global ID # _____

| Time Sampled | Date Sampled | Matrix* See Key Below | Sampled by / Lab ID Number (Office Use Only) | Report Attention / Sample Description | TAT | Field Filtered | Total and type of containers ** See below | VOC (524.2) | TOTAL Cr (200.8) | 1,4-D (314.0) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0816 | 2/13/09 | AQ | BMI09021702-01 | MW-5 | | | 10 | X | X | X | MS/MSD/QC LEVEL III |
| | | | | ~~MW-6~~ | | | ~~3~~ | ~~X~~ | ~~X~~ | ~~X~~ | |
| — | — | | -02 | TB-15-02/13/09 | | | 1 | X | | | TRIP BLANK |

**ADDITIONAL INSTRUCTIONS:**

| Signature | Print Name | Company | Date | Time |
|---|---|---|---|---|
| Relinquished by | MARCO MENDOZA | INSIGHT | 2/16/09 | 1100 |
| Received by Elizabeth Adcox | Elizabeth Adcox | Alpha | 2/17/09 | 1029 |
| Relinquished by | | | | |
| Received by | | | | |
| Relinquished by | | | | |
| Received by | | | | |

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

**NOTE:** Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

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

**CAS SR #P0900258**

**Table of Contents**

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

January 27, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on January 23, 2009. For your reference, these analyses have been assigned our service request number P0900258.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 24 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
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: Battelle CAS Project No: P0900258
Project: JPL Groundwater Monitoring 1Q09 / G486090

---

## CASE NARRATIVE

The samples were received intact under chain of custody on January 23, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

---

*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900258

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900258-001 | MW-21-5 | 1/23/09 | 08:12 |
| P0900258-002 | MW-21-4 | 1/23/09 | 08:47 |
| P0900258-003 | MW-21-3 | 1/23/09 | 09:19 |
| P0900258-004 | MW-21-2 | 1/23/09 | 09:48 |
| P0900258-005 | MW-21-1 | 1/23/09 | 10:25 |
| P0900258-006 | DUPE-1-1Q09 | 1/23/09 | 00:00 |
| P0900258-007 | EB-1-1/23/09 | 1/23/09 | 10:10 |

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert*-Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0900258

CAS Contact:

| Company Name & Address (Reporting Information) | Project Name |
|---|---|
| BATTELLE<br>3990 OLD TOWN AVE, C-205<br>SAN DIEGO, CA 92110 | JPL GW MON 1Q09 |
| | Project Number: 24660 90 |
| Project Manager: DAVID CONNER | P.O. # / Billing Information: 21439/BATTELLE ATTN: GERALD TOMKINS 505 KING AVE. COLUMBUS, OH 43201 |
| Phone: 614-726-7311 / Fax: | |
| Email Address for Result Reporting | Sampler (Print & Sign) |

**Analysis Method and/or Analytes**

*Preservative Code*

| Client Sample ID | Laboratory ID Number | Date Collected | Time Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) | TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | 0 Cr DF (7196) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-21-5 | 1 | 1/23/09 | 812 | W | 1 | | | | | | | X | |
| MW-21-4 | 2 | " | 847 | " | " | | | | | | | X | |
| MW-21-3 | 3 | " | 919 | " | " | | | | | | | X | |
| MW-21-2 | 4 | " | 948 | " | " | | | | | | | X | |
| MW-21-1 | 5 | " | 1025 | " | " | | | | | | | X | |
| DUPE-1-1Q09 | 6 | " | — | " | " | | | | | | | X | DUPLICATE |
| EB-1-1/23/09 | 7 | " | 1010 | " | " | | | | | | | X | EQUIP BLANK |

**Preservative Key**

| | |
|---|---|
| 0 | None |
| 1 | HCL |
| 2 | HNO3 |
| 3 | H2SO4 |
| 4 | NaOH |
| 5 | Zn Acetate |
| 6 | Asc Acid |
| 7 | Other |

**Report Tier Levels - please select**

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: Geotracker

Project Requirements (MRLs, QAPP)

| | Date | Time | | Date | Time |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | 1/23/09 | 1155 | Received by: (Signature) | 1/23/09 | 1155 |
| Relinquished by: (Signature) | 1/23/09 | 1236 | Received by: (Signature) | 1/23/09 | 1236 |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

Cooler / Blank / Ice / No Ice
Temperature 3° °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900258

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900258-001.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-002.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-003.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-004.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-005.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-006.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1243 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |
| P0900258-007.01 | | | | | |
| | 7196A | | | | |
| | | 1/23/09 | 1247 | SMO / LKUKITA | |
| | | 1/23/09 | 1322 | In Lab / NFALLAHI | |
| | | 1/23/09 | 1612 | P-37 / NFALLAHI | |

## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle Work order: P0900258

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 01/23/09 Date opened: 01/23/09 by: LKUKITA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Were **chain-of-custody** papers used and filled out? | ☒ | ☐ | ☐ |
| 5 | Did **sample container labels** and/or tags agree with custody papers? | ☒ | ☐ | ☐ |
| 6 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 7 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 8 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C Blank Temperature 3 °C | | | |
| 9 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: Serial # _____ -TB _____ | | | |
| 10 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 11 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☒ | ☐ | ☐ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 12 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 13 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900258-001.01 | 125mL Plastic NP | | | | | |
| P0900258-002.01 | 125mL Plastic NP | | | | | |
| P0900258-003.01 | 125mL Plastic NP | | | | | |
| P0900258-004.01 | 125mL Plastic NP | | | | | |
| P0900258-005.01 | 125mL Plastic NP | | | | | |
| P0900258-006.01 | 125mL Plastic NP | | | | | |
| P0900258-007.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers):

Chain of Custody is missing sampler's signature

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

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## ANALYSIS

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900258
**Date Collected :** 01/23/09
**Date Received :** 01/23/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | MDL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| MW-21-5 | P0900258-001 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| MW-21-4 | P0900258-002 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| MW-21-3 | P0900258-003 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| MW-21-2 | P0900258-004 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| MW-21-1 | P0900258-005 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| DUPE-1-1Q09 | P0900258-006 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| EB-1-1/23/09 | P0900258-007 | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |
| Method Blank | P0900258-MB | 0.01 | 0.006 | 1 | NA | 01/23/09 14:50 | ND | |

Approved By Sue Anderson Date : 1/27/09



Report By:NFallahi

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Battelle | **Service Request:** | P0900258 |
| **Project:** | JPL Groundwater Monitoring 1Q09 / G486090 | **Date Analyzed:** | 01/23/09 |

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |
| CCB2 | 0.010 | 0.006 | ND |

Approved By: Joe Anderson Date: 1/27/09

ICCBMDL/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900258
**Date Analyzed:** 01/23/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0397 | 95 |
| CCV1 | 0.0418 | 0.0397 | 95 |
| CCV2 | 0.0418 | 0.0408 | 98 |

Approved By: _____ Date: 1/27/09

CCV1A/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900258 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | NA |
| **Project Number :** | G486090 | **Date Received :** | NA |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/23/09 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/L (ppm) |
| Lab Code : | P0900258-LCS | Basis : | NA |

Test Notes :

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0418 | 105 | 92-113 | |

Approved By _____ Date : 1/27/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900258 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | 01/23/09 |
| **Project Number :** | G486090 | **Date Received :** | 01/23/09 |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/23/09 |

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-21-5
Lab Code : P0900258-001MS P0900258-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.01 | 0.0500 | 0.0500 | ND | 0.0522 | 0.0532 | 104 | 106 | 82-114 | 2 | |

Approved By _____ Date : 1/27/09



Report By:NFallahi

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

**CAS SR #P0900271**

## Table of Contents

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

January 28, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on January 26, 2009. For your reference, these analyses have been assigned our service request number P0900271.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 24 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
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: Battelle CAS Project No: P0900271
Project: JPL Groundwater Monitoring 1Q09 / G486090

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## CASE NARRATIVE

The samples were received intact under chain of custody on January 26, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

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*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900271

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900271-001 | MW-14-3 | 1/26/09 | 10:03 |
| P0900271-002 | MW-14-2 | 1/26/09 | 10:42 |
| P0900271-003 | MW-14-1 | 1/26/09 | 11:14 |
| P0900271-004 | EB-02-01/26/09 | 1/26/09 | 10:57 |

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert*-Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request



Columbia Analytical Services INC.
An Employee - Owned Company

**2655 Park Center Drive, Suite A**
**Simi Valley, California 93065**
**Phone (805) 526-7161**
**Fax (805) 526-7270**

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P900271

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name
JPL GW MON 1Q09

Project Number
G4866090

Project Manager
DAVID CONNER

P.O. # / Billing Information
21431A / BATTELLE
ATTN: GERALD TOMPKINS
505 KING AVE.
COLUMBUS, OH 43201

Phone
619-726-7311

Fax

Email Address for Result Reporting

Sampler (Print & Sign)

**Analysis Method and/or Analytes**

**Preservative Code**

| Client Sample ID | Laboratory ID Number | Date Collected | Time Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) | TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | 0 C-DH 7196 | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-14-3 | 1 | 1/24/09 | 1003 | W | 1 | | | | | | | X | | | | | | | | | | |
| MW-14-2 | 2 | \| | 1042 | \| | \| | | | | | | | X | | | | | | | | | | |
| MW-14-1 | 3 | \| | 1114 | \| | \| | | | | | | | X | | | | | | | | | | |
| EB-02-01/26/09 | X | \| | 1057 | \| | \| | | | | | | | X | | | | | | | | | | EQUIPMENT BLANK |
| | | | | | | | | | | | | | | | | | | | | | | | |
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**Preservative Key**
0 None
1 HCL
2 HNO3
3 H2SO4
4 NaOH
5 Zn Acetate
6 Asc Acid
7 Other

**Report Tier Levels - please select**
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: Geotracker

Project Requirements (MRLs, QAPP)

| Relinquished by: (Signature) | Date: 01/26/09 | Time: 1230 | Received by: (Signature) | Date: 1/26/09 | Time: 1230 |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | Date: 1/26/09 | Time: 1320 | Received by: (Signature) | Date: 1-26-09 | Time: 1320 |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

Cooler / Blank / Ice / No Ice
Temperature 3 °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900271

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900271-001.01 | | | | | |
| | 7196A | | | | |
| | | 1/26/09 | 1321 | SMO / LKUKITA | |
| | | 1/26/09 | 1342 | In Lab / NFALLAHI | |
| | | 1/26/09 | 1535 | P-37 / NFALLAHI | |
| P0900271-002.01 | | | | | |
| | 7196A | | | | |
| | | 1/26/09 | 1321 | SMO / LKUKITA | |
| | | 1/26/09 | 1342 | In Lab / NFALLAHI | |
| | | 1/26/09 | 1535 | P-37 / NFALLAHI | |
| P0900271-003.01 | | | | | |
| | 7196A | | | | |
| | | 1/26/09 | 1321 | SMO / LKUKITA | |
| | | 1/26/09 | 1342 | In Lab / NFALLAHI | |
| | | 1/26/09 | 1535 | P-37 / NFALLAHI | |
| P0900271-004.01 | | | | | |
| | 7196A | | | | |
| | | 1/26/09 | 1321 | SMO / LKUKITA | |
| | | 1/26/09 | 1342 | In Lab / NFALLAHI | |
| | | 1/26/09 | 1535 | P-37 / NFALLAHI | |

## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900271

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 1/26/09  Date opened: 1/26/09  by: LKUKITA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Were **chain-of-custody** papers used and filled out? | ☒ | ☐ | ☐ |
| 5 | Did **sample container labels** and/or tags agree with custody papers? | ☒ | ☐ | ☐ |
| 6 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 7 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 8 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C  Blank Temperature 3 °C | | | |
| 9 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: Serial # _____ -TB _____ | | | |
| 10 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 11 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☒ | ☐ | ☐ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 12 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 13 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900271-001.01 | 125mL Plastic NP | | | | | |
| P0900271-002.01 | 125mL Plastic NP | | | | | |
| P0900271-003.01 | 125mL Plastic NP | | | | | |
| P0900271-004.01 | 125mL Plastic NP | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Explain any discrepancies: (include lab sample ID numbers): _____



*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)



1/26/09 1:24 PM

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

---

## ANALYSIS

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900271
**Date Collected :** 01/26/09
**Date Received :** 01/26/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | MDL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| MW-14-3 | P0900271-001 | 0.010 | 0.006 | 1 | NA | 01/26/09 15:10 | ND | |
| MW-14-2 | P0900271-002 | 0.010 | 0.006 | 1 | NA | 01/26/09 15:10 | ND | |
| MW-14-1 | P0900271-003 | 0.010 | 0.006 | 1 | NA | 01/26/09 15:10 | ND | |
| EB-02-01/26/09 | P0900271-004 | 0.010 | 0.006 | 1 | NA | 01/26/09 15:10 | ND | |
| Method Blank | P0900271-MB | 0.010 | 0.006 | 1 | NA | 01/26/09 15:10 | ND | |

Approved By Sue Anderson Date : 1/28/09



Report By:NFallahi

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Battelle | **Service Request:** | P0900271 |
| **Project:** | JPL Groundwater Monitoring 1Q09 / G486090 | **Date Analyzed:** | 01/26/09 |

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |

Approved By: _____ Date: 1/28/09

ICCBMDL/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Battelle | **Service Request:** | P0900271 |
| **Project:** | JPL Groundwater Monitoring 1Q09 / G486090 | **Date Analyzed:** | 01/26/09 |

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0439 | 105 |
| CCV1 | 0.0418 | 0.0418 | 100 |

Approved By: Joe Anderson Date: 1/28/09

CCV1A/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900271 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | NA |
| **Project Number :** | G486090 | **Date Received :** | NA |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/26/09 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/L (ppm) |
| Lab Code : | P0900271-LCS | Basis : | NA |

Test Notes :

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0387 | 97 | 92-113 | |

Approved By Sue Anderson Date : 1/28/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900271
**Date Collected :** 01/26/09
**Date Received :** 01/26/09
**Date Extracted :** NA
**Date Analyzed :** 01/26/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-14-3
Lab Code : P0900271-001MS P0900271-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.010 | 0.0500 | 0.0500 | ND | 0.0512 | 0.0522 | 102 | 104 | 82-114 | 2 | |

Approved By Sue Anderson Date : 1/28/09



Report By:NFallahi

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax



**CAS SR #P0900298**

## Table of Contents

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

January 29, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on January 28, 2009. For your reference, these analyses have been assigned our service request number P0900298.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 23 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
Project Manager

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax



Client: Battelle CAS Project No: P0900298
Project: JPL Groundwater Monitoring 1Q09 / G486090

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## CASE NARRATIVE

The samples were received intact under chain of custody on January 28, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

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*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900298

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900298-001 | MW-17-4 | 1/28/09 | 08:57 |
| P0900298-002 | MW-17-3 | 1/28/09 | 09:30 |
| P0900298-003 | MW-17-2 | 1/28/09 | 10:10 |
| P0900298-004 | MW-18-4 | 1/28/09 | 11:53 |
| P0900298-005 | MW-18-3 | 1/28/09 | 12:21 |
| P0900298-006 | MW-18-2 | 1/28/09 | 12:50 |
| P0900298-007 | EB-04-01/28/09 | 1/28/09 | 09:54 |

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# Columbia Analytical Services, Inc.

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert*-Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

**2655 Park Center Drive, Suite A**
**Simi Valley, California 93065**
**Phone (805) 526-7161**
**Fax (805) 526-7270**

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0900298

CAS Contact:

| Company Name & Address (Reporting Information) | Project Name |
|---|---|
| BATTELLE<br>3990 OLD TOWN AVE, C-205<br>SAN DIEGO, CA 92110 | JPL GW MON 1Q09 |
| **Project Manager** | **Project Number** |
| DAVID CONNER | 64486090 |
| **Phone** / **Fax** | **P.O. # / Billing Information** |
| 619-726-7311 | 214319/BATTELLE<br>ATTN: GERALD TOMPKINS<br>505 KING AVE.<br>COLUMBUS, OH 43201 |
| **Email Address for Result Reporting** | **Sampler (Print & Sign)** |

**Analysis Method and/or Analytes**

**Preservative Code**

**Preservative Key**

| | |
|---|---|
| 0 | None |
| 1 | HCL |
| 2 | HNO3 |
| 3 | H2SO4 |
| 4 | NaOH |
| 5 | Zn Acetate |
| 6 | Asc Acid |
| 7 | Other |

| Client Sample ID | Laboratory ID Number | Date Collected | Time Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) | TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | 0 Cr VI (7196) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-17-4 | 1 | 1/28/09 | 0857 | W | 1 | | | | | | | X | |
| MW-17-3 | 2 | " | 0930 | " | " | | | | | | | X | |
| MW-17-2 | 3 | " | 1010 | " | " | | | | | | | X | QC LEVEL III |
| MW-18-4 | 4 | " | 1153 | " | " | | | | | | | X | |
| MW-18-3 | 5 | " | 1221 | " | " | | | | | | | X | |
| MW-18-2 | 6 | " | 1250 | " | " | | | | | | | X | QC LEVEL III |
| EB-04-01/28/09 | 7 | " | 0954 | " | " | | | | | | | X | EQUIPMENT BLANK |

**Report Tier Levels - please select**

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: Geotracker

Project Requirements (MRLs, QAPP)

| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| | 01/28/09 | 1400 | | 1/28/09 | 1400 |
| | 1-28-09 | 1745 | | 1/28/09 | 1745 |
| | Date: | Time: | | Date: | Time: |

Cooler / Blank / Ice / No Ice

Temperature 3 °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900298

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900298-001.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-002.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-003.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-004.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-005.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-006.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |
| P0900298-007.01 | | | | | |
| | 7196A | | | | |
| | | 1/28/09 | 1450 | SMO / LKUKITA | |
| | | 1/28/09 | 1457 | In Lab / NFALLAHI | |
| | | 1/28/09 | 1624 | P-37 / NFALLAHI | |

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## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900298

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 1/28/09  Date opened: 1/28/09  by: LKUKITA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Were **chain-of-custody** papers used and filled out? | ☒ | ☐ | ☐ |
| 5 | Did **sample container labels** and/or tags agree with custody papers? | ☒ | ☐ | ☐ |
| 6 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 7 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 8 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C  Blank Temperature 3 °C | | | |
| 9 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: Serial # _____ -TB _____ | | | |
| 10 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 11 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☒ | ☐ | ☐ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 12 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 13 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900298-001.01 | 125mL Plastic NP | | | | | |
| P0900298-002.01 | 125mL Plastic NP | | | | | |
| P0900298-003.01 | 125mL Plastic NP | | | | | |
| P0900298-004.01 | 125mL Plastic NP | | | | | |
| P0900298-005.01 | 125mL Plastic NP | | | | | |
| P0900298-006.01 | 125mL Plastic NP | | | | | |
| P0900298-007.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers): _____



*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)



1/28/09 2:57 PM

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

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## ANALYSIS

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900298
**Date Collected :** 01/28/09
**Date Received :** 01/28/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|
| MW-17-4 | P0900298-001 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| MW-17-3 | P0900298-002 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| MW-17-2 | P0900298-003 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| MW-18-4 | P0900298-004 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| MW-18-3 | P0900298-005 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| MW-18-2 | P0900298-006 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| EB-04-01/28/09 | P0900298-007 | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |
| Method Blank | P0900298-MB | 0.010 | 1 | NA | 01/28/09 16:05 | ND | |

Approved By Sue Anderson Date : 1/29/09



Report By:NFallahi

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900298
**Date Analyzed:** 01/28/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |
| CCB2 | 0.010 | 0.006 | ND |

Approved By: _____ Date: 1/29/09

ICCBMDL/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900298
**Date Analyzed:** 01/28/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0435 | 104 |
| CCV1 | 0.0418 | 0.0424 | 101 |
| CCV2 | 0.0418 | 0.0413 | 99 |

Approved By: _____ Date: 1/29/09

CCV1A/120594

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900298 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | NA |
| **Project Number :** | G486090 | **Date Received :** | NA |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/28/09 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/L (ppm) |
| Lab Code : | P0900298-LCS | Basis : | NA |
| Test Notes : | | | |

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0424 | 106 | 92-113 | |

Approved By Joe Anderson Date : 1/29/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900298
**Date Collected :** 01/28/09
**Date Received :** 01/28/09
**Date Extracted :** NA
**Date Analyzed :** 01/28/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-17-4
Lab Code : P0900298-001MS P0900298-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.010 | 0.0500 | 0.0500 | ND | 0.0541 | 0.0541 | 108 | 108 | 82-114 | <1 | |

Approved By _____ Date : 1/29/09



Report By:NFallahi

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

February 2, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on January 29, 2009. For your reference, these analyses have been assigned our service request number P0900314.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 25 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
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: Battelle CAS Project No: P0900314
Project: JPL Groundwater Monitoring 1Q09 / G486090

## CASE NARRATIVE

The samples were received intact under chain of custody on January 29, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900314

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900314-001 | MW-26-2 | 1/29/09 | 12:51 |
| P0900314-002 | MW-26-1 | 1/29/09 | 13:13 |
| P0900314-003 | MW-25-5 | 1/29/09 | 09:16 |
| P0900314-004 | MW-25-4 | 1/29/09 | 09:44 |
| P0900314-005 | MW-25-3 | 1/29/09 | 10:10 |
| P0900314-006 | MW-25-2 | 1/29/09 | 10:38 |
| P0900314-007 | MW-25-1 | 1/29/09 | 11:13 |
| P0900314-008 | DUPE-02-1Q09 | 1/29/09 | 11:48 |
| P0900314-009 | EB-05-1/29/09 | 1/29/09 | 10:59 |

# Columbia Analytical Services, Inc.

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert*-Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request



Columbia Analytical Services INC.
An Employee - Owned Company

**2655 Park Center Drive, Suite A**
**Simi Valley, California 93065**
**Phone (805) 526-7161**
**Fax (805) 526-7270**

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0900314

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE. C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON 1Q09

Project Number: G486090

Project Manager: DAVID CONNELL

P.O. # / Billing Information: 214319/ BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone: 619-726-7311

Fax:

Email Address for Result Reporting:

Sampler (Print & Sign):

**Analysis Method and/or Analytes**

*Preservative Code*

| Client Sample ID | Laboratory ID Number | Date Collected | Time Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | A | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-26-2 | 1 | 1/29/09 | 1251 | W | 1 | | | | | | X | |
| MW-26-1 | 2 | | 1313 | | | | | | | | X | |
| MW-25-5 | 3 | | 0916 | | | | | | | | X | |
| MW-25-4 | 4 | | 0944 | | | | | | | | X | |
| MW-25-3 | 5 | | 1010 | | | | | | | | X | |
| MW-25-2 | 6 | | 1038 | | | | | | | | X | |
| MW-25-1 | 7 | | 1113 | | | | | | | | X | |
| DUPE-02-1Q09 | 8 | | 1148 | | 1 | | | | | | X | DUPLICATE |
| EB-05-1-29-09 | 9 | | 1059 | | | | | | | | X | EQUIPMENT BLANK |

**Preservative Key**

| | |
|---|---|
| 0 | None |
| 1 | HCL |
| 2 | HNO3 |
| 3 | H2SO4 |
| 4 | NaOH |
| 5 | Zn Acetate |
| 6 | Asc Acid |
| 7 | Other |

**Report Tier Levels - please select**

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

| | Date | Time | | Date | Time |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | 1/29/09 | 1400 | Received by: (Signature) | 1/29/09 | 1402 |
| Relinquished by: (Signature) | 1/29/09 | 1450 | Received by: (Signature) | 1/29/09 | 1450 |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

Cooler / Blank / Ice / No Ice

Temperature 3 °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900314

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900314-001.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-002.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-003.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-004.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-005.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-006.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-007.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-008.01 | | | | | |
| | 7196A | | | | |
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1506 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |
| P0900314-009.01 | | | | | |
| | 7196A | | | | |

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# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900314

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| | | 1/29/09 | 1455 | SMO / LKUKITA | |
| | | 1/29/09 | 1507 | In Lab / NFALLAHI | |
| | | 1/29/09 | 1638 | P-37 / NFALLAHI | |

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## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900314

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 01/29/09  Date opened: 01/29/09  by: LKUKITA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Were **chain-of-custody** papers used and filled out? | ☒ | ☐ | ☐ |
| 5 | Did **sample container labels** and/or tags agree with custody papers? | ☐ | ☒ | ☐ |
| 6 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 7 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 8 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C  Blank Temperature 3 °C | | | |
| 9 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: Serial # _____ -TB _____ | | | |
| 10 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 11 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☒ | ☐ | ☐ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 12 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 13 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900314-001.01 | 125mL Plastic NP | | | | | |
| P0900314-002.01 | 125mL Plastic NP | | | | | |
| P0900314-003.01 | 125mL Plastic NP | | | | | |
| P0900314-004.01 | 125mL Plastic NP | | | | | |
| P0900314-005.01 | 125mL Plastic NP | | | | | |
| P0900314-006.01 | 125mL Plastic NP | | | | | |
| P0900314-007.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers):

ID for -008 on COC notes DUPE-02-1Q09; bottle label notes DUPE-02-1/29/09

ID for -009 on COC notes EB-05-1-29-09; bottle label notes EB-05-1-29-05

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12)  RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900314

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 01/29/09  Date opened: 01/29/09  by: LKUKITA

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900314-008.01 | 125mL Plastic NP | | | | | |
| P0900314-009.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

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## ANALYSIS

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900314
**Date Collected :** 01/29/09
**Date Received :** 01/29/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | MDL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| MW-26-2 | P0900314-001 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-26-1 | P0900314-002 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-25-5 | P0900314-003 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-25-4 | P0900314-004 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-25-3 | P0900314-005 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-25-2 | P0900314-006 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| MW-25-1 | P0900314-007 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| DUPE-02-1Q09 | P0900314-008 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| EB-05-1/29/09 | P0900314-009 | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |
| Method Blank | P0900314-MB | 0.010 | 0.006 | 1 | NA | 01/29/09 16:10 | ND | |

Approved By _____ Date : 2/2/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900314
**Date Analyzed:** 01/29/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |
| CCB2 | 0.010 | 0.006 | ND |

Approved By: _____ Date: 2/2/09

ICCBMDL/120594

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900314
**Date Analyzed:** 01/29/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0392 | 94 |
| CCV1 | 0.0418 | 0.0403 | 96 |
| CCV2 | 0.0418 | 0.0392 | 94 |

Approved By: Joe Anderson Date: 2/2/09

CCV1A/120594

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900314 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | NA |
| **Project Number :** | G486090 | **Date Received :** | NA |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/29/09 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/L (ppm) |
| Lab Code : | P0900314-LCS | Basis : | NA |
| Test Notes : | | | |

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0382 | 96 | 92-113 | |

Approved By Sue Anderson Date : 2/2/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900314 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | 01/29/09 |
| **Project Number :** | G486090 | **Date Received :** | 01/29/09 |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/29/09 |

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-25-5
Lab Code : P0900314-003MS P0900314-003DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.010 | 0.0500 | 0.0500 | ND | 0.0527 | 0.0527 | 105 | 105 | 82-114 | <1 | |

Approved By Sue Anderson Date : 2/2/09



Report By:NFallahi

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

**CAS SR #P0900334**

## Table of Contents

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

February 2, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on January 30, 2009. For your reference, these analyses have been assigned our service request number P0900334.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
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: Battelle CAS Project No: P0900334
Project: JPL Groundwater Monitoring 1Q09 / G486090

---

## CASE NARRATIVE

The samples were received intact under chain of custody on January 30, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

---

*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900334

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900334-001 | MW-20-5 | 1/30/09 | 08:45 |
| P0900334-002 | MW-20-4 | 1/30/09 | 09:19 |
| P0900334-003 | MW-20-3 | 1/30/09 | 09:51 |
| P0900334-004 | MW-20-2 | 1/30/09 | 10:21 |
| P0900334-005 | MW-20-1 | 1/30/09 | 11:10 |
| P0900334-006 | DUPE-03-1Q09 | 1/30/09 | 00:00 |
| P0900334-007 | DUPE-04-1Q09 | 1/30/09 | 00:00 |
| P0900334-008 | EB-06-01/30/09 | 1/30/09 | 10:37 |

3

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert* -Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P090033

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON 1Q09

Project Number: G486090

Project Manager: DAVID CONNER

P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone: 619-726-7311

Fax:

Email Address for Result Reporting

Sampler (Print & Sign)

**Analysis Method and/or Analytes**

**Preservative Code**

| Client Sample ID | Laboratory ID Number | Time Collected | Date Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) | TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | 0 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-20-5 | 1 | 0845 | 1/30/09 | W | 1 | | | | | | | X | |
| MW-20-4 | 2 | 0919 | | | | | | | | | | X | |
| MW-20-3 | 3 | 0951 | | | | | | | | | | X | |
| MW-20-2 | 4 | 1021 | | | | | | | | | | X | |
| MW-20-1 | 5 | 1110 | | | | | | | | | | X | EDD ~~DATA PKG~~ QC LEVEL III |
| DUPE-03-1Q09 | 6 | — | | | | | | | | | | X | DUPLICATE |
| DUPE-04-1Q09 | 7 | — | | | | | | | | | | X | DUPLICATE/QC LEVEL III |
| EB-06-01/30/09 | 8 | 1037 | | | | | | | | | | X | EQUIPMENT BLANK |

**Preservative Key**

| | |
|---|---|
| 0 | None |
| 1 | HCL |
| 2 | HNO3 |
| 3 | H2SO4 |
| 4 | NaOH |
| 5 | Zn Acetate |
| 6 | Asc Acid |
| 7 | Other |

**Report Tier Levels - please select**

Tier I - (Results/Default if not specified) ___
Tier II - (Results + QC) ___
Tier III - (Data Validation Package) 10% Surcharge ___
Tier V - (client specified) X

MRLs required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: Geotracker

Project Requirements (MRLs, QAPP)

| Relinquished by: (Signature) | Date: 1/30/09 | Time: 1230 | Received by: (Signature) | Date: 1/30/09 | Time: 12:30 |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | Date: 1/30/09 | Time: 1327 | Received by: (Signature) | Date: 1/30/09 | Time: 1327 |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

Cooler / Blank / Ice / No Ice

Temperature 3 °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900334

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900334-001.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-002.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-003.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-004.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-005.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-006.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-007.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |
| P0900334-008.01 | | | | | |
| | 7196A | | | | |
| | | 1/30/09 | 1340 | SMO / LKUKITA | |
| | | 1/30/09 | 1348 | In Lab / NFALLAHI | |
| | | 1/30/09 | 1613 | P-37 / NFALLAHI | |

# Columbia Analytical Services, Inc.
## Sample Acceptance Check Form

Client: Battelle  Work order: P0900334

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 1/30/09  Date opened: 1/30/09  by: LKUKITA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Was a **chain-of-custody** provided? | ☒ | ☐ | ☐ |
| 5 | Was the **chain-of-custody** properly completed? | ☒ | ☐ | ☐ |
| 6 | Did **sample container labels** and/or tags agree with custody papers? | ☒ | ☐ | ☐ |
| 7 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 8 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 9 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C  Blank Temperature 3 °C | | | |
| 10 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: _____ | | | |
| 11 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 12 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☒ | ☐ | ☐ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 13 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 14 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900334-002.01 | 125mL Plastic NP | | | | | |
| P0900334-003.01 | 125mL Plastic NP | | | | | |
| P0900334-004.01 | 125mL Plastic NP | | | | | |
| P0900334-005.01 | 125mL Plastic NP | | | | | |
| P0900334-006.01 | 125mL Plastic NP | | | | | |
| P0900334-007.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers): _____

7

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900334

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 1/30/09  Date opened: 1/30/09  by: LKUKITA

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900334-008.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12)  RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

---

## ANALYSIS

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900334
**Date Collected :** 01/30/09
**Date Received :** 01/30/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | MDL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| MW-20-5 | P0900334-001 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| MW-20-4 | P0900334-002 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| MW-20-3 | P0900334-003 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| MW-20-2 | P0900334-004 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| MW-20-1 | P0900334-005 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| DUPE-03-1Q09 | P0900334-006 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| DUPE-04-1Q09 | P0900334-007 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| EB-06-01/30/09 | P0900334-008 | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |
| Method Blank | P0900334-MB | 0.010 | 0.006 | 1 | NA | 01/30/09 15:25 | ND | |

Approved By Sue Anderson Date : 2/2/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900334
**Date Analyzed:** 01/30/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |
| CCB2 | 0.010 | 0.006 | ND |

Approved By: Sue Anderson Date: 2/2/09

ICCBMDL/120594

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900334
**Date Analyzed:** 01/30/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0424 | 101 |
| CCV1 | 0.0418 | 0.0413 | 99 |
| CCV2 | 0.0418 | 0.0413 | 99 |

Approved By: Joe Anderson Date: 2/2/09

CCV1A/120594

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900334 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | NA |
| **Project Number :** | G486090 | **Date Received :** | NA |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/30/09 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/L (ppm) |
| Lab Code : | P0900334-LCS | Basis : | NA |
| Test Notes : | | | |

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0403 | 101 | 92-113 | |

Approved By _____ Date : 2/2/09



Report By:NFallahi

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Battelle | **Service Request :** | P0900334 |
| **Project Name :** | JPL Groundwater Monitoring 1Q09 | **Date Collected :** | 01/30/09 |
| **Project Number :** | G486090 | **Date Received :** | 01/30/09 |
| **Sample Matrix :** | WATER | **Date Extracted :** | NA |
| | | **Date Analyzed :** | 01/30/09 |

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-20-5
Lab Code : P0900334-001MS P0900334-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.010 | 0.0500 | 0.0500 | ND | 0.0424 | 0.0434 | 85 | 87 | 82-114 | 2 | |

Approved By Joe Anderson Date : 2/2/09



Report By:NFallahi

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax



**CAS SR #P0900346**

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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

February 3, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

**RE: JPL Groundwater Monitoring 1Q09 / G486090**

Dear David:

Enclosed are the results of the samples submitted to our laboratory on February 2, 2009. For your reference, these analyses have been assigned our service request number P0900346.

All Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 23 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; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. 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.**

Sue Anderson
Project Manager

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax



Client: Battelle CAS Project No: P0900346
Project: JPL Groundwater Monitoring 1Q09 / G486090

## CASE NARRATIVE

The samples were received intact under chain of custody on February 2, 2009 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 samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

*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.*

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090

**Service Request:** P0900346

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| P0900346-001 | MW-24-4 | 2/2/09 | 08:40 |
| P0900346-002 | MW-24-3 | 2/2/09 | 09:04 |
| P0900346-003 | MW-24-2 | 2/2/09 | 09:28 |
| P0900346-004 | MW-24-1 | 2/2/09 | 10:21 |
| P0900346-005 | EB-07-02/02/09 | 2/2/09 | 10:03 |

## Acronyms

| | |
|---|---|
| **CA LUFT** | California DHS LUFT Method |
| **ASTM** | American Society for Testing and Materials |
| **BTEX** | Benzene/Toluene/Ethylbenzene/Xylenes |
| **CAS Number** | Chemical Abstract Service Registry Number |
| **CFC** | Chlorofluorocarbon |
| **CRDL** | Contract Required Detection Limit |
| **DLCS** | Duplicate Laboratory Control Sample |
| **DMS** | Duplicate Matrix Spike |
| **DOH or DHS** | Department of Health Services |
| **EPA** | U.S. Environmental Protection Agency |
| **GC** | Gas Chromatography |
| **GC/MS** | Gas Chromatography/Mass Spectrometry |
| **IC** | Ion Chromatography |
| **ICB** | Initial Calibration Blank |
| **ICV** | Initial Calibration Verification |
| **LCS** | Laboratory Control Sample |
| **LUFT** | Leaking Underground Fuel Tank |
| **M** | Modified Method |
| **MDL** | Method Detection Limit |
| **MRL** | Method Reporting Limit |
| **MS** | Matrix Spike |
| **MTBE** | Methyl *tert* -Butyl Ether |
| **NA** | Not Applicable |
| **NC** | Not Calculated |
| **ND** | None Detected at or above the Method Reporting/Detection Limit (MRL/MDL) |
| **NTU** | Nephelometric Turbidity Units |
| **ppb** | Parts Per Billion |
| **ppm** | Parts Per Million |
| **PQL** | Practical Quantitation Limit |
| **QA/QC** | Quality Assurance/Quality Control |
| **RCRA** | Resource Conservation and Recovery Act |
| **RPD** | Relative Percent Difference |
| **SIM** | Selected Ion Monitoring |
| **SM** | *Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995. |
| **SW** | *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB. |
| **TDS** | Total Dissolved Solids |
| **TPH** | Total Petroleum Hydrocarbons |
| **TSS** | Total Suspended Solids |
| **TTLC** | Total Threshold Limit Concentration |
| **VOA** | Volatile Organic Analyte(s) |
| **VOC** | Volatile Organic Compound(s) |

## Qualifiers

| | |
|---|---|
| **U** | The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. |
| **J** | The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL. |
| **B** | Analyte detected in the method blank above MRL (PQL). |
| **E** | Estimated; result based on response which exceeded the instrument calibration range. |
| **N** | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| **D** | The reported result is from a dilution. |
| **X** | See case narrative. |

# Water & Soil - Chain of Custody Record & Analytical Service Request



Columbia Analytical Services INC.
An Employee - Owned Company

**2655 Park Center Drive, Suite A**
**Simi Valley, California 93065**
**Phone (805) 526-7161**
**Fax (805) 526-7270**

**Requested Turnaround Time in Business Days (Surcharges) please circle**
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 0900346

CAS Contact:

| Company Name & Address (Reporting Information) | Project Name |
|---|---|
| BATTELLE<br>3990 OLD TOWN AVE. C-205<br>SAN DIEGO, CA 92110 | JPL GW MON 1Q09 |
| **Project Manager** | **Project Number** |
| DAVID CONNER | G486090 |
| **Phone** / **Fax** | **P.O. # / Billing Information** |
| 619-726-7311 | 21439/BATTELLE<br>ATTN: GERALD TOMPKINS<br>505 KING AVE.<br>COLUMBUS, OH 43201 |
| **Email Address for Result Reporting** | **Sampler (Print & Sign)** |
| | |

**Analysis Method and/or Analytes**

**Preservative Code**

| Client Sample ID | Laboratory ID Number | Date Collected | Time Collected | Matrix | Number of Containers | Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐ | TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐ | TPH Diesel 8015B ☐ (Subcontracted) | TPH Diesel Low Level 8015B ☐ (Subcontracted) | TPH FC ☐ 8015M (Subcontracted) | Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted) | 0 | Cr VI (7196) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-24-4 | 1 | 2/2/09 | 0840 | W | 1 | | | | | | | X | X | |
| MW-24-3 | 2 | " | 0904 | " | 1 | | | | | | | X | X | |
| MW-24-2 | 3 | " | 0924 | " | 1 | | | | | | | X | X | |
| MW-24-1 | 4 | " | 1021 | " | 2 | | | | | | | X | X | MS/MSD |
| EB-07-02/02/09 | 5 | " | 1003 | " | 1 | | | | | | | X | | EQUIPMENT BLANK |

**Preservative Key**

| | |
|---|---|
| 0 | None |
| 1 | HCL |
| 2 | HNO3 |
| 3 | H2SO4 |
| 4 | NaOH |
| 5 | Zn Acetate |
| 6 | Asc Acid |
| 7 | Other |

**Report Tier Levels - please select**

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: Geotracker

Project Requirements (MRLs, QAPP)

| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | 2/2/09 | 1220 | Received by: (Signature) | 2/2/09 | 12:20 |
| Relinquished by: (Signature) | 2/2/09 | 13:10 | Received by: (Signature) | 2/4/09 | 1310 |
| | Date: | Time: | Received by: (Signature) | Date: | Time: |

Cooler / Blank / Ice / No Ice
Temperature 2.2 °C

# Columbia Analytical Services, Inc.
# Chain of Custody Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09/G486090
**Service Request:** P0900346

| Bottle ID | Tests | Date | Time | Sample Location / User | Disposed On |
|---|---|---|---|---|---|
| P0900346-001.01 | | | | | |
| | 7196A | | | | |
| | | 2/2/09 | 1317 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |
| P0900346-002.01 | | | | | |
| | 7196A | | | | |
| | | 2/2/09 | 1317 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |
| P0900346-003.01 | | | | | |
| | 7196A | | | | |
| | | 2/2/09 | 1317 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |
| P0900346-004.01 | | | | | |
| | 7196A | | | | |
| | | 2/2/09 | 1317 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |
| P0900346-004.02 | | | | | |
| | | 2/2/09 | 1318 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |
| P0900346-005.01 | | | | | |
| | 7196A | | | | |
| | | 2/2/09 | 1317 | SMO / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1318 | P-37 / MZAMORA | |
| | | 2/2/09 | 1404 | In Lab / SANDERSON | |
| | | 2/3/09 | 0739 | P-37 / SANDERSON | |

**5A**

## Columbia Analytical Services, Inc.
### Sample Acceptance Check Form

Client: Battelle  Work order: P0900346

Project: JPL Groundwater Monitoring 1Q09 / G486090

Sample(s) received on: 02/02/09  Date opened: 02/02/09  by: MZAMORA

*Note:* This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

| | | Yes | No | N/A |
|---|---|---|---|---|
| 1 | Were **sample containers** properly marked with client sample ID? | ☒ | ☐ | ☐ |
| 2 | Container(s) **supplied by CAS**? | ☒ | ☐ | ☐ |
| 3 | Did **sample containers** arrive in good condition? | ☒ | ☐ | ☐ |
| 4 | Was a **chain-of-custody** provided? | ☒ | ☐ | ☐ |
| 5 | Was the **chain-of-custody** properly completed? | ☒ | ☐ | ☐ |
| 6 | Did **sample container labels** and/or tags agree with custody papers? | ☒ | ☐ | ☐ |
| 7 | Was **sample volume** received adequate for analysis? | ☒ | ☐ | ☐ |
| 8 | Are samples within specified holding times? | ☒ | ☐ | ☐ |
| 9 | Was proper **temperature** (thermal preservation) of cooler at receipt adhered to? | ☒ | ☐ | ☐ |
| | Cooler Temperature _____ °C  Blank Temperature 2 °C | | | |
| 10 | Was a **trip blank** received? | ☐ | ☒ | ☐ |
| | Trip blank supplied by CAS: _____ | | | |
| 11 | Were **custody seals** on outside of cooler/Box? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| | Were custody seals on outside of sample container? | ☐ | ☒ | ☐ |
| | Location of seal(s)? _____ Sealing Lid? | ☐ | ☐ | ☒ |
| | Were signature and date included? | ☐ | ☐ | ☒ |
| | Were seals intact? | ☐ | ☐ | ☒ |
| 12 | Do containers have appropriate **preservation**, according to method/SOP or Client specified information? | ☐ | ☐ | ☒ |
| | Is there a client indication that the submitted samples are **pH** preserved? | ☐ | ☐ | ☒ |
| | Were **VOA vials** checked for presence/absence of air bubbles? | ☐ | ☐ | ☒ |
| | Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | ☐ | ☐ | ☒ |
| 13 | **Tubes:** Are the tubes capped and intact? | ☐ | ☐ | ☒ |
| | Do they contain moisture? | ☐ | ☐ | ☒ |
| 14 | **Badges:** Are the badges properly capped and intact? | ☐ | ☐ | ☒ |
| | Are dual bed badges separated and individually capped and intact? | ☐ | ☐ | ☒ |

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P0900346-001.01 | 125mL Plastic NP | | | | | |
| P0900346-002.01 | 125mL Plastic NP | | | | | |
| P0900346-003.01 | 125mL Plastic NP | | | | | |
| P0900346-004.01 | 125mL Plastic NP | | | | | |
| P0900346-004.02 | 125mL Plastic NP | | | | | |
| P0900346-005.01 | 125mL Plastic NP | | | | | |

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide NaOH (pH>12); T. Sulfide NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

# DIVIDER SHEET

# ANALYTICAL DATA FOR

## Hexavalent Chromium

---

## ANALYSIS

Analytical Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900346
**Date Collected :** 02/02/09
**Date Received :** 02/02/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Sample Name | Lab Code | PQL | MDL | Dilution Factor | Date Extracted | Date/Time Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| MW-24-4 | P0900346-001 | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |
| MW-24-3 | P0900346-002 | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |
| MW-24-2 | P0900346-003 | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |
| MW-24-1 | P0900346-004 | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |
| EB-07-02/02/09 | P0900346-005 | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |
| Method Blank | P0900346-MB | 0.010 | 0.006 | 1 | NA | 02/02/09 15:10 | ND | |

Approved By _____ Date : 2/3/09



Report By:NFallahi

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900346
**Date Analyzed:** 02/02/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | PQL | MDL | Result |
|---|---|---|---|
| ICB | 0.010 | 0.006 | ND |
| CCB1 | 0.010 | 0.006 | ND |

Approved By: Sue Anderson Date: 2/3/09

ICCBMDL/120594

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Battelle
**Project:** JPL Groundwater Monitoring 1Q09 / G486090

**Service Request:** P0900346
**Date Analyzed:** 02/02/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

| Sample Name | True Value | Result | Percent Recovery |
|---|---|---|---|
| ICV | 0.0418 | 0.0405 | 97 |
| CCV1 | 0.0418 | 0.0415 | 99 |

Approved By: Jane Anderson Date: 2/3/09

CCV1A/120594

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900346
**Date Collected :** NA
**Date Received :** NA
**Date Extracted :** NA
**Date Analyzed :** 02/02/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name : Laboratory Control Sample
Lab Code : P0900346-LCS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.0400 | 0.0385 | 96 | 92-113 | |

Approved By _____ Date : 2/3/09



Report By:NFallahi

QA/QC Report

**Client :** Battelle
**Project Name :** JPL Groundwater Monitoring 1Q09
**Project Number :** G486090
**Sample Matrix :** WATER

**Service Request :** P0900346
**Date Collected :** 02/02/09
**Date Received :** 02/02/09
**Date Extracted :** NA
**Date Analyzed :** 02/02/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-24-1
Lab Code : P0900346-004MS P0900346-004DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

| Analyte | Prep Method | Analysis Method | PQL | Spike Level MS | Spike Level DMS | Sample Result | Spike Result MS | Spike Result DMS | Spike Recovery MS | Spike Recovery DMS | CAS Acceptance Limits | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | None | 7196A | 0.010 | 0.0500 | 0.0500 | ND | 0.0456 | 0.0456 | 91 | 91 | 82-114 | <1 | |

Approved By _____ Date : 2/3/09



Report By:NFallahi

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Columbia Analytical Services INC.
An Employee - Owned Company

**CAS SR #P0900363**

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